

IGNITE YOUR SPIRIT

NGK SPARK PLUG CO., LTD.

14-18 Takatsuji-cho, Mizuho-ku, Nagoya 467-8525

<https://www.ngkntk.co.jp/english/>

Corporate Communication Dept. HR Communication Company

Phone: 81-52-872-5896 Fax: 81-52-872-5951



COMMUNICATION ON
PROGRESS

This is our **Communication on Progress**
in implementing the principles of the
United Nations Global Compact and
supporting broader UN goals.

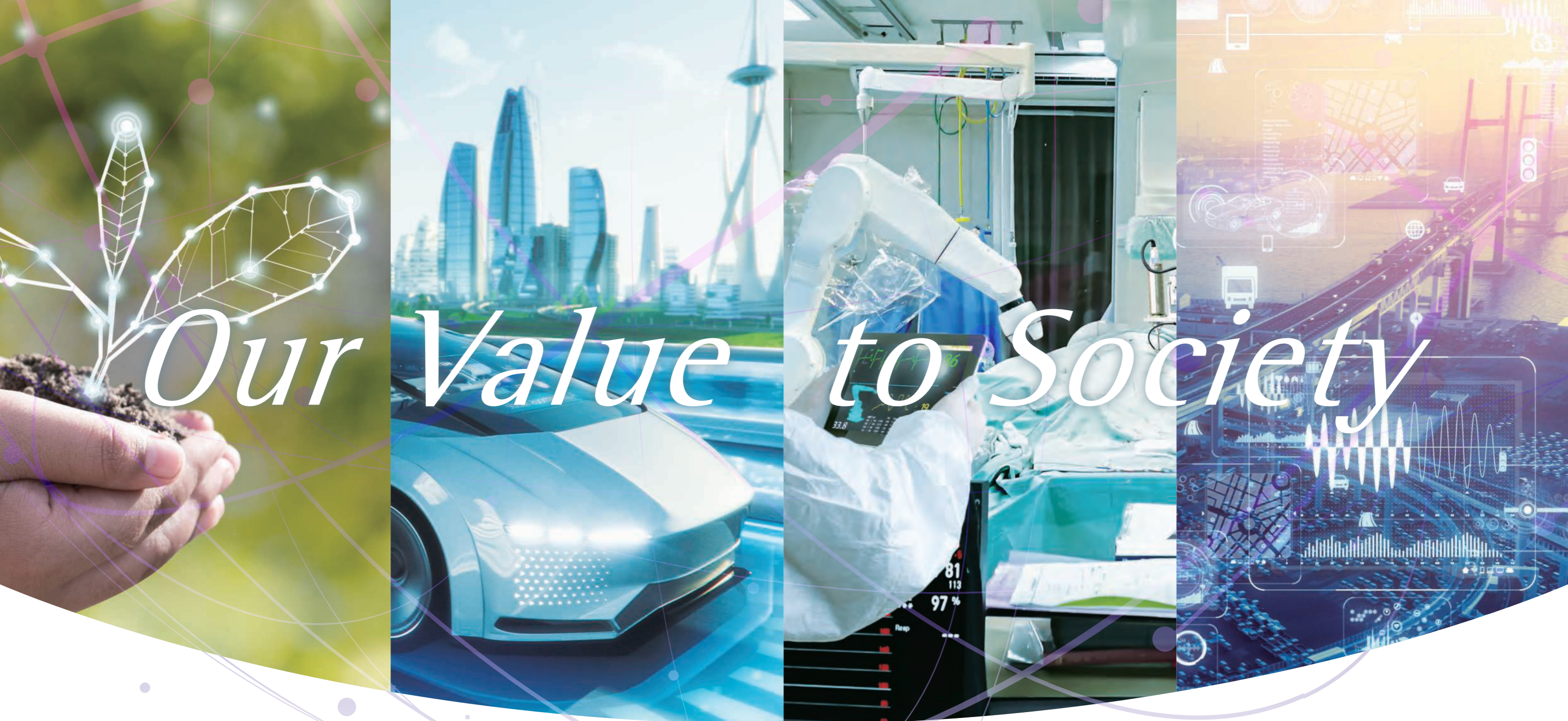
We welcome feedback on its contents.



NGK SPARK PLUG CO., LTD.

Integrated Report 2021

Year ended March 31, 2021



Our Value to Society

Environment & Energy

To an energy efficient and environmentally-friendly society

- Using sensing technology to improve industrial efficiency
- Stable supply of regenerated energy



Mobility

To a mobile society that is fun and convenient

- Providing maintenance services according to your lifestyle
- Improving electricity using ceramic components
- Providing MaaS (Mobility as a Service) to fit special needs



Medical

To bring advanced medical care to people all over the world

- Apply ceramic materials to artificial bone
- Non-invasive diagnosis and treatment, provision of preventive equipment and services using ultrasound technology



Communication

A high-speed communication society where virtual and reality are connected

- Provide infrastructure parts to support high-speed communication



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Our Value to Society

1 Our Business

Based on the principles of “quality products” and “involvement by all,” which form the starting points for our manufacturing activities, we have nurtured our business during a history of continuous challenge for the development of society, as described in this Our Business section.

2 Medium-term Growth Strategies

In the Medium-term Growth Strategies section, we discuss the strategy of our New Medium-term Management Plan, which we have formulated for the purpose of pursuing our 2040 Vision and the 2030 Long-term Management Plan “NITTOKU BX,” with the latter constituting a milestone on the way to achieving the former.

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Editorial Policy

NGK SPARK PLUG has been issuing an annual integrated report since 2017 with a view to helping all stakeholders deepen their understanding of its medium- to long-term value creation efforts. Based on the key strategic theme of pursuing business beyond ceramics while keeping ceramics at the core of our operations, we have been aiming to “change drastically beyond the current way” as our 2040 Vision and uphold the slogan “Beyond ceramics, eXceeding imagination” along with the major strategic theme of transforming our business portfolio that centers on the Automotive Components Group. And last year, NGK SPARK PLUG formulated the 2030 Long-term Management Plan “NITTOKU BX,” deeming 2030 as a milestone year. This year, to achieve the Long-term Management Plan, we have formulated a new medium-term management plan, implementation of which will end in FY2024. This report provides an explanatory overview of these plans, and its theme is getting readers to understand what sort of value the Group is delivering.

This publication is also intended to serve as a tool to respond to various opinions and inquiries we receive from stakeholders through our business and IR activities throughout the year. We look forward to receiving frank opinions from many people.

Period Covered

FY2020 (From April 1, 2020 to March 31, 2021) *Also includes some information about our FY2021 activities.

Scope Covered

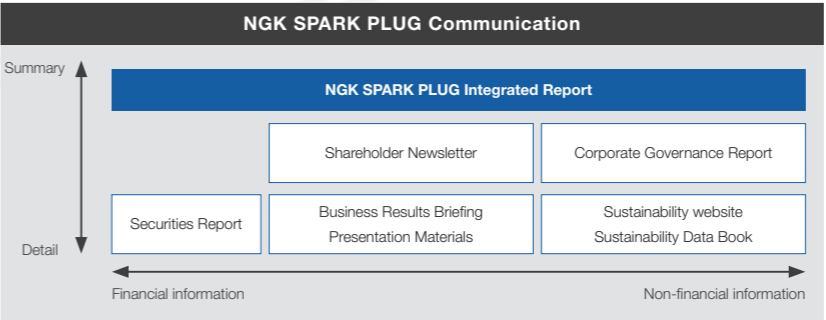
NGK SPARK PLUG Group *Also includes some non-consolidated information about NGK SPARK PLUG CO., LTD.

Guidelines for Reference

The International Integrated Reporting Framework, the International Integrated Reporting Council (IIRC) Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation, the Ministry of Economy, Trade and Industry

Forward-looking Statements

This report contains forward-looking statements regarding NGK SPARK PLUG’s future plans, strategies and performance. Please understand that actual results may differ substantially from these statements.



<https://www.ngkntk.co.jp/english/>

This report focuses on the information that is essential for the enhancement of our corporate value. For details of our technologies, products and financial affairs, please visit our website. For detailed information about our sustainability initiatives, please refer to our sustainability website and the Sustainability Data Book.

Sharing values and reaching for
a sustainable society
with our stakeholders



Representative Director
Chairman of the Board

With societal issues that threaten the sustainability of society appearing one after another, what is the reason for existence of corporations, and how can an ideal society be realized? We asked Chairman of the Board Shinichi Odo about how corporations should strive for new heights with a future orientation.

An era in which the value of corporate existence is being re-assessed

The NGK SPARK PLUG Group, established in 1936 as Japan's first manufacturer of spark plugs, has been pursuing the possibilities of ceramics under our principles of "Involvement by all" and "Quality products," which we believe are the foundation of Monozukuri (innovative and quality manufacturing). Through these efforts over many years, we have contributed to social development and built trust with our customers. Our growth has been centered on the core business of automotive internal combustion engine products, such as spark plugs and sensors, based on the cumulative effects of such efforts and on our technologies, which no one else can match and against the backdrop of the economic development in Japan and other nations.

However, the automotive components business, which we have grown with together during our more than 80 years of history, now faces a major turning point due to global moves toward a decarbonized society and rapid progress with technological innovations such as electric vehicles (EVs).

And the societal issues are not only environmental ones. Various other problems have come to light, such as issues with supply-chain labor and approaches to corporate governance, the latter of which have led to corporate scandals. In addition, in FY2020 the sustainability

of society found itself facing the unprecedented threat posed by the novel coronavirus (COVID-19).

The world is divided, and protectionism and trade clashes among the major advanced countries, which have been issues for some time, have become more obvious as a result of slogans such as "nationalism." On the other hand, global supply chains mean that companies have become increasingly closely connected, and we are now in an era in which risks facing one country/territory can send huge ripples across the world.

Furthermore, whether one likes it or not, people's lifestyles, ways of thinking, and values are also undergoing changes, and the companies that supply them with products and services around the world are thus also being forced to change.

How should we face and respond to the challenges faced by us, our industry, and the world? How should one change oneself? Societal issues that had been left aside as something that could be dealt with later have come to the fore as a result of the COVID-19 pandemic, and I think we're in transition phase in which companies will have to not only transform their business models but also rethink the very fundamentals of what their role in society is and what the value of their existence is.

Corporate management needs to adopt an altruistic perspective

In April 2020 we established our CSR and Sustainability Charter, and we are now taking action based on the Charter, which declares that we will endeavor to increase our enterprise value by contributing to the realization of a sustainable society. This gives rise to the question of what companies should do in order to grow. Needless to say, companies must keep increasing sales and profits for sustainable growth and to resolve societal issues.

But that in itself is not enough. I do not think that a prerequisite for the resolution of societal issues by corporations is expansion in terms of scale. The world will no longer accept companies whose fundamental values consist solely of the pursuit of sales and profits.

So what path should we take? How should companies grow? It's not going to be easy to come up with the correct answer, but in a nutshell, I think that we need to adopt a spirit of cocreation to replace the competition of the past.

Self-interest, characterized by the "I'm alright, Jack" approach, runs counter to the global trend toward contributing to the sustainability of society, and I feel that it's becoming increasingly important to think and act, at

least on occasion, based on an altruistic spirit, and to join hands with like-minded others who share the same the values and work together with them to create a better world.

Take the problem of climate change, for example. Unless the whole world tackles it, a fundamental solution will not be found. Japan, Western countries, and China have all declared a goal of becoming carbon neutral by achieving net-zero CO₂ emissions by 2050 in the case of the former two and by 2060 in the case of China, and are sharing their progress as they take action toward achieving these goals. With regard to that point, the auto industry will not bring about a decarbonized society just by switching to EVs. It is essential to build a charging infrastructure, and to join voices with the government to promote the supply of clean energy further up the supply chain.

And with action in the realm of ESG (environment, social, and governance) accelerating, the world also needs to show a united front in stemming the growing gap between rich and poor and tackling human-rights and labor issues. As the highlighting of the issues with the Uighurs

has shown, problems on supply chains affect the entire world. Though they may be occurring in distant places, they can't be treated as a "fire on the other side of the river," as an old Japanese saying goes. Instead, they must be recognized as business risks and given attention. Otherwise, the company concerned could be shunned by both the markets and customers, even if its financial performance is solid. That's the kind of era we're in now.

As concrete guidelines for behavior, our CSR and Sustainability Charter states that we will conduct business in a highly transparent manner, while building

relationships of trust with stakeholders and cocreating and delivering new value that contributes to the resolution of societal issues. In auto industry, the challenge is how to safeguard the jobs of the 5.5 million people employed by the sector as we enter this transition period, and how to pass on the technology that Japan has amassed over the years. We are therefore thinking and taking action in ways that go beyond organizational boundaries. I believe that expanding this sphere of activity will lead to the realization of the kind of society that we are aiming for.

Creating new businesses from the viewpoint of resolving societal issues

Regarding consideration for ESG, it has been pointed out that at the global level interest is high among the so-called Millennials, who were born in the 1980s or later, and among members of the even-younger Generation Z, who were born in the 1990s or later, there is a higher degree of interest in the question of how to be useful, and this trumps money among this age group. To create the world that we consider to be ideal, and to respond to the values of the young generation, who will comprise the consumers of the future, I believe that it is vital that we nurture young talent on a long-term time horizon, that we trust them, and that we put them in positions of responsibility.

As we look ahead to beyond the peak for internal combustion engine (ICE) vehicles, we are currently focusing on the creation of new businesses and solutions that are not dependent on the Automotive Components Group. And looking through the proposals from our young employees, my eyes are drawn to ideas aimed at resolving societal issues not through the conventional product-out method, but instead through the market-in approach.

For example, as part of a project to launch a new business, the "GOOD MORNING COLOR" web app was born as a result of an internal idea-soliciting drive. It's a

commercial product designed to promote self-care by working people and enhance workplace communication. The app incorporates elements from the field of color therapy, which involves using color to analyze a person's mental state. After arriving at work, each individual chooses from 21 colored circles displayed on their PC screen. They pick the color that best matches their mood, and this allows them to view their own mental condition and that of their colleagues. It is a tool for the purpose of deepening mutual understanding among co-workers. In December 2020 we launched a company (ignArt CO., LTD.) to market the app, and we are aiming to provide services that encourage people to express themselves and understand others in fields such as education, nursing care, and medical care.

Of course, it is important for ideas to have social significance, but it is also critical to generate profits as a business on an ongoing basis. That in itself is a trial in which the correct answer cannot be seen, but I view as a positive, hopeful development the fact that the era is changing from one in which we focused on manufacturing to one in which new ideas that incorporate hints from outside the company are emerging.

Work Style Reform Declaration we formulated in January 2021, we are focusing on the development of "self-disciplined" human resources, namely people who are capable of organizing themselves and their work, by promoting diverse work styles such as remote working.

They will be coming up with their own ideas for working more efficiently, and use the time that this efficiency frees up to take part in seminars or perform community services so as to enhance their own value. Developing such self-disciplined human resources will enhance not only the value of the employees themselves, but also that of the company. I also think it will enable us to evolve into a corporation boasting personnel who can make a contribution to society.

Initiatives like these, namely the introduction of the in-house company system and the promotion of work style reforms, are methods of strengthening the organization's *centrifugal force*, and some people will no doubt be concerned about possible governance problems that impair the company's *centripetal force*. But nurturing diverse values and generating new ideas will entail the challenge of replacing rigid organizational systems with free and flexible organizations.

There are numerous ways of strengthening governance using systems, but I believe that the most important thing is to nurture leaders. Leaders should utilize the authority they are given to take on risk and properly discharge the duties they are supposed to fulfill. If leaders like that are placed in positions at the top of the company, centrifugal force will come into play. They will think and act freely, but if they go too far, centripetal force will come into play. With regard to this point, programs that I have been involved

with for many years, such as the HAGI Program for developing the next generation of global executives and the DIAMOND Project for promoting the success of women in the workplace, which identify personnel with the potential to become the executives of the future, have been steadily nurturing young leaders, and I hope that they will continue to grow going forward.

The key to developing self-disciplined human resources will be the establishment of an evaluation system that properly reflects achievements. I would like small successes by individuals to be recognized, and for them to accumulate and be translated into big success for the company, services that contribute to broader society, and the development of our business.

And they cannot only be evaluated based on metrics like sales and profits. There will need to be new parameters for evaluation. We have established our Eco Vision 2030 as we endeavor to become carbon neutral by 2050, and we are taking action to meet numerical targets. As part of these efforts, in June 2021, we partially revised our performance-linked stock remuneration system for directors, etc., adding the rate of reduction of CO₂ emissions as a non-financial evaluation indicator. By including CO₂ emissions reduction in the KPIs for the officers' stock remuneration plan, we would like to send a clear message to the world that we are committed to working with our stakeholders to realize a decarbonized society.

We will share and cocreate a better future with all stakeholders and take on wide-ranging challenges to realize sustainability for society. I would appreciate your understanding toward our future challenges along with your support.

Developing self-disciplined human resources and contributing to broader society

The relationship between corporations and their employees should be re-examined.

Until now, companies have, in a sense, "captured" employees by using financial incentives such as salary, bonuses, and retirement benefits, which are aimed at securing top-flight talent. But amid the COVID-19 pandemic, the traditional work style, where "going to the office (or factory)" was the norm has been replaced by a diverse range of work styles, and there has been a huge value shift in how people view ways of working.

The traditional Japanese lifetime employment system made sense only because of the system of age-based promotions and pay increases that was established against the backdrop of an ever-growing economy. The premises upon which it stands have almost completely crumbled away, so forms of employment ought to be changed. We

need to shift from the old approach, where people basically joined a company for life, to a job-based system in which job content, scope, and responsibilities are clearly defined and people are evaluated based on their achievements. If that happens, employees will be able to independently select ways of working that are motivating for them personally, instead of just putting up with their situations and clinging to the company like their lives depended on it. Corporations are regarded by many as "public institutions" responsible for nurturing the next generation, and I think that we may need to adopt an approach of promoting fluidity in connection with human resources.

In our case, we introduced an in-house company system and spun off some businesses in April 2021 with the aim of clarifying the responsibilities and authority of each business and each individual. And in line with the



Break to change. Change to create.

Overcoming the pain of change and
delivering new corporate value to
society



In April 2021 we began implementing our New Medium-term Management Plan, which was formulated in 2020 and is a component of a breakdown of the 2030 Long-term Management Plan “NITTOKU BX.” “Break to change. Change to create.” With this as our slogan, what changes are we going to make to enhance our corporate value? Representative Director, President Takeshi Kawai provides an answer to this question and talks about the overview and relevant initiatives.

Shift to work styles suited to the new normal accelerating

Over its history of more than 80 years, NGK SPARK PLUG has built a stable revenue base by building on the company's core ceramics technology to advance and improve its products used in internal combustion engines (ICEs), such as spark plugs and sensors. However, the rapid progress of new technologies such as electric vehicles (EVs) is leading to a massive transformation in the very structure of the industry, and we are hurtling into an era in which we will need to embrace challenges that surpass conventional commonsense and imagination.

Furthermore, with a shift to a management style that considers ESG (environment, social, and governance), which encompasses climate change, becoming necessary, FY2020 saw the sustainability of society on a global scale facing the threat posed by COVID-19.

A retreat by economies and markets became inevitable, and this also affected our performance in FY2020, with our first quarter earnings plummeting. Fortunately, however, the situation improved, with brisk

sales of plugs for the aftermarket during the second quarter onwards. Sales rebounded, and while materials prices soared and shipping costs climbed, revenue ended on a par with the previous year's.

Although the COVID-19 pandemic has inflicted pain of various kinds, it has also provided an impetus for taking a fresh look at traditional business practices, beliefs, and styles.

In January 2021 we formulated the Work Style Reform Declaration, and since then we have been recommending a diverse range of ways of working. Remote working, which was presented as good example, has become more and more popular, and even tasks that people used to believe had to be conducted face to face, like business negotiations or the commencement of equipment operations, are now being completed speedily online, which has boosted operational efficiency. In addition, alongside the cost reductions, the most positive change that I have seen is that employees have not only personally

acquired an attitude of “we have to change,” but also a desire to turn that attitude into action right away.

In 2020, we formulated the 2030 Long-term Management Plan “NITTOKU BX,” the primary thrust of which is new business creation, and our goal for 2040 is to “change drastically beyond the current way,” while our vision is the slogan “Beyond ceramics, eXceeding imagination.” Employees must never fear change.

Instead, they must always be conscious of the concept of “Change (transformation) with (co-existence) Will (will)!!,” which is set forth in the Action Guidelines. And by thinking and taking action, they must establish the foundations for new businesses through the resolution of societal issues. I am promoting this approach with the awareness that I am the top executive in the company.

Making investment decisions about new businesses from the viewpoint of “Why Nittoku?”

Of course, it's impossible for anyone to look ahead 10-20 years and accurately predict what sorts of businesses are going to be needed. But what is certain is that while stable demand for products for internal combustion engines (ICEs) is expected to continue for about the next 10 years, in the 2030s the number of vehicles with ICEs is projected

to begin to decline, so we need to switch to a business structure that is not reliant on products for ICEs. Under “NITTOKU BX,” we will decrease the proportion of ICE business to 60% and increase that of non-ICE business to 40% by 2030 by transforming our business portfolio.



To that end, it is imperative that we expand the generation of cash from ICE business, allocate that cash to investment in new businesses, and accelerate our investment activities. We must follow a *two-wheeled* approach to management, where we see ourselves as a bicycle, with *current businesses* as the front wheel and *new businesses* as the rear wheel. Each wheel is independent of the other, but we rely on both to move forward.

Specifically, new businesses include, most notably, the fuel cell business (SOFC), which has already started mass

production. We are also pursuing dozens of projects on a trial-and-error basis, with the aim of staking a presence in new markets. The fields are diverse, but when we are deciding whether to invest in a new business, the criteria that we employ as major premises are these: “Why should we invest in that business?” and “Why Nittoku?”

We are aiming to contribute to higher quality of life (QOL) for people around the world by utilizing our core assets, pursuing linkages with the high-quality manufacturing operations (tangibles) and services (intangibles) that we have long prided ourselves on, and developing never-before-seen new businesses that demonstrate the “Nittoku spirit.”

From that perspective, the direction that I am considering for investment is to invest in M&A deals or technologies that offer investment efficiency. We will not be investing just because of the market’s great needs. Rather, we intend to invest in fields in which we can demonstrate our strengths as a company. It is also important to take into account the perspective of sustainability. As a long-term conceptual stance, we are exploring investment in domains in which our technologies can contribute to the realization of carbon neutrality. Specifically, we are focusing on the development of “e-fuel,” a new fuel synthesized through a catalytic reaction between carbon dioxide (CO₂) and hydrogen (H₂).

Going forward, it has to be said that even if the shift to EVs gathers pace in order to comply with ever tighter environmental regulations, unless rapid progress is made with the construction of battery-charging infrastructure, it will be tough to clear environmental regulatory hurdles with EVs alone. But with e-fuel, which is produced from renewable energy, the infrastructure already in place can be used, so it offers huge advantages on the road to making the entire world a decarbonized society. Although numerous issues remain in terms of costs and other aspects of economic rationality, to achieve our goal of “mobility for everyone,” we are going to be refining our core technologies and pursuing initiatives from a long-term viewpoint.

their responsibilities with respect to investment effectiveness and investment responsibility will become clearer. We also expect internal companies to introduce performance-related pay, such that salaries and bonuses are linked to profitability.

Employees will be exposed to the harsh realities of market competition, and the atmosphere in the workplace

may become edgy at times. But as the New Medium-term Management Plan declares, “Break to change. Change to create.” As this slogan makes clear, change is always accompanied by pain. I think that we needed to take a new direction and make real change while the ICE business is still performing well, as if we fail, we still have leeway to employ trial and error and try again.

Promotion of “Carbon Neutral as a service”

The COVID-19 pandemic has once again highlighted concerns about socioeconomic uncertainties, and calls for companies to adopt sustainability management, i.e. consider the sustainability society when conducting their operations, are growing louder by the day.

Taking this on board, last fiscal year we launched the Sustainability Promotion Dept. and endorsed the Task Force on Climate-Related Financial Disclosures (TCFD). And with respect to our responding to climate change, we have, in line with “NITTOKU BX,” been working to reduce CO₂ emissions as one of our priority tasks. In addition, we set out our Eco Vision 2030 in April 2021 that presupposes the achievement of carbon neutrality in 2050, as pledged in our New Medium-term Management Plan. The Vision includes such goals as a 30% CO₂ emissions reduction by 2030 (compared to FY2018 levels), and we are taking action to reach that goal.

And also with the aim of achieving carbon neutrality, we intend to be proactive in developing technologies and solutions that can benefit not only ourselves, but also society at large.

One of these projects is to develop SOFCs and SOECs (next-generation water electrolysis devices), which employ ceramic solid electrolytes. This project is already underway at our plants, and going forward, with “Carbon Neutral as a service” as our vision, we will be aiming to offer solutions for using SOFCs as distributed power supplies and using SOECs to manufacture hydrogen from renewable energy so as to cut CO₂ emissions.

Partly with the goal of generating a source of financing for investment in “Carbon Neutral as a service,” we have introduced an in-house carbon pricing system whereby each internal company incurs a monetary cost based on its CO₂ emissions. And to get the project moving forward rapidly, we are thinking about teaming up and collaborating with start-up firms that boast top-class technology to develop the business as one of our key new businesses and thereby lead to the realization of a decarbonized society.

Getting back to “Dokuritsu-Jiei” and “Ichigyo-Issha”

To promote sustainability management, creating an environment that employees find comfortable to work in is vital. In line with the Work Style Reform Declaration, we are going to establish an environment aimed at enabling at least 70% of employees to work remotely, and will also be investing in DX (digital transformation) to facilitate that. Remote work serves to protect employees from infection, boost productivity, and develop their ability to control themselves (i.e. become self-disciplined personnel). We will have employees acknowledge each other’s diverse work styles, pool the power that comes from diverse values, and translate this into new value creation.

This promotion of sustainability management in this way and the consideration of ESG absolutely does not

imply a trade-off with financial performance. To pursue sustainable businesses and initiatives, and to benefit all our stakeholders, I believe that it is crucial that we act strategically to raise our value as an enterprise.

Since the days when we were Morimura Gumi, the founding company of the Morimura Group, we have declared our commitment to “Dokuritsu-Jiei” and “Ichigyo-Issha.” We are going to return to that DNA, and with a fresh mindset, be constantly on the lookout for “Something New,” as we strive to develop our business and society in a sustainable way. I hope that our stakeholders will pay close attention to how the new challenges we are taking on actually play out, and look forward to receiving your feedback, including advice and opinions.

Clarification of responsibilities and authority through the introduction of an in-house company system

As we look ahead to the transformation of our business portfolio, we have set about reorganization aimed at ramping up the value of businesses in line with their positions. This move is as described in the New Medium-term Management Plan, implementation of which began in April 2021. In short, the reorganization involves the introduction of an in-house company system.

The previous headquarters has been split into two: Global Strategy Headquarters and Business Partners (BPs) / Companies. The former has been assigned a small number of elite strategic staff, and charged with such tasks as devising strategy for the entire company, pushing forward with portfolio transformation through the optimal allocation of management resources, and exercising governance over each business.

BPs / Companies, meanwhile, handle corporate functions such as procurement, accounting, personnel/labor affairs, and PR. The aim is for them to contribute to

the maximization of the profits of operating companies, and to that end, it will need to offer high added-value services that are competitive in the market place. By improving their operational efficiency and enhancing the sophistication of the services they provide, we will transform them into a profit center. Existing divisions will also be endeavoring to boost their ability to adapt to change through the introduction of systems and frameworks that reflect their respective market environments, and will be charged with hitting KPI and KGI targets set by the internal companies.

There are two key objectives for this reorganization. The first is to achieve clarification of responsibilities and authority, which had been vague in the past, through the switch to the in-house company system. The second is ensure that each internal company is allocated internal capital and takes responsibility for its balance sheet, income statement, and cash flow statement. By making each internal company independent in terms of profitability,



Our Business

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Our Thoughts

Corporate Message

IGNITE YOUR SPIRIT

IGNITE Your drive, dreams and SPIRIT

NGK SPARK PLUG has been a leader in manufacturing for 80 years.

Our desire is to live in a healthier and more beautiful world where all our dreams can come true.

Every day, we continue to ignite the passion in our hearts and spark new ideas in our minds
to focus on achieving our goals for the future.

Our mission is to continue to make the world a better place.

We will pursue future opportunities and improve NGK SPARK PLUG's unique and advanced technologies.

Our diverse workforce will ignite our company to create new products and to be a leader in innovation.

We will enhance our competitive advantage by understanding and adapting to global changes.

Fueled and motivated by our own drive, NGK SPARK PLUG will continue to IGNITE YOUR SPIRIT, instill passion
in your hearts, and deliver cutting-edge solutions as a leading manufacturer in the world.

The Nittoku Way

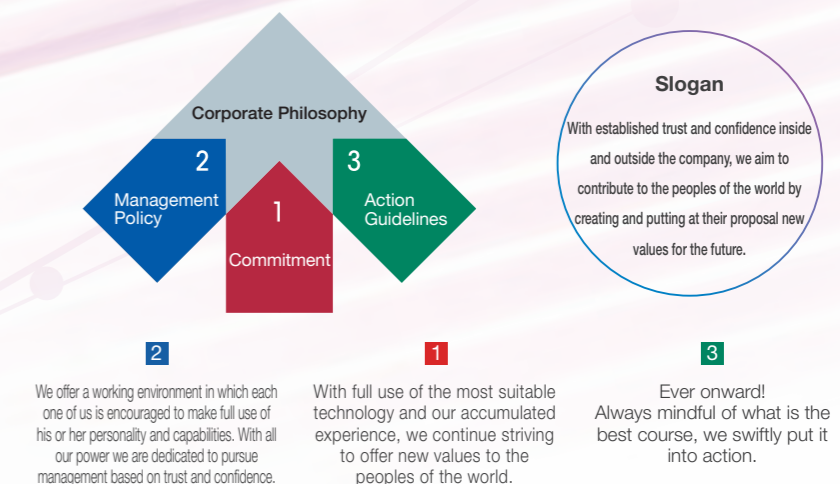
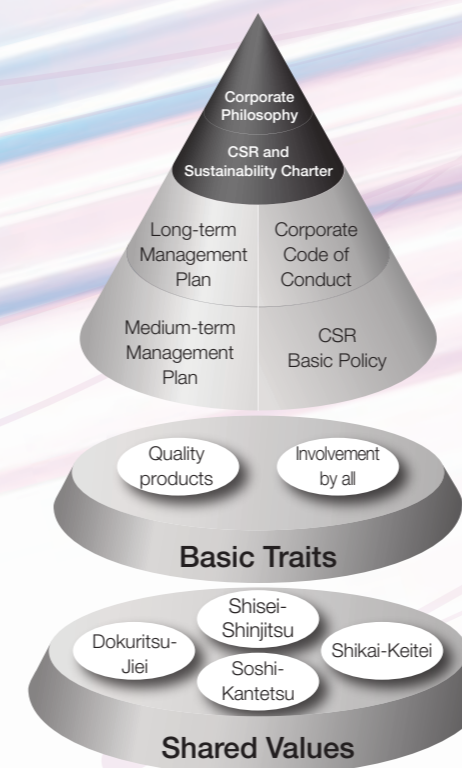
The Nittoku Way refers to a set of philosophies based on business mottos cherished by Morimura Gumi, the founding company of the Morimura Group.
The Nittoku Way refers to the values of the NGK SPARK PLUG Group that all employees commit to sharing and passing down to the next generations.

About the Morimura Group, see  ⇒ P.17

Corporate Philosophy

At NGK SPARK PLUG, we aim to contribute to people all over the world by linking people to technologies and delivering new values.
As a truly global corporation, we want to build stronger ties not only with customers and communities, but also with the local and global environments. We are always working to make our corporate philosophy and our commitments a reality.

Three elements constitute our corporate philosophy.



Shared Values

The Four Shared Values of the Nittoku Way

- Shisei-Shinjitsu** Sincerely, do our very best.
- Dokuritsu-Jiei** Believe in one's own ability, and take actions by oneself.
- Shikai-Keitei** Unite efforts with the people of the world, and utilize each other's differences.
- Soshi-Kantetsu** Have cherished desires, and carry it through till the end.

CSR and Sustainability Charter

We contribute to developing a sustainable society, thereby improving our corporate value.



Morimura Group

Timeline from Morimura Gumi to NGK SPARK PLUG



Ichizaemon Morimura in 1863



In New York,
Morimura Brothers Broadway 539, around 1893

1876

Ichizaemon Morimura VI and his brother Toyo founded Morimura Gumi in Tokyo, with Toyo starting an imported variety business in the US

1897

Morimura Bank established (merged with Mitsubishi Bank in 1929).

1881

Morimura Brothers established. Identified potential in porcelain exports.

1904

Nippon Toki Gomei Kaisha established.

1917

Nippon Toki converted into a joint stock company (Nippon Toki, Ltd.); its sanitary ware division spun-off into Toyo Toki Co., Ltd.



Nippon Toki Gomei Kaisha in 1904

1919

Nippon Toki's insulator division spun off into NGK Insulators, Ltd.; Okura Art China established

1921

NGK Insulators started research on manufacturing of spark plugs.

1930

NGK Insulators put spark plugs on the market.

1936

NGK Insulators' spark plug division spun off into NGK SPARK PLUG CO., LTD.

1937

NGK SPARK PLUG started manufacturing spark plugs.

Morimura Group's Background

Ichizaemon Morimura (right side) and Toyo in 1889

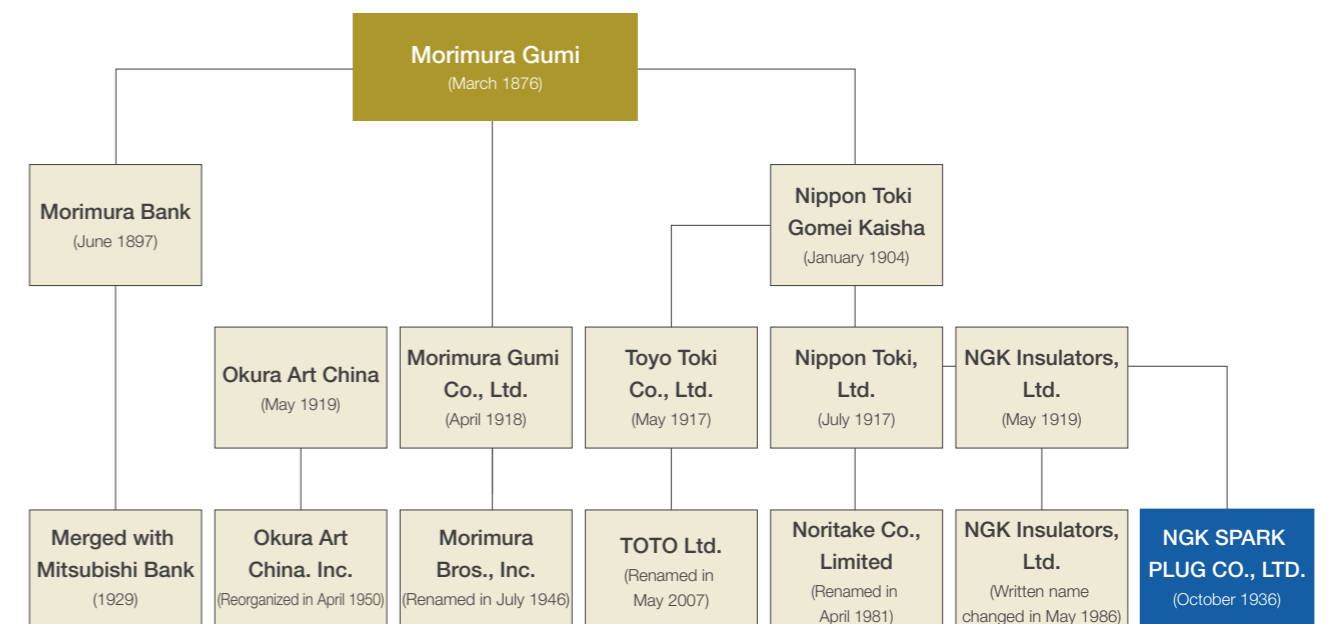


The origin of the Morimura Group, the foremost ceramics conglomerate in Japan, dates back to 1876, when the Morimura brothers, Ichizaemon and Toyo, founded Morimura Gumi*¹ to launch a pioneering foreign trade business in the country.

The Group's involvement in the ceramics industry began in 1904, when the founders of Morimura Gumi formed Nippon Toki Gomei Kaisha*², from which the sanitary ware division and insulator division were subsequently spun off into Toyo Toki Co., Ltd.*³ (1917) and NGK Insulators, Ltd.*⁴ (1919), respectively. Okura Art China*⁵ was also established in 1919.

After that, in October 1936, the spark plug division of NGK Insulators, Ltd. was spun off, and NGK SPARK PLUG was established, forming the foundation of the Morimura Group today.

Notes: 1. Currently, Morimura Bros., Inc.; 2. Later, Nippon Toki, Ltd., and currently, Noritake Co., Limited; 3. Currently, TOTO Ltd.; 4. Currently, NGK Insulators, Ltd. 5. Currently, Okura Art China, Inc.



History of Value Creation

Challenges embraced by NGK SPARK PLUG

Over the course of its history, NGK SPARK PLUG has made progress in response to the changing times, taking on the challenge of solving social issues.

Demonstrating a commitment to quality, our corporate DNA inherited from Morimura Gumi, we are continuously working to meet the challenge of creating new value.

1936

NGK SPARK PLUG founded

NGK SPARK PLUG was established through the spin-off of the spark plug division of NGK Insulators. The founding business of producing spark plugs has grown to make the company the world's top manufacturer of the product.



Magoemon Ezoe, first president

1937

Production of NGK Spark Plugs started

In 1930, we released NG Spark Plugs, Japan's first domestically produced spark plug, and began producing NGK Spark Plugs in 1937.



NGK Spark Plug

1949

Production of NTK Technical Ceramics started

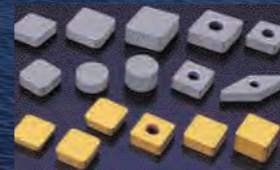
After the post-war confusion had settled down and spark plug production was stabilized, we began applying ceramics to develop new technologies and products for the diversification of our business. The new segment development was promoted under the brand name of NTK. Following this, we gradually broadened our ceramic product range to include those for industrial and environmental uses.



1958

Ceramic cutting tools developed

The importance of ceramic industrial tools increased, particularly in relation to electricity, automobiles, chemical engineering and machinery, and we developed ceramic cutting tools for cutting hard materials to be put on sale in 1958.



Cutting tools

1959

Overseas business expansion

Japan entered the high economic growth period, boosting exports. Driven by this trend, we established our first overseas base in Brazil, CERAMICA E VELAS DE IGNICAO NGK DO BRASIL LTDA, in 1959, and began to promote overseas advancement ahead of competitors to build strong global networks.

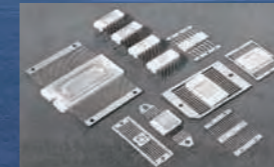


CERAMICA E VELAS DE IGNICAO NGK DO BRASIL LTDA

1967

Production of ceramic substrates and IC packages started

In the late 1960s, the silicon semiconductor integrated circuit (IC) became a mainstream standard and its mass production began in Japan and the US. Following this trend, we started manufacturing ceramic substrates and IC packages by applying our ceramics technologies.

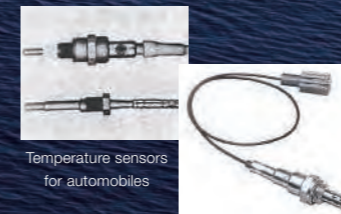


IC packages

1982

Production of oxygen sensors for automobiles started

In Japan in the 1960s, as the full-scale motorization of society progressed, environmental degradation such as air pollution became a social issue. In response, exhaust gas regulations were made stricter. To help related industries ensure regulatory compliance, we began developing various sensors, primarily in association with exhaust gas, such as zirconia oxygen sensors and wide range oxygen sensors.



Temperature sensors for automobiles

Oxygen sensors for automobiles

1989

Sales of electrostatic chucks started

In the late 1980s, requirements for higher integration and lower cost of semiconductor elements intensified, which gave rise to a shift to ceramic components, characterized by the material's excellent heat and abrasion resistance, to be used for semiconductor production equipment. In response, we promptly introduced ceramic electrostatic chucks, and commenced mass production of the product in the 2000s to expand sales.



Electrostatic chucks

1999

Sales of medical oxygen concentrators started

We started research on the possibility of medical applications of bioceramics in the 1970s, looking to future opportunities afforded by the progress of population aging. Related results included the rollout of the bone prosthesis Ceratite in 1990 and oxygen concentrators for medical use in 1999.



Medical-use oxygen concentrator

2000~

Building new business pillars

Under the NITTOKU SHINKARON long-term management plan started in FY2010, we accelerated efforts to establish new business pillars. The 2030 Long-term Management Plan "NITTOKU BX" also started in FY2020, aiming to transform our business portfolio by 2040. We continue with these challenging efforts, seeking out every possible new field by applying our core ceramics technologies including hydrogen leak detection sensors and the solid oxide fuel cell (SOFC).



Hydrogen Leak Detection Sensor

Solid Oxide Fuel Cell (SOFC)

Revenue trend

Historical background and social issues

Startup period (from 1930)

Domestic automobile industry depending on imports

In Japan in the 1920s, when the domestic automobile industry was still in its infancy, the supply of automobiles was limited almost entirely to imports from the U.S. and Europe, and automotive parts, including spark plugs, were also imported. The first president, Magoemon Ezoe, decided to produce plugs using ceramics, a specialty product of Japan, and led initiatives to launch domestic plug manufacturing.

Growth period (from 1940)

Automobile production growing rapidly

In the 1940s, domestic automobile production rose to 46,000 cars, as automobiles and related parts manufacturing developed into a major industry. Accordingly, demand for plugs also increased. After WWII, Japan ushered in a period of high economic growth in the late 1950s, when the country was rapidly becoming motorized.

Establishment period (from 1960)

Impact of high economic growth

From the late 1960s, pollution problems were emerging as a negative effect of the high economic growth, and the automobile industry was particularly called on to urgently address air pollution problems. Looking to fulfill needs related to such problems as well as resource conservation, we started research to develop new products that would help meet exhaust gas regulations. These regulations were made more stringent year by year, pushing up demand for high-performance plugs and sensors.

Development period (from 1990)

Tackling new social challenges

From the 1990s, automakers began to focus on the development of electric vehicles, hybrid vehicles and fuel cell vehicles, as part of efforts to address environmental and energy issues. Those years also saw the explosive growth of information communication technologies bringing about significant changes in many people's lifestyle. In order to provide products that would meet new needs related to these societal trends, we promoted research and development based on our technologies built over long years.

From present to future

Aiming to create a sustainable society

Our business environment is undergoing an enormous change brought about by a number of factors, such as AI and IoT-driven digitization, the once-in-a-century transformation of the automobile industry led by the concepts of CASE and MaaS, and mounting concerns over climate change and ESG-related issues. Recognizing this situation, we are striving to reduce our dependence on the production of automotive components for internal combustion engines, which account for 80% of our net sales, while creating new business projects aimed at achieving a sustainable society.

Value Creation Process

External environment

- Global environmental issues
- International issues
- Establishment of a society where economic development and resolution of social issues are compatible

⇒ P.35: Risks/Opportunities and Materiality

Priority issues

(Materiality)

E (Environment)

- Responding to climate change
- Providing environmentally friendly products

S (Society)

- Development of technologies, products, and businesses for contributing to the resolution of social issues
- Global human resources management

G (Governance)

- Corporate governance
- Risk management
- Compliance
- Information security

⇒ P.35: Risks/Opportunities and Materiality

Managerial capital

FY2020

Financial capital

Cash flows from operating activities

63.3 billion yen

Rating: A+ (R&I)

AA- (JCR)

Capital adequacy ratio: 58.2%

Manufacturing capital

39 bases in Japan

46 bases outside Japan

Intellectual capital

R&D expenses:

26,115 million yen

Number of patents:

6,433

Human capital

Consolidated number of employees:

16,391

Ratio of overseas employees:

45.7%

Social capital

Number of countries where our products are sold: about

140

Natural capital

Electricity:

450,522 MWh

Input of raw materials:

51,000 tons

Input of water resources:

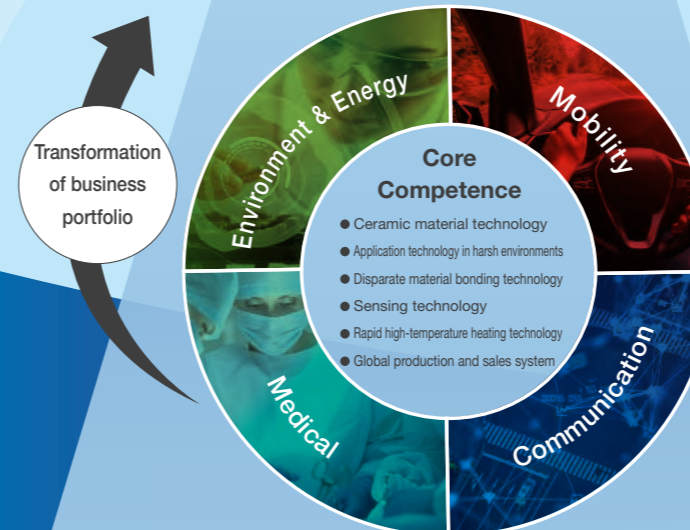
1,680,000 m³

Business Model

2040 Vision

Change drastically beyond the current way

Business Fields ⇒ P.41: New Medium-term Management Plan, P.93: Segment Highlights



Transformation of business portfolio

Business infrastructure ⇒ P.56: Foundation for Value Creation

Action against Priority Issues

Corporate Governance

Management Strategies ⇒ P.32: 2030 Long-term Management Plan "NITTOKU BX," P.41: New Medium-term Management Plan

2030 Long-term Management Plan "NITTOKU BX"



The Nittoku Way

Enforcement of Managerial Capital

Value to be provided to society into the future/Outcome

Contribution to environmental issues

- Cleaner automotive exhaust gas
- Higher fuel economy
- Contribution for a hydrogen energy-based society
- Reduction of environmental pollutants

Improvement of information infrastructure

- Higher performance of electronic devices
- Reduction of lead time at manufacturing facilities
- Effective use of equipment

Contribution to MaaS

- Safety in automobile driving

Development of medical technologies

- Higher QOL
- Safety in surgical operations

Generated results/Outputs

FY2020

Revenue 427.5 billion yen vs. previous FY +0.3%

ROIC 5.5% vs. previous FY -0.8%

Employee satisfaction survey Satisfaction rate: 46.2% vs. previous FY -14.6%

CO₂ emissions 250,000 tons vs. previous FY -5.1%

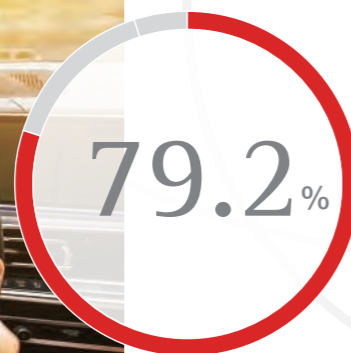
Proportion of non-ICE businesses 20.8% vs. previous FY +1.6%

Nurtured Businesses

The 80-year history of NGK SPARK PLUG started with the production of plugs. Then, applying its core ceramics technologies, we developed a number of businesses, and are currently accelerating business development in the Ceramics and the New Businesses to transform the business portfolio, while maintaining high profitability in the core Automotive Components.



Automotive Components



Revenue
338.6 billion yen

Operating income ratio
16.7%

Plugs

Spark plug

In an internal combustion engine, acts as a "lighter" to ignite the mixture of gasoline and air.



Glow plug

Assists with the startup of a diesel engine.



Sensors

Zirconia oxygen sensor

Used to measure the exhaust gas oxygen concentration for air-fuel ratio control.



NOx sensor

Used to precisely measure the concentration of NOx gas, a regulated substance, to ensure compliance with the NOx regulations, which have recently been tightened. Can be used to concurrently measure the concentration of oxygen.



Wide range oxygen sensor

Paired with a dedicated interface, used for wide-range air-fuel ratio control to maximize output according to the exhaust gas oxygen concentration level.



Temperature sensor

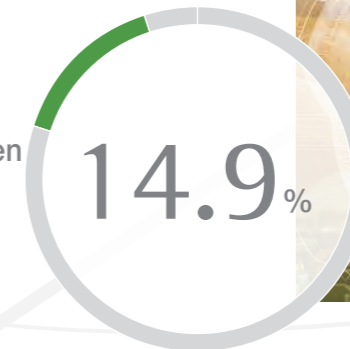
Used to monitor the exhaust gas temperature for the protection of exhaust system components and for the optimal control of the exhaust gas aftertreatment system, thereby contributing to cleaner exhaust gas and higher fuel efficiency.



Ceramics

Revenue
63.7 billion yen

Operating income ratio
1.0%



Components for semiconductor production equipment

Electrostatic chucks

We offer electrostatic chucks, an indispensable item for semiconductor manufacturing, by making use of the electrostatic property of ceramics.



Industrial ceramics products

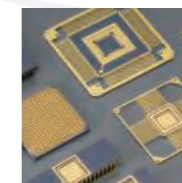
Piezoelectric ceramic components

Ceramics generate electricity when force is applied to them, while expanding/contracting when voltage is applied. By making use of this property, we manufacture and supply piezoelectric elements for use in sounders and fluid sensors.



Semiconductor packages and substrates

We offer IC packages suitable for electronic and smart devices as well as substrates used in probe cards for semiconductor wafer inspection.



Cutting tools

Indispensable for the processing of automotive, industrial, aircraft and other components. We offer a wide lineup of products, including ceramic tools and those made of new materials.

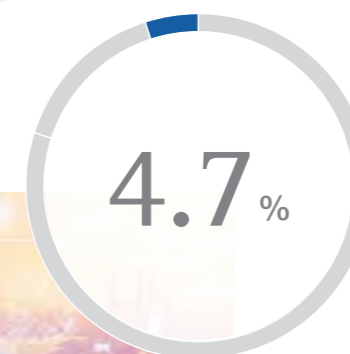


Medical products

By making use of our ceramic materials, we manufacture medical products, such as bone prostheses and oxygen concentrators for medical use.



New Businesses

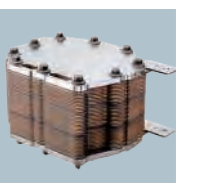


Revenue
19.9 billion yen

Operating income ratio
-52.4%

Solid Oxide Fuel Cell (SOFC)

SOFCs generate electricity and heat through electrochemical reaction. SOFCs are highly energy-efficient fuel cells and are expected to be downsized and provided at lower cost.

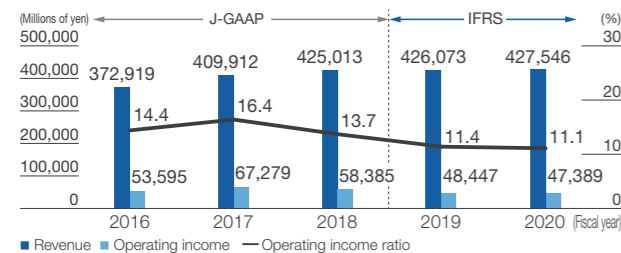


* Disclosure standards in FY2020

Proven Track Record

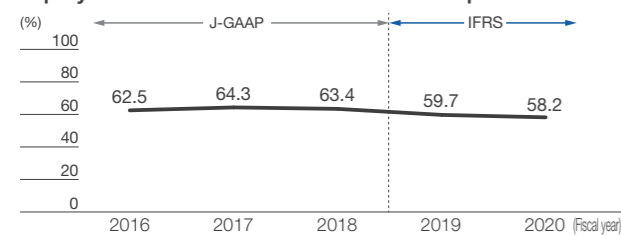
Financial Highlights

Revenue/Operating income/Operating income ratio



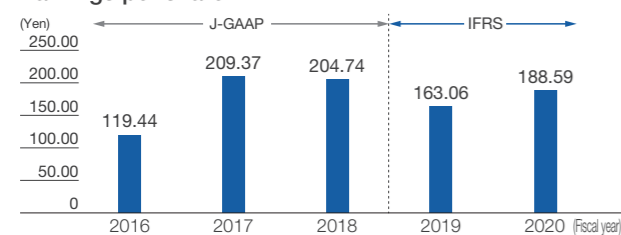
While affected by the spread of COVID-19, our revenue for the current fiscal year increased year on year due to a recovery from the second quarter of the year. Our profits slightly decreased due to an appreciation of yen, an increase in transportation costs, and soared unit prices of precious metals.

Equity ratio attributable to owners of the parent



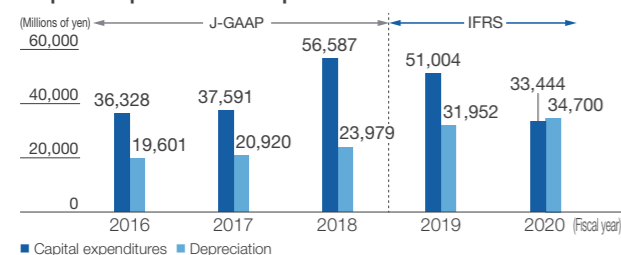
Equity ratio attributable to owners of the parent decreased year on year due to an increase in depreciation in order to secure liquidity on hand, affected by the spread of COVID-19.

Earnings per share



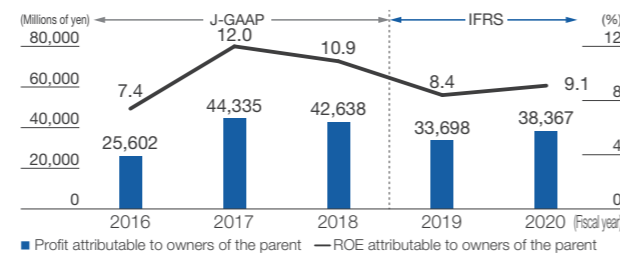
Earnings per share increased year on year due to an increase in the profit attributable to owners of the parent.

Capital expenditures/depreciation



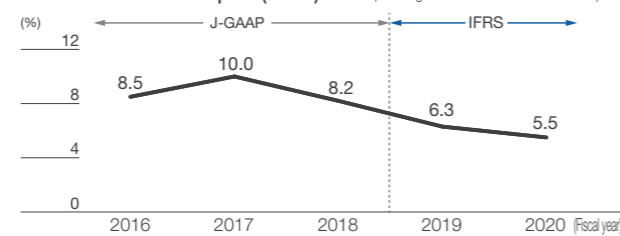
Capital expenditures significantly decreased year on year due to the examination of investment associated with increased production and the review of investment timing centering around automobile-related investment, under the influence of COVID-19.

Profit/return on equity (ROE) attributable to owners of the parent



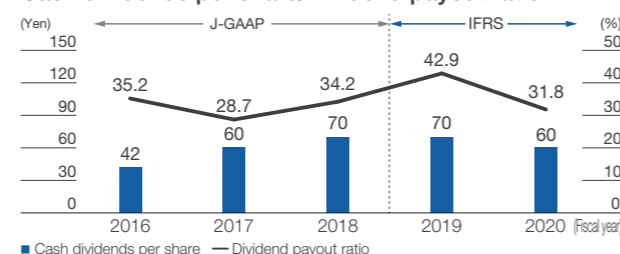
ROE increased by 0.7% year on year due to an increase in the profit attributable to owners of the parent.

Return on invested capital (ROIC)



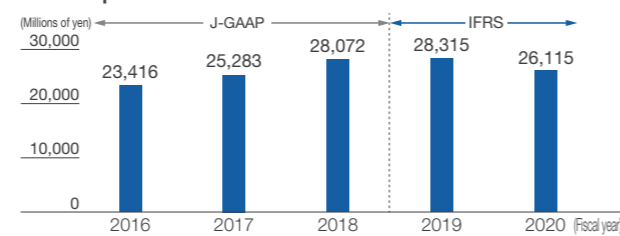
While we set our ROIC goal for FY2020 at 13%, we ended up at 5.5% due to an increase in depreciation cost driven by an increase in automobile-related investment and a decrease in gross profit driven by a delay in launching new businesses.

Cash dividends per share/Dividend payout ratio



While affected by COVID-19 in the current fiscal year, we increased the year-end cash dividend from 25 yen to 35 yen following the recovery of our performance from the second quarter, and ended up with the full-year cash dividend at 60 yen per share and the payout ratio at 31.8%.

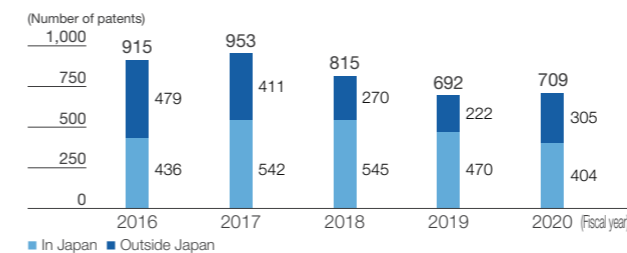
R&D expenses



Our ratio of R&D expenses to sales has been in the range of 5% to 6%. It reached 6.1% in FY2020.

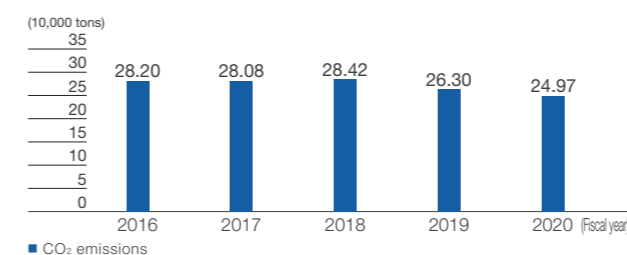
Non-financial Highlights

Number of new patents published



The number of patents published in Japan has stayed at a specific level as a result of our adjustment of the appropriate number of patent applications filed in Japan. The number of patents published outside Japan has also stayed at a specific level in line with the number of patent applications filed in Japan.

CO₂ emissions



CO₂ emissions as a cause of climate change has been on a declining trend due to our CO₂ reduction efforts and a decline in the CO₂ emissions conversion factor of electric power. As a priority issue to tackle, we aim at reducing CO₂ emissions by 30% by FY2030 from the FY2018 level.

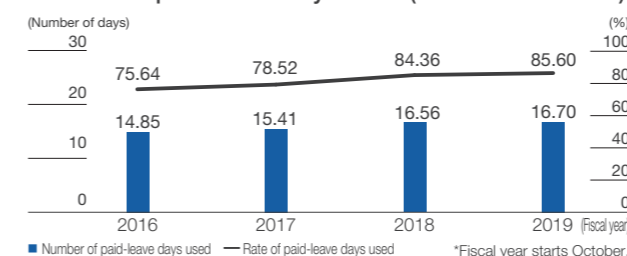
* Calculated based on the CO₂ emissions conversion factors of respective fiscal years.

Percentage of female/foreign-national/mid-career employees in managerial posts (non-consolidated)



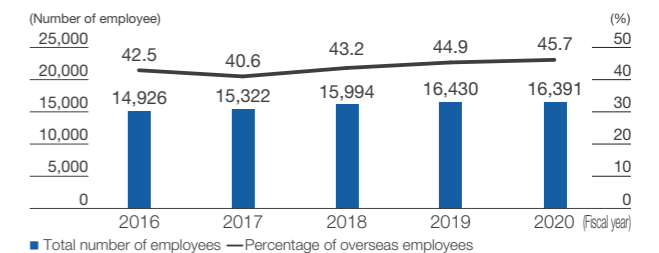
As a goal of one of our Priority Issues, Global Human Resource Management, we are promoting the diversity of management personnel, raising the percentage of women, foreign nationals and mid-career employees in managerial posts. We have set a target of increasing the percentage to 25%.

Number of paid-leave days used (non-consolidated)



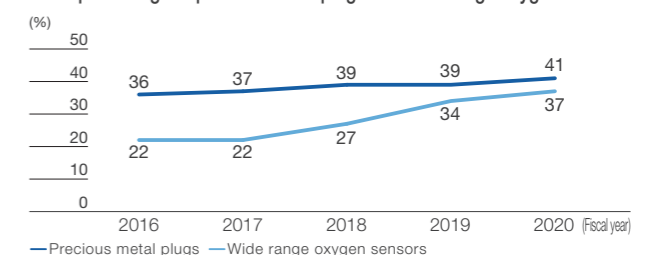
The management and labor cooperate in encouraging the use of paid leave, and the number of paid-leave days used is increasing year by year.

Number of employees at work/percentage of overseas employees



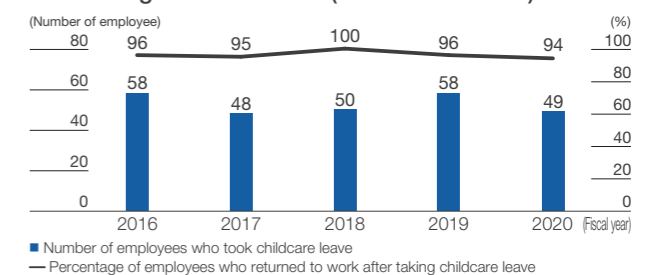
Against the background of M&As in and outside Japan, etc., the consolidated number of employees tended to increase.

Sales percentage of precious metal plugs and wide range oxygen sensors



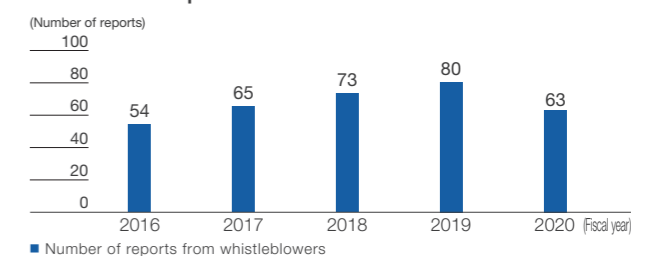
The sales percentage of precious metal plugs and wide range oxygen sensors has gradually increased as environmentally friendly products.

Number of employees who took childcare leave; percentage of employees who returned to work after taking childcare leave (non-consolidated)



A total of about 50 employees, male and female employees combined, take childcare leave every year. The return-to-work rate has remained consistently high over the years.

Number of reports from whistleblowers



Regarding the Corporate Ethics Helpline, an internal reporting system, we are creating an environment where employees feel comfortable in consulting and reporting, by promoting the system on an ongoing basis through holding seminars, creating posters and distributing pocket-size cards.



2

Medium-term Growth Strategies

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NGK SPARK PLUG's Sustainability

We will deepen our activities to achieve carbon neutrality, and contribute to the establishment of a sustainable society.

Mikihiko Kato,

Member of the Board Executive Officer,
Strategic Human Resources and Sustainability Promotion



Policy for attaining carbon neutrality determined

In response to the Paris Agreement, which was concluded in 2015, the Intergovernmental Panel on Climate Change (IPCC) put together its Special Report: Global Warming of 1.5°C in 2018. The report set a target of limiting the global average rise in temperatures compared to pre-industrial levels to 1.5°C, and to achieve this target, called for CO₂ emissions to be reduced to net zero by 2050. Alongside this establishment of an international framework for tackling climate change, individual nations, and developed countries in particular, have been stepping up their efforts to bring about carbon neutrality. In Japan, too, the government has been ramping up its activities following the issuance of Carbon Neutral Declaration in October 2020.

And against the backdrop of this worldwide trend, our own awareness of the need to take action on environmental issues has also increased. 2030 Long-term Management Plan “NITTOKU BX,” which we formulated in 2020, presented eight ESG-related tasks to be tackled as “priority issues,” and one of them was “Responding to climate change.” We set a goal of cutting CO₂ emissions by 30% by FY2030 compared to FY2018 levels, and are now pursuing initiatives to meet that goal. In July 2020, meanwhile, we endorsed the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), and are disclosing information about the risks and opportunities that climate change is creating. We also formulated our Eco Vision 2030, and began taking action to achieve it in April 2021. Eco Vision 2030 shows the vision (or goal) of what we want to be by 2030 and the vision of what we will pursue until 2040 as we aim for our ultimate goal of carbon neutrality in 2050.

We are not positioning this series of initiatives as merely environmental activities. Rather, they constitute a component of our corporate management, and we intend to pursue them steadfastly so that we can contribute to solving social challenges through our business operations.

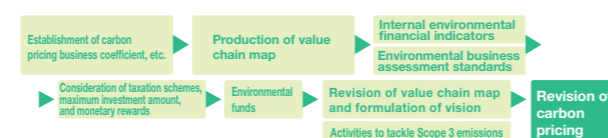
Introduction of internal carbon pricing system

In conjunction with the introduction of the in-house company system in April 2021, we launched the Sustainability Promotion Dept. It is even closer to corporate management than its previous incarnation was, and we are positioning it as an organization for promoting sustainability as part of the company-wide strategies while maintaining links with personnel, financial, and management strategies.

The Sustainability Promotion Dept. has started by initiating the SX (Sustainability Transformation) Project and putting together a framework that includes, among other things, an internal carbon pricing system.

With the introduction of internal carbon pricing, the volume of CO₂ being emitted by each internal company and the impacts of those emissions are made visible in the form of a monetary amount, which serves as an indicator that can be used when making decisions concerning decarbonization-related capital expenditures and resource allocations. Ultimately, we plan to further improve our internal carbon pricing as part of our efforts to abate Scope 3 emissions.

Until now, even when certain departments have called for “reductions in the CO₂ emissions of the Group as a whole,” each business entity has tended to take the issue as irrelevant. But in the wake of the government's declaration, awareness of activities for tackling environmental issues has heightened. There is a culture within our company whereby everyone, right down to the level of individual employees, takes proper action once internal rules are set, as exemplified by the internal carbon pricing. And although being certified by external bodies is not the goal, we intend to go deep by taking multiple actions to the point that we are worthy of receiving such certifications.



We demonstrate leadership in working to reduce CO₂ emissions along our entire supply chain. For example, we demand that suppliers set targets for cutting CO₂ emissions and take action to achieve them.

Tackling climate change through business activities

Regarding the question of how we can contribute to resolving the issue of climate change, we believe that the first thing we must do is reduce the absolute amount of our CO₂ emissions. As such, from this fiscal year we have switched from controlling per-unit emissions to controlling absolute emissions, and as mentioned earlier, we have been working on the reduction by setting targets of cutting CO₂ emissions by 30% compared to FY2018 levels by FY2030, and achieving net zero in 2050.

We also view the provision of more eco-friendly products as another important task.

For example, our precious metal type spark plugs, which are our showpiece eco-friendly products, enable fuel efficiency to be improved by 2% when they are used to replace conventional nickel type plugs. Recently, electric vehicles (EV) have tended to attract the most attention, but it isn't the case that all automobiles can be replaced immediately. There are said to be over a billion automobiles with internal combustion engines (ICEs) on the world's roads at present, and if, during the period of transition to EVs, our highly-fuel-efficient plugs can be installed in large numbers of ICE vehicles, this will result in a huge reduction in CO₂ emissions. This would also constitute a great contribution to the earth's environment, so we want to get our plugs into more automobiles around the world.

And looking ahead to the supply of new forms of energy, we have been pursuing R&D related to fuel cells for about 20 years. We have been developing power-generation devices that employ the same ceramics and the same principles seen in the exhaust gas oxygen sensors we have manufactured for so many years. We are pooling the wisdom of the companies in the Morimura Group, and have finally put together a structure to market the devices as a new business, part of which will be launched during this fiscal year. Hydrogen, which is a clean form of energy, can be used as fuel, and the only by-product from combustion is water. It is suited to the concept of small-scale “local production for local consumption,” which will be the dominant mode of electricity going forward, and can contribute to the establishment of a future hydrogen-based society. We hope that it will grow to become a truly eco-friendly, decarbonization-oriented business.

Also applying a sustainability viewpoint to new businesses

Positioning “sustainability” at the foundation of all our overall administration is vital for the long-term development of our business. We believe that we are able to pursue new business pillars precisely because of that foundation.

The sustainability concept provides a variety a hints when coming up with business ideas.

For example, one of these is Carbon Neutral as a service (CNaaS), which refers to services for a recycling-based society that employs hydrogen, the realization of which is one of our new corporate goals. CNaaS involves the generation of energy through the utilization of a technology called “methanation,” which is the synthesis of methane from hydrogen and CO₂. Because the bulk of Japan's energy is produced from fossil fuels, the generation of energy from hydrogen and CO₂ should make a big contribution to the realization of carbon neutrality. The idea for CNaaS originally emerged out of the concept of sustainability.

If every one of our employees is willing to share their wisdom, various other ideas are certain to be generated. Recently, it's become possible to make statements via social media, and we intend to take advantage of such media, while skillfully following new ideas and turning them into actual businesses.

Ensuring effectiveness even under the in-house company system

We sometimes use the terms *centrifugal force* and *centripetal force* to explain things. The former refers to each organization being proactive in dealing with the outside world, while the latter is about bringing us all together as one company. Of the two, until now we have probably been weaker in terms of centrifugal force, so in recent years we've been working to bolster that. At the same time, though, we must also ensure that our centripetal force, which is represented by the human resources side and core parts of the company such as governance, functions properly. Striking a balance between these two forces is of great importance.

With the in-house company system, for example, organizations are divided up, and authority is delegated to the company presidents, who are left to administer their businesses as they see fit. This boosts the speed of decision making and execution, so can be said to be form of corporate restructuring that strengthens centrifugal force.

To effectively promote sustainability under such a structure, ensuring a balance between the centrifugal and centripetal forces is vital, and both a short-term viewpoint and long-term sustainability are required. Frameworks such as internal carbon pricing, meanwhile, can be said to be good mechanisms for achieving a long-term/short-term balance.

And as for the remuneration of senior managers, including corporate officers, we have introduced a system that reflects the degree of goal attainment in order to increase motivation to take action. This is another of the ways we are making measures more effective.

NGK SPARK PLUG's Sustainability

Promoting heightened awareness of ESG

The Sustainability Promotion Dept. publishes a weekly internal e-mail newsletter. It now features articles on such themes as marine plastics and gender, and explains the latest buzzwords in an easy-to-understand manner. Thanks to improvements like this, its readership has doubled.

We also provide various programs of online sustainability education and training, with each program geared specifically to a different level of personnel, e.g. senior managers, middle managers, and rank-and-file staff. The training for regular staff includes presentations featuring videos from foreign staff members who are pursuing environmental activities overseas, and the program has earned high marks from participants, whose level of understanding has improved dramatically as a result of the training. Thanks to such internal initiatives, the awareness of sustainability of each employee seems to have increased. There is no set goal for such initiatives, but I feel that there's been a massive improvement compared to a year ago.

Among staff, it seems that those in their 20s and 30s are highly conscious of the importance of contributing to society in general, and they tend to see it as something that is relevant to them. Another characteristic of this younger generation is that they have clear ideas about workstyles that suit them and work that they want to do. If their high degree of social awareness spreads naturally, and the corporate culture and levels of motivation start moving in the right direction, the result could be an upturn in business and higher profits. We're hoping to see a virtuous cycle like that.

Allocating personnel in a way that enables employees to leverage their attributes

As we endeavor to develop global human resources, we are taking a fresh look at what sort of personnel should be assigned where, what skills those employees should possess, and how they can best be utilized. And this covers all employees, both in Japan and overseas.

This is because identifying the diversity, individuality, and potential of each employee will also lead to the growth of both the individual and the company.

Employees each have their own strong areas and weak areas, and the work they're currently engaged in may not actually match their attributes. Also, everyone has something that they want to do more than anything else, or a field that they are interested in and hope to experience. It might be difficult to enable every employee to work where they want and in the job they want, but in the case of new businesses/operations in particular, I think that we should do our utmost to assign personnel who are highly motivated to perform the task concerned. This is good both for the individual themselves and for the company, and should allow the organization to function well.

Matching activities like this are already being conducted by some internal companies, where personnel are being assigned to areas that suit their skills and strongpoints. There are also other initiatives in progress, such as putting together teams after considering the combination of attributes of the members and utilizing external personnel to complement the attributes of internal personnel. Going forward, we intend to roll out such activities, which have begun in parts of the company, across the entire company.

Continuing with work style reforms to create new value

The spread of COVID-19 has had a major impact in various areas of society. We have been reminded that our economy and society is built on the assumption that it is natural for people to live normal, everyday lives.

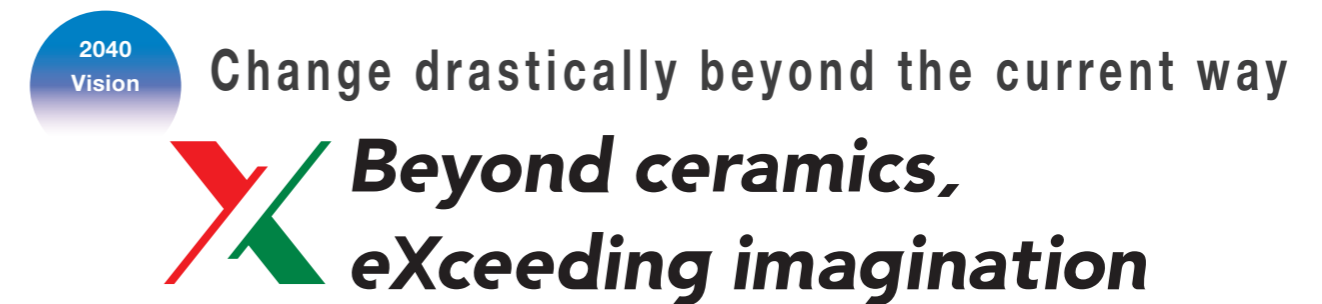
With there still being no end to the COVID-19 pandemic in sight, we too have asked our employees to work from home or other remote locations. But even before the outbreak, we had already introduced these modes of working as part of our work style reforms. We faced a tough battle in getting them to take root, but last year we needed to rapidly halt the spread of COVID-19, and because of that, these working modes suddenly proliferated and became popular, especially among employees from administrative departments.

The concept of "work style reforms" that we had initially been promoting was not limited to working from home. Rather, the basic principle was to "allow employees to work where they can do so most efficiently and comfortably." That should improve operational efficiency, and lead to an increase in employees' free time. In the future, we'd like to enable them to use this time to work a sideline.

As we become a super-aged society, the working population of Japan will gradually decline, so in addition to assigning personnel after considering the individual attributes of each employee, we will also endeavor to improve their productivity and work-life balance. I am confident that doing so will make us more sustainable, and also lead to technologies, products, and businesses that help address social challenges.

2030 Long-term Management Plan "NITTOKU BX"

In FY2020, NGK SPARK PLUG has formulated the 2030 Long-term Management Plan "NITTOKU BX," deeming 2030 as a milestone year for the growth of the company over the next two decades. We, as a company, work together to achieve 2040 Vision.



Beyond ceramics, eXceeding imagination

2040 Vision and the Long-term Management Plan

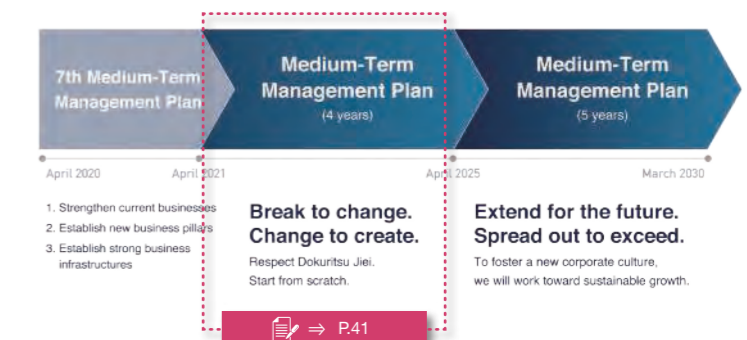
For the solution of various social issues, we need to search for a new way of doing business by thinking beyond "What ceramics can do." We aim to meet the challenge of going "beyond ceramics" and "exceeding the imagination" of society and ourselves, thereby changing "drastically beyond the current way" in 2040. We have created the 2030 Long-term Management Plan "NITTOKU BX" by backcasting from the 2040 Vision. We regard 2030 as a milestone year to ensure we are on the right path heading into 2040.

2030 Long-Term Management Plan



Structure of the 2030 Long-term Management Plan "NITTOKU BX"

The 2030 Long-term Management Plan "NITTOKU BX" is a plan composed of three Medium-term Management Plans: the seventh Medium-term Management Plan (the last year of which was the first year of the Long-term Management Plan), a four-year Medium-term Management Plan and a five-year Medium-term Management Plan. We will further concretize this 10-year plan.



Shisei-Shinjitsu

Dokuritsu-Jiei

Shikai-Keitei

Soshi-Kantetsu

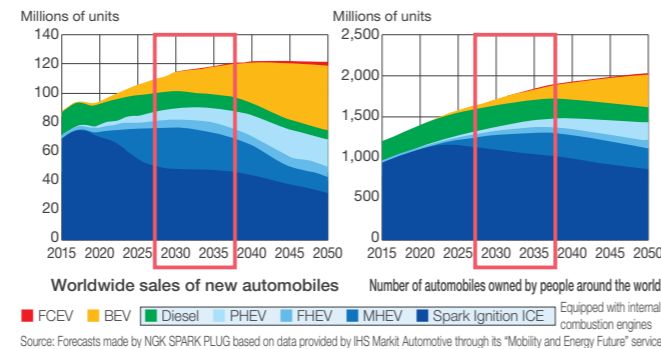
NITTOKU WAY

2030 Long-term Management Plan “NITTOKU BX”

2030 Long-term Management Plan “NITTOKU BX”

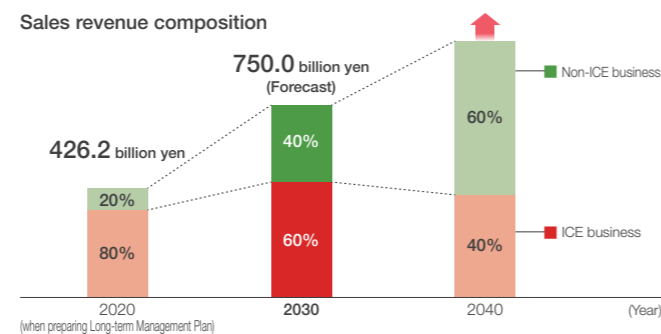
Changes in the external business environment

According to these graphs, which forecast the sales volume of new automobiles and the numbers of automobiles owned by people around the world, the number of those equipped with internal combustion engines will continue to increase until around 2030. However, in the middle of the 2030s, the number will peak and begin to go down. We therefore need to shift to a business structure that does not rely on the sales of products used in internal combustion engines by the middle of the 2030s.



Transformation of the business portfolio

NGK SPARK PLUG is currently doing business with a focus on internal combustion engines (ICE), but in the future, we need to be involved in more than ICE business and embrace the challenge of starting new businesses to transform our business structure. Specifically, as the 2040 targets, we aim to decrease the proportion of ICE business in our total sales revenue from the current 80% to 40% while raising that of non-ICE business from the current 20% to 60%, thereby transforming our business portfolio. To achieve these targets, we will decrease the ratio to 60% and increase the ratio to 40% for ICE business and non-ICE business, respectively, as milestone targets for 2030 under the 2030 Long-term Management Plan “NITTOKU BX.”



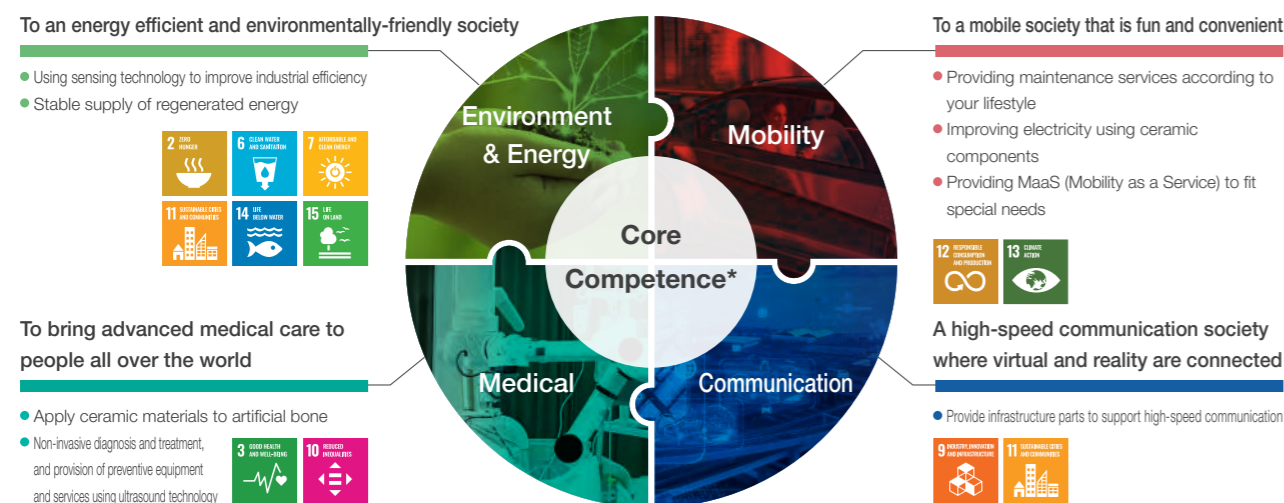
Guiding principle

In our Long-term management plan, we have upheld “Change with Will !!” as the guiding principle, meaning “with a strong commitment (‘Will’), we will foster ‘Change’ for coexistence with society and people”. We aim to reform our organizations and business structure with speed to make our company one that can coexist with stakeholders from a global perspective.



Business fields to focus on

We are focused on both existing and new businesses in four fields: Environment & Energy, Mobility, Medical, and Communication. Our core competence includes ceramic materials technology, sensing technology and a global production/sales system. We will add “Something New” to these to create new value and foster “Open Innovation” both internally and externally, thereby achieving further growth in the four fields.



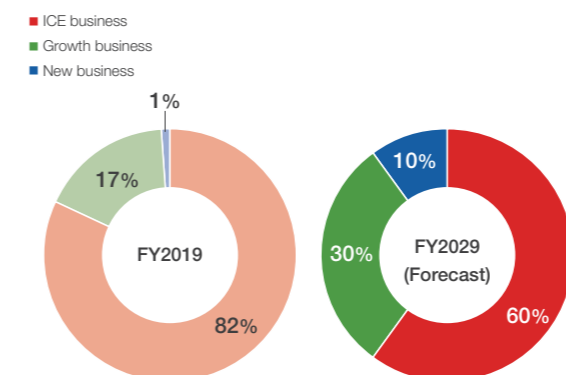
*Ceramic material technology, application technology in harsh environments, disparate material bonding technology, sensing technology, rapid high-temperature heating technology, and global production and sales system

Strategy

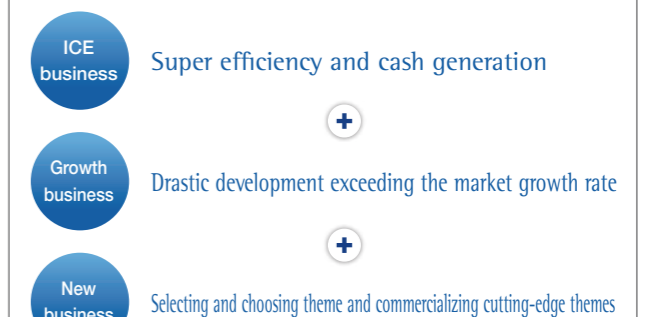
“Business Portfolio Transformation” for Growth

As the mainstay of the Long-term Management Plan, we will foster “business portfolio transformation.” As for ICE-related business, we will be able to expand revenue and operating income until 2030 in line with an increase in the number of ICE-equipped automobiles. However, in anticipation of the business environment in 2040, we need to pursue rationalization, higher efficiency and selection and concentration. As part of this initiative, we have shifted to an in-house company system in April 2021, while some departments were spun off. With more clarification of responsibilities and authorities, we will transform ourselves with speed. In new businesses, we aim to achieve a business value of 200 billion yen by 2030, working to achieve growth in each area in terms of sales and profitability. We aim to turn these businesses into our profit pillars in 2040, although their operating income margin may be still low in that year. We will increase efficiency in our ICE-related business with a focus on making profit, use the cash gained in that business for the growth businesses and achieve a profit growth rate that is higher than the market growth rate for the businesses. For new businesses, we will strictly screen the business themes to be continued, thereby revitalizing the new businesses. In order to promote this kind of business portfolio transformation, it is essential to achieve the following three aims: management innovation, clarification of responsibilities and authority, and willful cultural change. We will break our dependence on ICE-related business based on this recognition.

Sales revenue composition



Secure profit while transforming the business portfolio



Specific measures

1 Management Innovation

- Small, strong and agile head office to support business portfolio transformation
- Quick management decisions supported by DX

2 Clarification of Responsibilities and Authority

- Strong authority and strict responsibilities to promote portfolio transformation
- Build an optimized structure and system for each business

3 Willful Cultural Change

- Undertake culture reform and strengthen the Group's abilities

Management target

The 2030 Long-term Management Plan “NITTOKU BX” shows the midway milestone for our 2040 Vision. Under this plan, we will strive for business portfolio transformation, clarification of responsibilities and authority and investment in new businesses. In line with the guiding principle, “Change with Will !!” which should be followed by all employees, we will achieve “Beyond ceramics, exceeding imagination” to be reborn as a new NGK SPARK PLUG Group.




For the management targets for FY2029, we aim to achieve an operating income ratio of 15% or more, ROE of 12% or more, and ROIC of 10% or more.

Operating income ratio	15% or more (FY2020: 11.1%)
ROE	12% or more (FY2020: 9.1%)
ROIC	10% or more (FY2020: 5.5%)

Risks/Opportunities and Materiality

We are committed to contributing to the realization of a sustainable society, thereby aiming to increase our corporate value. Amid the industrial environment around us marking a tipping point, we first need to accurately understand the risks which affect our sustainable growth as well as opportunities, and then define priority issues (materiality) to be addressed by the Group in reference to ESG (Environmental, Social, and Governance) factors and set appropriate goals from medium- to long-term perspectives.

Taking the above-stated steps, we have identified eight priority issues for each ESG area after taking risks and opportunities into consideration, and various initiatives aimed at realizing a sustainable society have been set in association with each issue. To implement these initiatives, progress will be monitored by the CSR and Sustainability Committee, and reviews will be conducted in response to the changes in the business environment, stakeholders' expectations and activity conditions.

	Risks and opportunities related to businesses		Responses to risks and opportunities	
 Global environmental issues <ul style="list-style-type: none"> ● Climate change ● Decarbonized society ● Environmental destruction 	Mobility	● Decline in the number of internal combustion engine vehicles	Risk	● Optimize production and increase competitiveness to expand market share
		● Stricter environmental regulations	Opportunity	● Increase market shares of high-performance plugs and sensors
		● Expanding demand for automobiles in emerging economies	Opportunity	● Improve the production systems of local plants
 International issues <ul style="list-style-type: none"> ● Protectionism ● Emerging economies ● Disparities in society ● Human rights 	Energy	● Change in people's preferences regarding transportation means and consumption	Risk	● Enhance marketing, provide maintenance services that meet individual lifestyles, increase electrical efficiency by the use of ceramic components, and offer MaaS to meet specific needs
		● Effective use of renewable energy	Opportunity	● Store renewable electricity and energy ⇒ Develop SOECs and solid-state batteries
		● Distributed power sources, and local production and consumption of energy	Opportunity	● Develop devices for distributed power supply ⇒ Develop and commercialize fuel cell batteries and solid-state batteries
 Establishment of a society where economic development and resolution of social issues are compatible <ul style="list-style-type: none"> ● Robots, automation, labor saving ● Artificial intelligence (AI) ● Sensing IoT ● Nanotechnology ● Biotechnology ● Aging society with a decreasing birthrate/Population explosion ● Diversity ● Pandemic ● Earthquakes ● Work-life balance 	Communication	● Efficient use of CO ₂ for a decarbonized society	Opportunity	● Develop methanation and carbon recycling solutions
		● Expanding demand for semiconductors due to the enhanced communication performance	Opportunity	● Develop 5G and 6G high-speed communication devices and related components
		● Expanding demand for devices for optimal treatment, disease prevention, health management and recuperation	Opportunity	● Conduct respirator business, provide artificial bones and derivative products by applying ceramic materials and offer non-invasive treatment and disease prevention devices/services by the use of ultrasound technology
	Medical treatment and healthcare	● Expansion of the sensing field	Opportunity	● Make use of sensing IoT technology to promote automation, optimization and generalization for higher business efficiency
	Sensing	● Reduction of greenhouse gas emissions	Risk	● Declare carbon neutrality and introduce environmental technologies ⇒ Introduce energy-saving equipment and renewable energy
		● Stricter regulations on hazardous chemicals	Risk	● Replace hazardous chemicals used in products with alternatives and spread the use of lead-free piezoelectric materials
	Environment	● Effective use of water resources	Risk	● Reduce water use at high-risk bases
		● Diversification of human resources	Risk	● Secure professionals through mid-career employment, implement educational programs for manager candidates, reemploy employees reaching the mandatory retirement age and encourage the employment of foreign nationals
		● Diversification of work styles and values	Risk	● Diversify work styles and provide work-life balance support systems (telecommuting, shorter working hours)
	Society	● Promotion of employees' safety and health	Risk	● Foster health and productivity management and promote anti-pandemic measures
		● Respect for human rights	Risk	● Identify the impact of our business and implement measures
		● Stable procurement of raw materials	Risk	● Promote multi-sourcing and reinforce alliance with suppliers
	Governance	● High-quality products and services	Risk	● Adhere to the "producing quality products," and build and develop an even stronger quality management system
		● Diversification of management personnel	Risk	● Diversify management experience and skills in response to changes in the management environment ⇒ Increase the percentage of outside directors, female directors and foreign national directors
		● Speedier business decisions	Opportunity	● Foster DX ⇒ Foster digitization and visualization in plants and offices and in logistics, accounting and human resources
	Governance	● Implementation of compliance	Risk	● Provide compliance education for officers and employees and establish Corporate Ethics Helpline
		● Measures for information security	Risk	● Strengthen the CSIRT and the incident response organization and foster awareness-raising activities
		● Earthquakes and disasters caused by climate change	Risk	● Make a BCP and enhance the supply chain

Steps to define priority issues

STEP 1

Identify issues

Identify social requirements (issues) in reference to the United Nations Global Compact, SDGs, ISO 26000, GRI Standards, ESG surveys, industry guidelines and other companies' benchmarks.

STEP 2

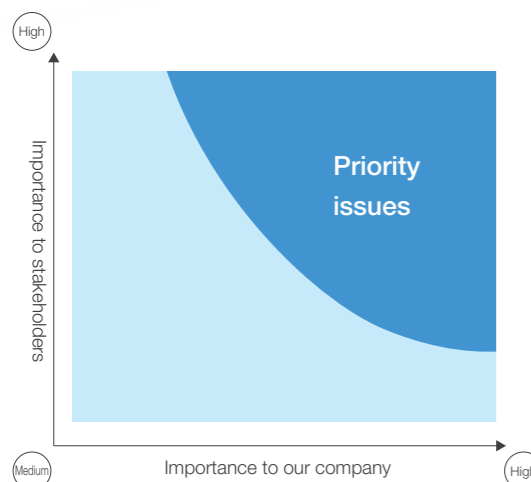
Analyze and prioritize issues

Conduct materiality assessment for stakeholders in reference to international guidelines and ESG surveys used in Step 1, and for our company in consideration of past activities and future management plans, and create an assessment results map.

STEP 3

Select priority issues

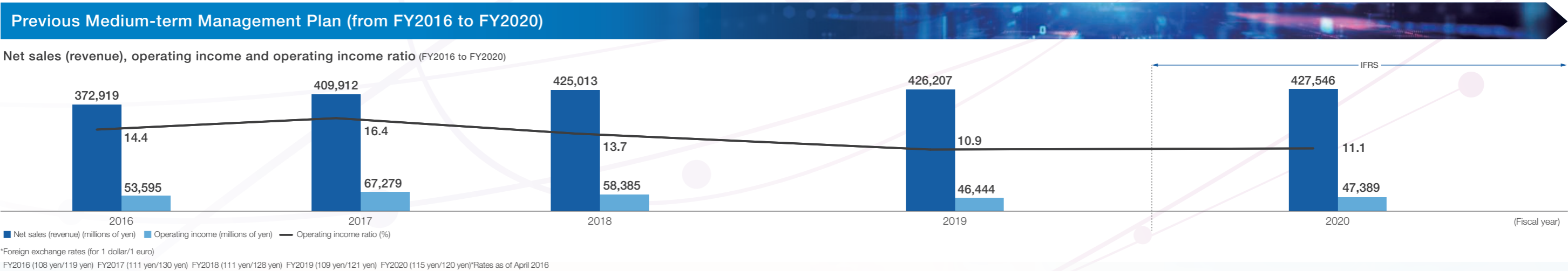
Using the map made in Step 2, select higher materiality items as priority issues, with approval by the CSR and Sustainability Committee, which includes outside directors as members.



	Priority issues	Major Initiatives	Goals and Outputs	Progress in FY2020	Contribution to SDGs
Environment	Responding to climate change	Reduction of CO ₂ emissions	<ul style="list-style-type: none"> CO₂ emissions: 30% reduction from the FY2018 level by FY2030 	<ul style="list-style-type: none"> Reduced by 12% (249,700 tons) 	  
	Providing environmentally friendly products	Dissemination and expansion of environmentally friendly products	<ul style="list-style-type: none"> Sales ratio of precious metal plugs: at least 50% Sales ratio of wide range oxygen sensors: at least 50% 	<ul style="list-style-type: none"> 41% 37% 	  
Society	Development of technologies, products, and businesses contributing to the resolution of social issues	Development of fuel cells	<ul style="list-style-type: none"> Dissemination of high-efficiency distributed power supply systems with an eye on the use of CO₂-free hydrogen fuel 	<ul style="list-style-type: none"> Started mass production of SOFC cell stacks for commercial and industrial use 	
		Development of lead-free piezoelectric materials	<ul style="list-style-type: none"> Promoting substitution for lead-based piezoelectric materials 	<ul style="list-style-type: none"> Continued to introduce and propose lead-free piezoelectric materials 	  
		Development of sensing IoT business	<ul style="list-style-type: none"> Improving operational efficiency through automation, optimization and generalization 	<ul style="list-style-type: none"> Completed the development of the water quality sensing system and preparing a showroom for sales promotion 	
	Global human resources management	Recruitment of female, foreign national and mid-career employees Development of new personnel system	<ul style="list-style-type: none"> Percentage of female/foreign national/mid-career employees in managerial posts: at least 25% Improved results of employee satisfaction surveys 	<ul style="list-style-type: none"> 14.5% Satisfaction level: 46% (response rate: 88%) 	  
Governance	Corporate governance	Increasing the percentage of female and foreign national directors	<ul style="list-style-type: none"> Percentage of female and foreign national directors: at least 30% 	<ul style="list-style-type: none"> 18% (2 out of 11 directors) 	 
		Increasing the percentage of outside directors	<ul style="list-style-type: none"> Percentage of outside directors: at least one-third 	<ul style="list-style-type: none"> 36% (4 out of 11 directors) 	
	Risk management	Management of signs of serious incidents and prevention of their occurrence	<ul style="list-style-type: none"> Establishing a risk management system that contributes to management decision making 	<ul style="list-style-type: none"> Identified key risks on a risk map and promoted countermeasures 	 
	Compliance	Awareness surveys and continuous education for officers and employees	<ul style="list-style-type: none"> Conducting compliance questionnaire surveys and disclosing the results 	<ul style="list-style-type: none"> Conducting compliance questionnaire surveys in FY2021 	
	Information security	Maintenance and enhancement of the incident response organization and establishment of a prevention system	<ul style="list-style-type: none"> Establishing an information security management system 	<ul style="list-style-type: none"> Obtained the TISAX certification 	  

Looking back on the Years under the Medium-term Management Plan

In FY2021, we formulated a new four-year Medium-term Management Plan ending in FY2024. In the following, we will look back on the achievements and challenges over the five years of the seventh Medium-term Management Plan, which concluded in FY2020.



Slogan

Accelerating Current and New Businesses

Basic framework

Delivering “Real Value” to all stakeholders in FY2020



	FY2016	FY2017	FY2018	FY2019	FY2020
Achievements	Significantly increased sales of both plugs and sensors and boosted profit by streamlining production and reducing the cost (but profit decreased year on year due to strong yen). Made progress with the structural reform of the semiconductor business, through “selection and concentration” of products and streamlining including personnel reduction, thereby greatly increasing revenue year on year. Launched new organizations and programs with a focus on human resources, to solidify the management foundation.	Successfully implemented the strategy for the Chinese market, as upheld in the seventh Medium-term Management Plan, thereby expanding sales and profit. Increased operating income by improved productivity through streamlining and cost reduction. In the structural reform of the semiconductor business, completed the consolidation of production bases for higher productivity. Also improved the product mix by expanding the shipment of packages for image sensors. For speedier decision making, fostered the GHQ-RHQ plan and localization.	Increased shipment for plugs and sensors as well as the ratio of high value-added products, thereby improving the product mix. However, unable to cover increases in the expenses incurred outside the scope of existing businesses, such as the packaging & transportation cost, new business-related cost and SG&A expenses for infrastructure improvement. Fostered the building of a system to establish a global supply chain as a core issue identified in the three-year Evolving stage, and began conducting tests for the system in Europe.	Due to COVID-19, the automobile industry, along with others, faced economic stagnation on a global basis. Despite this, NGK SPARK PLUG promoted sales of high value-added plugs and sensors, and as a result sales increased year on year in the automotive components business, excluding the impact of foreign exchange rate fluctuations. In the semiconductor business, we achieved the target of recording profit on a yearly basis for FY2019, which we set in the seventh medium-term management plan. As for new business development, we established a new company for solid oxide fuel cells.	Although the global economic stagnation caused by the spread of COVID-19 had an impact on our sales, the situation recovered in the second quarter and thereafter. As a result, for the full year, revenue was almost at the same level as the previous year. On the other hand, although we have continued to implement cost reduction measures, operating income decreased slightly from the previous fiscal year due to changes in the external environment, such as the strong yen, increased transportation costs, and the rapid rise in the prices of precious metals.
ESG initiatives	<ul style="list-style-type: none">Increased the number of outside directors to threeJoined the UN Global CompactBegan a program to develop the next generation of global business leadersFounded the Working Styles Reforming OfficeFormulated the “Global Eco Vision 2020”	<ul style="list-style-type: none">Established the Nomination and Remuneration CommitteesIntroduced the performance-linked stock remuneration systemTurned overseas bases into regional headquarters (RHQ)Selected as a DJSI Asia Pacific Index component for the first timeCertified as “Bronze Class” at the RobecoSAM Sustainability Award 2017Certified as one of the Excellent Enterprises of Health and Productivity Management 2018 (“White 500”)Certified as one of the New Diversity Management Selection 100 companiesEstablished the Diversity Promotion Section	<ul style="list-style-type: none">Full compliance with the revised Corporate Governance CodeIncluded in the DJSI Asia Pacific Index for two consecutive yearsCertified as a Nadeshiko Brand companyConcluded with Komaki City a cooperation agreement to assist people who need special medical care for home oxygen therapyCertified as one of the Excellent Enterprises of Health and Productivity Management 2019 (“White 500”)	<ul style="list-style-type: none">Published the Sustainability Data BookCertified as BRONZE CLASS in the Overall Category and as SILVER CLASS in the Industries Category (Glass and Ceramics Products) at the SUSTAINA ESG AWARDS 2019Certified as one of the Excellent Enterprises of Health and Productivity Management 2020 (“White 500”)	<ul style="list-style-type: none">Selected as a constituent stock of the SOMPO Sustainability IndexEndorsed the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)Published the Sustainability Data BookGranted Kurumin CertificationReceived an overall rating of 4 starts in the fourth NIKKEI Smart Work Management SurveyReceived an overall rating of 4 starts in the second NIKKEI SDGs Management SurveySelected as a DJSI Asia Pacific Index component for the fourth consecutive yearObtained certification as a company promoting work-life balance in Nagoya City
Remaining issues	<ul style="list-style-type: none">Response to contraction in the use of internal combustion engines and movement toward EVs and electrification: We are conducting examinations about products for EVs in cooperation with external partners, though demand for ICE engines is still growing.Development of new businesses: We have sown seeds, which now have to be grown.Fair corporate culture that allows for diverse individuals to reach their potential: While the number of female managers increased and a foreign national was appointed to the position of corporate officer in the Evolving phase, the rates should be further increased, and it will take more time for the establishment of such a corporate culture.			<ul style="list-style-type: none">Enrichment of corporate governance: While measures were taken to ensure compliance with the revised Corporate Governance Code, there remain issues regarding the implementation of rules at the global headquarters (GHQ) and the overseas regional headquarters (RHQ).	<ul style="list-style-type: none">Establishing new business pillars: Although we planted the seeds such as the acquisition of CAIRE in the medical business and the establishment of two Group companies in the fuel cell business, we were unable to show a vision for growth in new markets, partly because we concentrated our investments in existing businesses.Strengthening current businesses: We expanded our share of the spark plug market, especially in the Chinese market, which was a key market for us. We also captured the increase in demand due to stricter exhaust gas regulations, thereby establishing the top position in the global market for exhaust gas sensors.Strengthening business infrastructure: We have tried to speed up management decision-making by promoting localization through the introduction of regional headquarters (RHQ) as well as the introduction of a corporate officer system. However, we have not been able to establish the business infrastructure strong enough to transform our business portfolio and to penetrate ROIC management that leads to the evaluation of the return on investment of businesses and subsequent decision-making.

New Medium-term Management Plan

In our New Medium-term Management Plan, we will work on zero-based reforms to achieve our 2040 Vision and the 2030 Long-term Management Plan “NITTOKU BX,” which will be the milestone for the vision. Here we explain the overview of our New Medium-term Management Plan.



Set and implement sustainable business operation goals.

The modern society in which we live is faced with global environmental changes represented by climate change and increasingly complex social issues. These issues are expected to become more complex in the future. In the 2030 Long-term Management Plan “NITTOKU BX,” we have incorporated responding to climate change as one of our priority issues. In addition, we aim to reduce greenhouse gas emissions from all of our businesses to virtually zero by 2050, thereby helping to realize a decarbonized society.



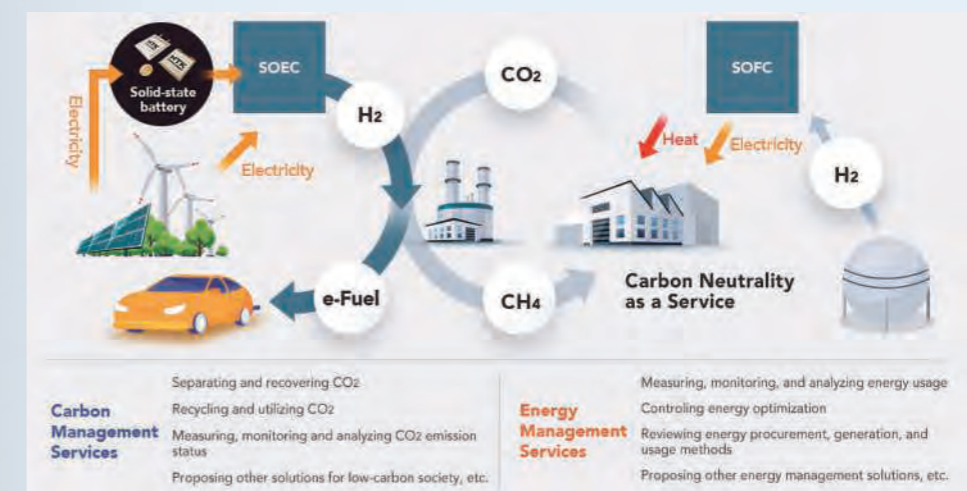
An example of our goals

Environment and energy field: Carbon neutrality through the use of hydrogen

Vision: Carbon Neutral as a service

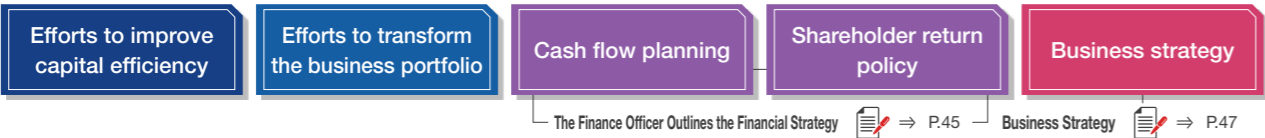
We are developing SOFCs and SOECs based on ceramic solid electrolytes.

In the future, we will aim to provide solutions to reduce CO₂ emissions using SOFC as a distributed power source and hydrogen production from renewable energy sources using SOEC.



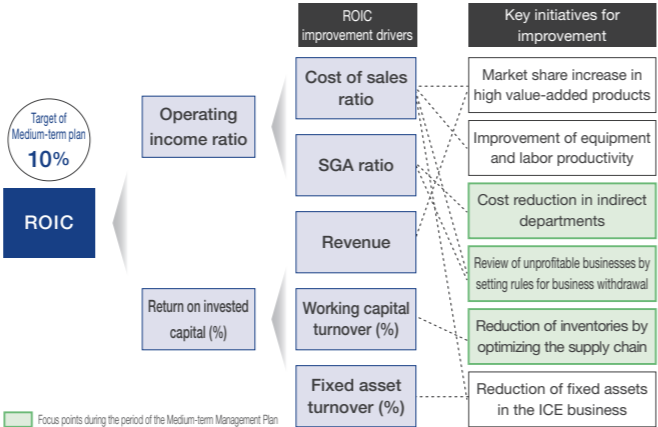
* Currently working with Mitsubishi Power, Ltd. on SOFC

Specific efforts



Efforts to improve capital efficiency

Regarding the ROIC management that was not fully in place throughout the Group during the period of the previous Medium-term Management Plan, we have identified priority measures that should be undertaken to improve the investment efficiency. We will achieve 10% ROIC by subdividing the challenges and responsibilities that must be undertaken at individual business and monitoring KPIs. We will continue to work on increasing our market share in high value-added products, improving equipment and labor productivity as well as reducing fixed assets in the internal combustion engine business over the medium to long term. In particular, during the period of the medium-term management plan, we will focus on the following priority measures: Cost reduction in indirect departments, review of unprofitable businesses by setting rules for business withdrawal, and reduction of inventories by optimizing the supply chain.



Efforts to transform the business portfolio

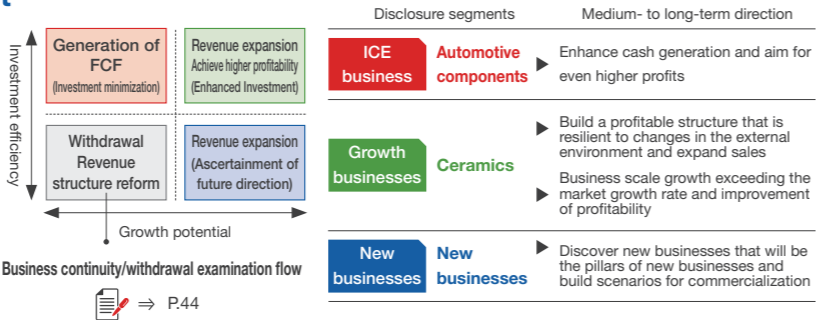
Introduction of an in-house company system Message from the President ⇒ P.9

As part of our initiatives to transform the business portfolio, we introduced an in-house company system in April 2021. We have introduced this system not only for business departments but also for functions at headquarters. The organization that used to be a part of the headquarters or functional headquarters has been reorganized into the Global Strategic Headquarters and Business Partner / Company, and a small number of strategic staff are assigned to the Global Strategy Headquarters. The organizational structure is designed to position each business and function as an independent pseudo-company. Through this organizational change, each company receives internal capital allocated by the headquarters, and will be responsible not only for PL, but also for BS and CF, thereby clarifying responsibility for return on investment as well as a decision to invest. In addition, the responsibilities and authorities, which were ambiguous in the past under the division system, will be clearly defined by for example optimizing the structure and rules to match the standards of the industry to which each company belongs. The Global Strategic Headquarters will promote global group management and accelerate the maximization of the business value according to its business position under the policy of Dokuritsu-Jiei.

Traditional organization	New organizations from April 2021		Roles
Corporate Domain	Corporate division	Global Strategy Headquarters	● Planning of company-wide strategies ● Enhancement of global governance ● Promotion of business portfolio transformation through optimal allocation of management resources ● Business withdrawal/continuity governance
	Business support department	Business Partner (BP) / Company	Contribution to the maximization of company-wide earning capacity ● Advancement of the services provided ● Cost reduction through efficiency improvement Improvement of company-wide earning capacity contributed by Business Partners (BP) / Companies ⇒ P.44
Divisions	Business department	Business company/spin-off	● Improvement of the ability to adapt to changes by introducing systems and structure tailored to each market environment ● Achievement of KPI and KGI at each company

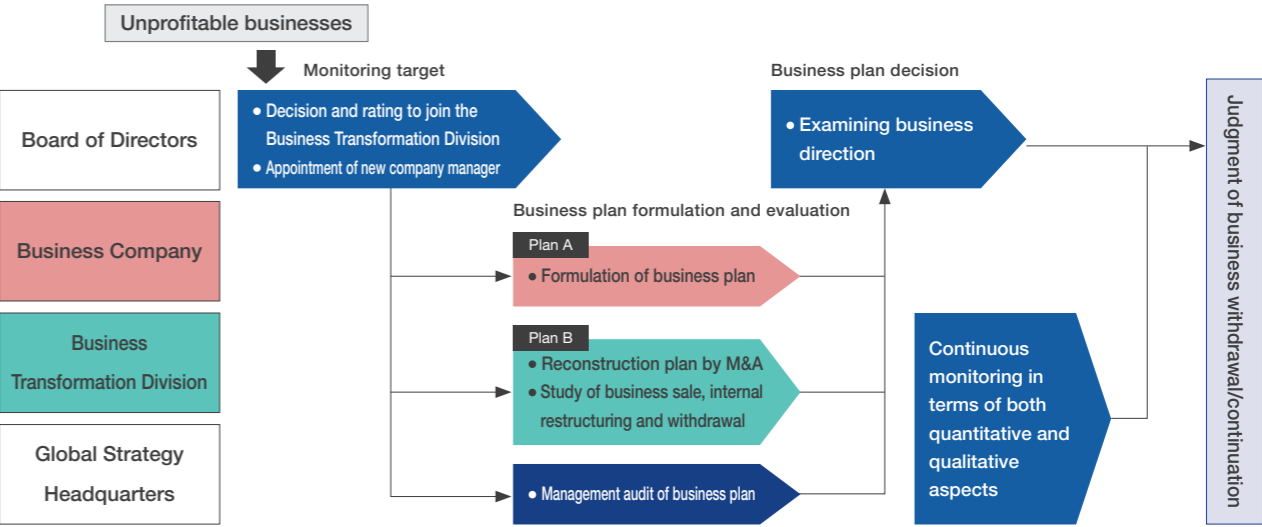
Business portfolio management

We will strengthen business portfolio management by setting hurdle rates for each business segment. Assessing the businesses using the two axes of growth potential and investment efficiency, we determine the future direction. KGI and KPI are set for each company after defining expected roles based on rating in accordance with each company's position in the market.



Business continuity/withdrawal examination flow

We newly established the Business Transformation Division in order to judge as to whether to continue or withdraw from an unprofitable business. The Business Transformation Division formulates and implements plans for the “business revitalization” of an unprofitable business or “withdrawal or business sale, etc.” In the event that a company comes under the organization of the Business Transformation Division, a revitalization plan will be formulated under the new company manager. Simultaneously, the Business Transformation Division formulates another revitalization plan under different point of view. Finally, the Global Strategy Headquarters assesses them in respect of probability, thereby enabling us to implement the best business strategy from multiple perspectives. The Board of Directors, Business Transformation Division and Global Strategy Headquarters have all been strengthened with outside human resources to establish a system that enables a rational decision-making.



Improvement of company-wide profitability by introducing Business Partners (BP) system

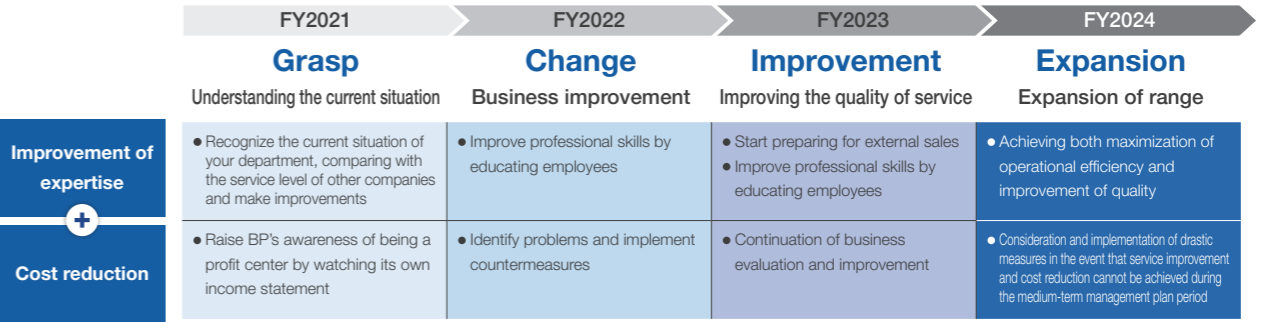
Business Partner (BP) / Company aims at providing high-value-added services that are market-competitive in order to contribute to enhancement of the business companies' profitability. By introducing the in-house company system, we were able to visualize the costs of each organization and its contribution to the business, which have been difficult to come to surface. Also, the services will not be evaluated based on internal standards, and will be compared with those of market. By grasping the service levels of other companies and identifying areas for improvement, we will improve the quality of our services step by step, and at the same time, we will expedite cost reduction by separating services with high added value from those that should pursue higher efficiency.

Business Partner (BP) / Company Aims

Providing market-competitive, high-value-added services

Implementation process

Procurement / Accounting / Human Resources / Labor / IT / Public Relations / General Affairs / Intellectual Property Management / Quality Control / Environmental Safety



The Finance Officer Outlines the Financial Strategy

Introducing the in-house company system ahead of the transformation of the business portfolio to boost the value of our businesses

Member of the Board, Executive Officer
Business Management and Financial Strategy

Kenji Isobe



FY2020 performance on a par with the previous year's

From the beginning of FY2020, COVID-19 started showing signs of spreading all over the world, and we were concerned that our own business would also be heavily impacted.

And sure enough, as the world economy ground to a halt in the first quarter, we also saw a large drop in earnings. Furthermore, a shortage of semiconductor chips led to a reduction in output by automakers in the fourth quarter. On the cost side, a global shortage of shipping containers pushed up transportation costs, while raw materials prices soared as a result of apparent speculative moves.

Despite all that, the automotive components business witnessed a rapid recovery in demand from the second quarter onwards, and with efforts to reduce expenses bearing fruit, our earnings for the full fiscal year were on a par with the previous year's.

Although the Automotive Components performed strongly, ROIC fell

With the aim of freeing ourselves from an overemphasis on profit and loss, and switching to a business style that stresses the efficiency with which invested capital is employed, we have adopted ROIC as a management control indicator.

Our seventh Medium-term Management Plan, which covered the period from FY2016 to FY2020, set 13% as a target for ROIC, but the actual figure in FY2020 ended up at 6%. The impact of COVID-19 has obviously been a factor, but despite proclaiming a commitment to ROIC-oriented management, the news hasn't really reached the frontlines, and I think we've probably failed to achieve a change in attitudes in the true sense of the expression. That's something I'm reflecting on.

Another reason we failed to meet our target is that for about the past five years, demand for automotive components such as plugs and sensors has been expanding at a faster pace than we anticipated, so we have been placing priority on the Automotive Components Group when investing for growth, and have also built up inventory levels. As a result, invested capital has swelled, which has reduced ROIC.

Aiming for ROIC penetration under the in-house company system

However, we are still going to be emphasizing ROIC going forward. The New Medium-term Management Plan, which we began executing this fiscal year, calls for us to further strengthen our earning power through ROIC-oriented management, and sets a target for ROIC of 10%.

Besides this company-wide target, we have also set

one for each of the internal companies. After putting together an ROIC tree for each internal company, we broke down ROIC into its constituent indicators and also determined targets for those. We have also established KPIs. Through this mechanism, we will ensure that action is also taken on the frontlines so that ROIC becomes firmly entrenched.

Efforts to improve capital efficiency ⇒ P.43

Further raising the value of the Automotive Components

The switch to the in-house company system has two primary aims. The first is to spin off small-scale current businesses and new businesses from the Automotive Components, which accounts for around 80 percent of sales, and based on the spirit of Dokuritsu-Jiei (self-reliance), administer each of them in a way that suits the position of the business. And the second is to pursue further growth and greater efficiency through the independent administration of the Automotive Components, which already boasts high earning capacity.

Of course, a disadvantage of the in-house company system is that we have to bear costs involved in intracompany transactions. Conversely, however, by boosting investment efficiency, growing the business, and generating bigger profits, we are aiming to generate earnings that exceed the increase in costs.

The Automotive Components requires an especially high level of investment efficiency. In the auto industry, the shift to EVs is accelerating, which means that the businesses related to internal combustion engines (ICEs) tend to be described as declining sectors, but we don't see things that way. Both our Long-term Management Plan and Medium-term Management Plan position the Automotive Components as a business that will continue to expand in the future.

Furthermore, as the Automotive Components is a cash-cow business for us, we demand the automotive components related companies to set a target for cash generation and produce cash efficiently using less invested capital by, for example, reducing inventory and curtailing the amount or enhancing the efficiency of capex. As such, we will not allow ourselves to be spoiled by the high profitability of this business. Rather, we will be aiming for an even higher level of profit.

Deliberations concerning growth investments by the Investment Committee

Alongside the switch to the in-house company system, we have delegated authority to the presidents of the internal companies, and have newly established the Investment Committee. The previous incarnation, which existed until

last year, was chiefly a forum for deliberating on capital expenditures, but the purpose of the new committee is to maximize investment effectiveness by viewing investments from the viewpoints of both NGK SPARK PLUG as a whole and the internal companies. As we execute our business growth strategies, we will be making investments after deliberating on investments as a whole, which means not only capex, but also M&A and inventory accumulation.

The criteria for making investment decisions vary depending on whether decisions are related to current businesses or new businesses. Decisions on new investment in current businesses are based on growth potential and profitability, and compared with new business pillars, the period for recouping the money invested is set shorter.

Besides investment efficiency, environmental aspects also assessed

ROIC is an indicator of investment efficiency from an economic perspective. Although we are publicly committed to ROIC-oriented management, on a forward-looking basis that will not be the only thing we should consider. We believe that it will become necessary to incorporate the degree of contribution to society in our investment decision making, and this will encompass ESG factors.

To discharge our social responsibilities, for example, we may invest in inventory to avert logistics risks or invest in renewable energy to reduce CO₂ emissions, even if such investments lead to a lowering of ROIC. In this way, we are going to be viewing economic value and our obligation to fulfill our social responsibilities as two sides of the same coin as we make investment decisions.

Eco Vision 2030 presents targets of cutting CO₂ emissions in 2030 by 30% compared with FY2018 levels and achieving carbon neutrality by 2050. These targets are very close to the roadmap published by the government. However, as is the case with ROIC, simply stating targets is rarely enough to get people taking action. So as a mechanism for spurring people into action, we are planning to employ the in-house carbon pricing system.

During meetings of the Investment Committee, we are going to be checking not only the typical economic calculations and investment efficiency of capital expenditures, but also how much of a CO₂ reduction can be achieved as a result of the investment. And we will be using the in-house carbon pricing system as an indicator of that.

We are also going to be employing business profit less carbon price when assessing each business.

Furthermore, we are thinking about producing something like "environmental financial statements," namely an income statement and a balance sheet that show how much we are contributing to CO₂ emissions reduction.

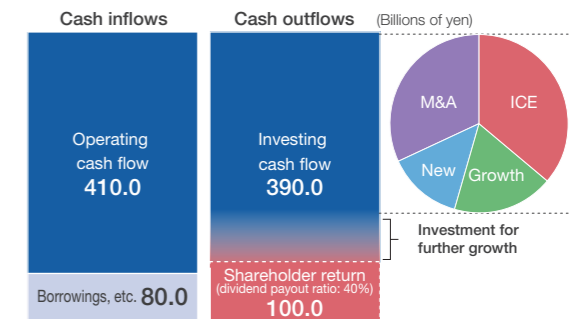
Figuring out how to increase economic value, including ROIC, is also important, but for a company to grow in a sustainable fashion, it is crucial that it also consider how to fulfill its responsibility to protect the environment and tackle issues that society requires that it do so. So I hope that we will be able to institute the in-house carbon pricing system and disclose such information in environmental financial statements.

Investing the cash obtained from the ICE business in new businesses and for growth; changes to shareholder return policy

The Automotive Components, our mainstay business, has long generated large quantities of cash. The notion of taking this cash produced by the ICE business and deploying it for investment in growth and new businesses

is the cash allocation approach of our Medium-term Management Plan.

While maintaining our financial soundness, we will be moving toward the transformation of our business portfolio by allocating the cash generated by the ICE business to investment in growth and new businesses.



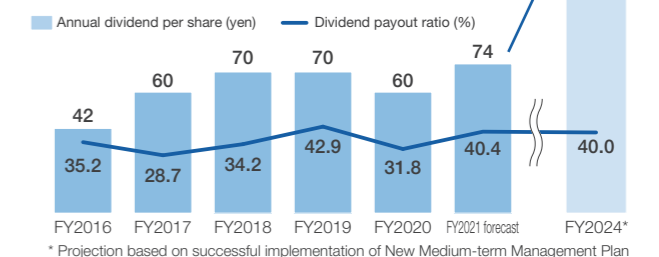
If there are retained earnings due to cash not being used in the manner described above or due to more cash being generated than expected, we will return the cash to shareholders, and this could be by means of purchases of treasury stock.

We have made a substantial change to our shareholder return policy compared with FY2020. In the past, our declared aim was "a dividend payout ratio of 30% or more," and we also promised to keep dividends stable. But we have now changed our policy to one of "a payout ratio of 40%, with dividends linked solely to performance." In other words, when we have performed well and made a profit, we will be able to pay out a big dividend, but if our profit is small, we will pay a lower dividend.

Policy under New Medium-term Management Plan

- Basic policy**
 - We will be pursuing the optimal balance between future-oriented growth investment and financial soundness, and our basic position will be to expand returns to shareholders.
 - We will also consider acquiring treasury stock in light of our optimal medium-term capital level

- Dividend policy**
 - Dividends will be linked solely to performance
 - The annual dividend will be based on a payout ratio of 40%



In the future, we will continue endeavoring to expand the value of our business, while integrating that with our social responsibilities, and aim to further increase our corporate value.

Business Strategy



Automotive Components Group

KGI

Operating income ratio → Annual average growth rate: 1%

Free cash flows → 1.5 times
(compared with the amount for FY2020)

Key tasks

Market share increase in high value-added products

Curtailing of investment thanks to productivity improvement

Increase in capital efficiency thanks to inventory reduction

External environment

Sales of our spark plugs have been increasing in recent years, especially in the Chinese market, and we have secured the leading market share. This is because we perform every step from the development of ceramic materials to manufacturer, and we are capable of meeting the demanding performance requirements and specifications required by the market, so we have earned the trust of customers. Another big factor is that we have established our own sales channels, and have responded to the needs of the repair parts market while providing technical support at the local level.

We have also been expanding our share of the market for exhaust gas oxygen sensors, for which demand has been growing in response to a global tightening of environmental regulations. The expansion of regulatory scope to cover not only automobiles but also motorcycles has resulted in a particularly large jump in demand for sensors for controlling the quantity of fuel injected. Demand for these sensors for both autos and motorcycles has been rising. The need for sensors with higher performance that can assure compliance with

standards is mounting. Such sensors are more technologically advanced than the typical oxygen sensors that have been mainstream until now, and include wide-range oxygen sensors capable of measuring oxygen concentration in exhaust gas more precisely as well as NOx sensors capable of measuring nitrogen oxide.

However, the importance of tackling climate change has increased substantially during the past few years, and governments around the world have been moving swiftly to become decarbonized societies. The automobile industry is in the midst of a once-in-a-century period of radical transformation, with automakers developing electric vehicles (EVs) as nations move with greater speed toward electrification in order to reduce CO₂ emissions. Amid this trend, the electrification of power trains is occurring even faster than was predicted just a few years ago. HEVs (hybrid vehicles) are expected to proliferate over the medium term, while ZEVs (zero-emission vehicles) look set to dominate over the long term.

Vision

Against the backdrop of these rapid moves toward decarbonization, the need for electrically-powered vehicles that offer high levels of fuel efficiency, such as HEVs and PHVs, is increasing. Our range of spark plugs include the regular nickel type as well as precious metal types, which are highly fuel efficient. The precious-metal spark plugs are said to offer fuel efficiency that is around 2% higher than the regular types. Precious-metal spark plugs already account for around 40% of sales, and by replacing regular nickel spark plugs with them, it would be possible to achieve a significant improvement in fuel efficiency. By selling precious-metal spark plugs, which help boost fuel efficiency, we will meet the needs of the market.

Like spark plugs, exhaust gas oxygen sensors now need to be high-value added products with a stronger environmental contribution.

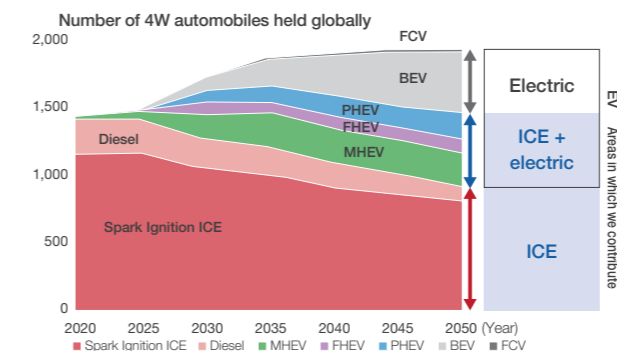
Compared with regular oxygen sensors, our next-generation oxygen sensors and wide-range oxygen sensors can contribute to reduced CO₂ emissions through more precise measurement of oxygen concentrations, and they therefore allow compliance with strict environmental regulations.

By concentrating investment on high-value added products like these spark plugs and exhaust gas oxygen sensors, maximizing investment effectiveness, pursuing ultra-efficiency, and expanding our share of the market for high-profit-margin products, we will maximize cash generation. We will curb increases in inventory by raising productivity, identify supply chain issues on a cross-organizational basis encompassing procurement, manufacturing, logistics, and sales, clarify responsibilities, and endeavor to trim inventories.

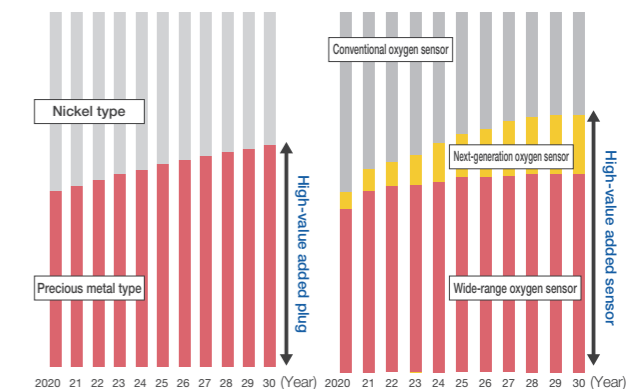
With decarbonization progressing rapidly, non-ICE vehicles as a proportion of new cars sold are increasing, but when one considers that number of vehicles currently owned, it is clear that ICE vehicles

are not about to disappear overnight. We will fulfill our responsibility to supply as the world's top supplier of spark plugs for ICEs, and continue striving to contribute to Well-to-Wheel CO₂ reduction.

Projected ICE demand

(Millions of units)
2,500

Volume trend with high-value added products



SPE

KGI

Revenue → 35.0 billion yen

ROIC → 17%

Key tasks

Main indicators

Differentiation through proprietary technology
that meets customer requirementsAnnual average growth rate of revenue:
12% or more

Establishment of production structure that is resilient to market changes

Inventory optimization, increase in capacity utilization
rates, increase in labor productivity, etc.Labor productivity improvement:
improved by 30%
(compared to FY2020)

Vision

With the new high-speed telecommunications standard (5G) proliferating and lifestyles changing as a result of the impact of COVID-19, demand for chips for use in IoT and AI is increasing, and total sales of production equipment for upstream semiconductor fabrication processes are expected to grow at a rate of 5% per year until 2025. Regarding market needs, the memory market requires high-rise 3D NAND devices, and what is important for these is the formation of minute yet deep memory holes, which is possible with high-power plasma. In other words, the etching process is important. As a result, the etching device market is expanding, and we intend to supply ceramic material technology that can withstand high-power

Ceramics business



New Medium-term Management Plan Business Strategy

plasma. And in the logic market, demand for etching devices is also increasing as result of multi-patterning technology, which breaks down lines produced with a single exposure into even finer, multiple patterns. We plan to employ ceramic sheet lamination technology to contribute to technology for in-plane temperature homogenization, low particles, and wide-ranging surface temperatures.

Going forward, we will be establishing a production structure that is resilient to market changes, deploying proprietary technology to achieve differentiation in terms of social value and business value over the medium term, and responding to cutting-edge needs. In this way, we will be aiming to establish ourselves as the top supplier in the semiconductor production equipment field.

Medical respiratory related business

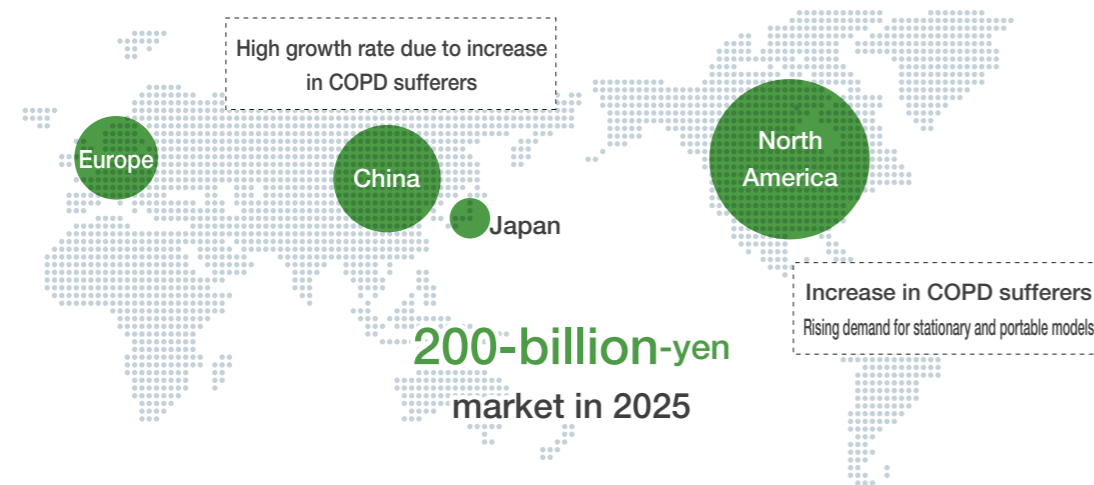
KGI

Revenue → 30.0 billion yen

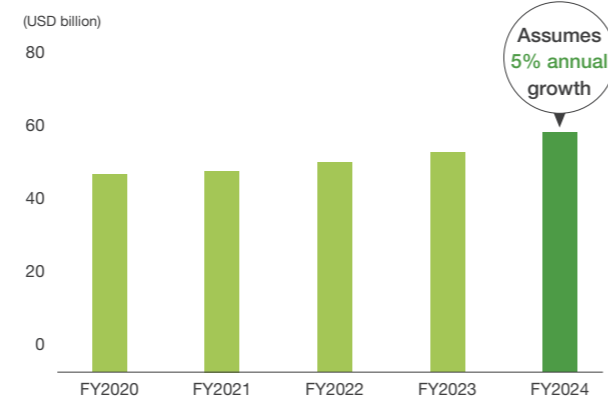
Operating income ratio → 18%

The global market for oxygen treatment is expected to continue to expand as the population ages and the number of COPD sufferers increases, such that the projected size of the market in 2025 is 200 billion yen. In regional terms, the North American market is currently the biggest, and the number of patients is expected to continue rising, and we believe that demand for portable oxygen concentrators, in particular, will rise. And in the Chinese market, an increase in the number of people with COPD is expected to lead to higher demand for stationary oxygen concentrators, and the market is forecast to grow at a faster rate than the U.S. market.

Oxygen therapy needs on the rise



Outlook for semiconductor production equipment market



Key tasks

Main indicators

Development of new oxygen concentrators

Launch of new products (FY2024)

Diversification of sales channels and sales regions

Revenue from Chinese market
Annual average growth rate:

25% or more

Looking ahead, we will be strengthening our development structure along with CAIRE Inc., which we acquired in FY2018, and plan to develop new stationary and portable oxygen concentrators, demand for which is expected to increase in the North American and Chinese markets in the future. As we expand sales globally, we are strengthening our sales capabilities in sales channels that are suited to expansion in the Chinese market and for the needs of each region.

To help improve the quality of life (QOL) of patients around the world, we aim to achieve growth by leveraging synergies with CAIRE to expand our product line-up and our sales channels.

Cutting tools

The market for cutting tools is expected to continue to grow in the future in connection with the development of various industries. Within this market, we will be continuously pursuing innovation in ceramic grades, which are suited to cutting components made of hard-to-cut materials such as highly heat resistant materials for aircraft jet engines and power generators of various types, and in grades for machining small parts, which are suited to the manufacture of precision components, thereby expanding the business through cutting tools that satisfy the market needs. And by offering grades for high-speed machining that are suited to workpieces as well as dry-processing solutions that do not require the use of cutting oil, we will make it possible to perform cutting in ways that are kind to the earth and have minimal impact on the environment.

Industrial ceramics

We offer a varied line-up of industrial-use ceramics, including ultrasonic transducers, which are used for ultrasonic scalpels, and products for semiconductor production equipment. Among them, sales of ultrasonic transducers are expected to continue to see growth as the ultrasonic scalpel market expands, and products for semiconductor production equipment are also expected to rise in conjunction with the expansion of the etching market. Because we both develop and manufacture materials in house, we are able to supply the world with a wide range of ceramic products that meet various customer needs. Going forward, we will endeavor to provide society with new products, mainly in the medical and IT fields, but also in new business domains.

As one such new business, we are currently developing lead-free piezoelectric products, which do not contain lead. Partly because of growing awareness of the SDGs, demand for lead-free piezoelectric products has been climbing, and the market is expected to continue to expand in the future. We plan to begin mass-producing lead-free piezoelectric products, and are aiming to book sales of 4 billion yen over the next five years.

Semiconductor packages

Much like the semiconductor production equipment market, the semiconductor market is expected to grow 5 to 10% or more annually thanks to the growing demand for semiconductors in line with the AI and IoT-driven digitalization in society. We plan to steadily grow this business by focusing on market segments characterized by a variety of small lot, high value-added products such as industrial ICs and probe cards rather than going for the highly price competitive crystal market segment.

By further leveraging the ceramic firing technology we have cultivated over many years, we will work hard to develop products to make inroads into a business for 5G networks in the millimeter-wave range (28 GHz band), which are expected to be put into full operation in around 2025.

New businesses



Strategy for creation of new business pillars

We are doing business with a focus on internal combustion engines (ICE), but if we are to transform our business portfolio in the future, we need to be involved in more than the ICE business and embrace the challenge of starting new businesses to transform our business structure. To that end, we need to search for a new way of doing business by thinking beyond "What ceramics can do." We aim to meet the challenge of going "beyond ceramics," thereby changing "drastically beyond the current way" in 2040.

The new business pillars we are going to be focusing on in the future will comprise three domains: Decentralized Utilities, Smart Mobility, and Smart Health. These are domains that can be expected to exhibit sustained and rapid growth over the medium to long term, which means that we will be able to tackle social challenges by providing high value-added system solutions that take full advantage of our core competencies.

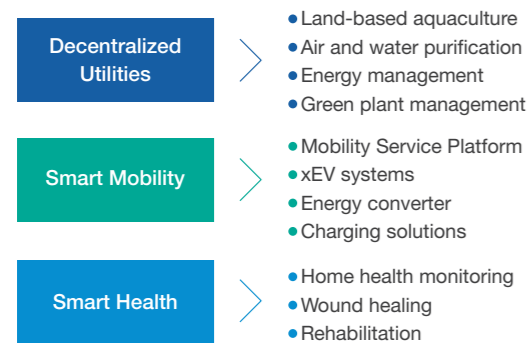
Among the new business pillars we are currently building, the biggest one right now is the fuel cell business. In 2019, we established a joint venture called MORIMURA SOFC TECHNOLOGY Co., Ltd. along with three other companies: Noritake Co., Limited, TOTO Ltd., and NGK Insulators, Ltd. And in 2020 we launched another joint venture (CECYLLS Co., Ltd.) with Mitsubishi Power, Ltd. MORIMURA SOFC TECHNOLOGY manufactures planar cell stacks, while CECYLLS produces cylindrical cell stacks, and we plan to offer a full line-up with products for residential, commercial, and industrial use. Until now, there have been issues with costs and making the stacks smaller, and it has been difficult to achieve proliferation of fuel cells.

However, with the world undergoing the shift to a decarbonized society, fuel cells are expected to become more popular, as they will be products that offer a CO₂ reduction effect of approximately 30% in relation to grid power, and can thus play a role in contributing to the creation of a sustainable society. The target markets for industrial-use SOFCs are Japan, South Korea, Europe, and North America. As a latecomer to the market, we intend to take advantage of the long life, high efficiency, and heat usage of Mitsubishi Power's fuel cells and put together a business model based on superiority in terms of lifecycle cost. In the case of residential- and commercial-use SOFCs, meanwhile, for the time being we will only be targeting the Japanese market. Our aim is to leverage the potential for ultra-high efficiency and the high degree of design freedom to develop and complete next-generation stacks that are even cheaper, smaller, and lighter than now. Working with system vendors, we will be striving for smaller, lighter,

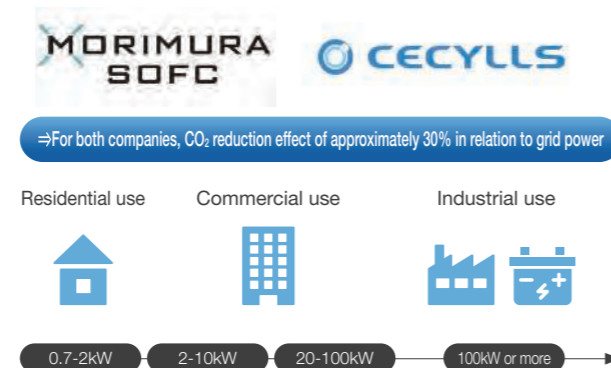
and cheaper products that can be purchased anywhere at any time.

Besides fuel cells, we are planning to launch multiple projects during this term, covering such themes as making water-quality information visible, integration of biometric information from cameras, on-land aquaculture total solutions that combine Big Data analysis, disinfection devices that use ozone gas to deactivate viruses, and connected maintenance services that utilize auto dealer networks. Going forward, we will be re-shuffling and re-pivoting projects on an ongoing basis with a goal of achieving around four launches every year. In this domain, we also want to aim for synergies by proactively investing in startups and venture capital firms, and as the department in charge of other new business pillars, we are targeting at least a two-fold increase in the value of our businesses by 2030, compared with the total amount invested, including through M&A.

Domains of new business pillars we will be focusing on



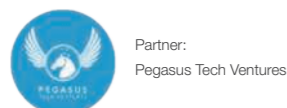
SOFC rollout



Establishment of CVC fund to accelerate creation of new business pillars

To step up the creation of new business pillars, we believe that it is essential to cooperate with startups that possess leading-edge technologies, business models, and ideas, so along with Pegasus Tech Ventures, in April 2021 we set up a CVC (corporate venture capital) fund for the purpose of investing in startups around the world. With this move, we will be ramping up the creation of new business pillars through the provision of cash to and the forging of business alliances with startups from countries all over the world that possess advanced technology.

We have traditionally been investing in such startups indirectly through venture capital firms, and have established a network comprising numerous partners. Yet when we began actually collaborating with them, we realized we had issues with skills that are necessary, such as those related to coordinating activities with companies, making investments, and pursuing M&A. But this new CVC fund will not only help to further increase our network of startups, but will also allow us to make up for our weaknesses on the skills side. We have therefore completed the establishment of an investment structure for new business pillars. From now on, we will accelerate the creation of new business pillars as we press forward with investments that are in line with our strategy.



Partner:
Pegasus Tech Ventures

Small equity stakes

Expected no. of transactions	Approx. five each year
Stages targeted	Seed capital to Series A funding
Sizes of equity stakes	Several tens of millions of yen to several hundreds of million yen, 10 billion yen over six years
Investment criteria	<ul style="list-style-type: none"> The startup matches our portfolio of new business pillars, the business domain targeted is broad, the business has potential, and there is a vision for the business There is a high degree of affinity with our new business pillars, and the startup possesses a business, technology, and human resources that will complement/expand our portfolio The startup possesses technology, intellectual property, and skilled people or teams of the like we are lacking as we endeavor to establish our new business pillars

M&A

Stages targeted	From Series A funding and onwards
Sizes of equity stakes	50 billion yen over four years
Purpose of investment	<ul style="list-style-type: none"> To acquire a business, technology, intellectual property, customer base, or human resources that matches, complements, and expands our portfolio of new business pillars To acquire technology, intellectual property, a customer base, or skilled human resources of the like we are lacking for our portfolio of new business pillars or for our projects To expand our business portfolio and achieve rapid commercialization in business domains with a high degree of affinity with our projects

NGK SPARK PLUG Group's Innovation

We will leverage our strengths to create new businesses and contribute to the resolution of social challenges.

Toru Matsui

Representative Director, Member of the Board,
Executive Vice President, Business Creation Company



Determination of three areas as directions for new businesses

In 2030 Long-term Management Plan "NITTOKU BX" which we announced in FY2020, we defined priority issues (materiality) in order to achieve sustainable growth, and decided that we would focus on four business fields: Environment & Energy, Mobility, Medical, and Communication. So we will be taking action in these four business fields going forward, and the Business Creation Company* (BCC), which is in charge of creating new business pillars, has settled on the three areas of Decentralized Utilities, Smart Mobility, and Smart Health as directions for the development of new business pillars.

New businesses ⇒ P.50

We selected these three areas after analyzing our technologies and assets in view of long-term changes in society and considering what kind of contribution we can make in which areas. Within these areas, we will identify and pursue fields and business models in which we can provide even greater value, and link these to the provision of our unique products and services.

*Global Innovation Division, launched in 2020. Renamed the Business Creation Company in conjunction with the shift to the in-house company system in April 2021.

Projects producing results

As a result of BCC's efforts over the previous year, we expect several new products and services to be launched during FY2021. They include an ozone gas generator, Doctor Link, and water quality sensing.

We developed the ozone gas generator by applying

technology we built up through the development of ceramic plasma reactors, which are used to purify automobile exhaust gas, to the purification of air in people's living spaces. The generator is effective in suppressing airborne viruses by drawing in ambient air and producing ozone gas to maintain an appropriate ozone concentration. Advantages of the product include the fact that it supplies enough ozone to suppress viruses, but at safe concentrations. Maintenance costs are also low, as it doesn't contain any parts that need to be replaced. To serve as the next model following the new product to be launched in FY2021, we are currently developing a product that uses an ozone sensor to control indoor ozone concentration more optimally.

Doctor Link, meanwhile, is a service that employs our global network, which is one of our strengths and also one of our assets. It utilizes connected technology to propose the optimal timing and content of maintenance to automobile maintenance shops based on data on automobile usage and maintenance history. Car users can enjoy such benefits as continuing to drive the same beloved car with peace of mind and actually increasing the value of their car. We plan to utilize our sales network to drive sales of this service.

Water quality sensing is a product that utilizes our core sensing technology to contribute to the improvement of productivity of the aquaculture industry by measuring the concentration of substances that affect water quality, such as ammonia, nitric acid, and nitrous acid, as well as water temperature, and controlling them appropriately in land-based aquaculture. It also helps to control the administration of chemicals and antibiotics in aquatic products, thus contributing to ensuring the safety of aquatic products as food. Based on

the results of this spring's demonstration tests, we will proceed with sales, starting with land-based shrimp farms in Japan.

In addition, once the aforementioned projects are in stable operation, we will begin to consider launching new businesses that are similar or closely related to them in order to achieve synergies in peripheral fields.

Providing new services that contribute to carbon neutrality

As for new initiatives other than those mentioned above, we are considering providing services that contribute to carbon neutrality in Decentralized Utilities, one of the three fields.

Carbon neutrality is an important goal that the whole world needs to work together on. From the upstream materials industry to the downstream processing industry, there are many companies with processes that generate CO₂ on the frontline, and they need to take some action.

To tackle such tasks, we are considering offering Carbon Neutral as a service. We would collect CO₂ generated in gas furnaces at factories and convert it to fuel by combining it with hydrogen. We would then return the fuel to the furnace for recycling through recombustion, thereby contributing to carbon neutrality. It would be provided either as a standalone system or as a service that also encompasses operation of the system. With the goal of not only providing the service to our own plants but also selling it to other companies, we have now commenced development, launching a cross-functional team comprising members from the R&D department, BCC, and the Sustainability Promotion Dept. Although more and more major companies are also working on this idea, most of them are focused on solutions for the large-scale material production or primary material processing, such as steel and cement production, which emit large amounts of CO₂. However, it is highly likely that measures will also become essential for dispersed processing after secondary processing, such as casting and molding, even though the CO₂ emissions from such processes are relatively small. Our solution involves combining technology for efficiently generating hydrogen using lightweight and compact SOEC devices that feature ceramics with CO₂ capture and methanation technology, and also with methane combustion control using sensors, which are our specialty. By using the devices to make good use of the heat generated, we will be

able to make the entire system function efficiently overall. Putting this mechanism in place, we would like to provide the solution that can be used even in relatively small facilities.

The key to the realization and success of this new business is to collaborate with other companies. We would like to work with other companies on modularization and systemization involving various technologies, so as to speed up development and thereby become able to provide even better solutions.

Another Decentralized Utilities initiative

Another specific product that we are actively trying to develop into a business is solid-state batteries.

The ones we are working on are unsintered oxide solid-state batteries. We have succeeded in developing the highest energy density (300Wh/L) and capacity (10Wh) as an oxide solid-state battery by utilizing ceramic material and lamination technologies that we have cultivated over the years. Compared to sulfide solid-state batteries, oxide solid-state batteries are safer, as they do not emit toxic gases and are not susceptible to breakage, rupture, or ignition. In addition, they can be used in a wider range of temperatures, from -30°C to 105°C, compared to the upper limit of 60°C for conventional liquid lithium-ion batteries. In the future, we will proactively pursue marketing and sales activities for applications with harsh operating conditions and for which safety is essential, such as in space, for distributed and backup power supplies for automobiles, for marine equipment, for transportation IoT, and for equipment that requires explosion protection. We are also participating as a corporate partner in a commercial lunar exploration program, named "Hakuto-R" being pursued by ispace, inc. With this collaboration, we are planning to conduct the world's first demonstration test of a solid-state battery on the surface of the moon in 2022. We have already completed the trial production of a flight model battery that has passed various environmental tests, including vacuum, vibration, and thermal cycle tests for space, and are smoothly preparing for the launch.

In parallel, we will speed up development in collaboration with other companies in areas where even higher output and capacity are required, such as main batteries for EVs.

Investing in startups with potential for synergies

For several years now, we have been investing in startup companies, and have established a "venture lab" in Silicon Valley as a base for this, building the connections necessary for investment. In April 2021, we joined forces with Pegasus Tech Ventures in the U.S. to establish a corporate venture capital (CVC) in order to further increase the speed and probability of success. We made this decision as we felt that we needed an organization that understood our strategy and that would work solely for us by continuously providing a full range of services including M&A.

CVC is a venture investment fund of approximately 10.0 billion yen. With an understanding of our assets such as our technology, intellectual property, and sales network, as well as our priority areas and direction, it searches for startup firms that are aligned with our direction and have new technologies and skills that we do not have. It then draws up a list of them. We pick out companies from the list, and after assessing their suitability for investment, we start investing in them, initially with a small amount. Eventually, we would like to expand our business by combining the assets of our collaborators with our own assets to create huge synergies.

We are currently considering investments in several candidates, and have already invested in one startup. This startup that we have already invested in possesses excellent electronics technology, and we feel that our ceramic technology could be combined with it to further enhance the performance of EVs and other target products. We would like to utilize this technology in the areas of Smart Mobility and Decentralized Utilities to develop our business.

Development of new businesses based on business plans

BCC views itself as an internal venture capital company that receives equity capital from the headquarters, and controls the balance between investment and return by setting its own goal of increasing the average investment multiple to twofold or more, i.e. getting our money back twice. The speed of business development varies depending on the project, but a relatively large number of our business plans are designed to become profitable two or three years after the start of the project, with all the money invested being recouped after four or five years. Several years after the start of the project, we make a decision on whether to continue

or withdraw from the investment, and we formulate our own criteria based on the type and nature of the business.

Furthermore, based on the business plan developed for each project, we discuss the success or failure of the project at each milestone.

Emphasis on design thinking and human-centered design

At BCC, we incorporate concepts such as design thinking and human-centered design into our business development efforts.

Up to now, many of our businesses have been realized in response to specific requests from large corporate customers such as automobile manufacturers. But to speedily develop new businesses and make them successful, we must discover end-user needs that have not yet become apparent, and create products and services from scratch to meet those needs.

Therefore, we start with end-users in mind, which is common to both design thinking and human-centered design, and strive to understand the latent needs by observing their behavior and speech. In addition, we design and create prototypes at an early stage, have people actually use them, receive feedback, and make improvements over and over again. By adopting these unconventional methods, we will accelerate the development of new businesses to a greater extent than ever before.

Innovation which is all the more essential in the time of uncertainty

Recently, it is said that we are in the "VUCA" era. VUCA is an acronym that stands for volatility, uncertainty, complexity, and ambiguity. I believe that the aforementioned design thinking and human-centered design are a good match for this era. This is because in the VUCA era, a multitude of new needs and challenges are emerging, and it is more likely that these needs and challenges will be different in the future from how they have been until now. The only way to explore new needs and challenges is to go out into the market. You can't just sit in a chair in a lab. The only method is to follow the process in an agile manner while watching the reactions of the end-users.

Through these efforts, we will contribute to addressing social challenges by creating new businesses.



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Foundation for Value Creation

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Environment



Environmental Policy

As a globally developing core manufacturing corporation, we aim to promote environmental conservation activities linked with corporate management maintaining a good balance with corporate growth, based on “Involvement by all” in order to contribute to the construction of a sustainable society.

Action Guidelines

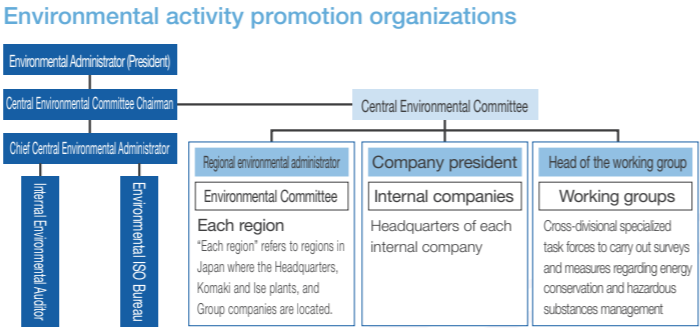
- Through all of our business activities, we make particular efforts to reduce CO₂ emissions toward a decarbonized society, conserve water resources, manage waste, and develop, offer and expand environmentally friendly products.
- We strive to conserve the ecosystem through the control of chemical substances that place a burden on the environment.
- We strive to raise environmental awareness among our employees to ensure that they all positively participate in activities.
- We observe the laws, ordinances, and agreements concerning environmental conservation.
- We aim to substantiate information disclosure to stakeholders and communication activities, and also conduct activities for coexistence with the regional community.
- In order to achieve these targets, we will strive to make ongoing improvements to our environmental management system.

Promotion system

Our group has a matrix-type structure including internal companies and respective regions, promoting environmental activities while having individual roles clarified.

Each internal company manages its own targets on items relevant to business activities for the practice along with its business. Meanwhile, we conduct such activities as compliance of regulations, raising environmental awareness, and communication with local society mainly on the regional basis in accordance with action plans. Various working groups are set up as cross-functional teams across the internal companies for promoting activities.

The Central Environmental Committee, attended by President, directors, company presidents, regional environmental administrators, and heads of the working groups, confirms the progress toward the targets and issues in relation to each activity, for continuous improvement.



Eco Vision 2030

On the premise of aiming for carbon neutrality in 2050, we have established “Eco Vision 2030,” which shows the vision (or goal) of what we want to be by 2030 and the vision of what we will pursue until 2040.

For Eco Vision 2030, the impacts that our businesses and products would have on society and our company were analyzed, and 13 issues that would have a large impact were selected. Among them, the four issues that were considered to have a greater impact – “Responding to Climate Change,” “Expanding Environmentally Friendly Products,” “Conserving Water Resources,” and “Waste Management” - were positioned as the four important issues, and numerical goals were set for them. Through the practice of Eco Vision 2030, our group will work together to contribute to the realization of global carbon neutrality and zero emissions.

4 important issues	The milestone to be achieved in 2030		Our vision for 2040
Responding to Climate Change	CO ₂ emissions: 30% reduction from the FY2018 level	Implementing activities toward realization of a decarbonized society *Aiming for carbon neutrality by 2050	
Expanding Environmentally Friendly Products	Expand Nittoku Green Products	All products contribute to the improvement of the global environment and contribute to making sustainable society come true	
Conserving Water Resources	Water consumption intensity: Keep below FY2018 level	Implementing sustainable business operations in response to global water risks	
Waste Management	Achieve over 95% effective utilization rate	Contribute to a global recycle-oriented society by promoting zero emission	
	Reduce at least 1% of waste intensity compared to FY2018		
	Promote 3R (reduce, reuse, recycle) activities		

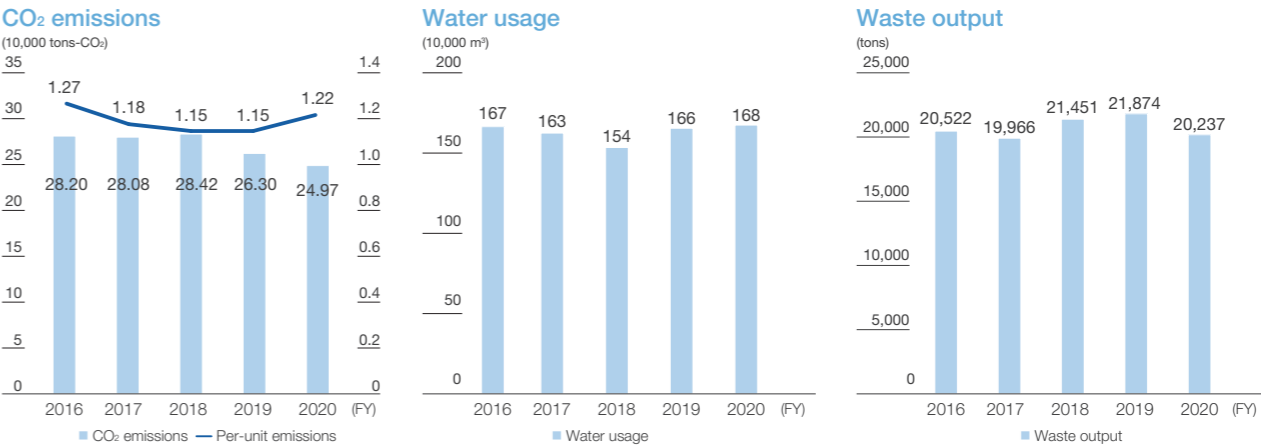
Other Eco Vision 2030 issues  ⇒ https://www.ngkntk.co.jp/english/sustainability/environmental/eco_vision.html

Results of Efforts to Achieve Global Eco Vision 2020

The Global Eco Vision 2020, which ended in FY2020, set forth four priority issues related to “natural resources,” “global warming,” “toxic, hazardous chemicals” and “key quality (development of environmentally friendly products).” We tackled these issues through business activities, creating platforms for education (awareness raising), compliance and open communication, and aimed to promote the sustainable development of our business as well as society at large.

As a result, we have largely achieved the Global Eco Vision 2020.

Major item	Minor item	Targets for FY2020	Looking back on the Global Eco Vision 2020
Global warming	Production	Reduce per-unit CO ₂ emissions by 15% relative to FY2015* *We revised the target upwardly on April 1, 2018.	Result: Reduced per-unit CO ₂ emissions by 6.1% relative to FY2015 Per-unit CO ₂ emissions improved and reduced by 12% as of FY2019 thanks to the effects of productivity improvements by Group companies that had newly commenced operations. However, per-unit emissions deteriorated in the first half of FY2020 due to production adjustments caused by COVID-19. This resulted in an eventual reduction of 6.1%.
	Logistics	Increase efficiency for logistics	Promoted efficient logistics by carrying out activities with a focus on streamlining our domestic logistics operations.
Depletion of resources	Waste	Reduce defective products to reduce waste	Waste intensity improved consistently through efforts to improve yield in Japan and reuse waste oil.
		Design products in consideration of waste reduction	
	Water	Use water more efficiently	Water consumption intensity improved consistently through process optimization in Japan.
	Raw materials	Design products in consideration of the saving of raw materials	Worked on reduction of raw materials input primarily through process improvement and streamlining as well as on environmentally friendly design.
Environmentally friendly products	—	Build an environment-friendly product certification system and expand the lineup of such products	Built a system to certify the Group’s environmentally friendly products “Nittoku Green Products” and evaluated three products to certify them as model cases.
Hazardous chemical substances	—	Ensure compliance with ELV, RoHS, REACH and other regulations	Established the chemical substances management working group and shared regulatory information, such as on RoHS and REACH, and responded to investigations. No products containing controlled substances were put on the market.
	—	Foster the replacement of substances of concern with substitutes	Fostered the replacement of substances of concern, such as phthalates, with substitutes.
	—	Totally discontinue the use of HCFCs	Completed the discontinuation of use of HCFCs at domestic production facilities in FY2020. The discontinuation at other domestic facilities is scheduled to complete in FY2022 and is under planning for overseas facilities.



Biodiversity conservation

Recognizing the conservation of biodiversity as a critical global challenge, NGK SPARK PLUG Group identifies it as a material environmental issue for us to address, along with global warming mitigation and resources recycling. Based on this view, we established the NGK SPARK PLUG Group Biodiversity Action Guidelines in April 2013. Using the guidelines as a guide, we are working to remain aware of the fact that our activities, particularly involving energy and resource usage, are inevitably causing impacts on biodiversity, and are taking appropriate measures to reduce such impacts throughout our business operations, in cooperation with business partners and external groups.

Responding to Climate Change

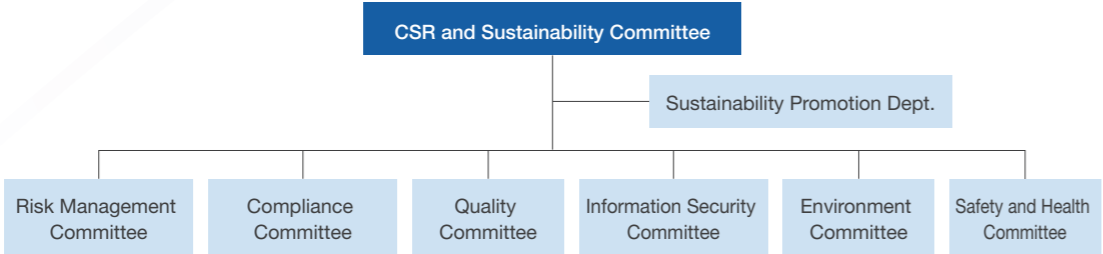
In July 2020, the NGK SPARK PLUG Group announced its support for the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Based on the TCFD recommendations, we disclose important information related to climate change as outlined below.



Governance

Our group is aware that climate change and other environmental issues are serious business issues. Our management direction related to climate change is reviewed and monitored at the CSR and Sustainability Committee chaired by the President, which is held twice a year with the attendance of all directors, including outside directors. For detailed activities, the Environmental Committee (twice a year), which is subordinated to the CSR and Sustainability Committee, checks progress towards the targets and confirms issues to be addressed in order to make continuous improvement. Furthermore, risks associated with climate change are assessed in light of company-wide risk management at the Risk Management Committee (twice a year).

Promotion system



Examples of what was discussed and determined in terms of climate change

- Endorsement of the TCFD recommendations (Corporate Management Committee in July 2020)
- Approval of the priority issue (materiality): “CO₂ emissions: 30% reduction from the FY2018 level by FY2030” (CSR and Sustainability Committee in March 2020)
- Approval of “Eco Vision 2030” (Environmental Committee in March 2021)
- Approval of “Aiming for carbon neutrality in 2050” (CSR and Sustainability Committee in March 2021)

Strategy (risks & opportunities)

Climate-related risks

With regard to climate-related risks, we examined the following risks according to the TCFD risk categories: risks related to the transition to a lower-carbon economy, which may emanate mainly in the course of a 2°C scenario; and risks related to the physical impacts of climate change, which may emanate under a 4°C scenario without achieving global targets for reducing CO₂ emissions. The three terms used below, “short term,” “medium term” and “long term,” have the following meanings:

Short term until around **2025** in line with the target year of our Medium-term Management Plan

Medium term until around **2030** in line with the target year of our Long-term Management Plan

Long term until around **2040** in line with the vision of our Long-term Management Plan

Main scenarios and projections used in the study
2°C scenario: IPCC RCP2.6, IEA ETP 2DS, etc.
4°C scenario: IPCC RCP8.5, IHS Markit Automotive “Mobility and Energy Future” service data, etc.

Risk item			Business impact (risk)	Assessment (impact)			Timing of the impact		
				Small	Medium	Large	Short term	Medium term	Long term
<div>2°C scenario</div> <div>Risks related to the transition to a lower-carbon economy</div>	Policy and legal	Carbon tax	● If a carbon tax is introduced, taxes levied on fuel will increase procurement costs, resulting in a rise in the costs of energy and raw materials.			●			
		Carbon border tax	● If a carbon border tax is introduced, taxes will be levied on products to be exported, resulting in the reduction in the cost competitiveness of the products.			●			
		Regulations on carbon emissions	● The achievement of GHG reduction targets will be required, resulting in increases in the costs of, for example, making capital investments and purchasing electricity generated from renewable energy sources.			●			
		Sale of gasoline-powered vehicles	● In countries that ban the sale of gasoline-powered vehicles, OEM demand will disappear, resulting in a decrease in sales.			●			
	Technology	Proliferation of energy-saving and renewable-energy technologies	● The introduction of new energy-saving and renewable-energy technologies will increase the cost related to, for example, capital investments.		●	●			
		Development of new technologies	● Expenditures on the research and development of new technologies will increase.			●			
	Market	Shift in customer preferences	● After the 2030s, the number of people who choose ZEVs even as used cars will increase, resulting in a decline in demand for spark plug replacement and eventually a decrease in sales. ● Products that emit less CO ₂ in their life cycle will be chosen, resulting in a decrease in the sales of conventional products.			●			
	Reputation	Shift in investor preferences	● Investors' opinions will turn against internal combustion engines, resulting in divestments.	●	●				
		Shifts in job-seekers' preferences	● Job seekers' opinions will turn against internal combustion engines. Accordingly, job seekers will not choose us as their place to work.	●	●				
<div>4°C scenario</div> <div>Risks related to the physical impacts of climate change</div>	Acute	Increased severity of extreme weather events	● Typhoons and other extreme weather events will cause damage to plants and other facilities, resulting in shutdown or a decrease in production. Furthermore, additional costs will be incurred to restore equipment. Non-life insurance premiums will also increase.	●	●				
	Chronic	Sea level rise	● Rising sea levels will increase the risk of flooding and storm surges. Plants and transport infrastructure located in coastal areas will be damaged and supply chains will be broken, resulting in the extra costs of addressing these problems.	●	●				
		Changes in precipitation patterns and variability in weather patterns	● Plants in areas facing severe water shortage will be forced to shut or slow down operations due to limitations on water usage, resulting in the cost of shifting production to other plants, increased transportation costs and the like.	●	●				
		Rising mean temperatures	● Employees who work in extreme heat will frequently get heat stroke. To reduce their increased physical burden, the cost of dealing with extreme heat and labor costs will increase.	●	●				

Climate-related opportunities

With regard to climate-related opportunities, we examined, according to the TCFD categories, opportunities for management reform to be accomplished through efforts to mitigate and adapt to climate change.

Aspect	Major opportunity
Resource efficiency	● The increasing adoption of new energy-saving and renewable-energy technologies will reduce energy costs.
Energy source	● The increased demand for hydrogen as a fuel exempt from carbon tax will provide new opportunities in the hydrogen energy market.
Products and services	● To conform to fuel efficiency regulations, demand for high value-added products will increase.
	● The hydrogen energy market is expected to grow due to mandatory reduction of GHG emissions. Increased demand for hydrogen technologies and SOFCs will provide business opportunities.
	● In disaster preparedness, local consumption of locally-produced energy (distributed power generation) will receive attention, resulting in increased demand for SOFCs.
Markets	● The development of new climate-related technologies that meet social needs will provide business opportunities.
Resilience	● In disaster preparedness, the continuous reinforcement of the BCM and BCP of our group, including our supply chain, will help enhance our resilience.

Responding to Climate Change

Business risks, opportunities and responses under the climate-related scenarios

To further clarify climate-related risks and opportunities, we examined business environments and responses by business type under both 2°C and 4°C scenarios.

As a result of our examination, no existential impact from physical risks has been identified. With regard to our business related to internal combustion engines, whose sales revenue makes up 80% of the total at present, we are facing a major change. On the other hand, geared toward the realization of a decarbonized society, hydrogen-related and other new needs and markets are expected to arise. Therefore, in the 2030 Long-term Management Plan “NITTOKU BX,” we take up “Environment & Energy” as one of the business fields to focus on. Toward 2040, we will push forward with a business portfolio transformation (40% ICE business, 60% non-ICE business).

Examined business	Product	Responses to future business risks and opportunities	Financial impact	Revenue target in our Long-term Management Plan
Automotive Components	Spark plugs, Glow plugs, Sensors	<ul style="list-style-type: none">Under the 2°C scenario, sales of internal combustion engine parts are expected to decline in the future due to stricter regulations on vehicles with internal combustion engines. On the other hand, opportunities will arise in the electric vehicle market and other new markets.Under a 4°C scenario, further energy conservation and toxic-gas-emission control will be required in terms of internal combustion engines. Therefore, we will take measures to improve the performance of internal combustion engine parts.	Impact on part of the revenue of 338.6 billion yen (FY2020)	450 billion yen (FY2029)
Fuel cell business	Fuel cells	<ul style="list-style-type: none">Under either a 2°C or 4°C scenario, demand for non-fossil energy sources is expected to grow. Therefore, we will continue to enhance our measures taken in the relevant markets.Under a 2°C scenario, the proliferation of hydrogen infrastructure is expected. Therefore, the market may grow at an increasing rate.	Impact on part of the revenue of 83.6 billion yen (FY2020)	300 billion yen (FY2029)
Other businesses	SPE, packages, oxygen concentrators, cutting tools, bearing balls, etc.	<ul style="list-style-type: none">Under either a 2°C or 4°C scenario, the impact on risks and opportunities is small.		

- For the Automotive Components, under the 2°C scenario, sales are expected to decline in the future due to stricter regulations. Therefore, a business portfolio transformation is required.
- For other business types, under either a 2°C or 4°C scenario, we will conduct business flexibly and strategically while keeping a close watch on market trends. Thus, we have high resilience in terms of both medium- and long-term perspectives.

2030 Long-term Management Plan “NITTOKU BX” ➡ P.32

Risk management

Conducting business globally in many fields, our group faces various risks and opportunities in each type of business. Therefore, we grasp and respond to risks and opportunities on a business company basis. We respond to climate-related risks and opportunities in the same way.

The Risk Management Committee conducts a risk assessment from a company-wide perspective in terms of whether or not the risk will have great impact on our business activities. A risk assessed as a key risk is considered a priority risk. For such a risk, a responsible department is assigned to check the status of measures against the risk.

Meanwhile, the CSR and Sustainability Committee checks key opportunities. The Committee incorporates, when necessary, these opportunities into our management strategy and priority issues (materiality).

Risk Management ➡ P.71

Metrics and targets

In the 2030 Long-term Management Plan “NITTOKU BX,” which was announced in FY2020, our group has set the goal: “CO₂ emissions: 30% reduction from the FY2018 level by FY2030.” ➡ P.35

Meanwhile, to enhance environmental conservation activities from a long-term perspective, we formulated Eco Vision 2030 in April 2021. It stipulates the achievement of carbon neutrality by 2050 as a long-term goal.

Furthermore, we are also working to reduce CO₂ emissions throughout the supply chain. We ask our business partners (suppliers) to set a target for reducing CO₂ emissions and work toward achieving the target. We also offer support for them as deemed appropriate.

For more information on Eco Vision 2030 and detailed environmental data, please visit our website.

Eco Vision 2030



https://www.ngkntk.co.jp/english/sustainability/environmental/eco_vision.html

Sustainability Data Book



<https://www.ngkntk.co.jp/resource/pdf/sustainability2021e.pdf>

Global Human Resources Management



Human Resource Policy

We acknowledge that employees are the most important management resources. In light of this, we respect the diversity and individuality of our employees and promote the cultivation of physically and mentally healthy human beings, striving to promote the further development of our group as a whole.

Action Guidelines

- We secure and foster human resources who help pass down our “Quality Products” and “Involvement by all” principles to the following generations. To this end, we provide learning opportunities and other programs to support the career development of all employees.
- We strive to nurture a corporate culture that ensures that people with different qualities can fully realize their own capabilities within our group.

Diversity and inclusion

We consider diversity and inclusion to be one of our most important management strategies as we believe that diversity and inclusion are essential for companies to attain sound growth and ensure happiness for all employees.

We acknowledge and accept different people regardless of their gender, age, disabilities or nationality as well as of their lifestyles or personality. Then, we utilize new values and ideas coming from an employee-friendly workplace that accepts such people by combining different “knowledge.”*

* Combining different “knowledge” means combining human resources with different attributes, values or ideas.

Efforts for gender equality (promoting empowerment of women)

Since 2013, as our first step toward diversity promotion, we have been putting effort in creating working environment across the company where women can truly thrive and play active roles. We are trying to change the mindset of both managers and female employees themselves, regarding the empowerment of women as a driver for the reform of our corporate culture.

For example, we implemented a training program to support female employees in developing their careers with higher motivation. In the program, these employees were paired with managers able to advise them as they sought to meet the challenge of fulfilling certain tasks with a higher level of difficulty than their routine assignments, thereby supporting the growth of the participating female employees.

We have also held lectures and training seminars for all managers so that they can deepen their understanding of diversity management. Moreover, across NGK SPARK PLUG and Group companies in Japan, the departmental heads led the formulation of action plans appropriate for their own departments, and the departments that excelled in implementing the plans received incentive awards. The action plans target measures for diversity in general, not limited to those for the empowerment of women. We are also working to expand our systems to provide workplaces where female employees can work with greater comfort.

In addition, as a positive action, we are providing special education to female employees who aim to become managers, including mentoring by executives.

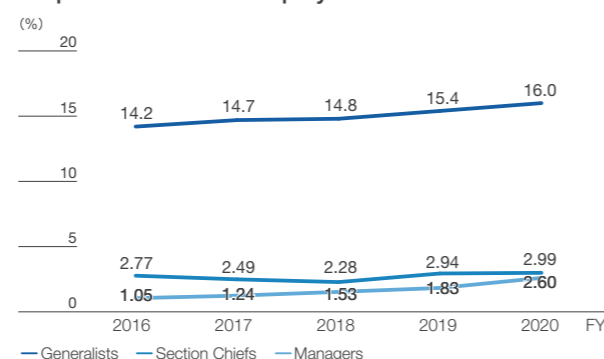
Going forward, we will implement more measures to increase the percentage of female managers.

External commendation for the empowerment of women

- Signed the Women's Empowerment Principles (WEPs)
- Granted Kurumin certification (for FY2020)
- Selected to be a Nadeshiko Brand company (for FY2018)
- Certified by Aichi Prefecture as an “Aichi Josei Kagayaki Company (Company Supporting Aichi Women's Career Success)” (for FY2018)
- Included in “New Diversity Management Selection 100” by the Ministry of Economy, Trade and Industry (for FY2017)
- Granted Eruboshi two-star certification based on the Act on Women's Participation and Advancement in the Workplace (for FY2016)
- Granted the 2015 Japan Productivity Center Incentive Award Empowerment Grand Prix for Activities by Women
- Received the 2014 Excellence Award, Nagoya City Accreditation and Commendation System for Companies that Promoted Increased Roles for Women



Proportion of female employees



Work style reforms

To improve productivity and develop self-disciplined human resources, we have formulated Work Style Reform Declaration based on two pillars: promoting comfortable remote work and creating new value with tools responding to change.

We are working to put in place a remote access environment and introduce a telephone extension system even available for employees working remotely or on business trips to realize the work style reforms.

We are also promoting the creation of working environment where employees can more easily work remotely by eliminating a requirement for attendance (clock-in time), offering a remote work allowance, putting in place satellite offices and sharing information on ingenious approaches for remote work taken at workplaces.

We will review the modality of organization as well as our business management through the promotion of remote work, and create self-disciplined human resources who are not tied down to tradition and capable of creating new value.

Work Style Reform Declaration

We recommend “diversified work styles” in order to create an “organization comprised of passionate individuals working together” of NITTOKU BX.

- Promote comfortable remote work to employees ⇒ Create an environment with a goal of a remote work rate of 70% or more.
- Prepare tools that respond to change and create new value ⇒ To that end, we will invest in digital solutions.

And we want you to find the best for yourself from the many options and become a “self-disciplined human resource who can continue to add value.”

The NGK SPARK PLUG Group respects each person's values and aspirations.

Providing workplaces where employees can continue to exert their abilities

The growth of employees leads to the sustainable growth of the company. Based on this recognition, we are working to provide employees with workplaces where they can choose the right career for themselves, enhance their expertise and skills, and continue to make a meaningful contribution.

For example, we launched the Platinum Project targeting employees who are aged 60 and above, also known as the “platinum generation,” to ensure that employees who wish to remain in the workforce after reaching the retirement age can continue to use their skills.

In the Platinum Project, we hold various seminars and provide information through an internal e-mail newsletter.

■ Establishment of a career consultation helpline

Through this contact, employees who have a national qualification for career consulting respond to calls for advice about career vision, work motivation, life events, etc. The career consultants do not provide solutions but instead help the questioners find answers for themselves.

■ Promoting the use of “My Career”

As a tool to help employees to look back on their past, set their future vision and commit themselves to achieving the vision, we use “My Career.” Employees annually input information about their career to date and their future aspirations into “My Career,” which their managers then refer to in interviewing them to support their career development.

■ Diversification of the work styles of the platinum generation

Some employees in the platinum generation are eager to work but do not have confidence in their physical stamina. In response, at some of our plants we have begun to exempt such employees from the night shift upon request, with other employees working at night instead.

Putting focus on the employment of new graduates with foreign nationality

We are promoting the employment of foreign nationals in our effort to adapt to the rapid progress of globalization and encourage diverse talent to play active roles.

For new graduates, we have been employing at least three foreign nationals every year, recently with a special focus on the employment of foreign nationals who have studied the Japanese language at overseas universities and want to work in Japan, in addition to those who have studied in Japan.

In order to help newly-hired foreign national employees smoothly adapt to life in Japan, we offer them various supports, including a help site Nittokupedia created by their senior colleagues, a work buddy program to work with Japanese peers, teaching of Japanese language and cross-cultural training.

With non-Japanese new graduates and mid-career employees, including both engineers and office personnel, demonstrating their abilities at our workplaces, we can increase our diversity awareness across the company.

Continuous education and training activities

Based on the Four Shared Values of The Nittoku Way (Shisei-Shinjitsu, Dokuritsu-Jiei, Shikai-Keitei and Soshi-Kantetsu) and on the “Quality Products” and “Involvement by all” principles, we conduct education and training activities in a planned manner to continuously develop employees who can boldly deal with challenging internal and external changes as well as those with high levels of expertise.

Our education and training activities consist mainly of OJT (on-the-job training), through which employees can acquire technologies and knowledge through their hands-on work. We also offer OFF-JT (off-the-job training), providing employees with new technologies, knowledge and skills outside their respective workplaces. We have a wide range of OFF-JT programs that include training by organizational level and role to provide necessary knowledge and skills, product quality education, environment and safety & health education, manufacturing education, education in global business, and career development support.

Due to the spread of COVID-19, we were forced to cancel some training programs in FY2020. Even so, we took thorough measures to prevent infection, for example, switching the training style from group training to online training, and as a result, a total of 3,706 employees received OFF-JT.

Efforts to maintain and improve employees' health

NGK SPARK PLUG regards the health of employees as one of its important managerial resources for sustainable corporate growth and is fostering the health of individual employees for “health and productivity management.” In December 2017, we made a declaration on health and productivity management as the entire NGK SPARK PLUG Group and are implementing preventive and other measures against lifestyle-related diseases, mental disorders and passive smoking to proactively support the health of employees.



Declaration on health and productivity management

- I. The NGK SPARK PLUG Group declares that we will support the health of each and every employee and promote *Kenkokeiei* (health and productivity management) by viewing the health of our employees as one of the most important management resources in order to realize sustainable growth.
- II. We will respect the diversity and individuality of each employee and promote the creation of a workplace in which each employee can fully demonstrate his or her abilities as well as work energetically.
- III. We will work together with the labor and health insurance unions to actively engage in health promotion activities that include employees' families from a long-term perspective.

Takeshi Kawai
Representative Director President
Chief Operating Officer

* *Kenkokeiei* is a registered trademark of NPO Kenkokeiei.

■ Prevention of lifestyle-related diseases

To help employees maintain and promote their health, we task industrial physicians, medical doctors and nurses with following up with employees who have been found to have problems as a result of undergoing health checkups. Such employees are also referred to appropriate medical institutions as needed.

■ Enhancing mental healthcare

We carry out stress checks on employees to prevent them from suffering mental disorders due to stress. Based on the results, we analyze the influence work environments have on employees in our effort to provide them with safe and comfortable workplaces.

■ Prevention of passive smoking

NGK SPARK PLUG has declared that it will totally ban smoking on the premises of all its sites in and after April 2023. Toward this goal we have been gradually limiting smoking hours as well as giving support to those who want to quit smoking, such as by referring them to smoking cessation clinics.

Development and management of managerial human resources

As we expanded our business globally, in 2016, we started a program to find and develop the next generation of global managerial human resources, targeting all Group companies.

This program is intended to facilitate the employment and promotion of candidates regardless of nationality and to provide them with opportunities and environments that allow them to demonstrate their abilities. It was named the “HAGI Program” after Hagi City in Yamaguchi Prefecture, where the Shoka Sonjuku school developed diverse human resources at the end of the Edo period. Chairman of the Board Shinichi Odo serves as the head of the program. Under the program, seminars have been held on a continuous basis to provide employees with opportunities to learn together with a focus on gaining a big picture view encompassing the entire company. We are thereby developing leaders with the will and sense of mission required to take the NGK SPARK PLUG Group into the future.

Targeting human resources in Japan, we run Nittoku Business School classes for employees who are almost qualified to participate in the HAGI Program. For these classes we have prepared a curriculum that helps participants develop logical thinking and acquire knowledge and skills regarding management strategies, marketing and presentations. It also includes case studies based on actual examples and is intended to help participants to develop the spirit, techniques and physical stamina required of leaders.

Employees who have completed the HAGI Program and the Nittoku Business School curriculum have already been making contributions in core positions within the Group.

We have also established a selective human resources development program for each of North America, Europe, Asia and other regions and implement the program four times a year for the local development of business leaders.

Moreover, in order to visualize the personal histories and skills of employees who are candidates to become business leaders, we have collected information about NGK SPARK PLUG's managers and executives of overseas Group companies for input into our human resource databank, which is used in discussions by the Human Resources Committee. This committee is composed of the members of the management team and has been meeting monthly since FY2018. At the meeting the members discuss personnel affairs regarding core positions and work to place the right person in the right job for total optimization.

Development of managers

For the development of managers, we provide them with opportunities to review their past management approaches and observe the situation of their respective workplaces in an objective manner.

■ Implementation of a 360-degree survey

We implemented a 360-degree survey targeting departmental managers and those in higher positions in FY2018, and expanded the survey target to include sectional managers and those in higher positions in FY2020.

In the survey, we examine leadership qualities of the respondents, including progressiveness, intelligence and sense of responsibility, as well as negative attributes that might hinder them from demonstrating their leadership, such as being avoidant. The survey results reveal the gaps between what the surveyed individuals think about themselves and what others think about them. We give feedback to the respondents to help them become aware of the importance of “observing” themselves.

■ Use of an indicator to visualize workplace engagement

Along with the “one-on-one meeting,” which we introduced on a trial basis in FY2019 to foster dialogue between managers and their subordinates for the development of workers able to work autonomously, we have also introduced a quantitative indicator as a tool to visualize workplace engagement. This engagement indicator numerically shows the level of employees' eagerness to contribute to their organizations and jobs, and is designed for use by line managers to check the management level of their workplaces.

Employee satisfaction survey

In order to grasp the Group's situation and challenges and make improvements, we have been conducting an employee satisfaction survey targeting employees of NGK SPARK PLUG and Group companies in Japan.

For the FY2020 survey, the response rate and satisfaction rate dropped from the previous fiscal year to 88.0% and 46.2%, respectively. The survey results of each individual department were fed back to the departmental head. Each departmental head is working on improvement based on the understanding of the department's situation and challenges indicated by the results. The personnel department is also working to offer a much better working environment for employees by identifying issues to be resolved through interviews with young employees at each workplace.

Respect for Human Rights



Human Rights Policy

Based on the Universal Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, the UN Global Compact, and the UN Guiding Principles on Business and Human Rights, we understand the need to respect the human rights of all people who are affected by our business activities and will make our best effort to protect the dignity of these people.

Action Guidelines

- We do not discriminate against people or infringe upon their human rights based on race, ethnicity, religion, nationality, place of birth, social status, belief, age, disabilities, physical features, gender, sexual orientation and others.
- We do not use child labor or forced labor.
- We do not engage in harassment including sexual harassment and power abuse.
- We identify the negative impact that we could have on human rights through our business activities and try to prevent or reduce such impact.
- In the event of direct or indirect violation of human rights, we protect the victims through appropriate investigations and responses.
- We promote education and enlightenment so that this policy is understood and implemented throughout our business activities.

Efforts to protect human rights

In 2012 we issued the Compliance Guidebook to set out our guidelines on respecting human rights and prohibition of harassment and have since been distributing copies to employees and others to educate them about compliance. Subsequently, in 2016, we signed the UN Global Compact and since then we have been creating more opportunities to provide education and information on human rights to our employees to raise their awareness. We have recently increased our focus on enlightenment about gender equality and LGBT-related issues through our human rights-related training and internal e-mail newsletter, and are also monitoring the occurrence of racial problems around the world.

Harassment at the workplace can include harassment related to pregnancy, childbirth, childcare leave and long-term care leave, bullying, and mobbing, as well as sexual harassment including that directed against people of the same gender and in relation to sexual orientation or identity. We have set measures to prevent these types of harassment and the rules to be followed by all employees and others and are working for prevention based on labor-management cooperation.

We offer consultation services to people facing harassment through the contact point jointly established by labor and management at each of our plants and via the Corporate Ethics Helpline. We also conduct a compliance survey in order to grasp the situation at our workplaces. The details of consultations held and the issues reported through the contacts are promptly examined and the facts checked by the Anti-Harassment Committee, which then takes corrective action and gives instructions as needed.

Moreover, to ensure respect for human rights across our supply chain, we ask suppliers to prohibit child labor, forced labor, harassment and discrimination and to make appropriate responses to conflict minerals through our CSR and Sustainability Procurement Guidelines.

Corporate Ethics Helpline, Anti-Harassment Committee  ⇒ P.73

NGK SPARK PLUG Group participated in the UN Global Compact in November 2016.

The Global Compact sets out the voluntary action principles to be followed by companies. This initiative was proposed by Kofi Annan, the then secretary-general of the United Nations, in 1999 to address various issues facing the world, such as global warming, environmental problems and disparities in society. It was officially launched at the UN Headquarters in July 2000. In order to contribute to creating a sustainable society, the Group will conduct a range of activities as a good corporate citizen, supporting the Global Compact's 10 principles set in the four areas of "human rights," "labor," "environment" and "anti-corruption."

Takeshi Kawai
Representative Director President
Chief Operating Officer



Proper procurement



Procurement Policy

We aim to realize globally optimal procurement based on our "Quality Products" principle. To this end, we focus on strengthening cooperation with suppliers and promoting our CSR efforts throughout our supply chain system, while at the same time striving to carry out proper purchasing transactions when procuring materials and parts, based on the following guidelines.

Action Guidelines

- We conduct rational transactions based on fair, transparent, and open competition.
- We comply with procurement-related laws and regulations and foster responsible procurement. We select suppliers based on comprehensive assessment of product quality, technology, prices, deliveries, CSR initiatives, and efforts to continuously make improvements.
- Aiming to procure more eco-friendly products, we strive to promote our green supplier system.
- We enhance mutual trust with our suppliers, who are good partners for us, and strive to realize mutual development.

Promoting responsible procurement

Taking recent social and environmental issues related to supply chain seriously, we foster the responsible procurement of materials and others, giving due consideration to human rights and the environment, in addition to complying with the related laws and regulations including the Subcontract Act.

■ Promoting CSR and sustainability-oriented procurement

We have issued our CSR and Sustainability Procurement Guidelines and are distributing copies to our suppliers.

We are requesting suppliers to survey the status of implementation with a checklist every two years, providing feedback on the evaluation results. In the survey implemented in FY2019, 98% of the targeted suppliers responded to the survey. For some suppliers, we requested to improve identified issues through follow-up interviews with their management, etc.

■ Ensuring green procurement

In order to reduce our environmental impact throughout the supply chain, we issued the Green Procurement Guidelines to request that suppliers build environmental management

systems and ensure the strict management of environmentally hazardous substances.

■ Measures against conflict minerals

There are concerns that some mineral resources mined in the Democratic Republic of the Congo and surrounding countries provide a source of funding to local armed forces, thereby promoting conflicts and infringements of human rights. This issue of conflict minerals is recognized as a serious social issue in relation to the procurement of resources and materials.

Accordingly, we annually conduct surveys on the use of conflict minerals targeting the upstream section of our supply chain and avoid the use of any with related risks.

Activities to support suppliers

By conducting activities to help suppliers enhance their business foundation and engaging in follow-up activities after our regular evaluation of them, we make joint efforts for improvement with suppliers, thereby building greater trust.

1 Activities to help suppliers enhance their business foundation (through classroom seminars and practical seminars held on-site)

For suppliers, we organize classroom seminars on themes such as process improvement, QC, occupational health & safety and the environment and also hold practical seminars at their own manufacturing facilities to foster improvements. We have been conducting these activities to help suppliers develop their workers in order to build a more robust business foundation. In FY2020, we held a total of 24 such seminars including the introduction of online seminars. We are thus implementing our "Quality Products" policy and improving our manufacturing abilities in cooperation with suppliers.

2 Follow-up activities conducted after the regular evaluation of suppliers

We annually conduct evaluation on some suppliers and inform them of the results. For suppliers that require follow-up activities, we visit them to provide targeted advice and inspect their sites in order to work with them in thinking about how to rectify any weak points. We also commend suppliers for excellent results.

Measures against COVID-19

We are implementing measures against COVID-19, which is spreading globally, giving first priority to the safety and health of NGK SPARK PLUG Group employees and all those related to the Group.

Global measures

NGK SPARK PLUG Group has bases across the world, and the situation concerning the spread of COVID-19 and related restrictions imposed on the public, such as lockdowns, differ by country and region. Accordingly, we give priority to implementing measures in accordance with the local situation speedily and appropriately at each of our bases. The local operational situation and status of infection is reported by each of the bases to the head office, which provides support to them as necessary.

Measures taken in Japan to prevent the spread of infection

Following the spread of infection in Japan, in January 2020, we launched our anti-novel COVID-19 headquarters, manned by the President, who serves as the head of the HQ, as well as the Executive Officer of the Corporate Strategy Group and the Executive Officer of the Corporate Administration Group. Since then we have implemented a range of measures to control the infection. Placing safety as the top priority, we will continue our business activities toward the solution of social issues while implementing necessary measures in accordance with the guidelines issued by the government and local municipalities.

Work system

Strongly encouraging employees to work from home

While we have promoted work from home or remote work as part of our work style reforms since before the spread of the infection, we now strongly encourage employees to work from home in view of preventing the spread of the infection. For workplaces where remote work can be applied, we have taken measures to achieve the remote work ratio of 70%. We have also striven to lay the groundwork for work from home or remote work including putting in place a remote access environment, the elimination of requirements for employees' attendance in offices when using remote work options, and the introduction of work from home allowance.

Fostering staggered commuting

We are fostering staggered commuting so that employees can avoid crowds when commuting.

Allowing employees to drive to their workplaces on a temporary basis

In order to prevent the risk of employees becoming infected while commuting via public transportation, we allowed them to drive to their workplaces on a temporary basis.

Health management

Disinfection, ventilation and mask-wearing

We encourage employees to wash their hands and use disinfectants frequently and increase ventilation. We also strongly recommend that they wear masks.

Physical condition management

We encourage employees to manage their physical condition, paying attention to their diet, exercise, rest, and sleep.

Measures for employees returning to Japan from overseas

We respond appropriately in line with the government's policies and allow returnees to enter our premises only after we confirm that their health observation results indicate no problems and the occupational physician gives permission for their entry.

Business operations, business trips and meetings

Prohibiting business trips in principle

We prohibit both domestic and international business trips in principle.

Holding meetings and training seminars online in principle

In order to avoid the so-called three Cs (closed spaces, crowded places, and close-contact settings), we encourage employees to hold meetings and training seminars online and are using online tools also for meetings with those outside the company.

Establishment of satellite offices (decentralization of workplaces)

We effectively utilize satellite offices to avoid the three Cs in workplaces.

Social distancing at the canteen

We increased the number of shifts at the canteen and decreased the number of people working on the same shift. We have also reduced the number of seats available at the canteen and ensure that employees will not be seated face to face. We also ask employees to refrain from talking when they are eating at the canteen.

Intellectual Property

Our policy for intellectual property

We appropriately create, protect, manage, and utilize intellectual property in close coordination with related departments, internal companies, and Group companies, under our policy to honor intellectual property including patents, designs, trademarks, copyrights, and trade secrets.

- Create intellectual property, aiming to further improve our corporate value.
- Honor intellectual property rights of third parties.
- Comply with laws and regulations regarding intellectual property in individual countries.

Intellectual property activities according to the management strategy outlined in the 2030 Long-term Management Plan “NITTOKU BX”

We have formulated the medium-term management tasks regarding intellectual property, and are promoting various measures for the tasks, positioning intellectual property activities as an important element in our management strategy.

1. Protect new technologies and inventions from the development stage to the mass-production stage, and create intellectual property.
2. Search patents utilizing AI, and deploy high-value-added patent information within a company.
3. Negotiate and manage complicated contract clauses regarding intellectual property based on legal knowledge.
4. Protect our brands, and detect and eliminate counterfeit goods, in coordination with customs offices and government agencies of the countries throughout the world.
5. Develop regulations and management rules which comply with laws and regulations of individual countries.
6. Lay the groundwork for the promotion of efficient intellectual property strategy, such as response to DX, compliance with working styles that meet the needs of the times, and remote work.

Incentive system for inventions at work

We started a new incentive system for inventions at work in April 2021. We have expanded the incentive system to further accelerate the creation of superior inventions by our employees, with improving incentives for inventors of patents when contribution to our business is recognized in the patents; the patents are with innovative content; or the patents will be applied to our new products.

Promotion of education regarding intellectual property

We implement a wide range of education regarding intellectual property for employees including engineers who may be involved in intellectual property rights; new employees; employees in managerial posts and executives; and employees of affiliates in and outside Japan.

- **Basic course in intellectual property and introduction to research (Level 1):** For those who are in the stage of being only interested in developing their technologies
- **Intermediate course in intellectual property and research mapping (Level 2):** For those who are advanced to the stage of recognizing the needs to protect technologies they have developed
- **Advanced course in intellectual property (Level 3):** For those who are in the stage of being interested in the success as a business
- **Training on trademarks:** Learn the treatment of names and logos used in business in relation to trademarks
- **Intellectual property seminars:** Invite lecturers from other companies, and learn about intellectual property activities of these companies. (Integration of management strategy and intellectual property strategy)

Risk Management



Risk Management Policy

We adapt from a global viewpoint to changes in the management environment surrounding our group and to the diversification of risks and will foster risk management to reduce or avoid the loss of managerial resources, thereby improving our corporate value.

Action Guidelines

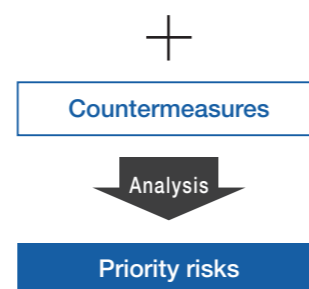
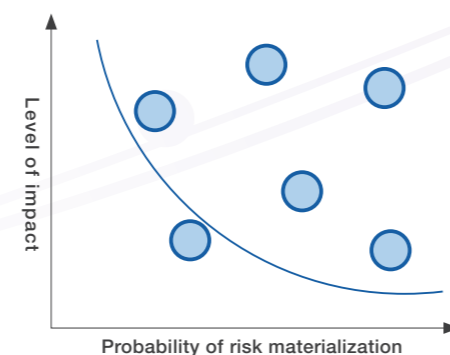
- We identify the risks that might hamper the achievement of our management targets from a global and long-term viewpoint and strive to prevent the actualization of these risks in a planned and organization-based manner.
- In the event that such a risk materializes, we strive to minimize the impact on our stakeholders, maintain their trust and prevent the recurrence of similar incidents.

Promotion system

For risk management, we have appointed the President as “Chief Administrator” and the Director in charge of the Business Management as “Promotion Manager,” and are making efforts to improve and operate our risk management system that integrates the risk management to prevent risks and the crisis management to handle risks when they become obvious.

Company-wide risk management

In order to identify and limit those risks that could have serious impacts on our business continuity and on the achievement of our targets, we follow the risk management process as described below. We also evaluate the ESG-related risks including those concerning climate change and human rights.



Response in the event of crisis

When risks become obvious and may have a serious impact on our business continuity, we will respond by swiftly setting up the risk management team.

Business Continuity Management (BCM)

In preparation against possible earthquakes and other large-scale disasters, we are conducting BCM activities. Specifically, we are making business continuity plans and working on disaster control and reduction in a group-wide basis to minimize damage in the event of a large-scale disaster and resume production as soon as possible if operation is suspended, thereby helping customers maintain their supply chains.

We are also implementing measures against infectious diseases. To deal with the COVID-19 infection, we have expanded our work at home system and reviewed work shifts in line with the internal guidelines, thereby continuing to operate our business while preventing infection. We will verify the results to make more preparations against infectious diseases.

Measures against COVID-19 ⇒ P.69

■ Major initiatives related to business continuity plans (BCPs)

We have made a BCP for each of our departments. Each plan defines the initial response to be made and recovery procedures to be followed in case of emergency.

IT departments

To ensure our business continuity, we are continuously working to minimize the damage that might be caused to our IT systems in the event of a disaster and speed up the time required for recovery.

To minimize such damage, we have been gradually transferring operating environment established for our business system to a highly robust data center where we have transferred our Internet platform. Also, to shorten the recovery time, we are shifting to cloud backups so that we can recover and restart the systems by using undamaged backups.

We also plan to integrate the IT systems of our domestic Group companies by using an integrated server infrastructure so that all companies can take BCP measures on the same level.

Moreover, we are regularly providing more specific and practical education and training so that employees can make better responses in case of a disaster.

Procurement departments

We are fostering BCP measures for key procurement items such as materials and parts, including purchasing from multiple suppliers. In view of the fact that we need a range of materials and parts to manufacture our products, we have built up a system to implement BCP measures across the supply chain in cooperation with suppliers.

Business departments

In the BCP made for each department, we set a limit for the recovery time required for our major products. We also formulate action plans for the recovery teams to achieve early recovery.

Buildings and facilities departments

We conduct earthquake countermeasures for our buildings and facilities, in anticipation of a Nankai Trough Megathrust Earthquake. We are promoting training for diagnose of buildings at each site, with developing a checklist for swift diagnosis of buildings on the spot in case of earthquakes. After the diagnosis, recovery teams implement recovery activities according to the set priorities, after inspecting infrastructure, supplemental facilities of buildings, and other facilities.

BCP training

We conduct BCP training every December for the purpose of resuming business as soon as possible in the event of a disaster. BCP training is designed to improve the effectiveness of BCPs by formulating recovery plans for the major businesses, organizing recovery teams and implementing recovery activities. To prepare for a situation where our internal network is unavailable, we conduct training on communicating with the emergency headquarters using IP wireless equipment and sharing information via the Internet.



Establishment of emergency headquarters for recovery of business departments



Training for facility inspection

■ Major disaster control and disaster reduction activities

Implementation of the joint disaster prevention drill

In anticipation of a Nankai Trough Megathrust Earthquake, we are implementing the company-wide Disaster Prevention Drill as a joint drill for domestic Group companies. The drill includes training for evacuation, confirmation of employees' safety, incipient stage firefighting, and inspection of damage caused to facilities and equipment and is designed for early recovery in the event of an emergency.

Measures against storm and flood damage

Recently, climate change has been causing more extensive storm and flood damage. In response we annually check the hazard maps of the areas where our sites are located and implement measures as necessary.

Raising employees' awareness of disaster prevention

In order to enhance the disaster response capabilities of our employees and foster our business continuity, we distribute to employees copies of the booklet titled “NGK Spark Plug Disaster Prevention,” which shows the action guidelines to be followed in the event of a disaster.



Training for emergency aid



Training for evacuation

Compliance



Compliance Policy

With recognition that our company is a member of society, we enhance corporate ethics and understand the spirit and meaning of laws, company regulations, international rules, and social norms in order to appropriately meet social demand and become a company trusted by the international community.

Action Guidelines

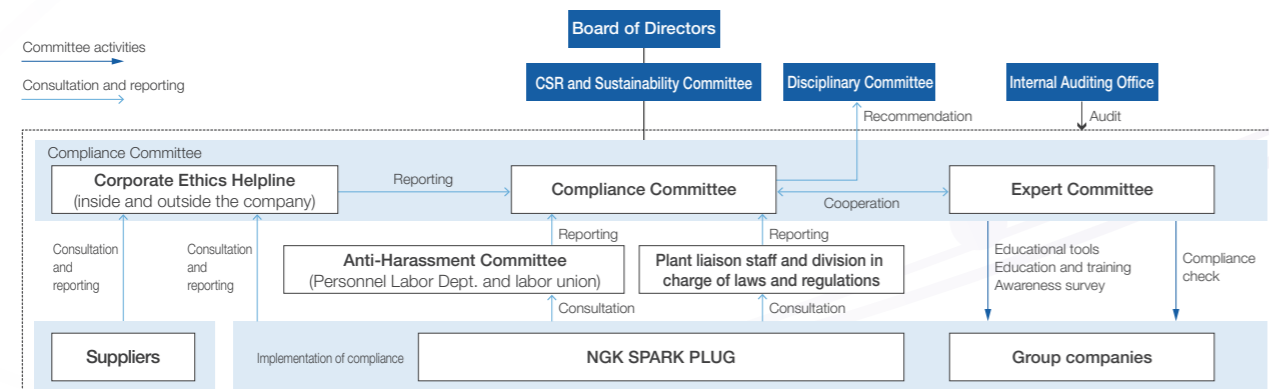
- We not only comply with laws and regulations, but also act in good faith with common sense and responsibility as a member of society.
- We regularly educate and raise the awareness of all our employees to impart a high level of ethics and correct knowledge, with which they can act voluntarily to prevent a violation.
- Should a violation occur, we will promptly investigate the causes and take remedial actions. We will strive to take appropriate countermeasures to prevent recurrence and fulfill our accountability.

Promotion system

In order to enhance compliance, we established the Compliance Committee chaired by the Representative Director.

This committee conducts activities to prevent noncompliance issues. It will also give instructions about the measures to be taken in the event of a noncompliance incident and monitor the implementation of the measures. Moreover, it provides compliance education and conducts awareness-raising activities targeting both executives and employees while also providing related information and raising employees' compliance awareness through designated compliance facilitators at each department.

Compliance promotion system



Prevention of corruption

We are striving to prevent corruption in line with the statement made in our Corporate Code of Conduct: "We shall promote fair, transparent, free competition and sound trade. We shall also ensure that our relationships and contacts with government agencies and political bodies are of a sound and proper nature."

We issued the Compliance Guidebook in 2012, in which we set the rules concerning the prevention of corruption, including the prohibition of involvement in political contributions or bribery, and made employees aware of these rules. Subsequently, in 2013, we issued the Conduct Guidelines Concerning the Giving and Receiving of Gifts and Entertainment to raise employees' awareness of the issues and prevent them from becoming involved in misconduct. Further, in 2016, we signed the UN Global Compact, openly reaffirming our commitment to preventing corruption.

We are thus working to prevent corruption in line with the guidelines and others. We respond to any violations of the anti-corruption rules mainly through the Compliance Committee. Our overseas Group companies are also taking action to prevent corruption, especially to prohibit and prevent bribery of civil servants, including providing employees with related education and conducting surveys on local laws. We also request that suppliers refrain from acts of bribery through our CSR and Sustainability Procurement Guidelines. In FY2020, there were no violations of related laws and regulations across the Group.

Activities concerning competition laws

Taking seriously our violation of the Anti-Monopoly Act of Japan, as uncovered in FY2014, we have established a system to promote compliance with competition laws and to ensure legal compliance both within and outside the country.

In Japan, we formulated the Anti-Monopoly Act Compliance Manual and distributed copies to employees while holding a range of related seminars internally for both executives and employees. Moreover, we have introduced an in-house e-mail inspection system to monitor and prevent recurring violations of the competition law.

Our overseas Group companies are required to report the activity status regarding compliance with competition laws to NGK SPARK PLUG on a regular basis. In addition, the company's teams in charge of affairs concerning competition laws and compliance visit the Group companies, where they audit the companies' compliance systems and implementation status and check whether local employees are sufficiently aware of the related rules. Seminars featuring guest speakers are also held.

We will continue our education and auditing activities to ensure compliance with competition laws both in Japan and abroad.

Export control

In order to ensure compliance under the multilateral export control regime (MECR) established for international peace and safety, we have established related internal rules and an in-house export control organization. We also conduct awareness-raising and inspection activities targeting departments engaged in export control, thereby ensuring and enhancing our export control in compliance with the related laws and regulations.

Compliance education and awareness raising

To raise employees' awareness and knowledge regarding compliance, we are continuing to educate them by using the Compliance Guidebook, which summarizes the rules concerning companies and society, and the Compliance Newsletter, which provides specific examples of compliance issues that could arise in our daily operations, in addition to holding level-specific and theme-specific training.

Moreover, in order to check employees' level of understanding about the corporate rules and systems and to examine the corporate culture and identify compliance risks, we conduct a questionnaire survey on compliance targeting employees and then give feedback to their workplaces to foster improvements.

Corporate Ethics Helpline

We have established the Corporate Ethics Helpline as an internal reporting system available to employees and suppliers seeking consultation and making reports regarding compliance. We have worked to improve user convenience by establishing channels not only inside the company but also via an external expert service provider and enabling employees and suppliers to seek consultation and make reports also outside work hours and on holidays. This service can be used anonymously.

Regarding consultations and reports received, facts are investigated with discretion so that the reporting employee or supplier is neither identified nor feels uncomfortable, and if problems are confirmed, they are dealt with promptly.

In FY2020, there were 63 consultations and reports, including those from employees of Group companies and those related to labor affairs and internal regulations, and we promptly took corrective actions for the identified problems.

We are continuously working to make the helpline service widely known by measures such as introducing it in training, putting up related posters and distributing carrying cards describing the service.

We have also created a system for consultations and reports at Group companies outside Japan, establishing channels at respective companies.

Anti-Harassment Committee

Labor and management are cooperating to prevent all kinds of harassment in their effort to protect the human rights of employees. The Anti-Harassment Committee closely examines and verifies reports and consultations received by the harassment consultation desks set up in each of the factories and provides guidance for correction as necessary. The details of this committee's activities are reported to the Compliance Committee.

Information Security

Information Security Policy

We regard all of our own information assets as one of our management resources. Through the proper protection and effective use of our information assets, we pursue healthy maintenance and development of our business.

Action Guidelines

- We establish rules that clearly define the system and responsibilities for the protection and management of all information assets including the information we keep for our customers, the know-how and intellectual properties owned by our group, and personal information.
- We comply with laws, ordinances, and regulations regarding information security.
- We educate all executives and employees who handle information assets about the importance of information security, and about specific items to be observed.
- We continuously update the information infrastructure for the maintenance and improvement of the confidentiality, integrity, and availability of all information assets.
- We promote measures to prevent accidents in order to address the risks of information leakages associated with the continuous advancement and sophistication of information technology. Should an accident occur, we will strive to minimize the damage and take preventive measures against recurrence.

Promotion system

The director in charge of the Information System Dept. serves as the Chief Administrator to ensure information security. We also have our Information Security Committee chaired by the Chief Administrator with an eye to increasing the effectiveness of our information security management and reducing security risks regarding the NGK SPARK PLUG Group's information assets through the concerted effort of the management team and on-site workers. We are fostering appropriate measures by checking how information security activities are conducted across the Group.

For confidentiality management, we have a working group on confidentiality management that reports to the Risk Management Committee. The working group is tasked with identifying and reducing the risks related to the management of confidential information and protection of personal information.

Information security management system

We are establishing an information security management system. In 2020, we obtained accreditation for the Trusted Information Security Assessment Exchange (TISAX), the assessment standard of information security for the supply chain of the automobile industry.

Security measures

We are continuously implementing measures to deal with the types of information security risks that pose a threat to companies and other organizations.

In response to the recent increase of damage caused by cyberattacks, we have established a Computer Security Incident Response Team (CSIRT).

We are thus working to improve the level and sophistication of our information security with a focus on both preventive and follow-up measures.

Confidentiality management

The working group on confidentiality management annually inspects the company-wide status of confidentiality management based on the confidentiality management rules set by the company. The inspection includes self-inspection by each department and mutual inspection between departments. The inspection items are reviewed according to the broader progress of informatization in society for the enhancement of the checking function.

Protection of personal information

As exemplified by the General Data Protection Regulation (GDPR) enforced in Europe, measures to protect personal information have been enhanced globally. In response, the NGK SPARK PLUG Group has set a range of internal rules to appropriately protect, manage and handle the personal information of its customers and employees.

Stakeholder Engagement

Communication with stakeholders

To deepen mutual understanding, we are fostering dialogue with our stakeholders through various opportunities.

Stakeholder	Communication	Major activities in FY2020	Frequency & no. of participants per year
Shareholders and investors	We disclose information in compliance with the law and also disclose information promptly via the media and at our website.	● Organization of the ordinary general meeting of shareholders	Jun.
		● Dialogue with institutional investors and securities analysts	197 times
		● Conference call for institutional investors and securities analysts	Four times (242 people in total)
		● Organization of briefings on our technologies for institutional investors and securities analysts	Cancelled due to COVID-19
		● Organization of briefings on the company for personal investors	Twice (411 people in total)
		● Publication of the newsletters for shareholders	Once
		● Publication of an annual integrated report	Oct.
		● Provision of information via the website	From time to time
Customers	We offer information meaningful to customers at our website and through exhibitions so that they can purchase and use our products and services with peace of mind.	● Communication through sales activities	From time to time
		● Provision of information via the website (on products, events, etc.)	From time to time
		● Explanation about products and technologies at exhibitions	From time to time
		● Communication at venues of events, such as racing events	From time to time
Suppliers	We are working to build relationships of trust with suppliers as their sound partner and achieve growth together. To this end we conduct activities across the supply chain, such as holding briefing sessions on our corporate policies.	● Communication through daily procurement activities	From time to time
		● Organization of briefings on the corporate principles	Jun. (held online)
		● Organization of seminars on practical issues	24 seminars
Local communities	We respect the local culture and customs at each of our bases located across the world and work for smooth communication with local communities. We also participate in various social contribution activities to help create a comfortable society as a corporate citizen.	● Communication through social meetings and events	From time to time
		● Participation in local events such as festivals	From time to time
		● Local cleanup activity	From time to time at each plant (464 people in total)
		● Hosting environment-related plant tours	From time to time at each plant (71 people in total)
		● Social meetings on the environment	From time to time at each plant (four people in total)
		● Communication through cultural and sport events	
		· 2020 NGK SPARK PLUG Suzuka 2&4 Race	Cancelled due to COVID-19
		· NGK SPARK PLUG FC Gifu football class for children	Cancelled due to COVID-19
		· Musical for families held in the NTK Hall	Dec. (downsized due to COVID-19)
		· Marathon Festival Nagoya Aichi	Mar. (downsized due to COVID-19)
Employees	To maintain safe and sound workplaces and help employees work with vigor, the management team proactively visits work sites to have dialogues with on-site employees.	● Provision of information via the website (environmental information, etc.)	From time to time
		● Communication through daily operations and at workplaces	From time to time
		● Publication of an in-house magazine	Four times in a printed form and from time to time on the website
		● Organization of various labor-management meetings	From time to time
		● Utilization of the corporate ethics helpline (for employees)	63 calls received
		● Organization of various training sessions	From time to time (primarily held online)
		● Employee satisfaction survey	All employees from Oct. to Nov.

Inclusion in SRI Indexes

NGK SPARK PLUG Group is included in the following socially responsible investment (SRI) indexes:



(As of July 31, 2021)

*The inclusion of NGK SPARK PLUG CO., LTD. in any MSCI index, and the use of MSCI logos, trademarks, service marks or index names herein, does not constitute a sponsorship, endorsement or promotion of NGK SPARK PLUG CO., LTD. by MSCI or any of its affiliates. The MSCI indexes are the exclusive property of MSCI. MSCI and the MSCI index names and logos are trademarks or service marks of MSCI or its affiliates.

Corporate Governance

In line with the corporate philosophy expressed in the slogan, “With established trust and confidence inside and outside the company, we aim to contribute to the peoples of the world by creating and putting at their proposal new values for the future.” we are enhancing the corporate governance system that we built to foster business management that will increase our corporate value on a medium- to long-term basis. Our

basic philosophy on corporate governance is to promote fair and highly transparent management for our stakeholders, including shareholders, customers, suppliers, employees and local communities, and build relationships of trust with them, and to operate and further improve our management and internal control systems to achieve sustainable growth through efficient and sound management.

Corporate governance system

In order to secure transparency, healthiness, and efficiency of management, we have established respective organizations under the framework of a company with an Audit & Supervisory Board. To that end, we have adopted the following system, aiming for the enforcement of supervision & audit function and decision-making function as well as for swift business execution.

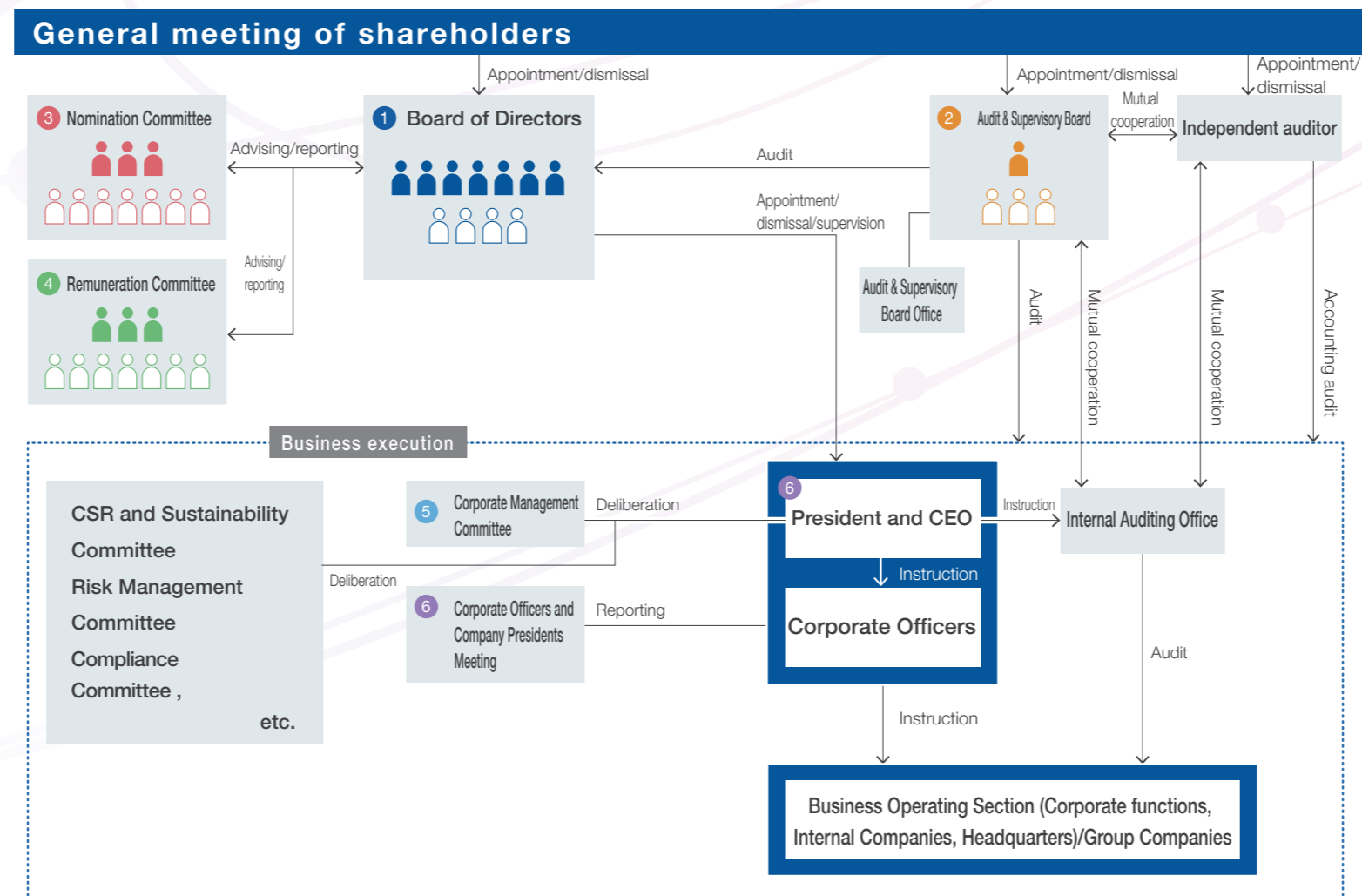
1 Board of Directors

The Board of Directors is composed of 11 directors, four of whom are outside directors. The Board meets regularly once a month and as required for deliberation and determination of issues as prescribed in applicable laws and regulations or articles of incorporation as well as other key managerial issues. The Board also supervises business execution, receiving reports from directors. Multiple independent outside directors have been invited to join to the Board to enhance its supervisory function and ensure management transparency.

2 Audit & Supervisory Board

The Audit & Supervisory Board is composed of four corporate Audit & Supervisory Board members, three of whom are outside Audit & Supervisory Board members. The Board audits the directors' business execution as an independent organization on the behalf of shareholders. Full-time Audit & Supervisory Board members carry out audits based on their business experience in the company and outside Audit & Supervisory Board members from a neutral and professional viewpoint, thereby ensuring sound business management.

Corporate Governance System Chart (as of July 1, 2021)



3 Nomination Committee

Advisory body of the Board of Directors. Majority of its members are independent outside directors so as to ensure transparency and rationality for the nomination of director candidates. Consulted by the Board of Directors, this committee deliberates on the appointment of directors and Audit & Supervisory Board members, which will be proposed at the general meeting of shareholders as well as on the evaluation of corporate performance and the results-based evaluation of the management team. The deliberation results are reported to the Board of Directors.

4 Remuneration Committee

To ensure reasonableness and transparency with regard to director nomination, a Remuneration Committee, in which a majority of the members are independent outside directors, was established as advisory bodies to the Board of Directors. Based on the Board of Directors' request for opinion, the Remuneration Committee deliberates on matters related to director remuneration, including the appropriateness of policies, procedures, and systems, as well as the appropriateness of the proposed remuneration for each director, and then delivers its opinions to the Board of Directors.

5 Corporate Management Committee

Composed of the representative directors, other directors and some of the executive officers, this committee discusses the important issues to be reported to the Board of Directors. It also meets to discuss and grasp in advance business challenges to be addressed and any possible risk that involves the company, thereby building a system to make prompt responses to changes in the business environment.

6 Corporate Officers, Corporate Officers and Company Presidents Meeting

We adopt the corporate officer system to foster business execution based on the policies set by the Board of Directors and clarify responsibility for the execution results. Corporate officers are selected by the Board of Directors and report on their business execution at the monthly Corporate Officers and Company Presidents Meeting to share information and exchange opinions in a cross-sectional way.

Members of the Nomination and Remuneration Committees

Directors	FY2021	
	Nomination Committee	Remuneration Committee
Shinichi Odo	○	○
Takeshi Kawai	○	○
Toru Matsui	○	○
Mikihiko Kato	○	○
Takio Kojima	○	○
Kenji Isobe	○	○
Hiroyuki Maeda	○	○
Morihiko Otaki	○	○
Kanemaru Yasui	○	○
Mackenzie Donald Clugston	○	○
Miwako Doi	○	○

Audit & Supervisory Board members	FY2021	
	Nomination Committee	Remuneration Committee
Yoshihiro Matsubara	○	○
Fumiko Nagatomi	○	○
Akihiko Minato	○	○
Chiharu Takakura	○	○

Basic information

As of June 25, 2021

Organizational design	Company with an Audit & Supervisory Board
No. of directors	11
No. of outside directors among total no. of directors	4
Term of directors	1 year
No. of Audit & Supervisory Board members	4
No. of outside Audit & Supervisory Board members among total no. of Audit & Supervisory Board members	3
Independent Audit & Supervisory Board member	KPMG AZSA LLC

Corporate Governance

Directors (as of June 25, 2021)

Representative Director,
Chairman of the Board

Shinichi Odo



April 1977: Joined our company
February 2003: General Manager of Overseas Aftermarket Sales & Marketing Dept., Sales and Marketing Div., Automotive Components Gr.
July 2005: President, NGK SPARK PLUGS (U.S.A.), INC.
June 2007: Member of the Board
June 2010: Member of the Board (Managing Director)
June 2011: President
April 2012: President & CEO
April 2016: Representative Director & Chairman of the Board
 President & Chief Executive Officer
April 2019: Representative Director Chairman of the Board (up to today)
May 2020: Chairman, Japan Auto Parts Industries Association (up to today)

Representative Director, President, Chief Operating Officer
Digital Transformation and Global Group
Governance Headquarters

Takeshi Kawai



April 1987: Joined our company
February 2011: General Manager of Sensor Engineering Dept. II, Sensor Div., Automotive Components Gr.
April 2012: Corporate Officer
April 2015: Managing Officer
June 2015: Member of the Board, Managing Officer
April 2016: Member of the Board, Senior Managing Officer
April 2019: President & Chief Operating Officer (up to today)

Member of the Board (Outside Director)

Morihiko Otaki



August 1996: President & CEO, JOHNSON & JOHNSON K.K. VISION CARE COMPANY
August 2011: Vice Chairman of the Board, PASONA INC.
June 2013: Member of the Board (Outside Director), NGK SPARK PLUG CO., LTD. (up to today)
June 2016: Director, Henry Schein Japan K.K. (up to today)
August 2016: Vice Chairman, PASONA INC.
June 2018: Outside Director, GIGA PRIZE CO., LTD. (up to today)
June 2020: Outside Director, FP Corporation (up to today)

Member of the Board (Outside Director)

Kanemaru Yasui



March 1981: Registered as a Certified Public Accountant
April 1999: Representative Partner, Central Audit Corporation
September 2006: Partner, Misuzu Audit Corporation
August 2007: Representative Partner, AZSA & Co. (currently KPMG AZSA LLC.)
June 2008: Managing Partner, Director of Nagoya Branch, AZSA & Co. (currently KPMG AZSA LLC.)
June 2013: Retired from KPMG AZSA LLC.
July 2013: Director, Yasui Certified Public Accountant Office (up to today)
June 2014: Outside Director, NICHIIHA Corporation
 Member of the Board (Outside Director), NGK SPARK PLUG CO., LTD. (up to today)

Representative Director, Member of the Board,
Executive Vice President, Assistant to President,
Business Creation Company

Toru Matsui



April 1984: Joined our company
April 2011: President of NGK SPARK PLUG EUROPE GmbH
October 2013: General Manager of OEM Sales & Marketing Dept., Sales and Marketing Div., Automotive Components Gr.
December 2014: President of NGK SPARK PLUG (SHANGHAI) CO., LTD.
April 2015: Corporate Officer
July 2016: President of NGK SPARK PLUG (SHANGHAI) TRADING CO., LTD.
April 2018: Managing Officer
June 2018: Member of the Board, Managing Officer
April 2019: Member of the Board, Executive Vice President
April 2020: Representative Director, Member of the Board, Executive Vice President (up to today)

Member of the Board, Executive Officer,
Strategic Human Resources and
Sustainability Promotion, Gr. General Manager,
Tokyo Branch Office

Mikihiko Kato



April 1985: Joined our company
February 2012: General Manager, Corporate Planning Dept.
August 2012: President of CERAMICA E VELAS DE IGNICAO NGK DO BRASIL LTDA.
October 2015: General Manager, Corporate Planning Dept.
April 2016: Corporate Officer
June 2017: Member of the Board, Corporate Officer
April 2019: Member of the Board, Executive Officer (up to today)

Member of the Board (Outside Director)

Mackenzie Donald Clugston



June 1982: Joined Department of Foreign Affairs and International Trade of the Canadian Government
August 2000: Canadian Consul General in Osaka
August 2003: Minister, Embassy of Canada in Japan
August 2009: Ambassador of Canada to Indonesia, Timor-Leste and the ASEAN
November 2012: Ambassador of Canada to Japan

June 2016: Outside Director, KAMEDA SEIKA CO., LTD. (up to today)
September 2016: Professor, Kwansei Gakuin University (up to today)
June 2017: Outside Director, Idemitsu Kosan Co., Ltd.
March 2018: Outside Director, Sapporo Holdings Limited (up to today)
June 2019: Member of the Board (Outside Director), NGK SPARK PLUG CO., LTD. (up to today)

Member of the Board, Executive Officer,
Corporate R&D Group

Takio Kojima



April 1984: Joined our company
February 2011: General Manager of Next Generation Product Project, Product Planning Center, Engineering R&D Gr.
April 2012: General Manager of Next Generation Product Project, New Business Advancement Gr.
October 2013: Deputy General Manager of R&D Center
April 2014: Corporate Officer
April 2018: Managing Officer
June 2018: Member of the Board, Managing Officer
April 2019: Member of the Board, Executive Officer (up to today)

Member of the Board, Executive Officer, Business
Management and Financial Strategy, Secretarial
Office, President of NGK SPARK PLUGS (U.S.A.)
HOLDING, INC.

Kenji Isobe



April 1986: Joined our company
July 2011: General Manager of Accounting & Finance Dept.
April 2013: General Manager of Corporate Planning Dept. and Public Relations Office
December 2015: General Manager of Accounting & Finance Dept., Corporate Administration Group and General Manager of Public Relations Office
April 2016: Corporate Officer
June 2018: Member of the Board, Corporate Officer
April 2019: Member of the Board, Executive Officer (up to today)

Member of the Board (Outside Director)

Miwako Doi



April 1979: Joined Tokyo Shibaura Electric Co., Ltd. (currently Toshiba Corporation)
July 2005: Senior Fellow, Corporate Research & Development Center, Toshiba Corporation
July 2008: Chief Fellow, Corporate Research & Development Center, Toshiba Corporation
April 2014: Auditor, National Institute of Information and Communications Technology, an Incorporated Administrative Agency (currently, a National Research and Development Agency) (up to today)
June 2015: Outside Director, Nomura Research Institute, Ltd.
April 2017: Executive Director, Nara Institute of Science and Technology (up to today)
June 2019: Outside Director, Isetan Mitsukoshi Holdings Ltd. (up to today)
April 2020: Vice President, Tohoku University (up to today)
June 2020: Outside Director, Subaru Co., Ltd. (up to today)
 Member of the Board (Outside Director), NGK SPARK PLUG CO., LTD. (up to today)

Member of the Board, Executive Officer,
Corporate Strategy and Business
Transformation Div.

Hiroyuki Maeda




April 1986: Joined our company
February 2012: General Manager of Planning Control Dept., Sensor Div., Automotive Components Group
April 2012: General Manager of Sensor Engineering Dept. II, Sensor Div., Automotive Components Group
April 2013: General Manager of Procurement Dept., Procurement Div.
April 2014: Deputy General Manager of Procurement Div., General Manager of Supplier Relations & Development Office, General Manager of Procurement Dept.
April 2016: Corporate Officer
April 2019: Executive Officer
June 2019: Member of the Board, Executive Officer (up to today)

Corporate Governance

Audit & Supervisory Board Members (As of June 25, 2021)

Audit & Supervisory Board Member, Standing

Yoshihiro Matsubara



April 1983: Joined our company

February 2012: General Manager, Production Engineering Dept., Spark Plug Div., Automotive Components Gr.

April 2012: General Manager, Spark Plug Production Engineering Dept., Production Engineering Center, Production Engineering Gr.

February 2014: General Manager, Equipment Dept., Production Engineering Center, Production Engineering Gr.


April 2014: Corporate Officer

April 2019: Corporate Adviser, Standing

June 2019: Audit & Supervisory Board Member, Standing (up to today)

Outside Audit & Supervisory Board Member

Fumiko Nagatomi



April 1981: Registered as an attorney and joined Hachisuka Law Firm

March 1989: Left Hachisuka Law Firm

April 1989: Opened Nagatomi Law Firm (up to today)


May 2006: Outside Auditor, UCS CO., LTD.

June 2016: Audit & Supervisory Board Member (Outside Corporate Auditor), Chubu Electric Power Co., Inc. (up to today)

June 2017: Outside Audit & Supervisory Board Member, NGK SPARK PLUG CO., LTD. (up to today)

Outside Audit & Supervisory Board Member

Akihiko Minato



April 1976: Joined The Mitsubishi Bank, Ltd.

June 2003: Executive Officer, The Bank of Tokyo-Mitsubishi, Ltd.

May 2007: Managing Executive Officer, The Bank of Tokyo-Mitsubishi UFJ, Ltd. (currently MUFG Bank, Ltd.)

June 2009: Managing Director, MARUNOUCHI YOROZU Co., Ltd. Outside Audit & Supervisory Board Member, The Nanto Bank, Ltd.

June 2010: Representative Director and Vice President, Mitsubishi UFJ Research and Consulting Co., Ltd.


June 2012: Outside Audit & Supervisory Board Member, Mitsubishi Materials Corporation

September 2016: Chairman, MST Insurance Service Co., Ltd.

June 2018: Outside Audit & Supervisory Board Member, NGK SPARK PLUG CO., LTD. (up to today)

Outside Audit & Supervisory Board Member

Chiharu Takakura



April 1983: Joined the Ministry of Agriculture, Forestry and Fisheries

May 1992: Obtained an MBA from Georgetown University (U.S.A)

August 1993: Consultant, Sanwa Research Institute Corp.

July 1999: Planning Manager, Human Resources Division, Pfizer Japan Inc.

October 2006: General Manager of Human Resources Department, Human Resources and Communication Division, Novartis Pharma K.K.

July 2014: Corporate Fellow, General Manager, Global Human Resources Dept., Ajinomoto Co., Inc.

April 2020: HR Advisor, ROHTO Pharmaceutical Co., Ltd.

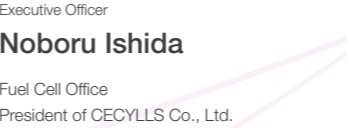
June 2020: Director, Head of Well-being Management Promotion Division, ROHTO Pharmaceutical Co., Ltd. (up to today)

June 2021: Outside Audit & Supervisory Board Member, NGK SPARK PLUG CO., LTD. (up to today)

Executive/Corporate Officers (As of June 25, 2021)

Executive Officer

Noboru Ishida



Fuel Cell Office

President of CECYLLS Co., Ltd.

Executive Officer

Hiroyasu Ogura



Company President, SCM Solutions & Services Company

Regional President ASEAN, India

President of NGK SPARK PLUGS (ASIA) CO., LTD.

President of NTK CORPORATION ASIA CO., LTD.

Executive Officer

Yoshiyuki Takayanagi

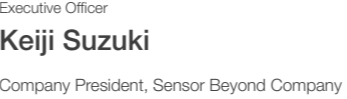


Business Management Dept., Company President, Business Support Company

Plant Manager of Nagoya

Executive Officer

Keiji Suzuki



Company President, Sensor Beyond Company

Corporate Officer

Michael Alan Schwab



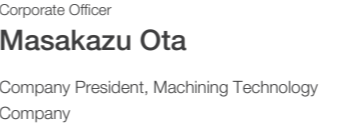
Regional President PAMA

President of NGK SPARK PLUGS (U.S.A.), INC.

President of NGK SPARK PLUGS CANADA LIMITED

Corporate Officer

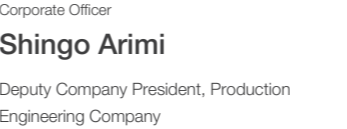
Masakazu Ota



Company President, Machining Technology Company

Corporate Officer

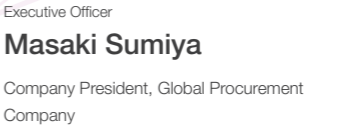
Shingo Arimi



Deputy Company President, Production Engineering Company

Executive Officer

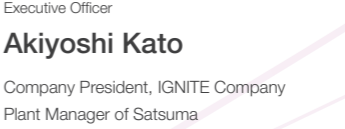
Masaki Sumiya



Company President, Global Procurement Company

Executive Officer

Akiyoshi Kato

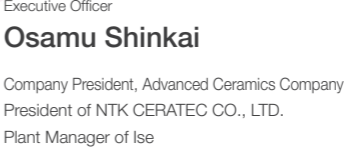


Company President, IGNITE Company

Plant Manager of Satsuma

Executive Officer

Osamu Shinkai



Company President, Advanced Ceramics Company

President of NTK CERATEC CO., LTD.

Plant Manager of Ise

Executive Officer

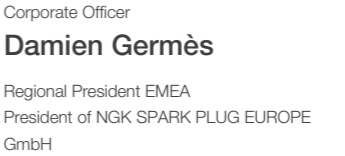
Kazuoyoshi Terashita



Financial Strategy Dept., Company President, FP & A Company

Corporate Officer

Damien Germès

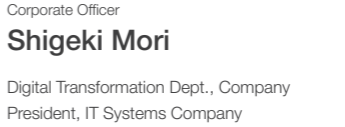


Regional President EMEA

President of NGK SPARK PLUG EUROPE GmbH

Corporate Officer

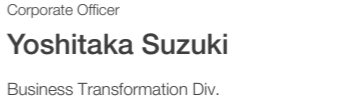
Shigeki Mori



Digital Transformation Dept., Company President, IT Systems Company

Corporate Officer

Yoshitaka Suzuki



Business Transformation Div.

Executive Officer

Hiroyuki Tanabe

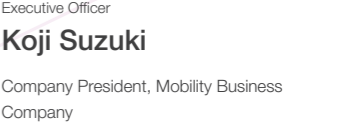


Company President, Production Engineering Company

Plant Manager of Komaki

Executive Officer

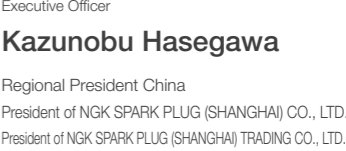
Koji Suzuki



Company President, Mobility Business Company

Executive Officer

Kazunobu Hasegawa



Regional President China

President of NGK SPARK PLUG (SHANGHAI) CO., LTD.

President of NGK SPARK PLUG (SHANGHAI) TRADING CO., LTD.

Executive Officer

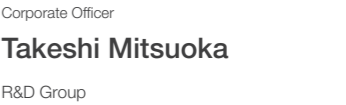
Tomohiro Yamaguchi



Strategic Human Resources Dept. and Sustainability Promotion Dept., Company President, HR Communication Company, General Manager, HR Development Dept.

Corporate Officer

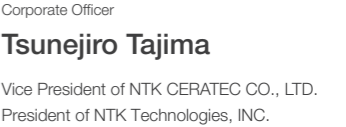
Takeshi Mitsuoka



R&D Group

Corporate Officer

Tsunejiro Tajima



Vice President of NTK CERATEC CO., LTD.

President of NTK Technologies, INC.

Executive Officers and Corporate Officers who are not directors



Basic Philosophy on Corporate Governance

In line with the corporate philosophy expressed in the slogan, “With established trust and confidence inside and outside the company, we aim to contribute to the peoples of the world by creating and putting at their proposal new values for the future,” we are enhancing the corporate governance system that we built to foster business management that will increase our corporate value on a medium- to long-term basis. Our basic philosophy on corporate governance is to promote fair and highly transparent management for our stakeholders, including shareholders, customers, suppliers, employees and local communities, and build relationships of trust with them, and to operate and further improve our management and internal control systems to achieve sustainable growth through efficient and sound management.

Roles and structure of the Board of Directors

The Board of Directors plays the following roles to help the company achieve sustainable growth and increase its corporate value on a medium- to long-term basis, thereby increasing its profitability, capital efficiency and others:

- Deliberates and makes decisions on the basic management policies, medium- to long-term management strategies and other important managerial issues
- Builds and improves the environment to help the management team take risks appropriately
- Supervises the management team in a highly effective manner from an independent and objective standpoint

The Board of Directors is composed of 11 directors, and includes four independent outside directors to foster discussions from multifaceted viewpoints and ensure the transparency and objectivity of its decision-making. For the sustainable growth of the company and medium- to long-term increase of its corporate value, we regard it as important that the Board be comprised of a diverse group of individuals with different backgrounds (expertise, experience, etc.) and choose the members in a balanced manner from those who have abundant experience, tremendous insight and a high degree of professionalism in consideration of the current business environment, while also ensuring diversity in terms of gender, international caliber and other attributes. We select members regardless of race, ethnicity, nationality, country of origin and cultural background.

Evaluation of the effectiveness of the Board of Directors

The company conducted an evaluation on the effectiveness of the Board of Directors. An overview of this evaluation for FY2020 is as follows.

1

Method of evaluation

- Evaluation was conducted by the Board of Directors based on a survey of directors and Audit & Supervisory Board members.

2

Overview of evaluation results

- We confirmed that the effectiveness of the Board of Directors has been sufficiently secured, and more specifically we have confirmed that the effective measures are being taken in the following areas:
 - 1) The Board of Directors consists of appropriate members who collectively have sufficient knowledge, experience, abilities and diversity to fulfill their roles and responsibilities.
 - 2) All the directors share how important it is to reinforce the supervisory function of the Board of Directors and how outside directors should act therein.
 - 3) The Board of Directors understands the company's cost of capital, and appropriately supervises the optimization of the business portfolio of the entire Group and the proper allocation of managerial resources.
 - 4) The Board of Directors has set the basic policies regarding the internal control system for the entire Group and appropriately supervises the establishment and management of the system.
 - 5) The Board of Directors periodically verifies that the management identifies the risks the company face and the effective process to evaluate the potential effect of those risks is established.
 - 6) The Nomination Committee and the Remuneration Committee act as advisory bodies to the Board of Directors to ensure the suitability and transparency of the director nomination and remuneration decisions.

As for the issues pointed out during the FY2019 effectiveness evaluation, we took measures to enhance deliberations on business management and strategies by the continuous discussion with a view to preparing medium- and long-term management and business strategies and by delegation the authority to the executives. With regard to the enhancement of training for executives, we confirmed good progress in the on-boarding program for newly appointed officers. However, further improvement on continuing training after taking office should be necessary; therefore we continue to work on it.

In the FY2020 evaluation, the following issues were pointed out as issues to be addressed to enhance the effectiveness of the Board of Directors: advanced supervisory function driven by introducing an in-house company system, and enhanced monitoring on non-financial management indicators. Going forward, we strive to maintain and enhance the effectiveness of the Board of Directors by tackling those issues.

Roles and Independence of Outside Directors and Audit & Supervisory Board Members

Outside directors play supervisory roles in positions independent from business operations, including expressing their opinions by taking a broad view at important meetings, such as Board of Directors meetings. Outside Audit & Supervisory Board members also fulfill auditing functions by drawing on their expertise to carry out audits from multifaceted viewpoints and express their opinions at important meetings, such as Board of Directors meetings.

We appoint all the independent outside directors and Audit & Supervisory Board members as independent officers. In order to ensure that candidates have neither special relationships with the management team and major shareholders nor conflicts of interest with general shareholders, we designate those who meet all the followings as independent officers: our own criteria for the appointment of independent officers; the requirement of independent officers set by the Companies Act; and the rules and regulations stipulated by the financial instruments exchanges.

Appointment reasons for outside directors and Audit & Supervisory Board Members

We also attribute importance to having multiple outside directors on the Board who can provide external viewpoints, thereby enhancing the Board's supervisory function and ensuring the transparency of its decision-making.

Title	Name	Reason for appointment	FY2020 Frequency of attendance	
			Board of Directors	Audit & Supervisory Board
Outside director	Morihiro Otaki	He has a wealth of experience in global companies and expertise as an executive. As an outside director, he oversees business execution by the Company's management team and provides advice to the team, and we have selected him as an outside director with the expectation that he will continue to fulfill his role.	12/12	—
Outside director	Kanemaru Yasui	He has a wealth of expertise and experience developed through the long-term career as a certified public accountant. As an outside director, he oversees business execution by the Company's management team and provides advice to the team, and we have selected him as an outside director with the expectation that he will continue to fulfill his role.	12/12	—
Outside director	Mackenzie Donald Clugston	As a diplomat, he has a great deal of global experience and expertise in international affairs and trade. As an outside director, he oversees business execution by the Company's management team and provides advice to the team, and we have selected him as an outside director with the expectation that he will continue to fulfill his role.	11/12	—
Outside director	Miwako Doi	She has an abundance of experience and an outstanding record as a researcher in the field of information and communication and has been engaging in advanced research both in academia and in the private sector. As an outside director, she oversees business execution by the Company's management team and provides advice to the team, and we have selected her as an outside director with the expectation that she will continue to fulfill her role.	10/10*	—
Outside Audit & Supervisory Board member	Fumiko Nagatomi	She has the expertise and abundant experience that she has accumulated during her long career as an attorney. Based on her career, we have selected her as an outside Audit & Supervisory Board member in the belief that she will continue to execute proper auditing of the Company's overall management.	12/12	13/13
Outside Audit & Supervisory Board member	Akihiko Minato	He has served in important posts at financial institutions and has abundant expertise and knowledge regarding finance and corporate management as an executive. Based on his career, we have selected him as an outside Audit & Supervisory Board member in the belief that he will continue to execute proper auditing of the Company's overall management.	12/12	13/13
Outside Audit & Supervisory Board member	Chiharu Takakura	After receiving an MBA degree, she worked as a consultant in organization building and human resources development before taking up successive important positions with several global companies, including international pharmaceuticals companies. As such, she has a wealth of experience and knowledge concerning organizational development and human resources development. Based on her career, we have selected her as an outside Audit & Supervisory Board member in the belief that she will continue to execute proper auditing of the Company's overall management.	—	—

* After taking office as an outside director on June 24, 2020.

Succession Plan

NGK SPARK PLUG’s Board of Directors engages in the formulation and implementation of the succession plan, which includes programs such as that to develop global managerial human resources (“HAGI Program”), such as future CEOs and other business leaders. The members of the Board see to it that sufficient time and resources are committed to developing their successors in a planned manner.

Specific involvement by the Board of Directors

Representative directors as well as outside directors proactively participate in the development of managerial human resources, including serving as lecturers for the HAGI Program.

Details of human resource development for CEO candidates

We are implementing the HAGI Program and a training program in which all directors and corporate officers participate. These programs are designed to develop future CEO candidates in a planned and strategic manner by devoting adequate time and resources to the task.

Training for officers

We provide the directors and Audit & Supervisory Board members with sufficient assistance to fulfill their expected roles and responsibilities where applicable. For the directors, we encourage them to take external seminars to acquire additional knowledge to meet their obligations, while all the directors and corporate officers are required to attend an executive training session to share the managerial issues and seek out the solution. In order for the outside directors to deepen understanding of the Group, each department explains the businesses and operations in addition to providing them with opportunities to visit major sites of the businesses.

The Audit & Supervisory Board members periodically take external sessions to gain understanding of what roles the Audit & Supervisory Board members fulfill, the audit methods, the relevant laws and regulations, and financial accounting knowledge required for the accounting audit. We also provide them with opportunities to visit our factories and subsidiaries to enhance their understanding of the company.

Remuneration for Officers

Basic policy

Remuneration for officers is paid based on the policy of providing them with additional motivation to contribute to improving the company’s business performance on a medium- to long-term basis and growing the corporate value, while ensuring they have a shared interest with shareholders by holding company shares themselves. The remuneration consists of fixed remuneration paid in the form of cash; bonus, which is linked with the company’s single-year business performance, etc.; and performance-linked stock remuneration paid in accordance with each person’s position and level of achievement against the performance targets set in the medium-term management plan and others. For Audit & Supervisory Board members and outside directors, only fixed remuneration is paid.

Our Remuneration Committee acts as an advisory body to the Board of Directors. It deliberates the policies, procedures, details of the remuneration system and the appropriateness of the amount of remuneration planned to be paid to each director, and submits the results to the Board of Directors to ensure the rationality and transparency of the decisions made concerning the remuneration of directors. In FY2020, the committee met four times.

Type and details of remuneration for officers

	Fixed remuneration	Bonus	Performance-linked stock remuneration
Details of remuneration	Fixed remuneration is determined holistically according to the position and responsibilities, by taking into account peers’ levels, the company performance, and the level of employee salaries, and then paid monthly.	Bonus is determined based on a comprehensive consideration of the base amount for each position, by taking into account quantitative targets for the degree of achievement of Company performance goals as well as qualitative evaluations of individual performance, and is paid at a certain time each year.	The Board Incentive Plan (BIP) is adopted, where the company shares and money in the amount equivalent to the value of the shares of the company are given or granted to directors at the end of the period set for the system, based on their positions and level of achievement against the targets set in the Medium-term Management Plan, etc.
Indicators against which the achievement of the performance targets is assessed	—	Consolidated revenue, Consolidated operating income ratio	● Performance goals for the year: Consolidated revenue, consolidated operating income ● Performance goals for the medium-term: Consolidated revenue, consolidated operating income, ROIC ● Non-financial measures goals: Sales from non-ICE business, rate of reduction of CO ₂ emissions
How to determine payment	—	Payment is determined within the range of 0% to 175% based on the achievement of the company performance target and assessment of individual performance.	The ratio of the fixed portion to the performance-linked portion is set to be 3:7, in the case of 100% achievement of each indicator. Performance-linked portion is determined within the range of 0% to 200%, according to the achievement of each indicator.
Recipients	Directors, Audit & Supervisory Board members	Directors (excluding outside directors)	Directors (excluding outside directors)

Example of remuneration payment

In the case of 100% achievement of key performance indicators (KPIs)	Fixed remuneration 60%	Bonus 25%	Performance-linked stock remuneration 15%
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Policy on the payment of bonus

As for bonuses, in addition to the base amount set for each position, an amount to be decided as follows is paid to each person: decided comprehensively in consideration of the quantitative targets set for corporate performance such as consolidated revenue and consolidated operating income ratio, which reflect the results of sales activities, and based on the qualitative evaluation of the individual performance of the person. For FY2020, the numerical targets for consolidated revenue and consolidated operating income ratio were 405.0 billion yen and 8.1%, while the actual results were 427.5 billion yen and 11.1%.

Performance-linked stock remuneration system

We introduced the performance-linked stock remuneration for directors (excluding outside directors) and corporate officers (excluding employment-type corporate officers) to further clarify the link between the compensation of directors and the value of the Company’s stock, and to have them share interests with shareholders, so as to incentivize them to contribute to the improvement of the Company’s medium- to long-term performance and to increasing corporate value. Under the system, the Board Incentive Plan (BIP) is adopted, where points are given to directors based on their position and the level of achievement against the targets set in the Medium-term Management Plan. Points are calculated according to the method stipulated in share granting regulations, which were determined by the Board of Directors after the deliberation of the Remuneration Committee. After the end of the period, shares of the company and money in the amount equivalent to the value of the shares are to be given or granted based on granted points.

In 2021, we added non-financial measures (such as sales from non-ICE business and reduction of CO₂ emissions) to indicators against which the achievement of the performance targets is assessed, with a view to facilitating the transformation of the business portfolio and sustainability initiatives raised in the Long- and Medium-term Management Plan. Given the revision, we continue to adopt the performance-linked stock remuneration system over the New Medium-term Management Plan from FY2021 to FY2024.

Total amount of remuneration, etc. paid to officers, total payment amount by remuneration type, and the number of recipients (for FY2020)

Category	Total amount of remuneration paid (millions of yen)	Total payment amount by remuneration type (millions of yen)			Number of recipients (persons)
		Fixed remuneration	Bonus	Performance-linked stock remuneration	
Directors (excluding outside directors)	522	342	124	55	7
Audit & Supervisory Board members (excluding outside members)	49	49	—	—	2
Outside directors	54	54	—	—	4
Outside Audit & Supervisory Board members	28	28	—	—	2

(Notes)*1: The following limits are set on the remuneration paid to directors, according to the resolution made at the 117th general meeting of shareholders held on June 29, 2017. The number of directors as of the end of the 117th general meeting of shareholders was 10 (including 3 outside directors).

Total amount of remuneration (excluding bonus): 60 million yen or below per month

Total amount of bonus: 180 million yen or below per year

According to the resolution made at the 117th general meeting of shareholders held on June 29, 2017, a performance-linked stock remuneration system is implemented separately for four fiscal years from FY2018 to FY2021, targeting the company’s directors (excluding outside directors) and corporate officers, with the upper limit on the total payment amount set at 1,000 million yen. The number of directors (excluding outside directors) and corporate officers (excluding directors) as of the end of the 117th general meeting of shareholders was 7 and 12, respectively.

*2: The following limits are set on the remuneration paid to Audit & Supervisory Board members according to the resolution made at the 106th general meeting of shareholders held on June 29, 2006. The number of Audit & Supervisory Board members as of the end of the 106th general meeting of shareholders was 4 (including 2 outside Audit & Supervisory Board members).

Total amount of remuneration (excluding bonus): 10 million yen or below per month

Total amount of bonus: 10 million yen or below per year

*3: For the bonus and performance-linked stock remuneration shown in the table, they were recorded as expenses for FY2020.

Audit & Supervisory Board Members and Measures to Strengthen Their Functions

The Audit & Supervisory Board is composed of four members, three of whom are outside members. The Audit & Supervisory Board offers timely and appropriate opinions including external viewpoints. None of the outside members have interests in NGK SPARK PLUG, such as conducting transactions with the company, or belong to any organizations that have interests in it. In addition, the Audit & Supervisory Board strives to improve the effectiveness of audits by close alignment and interactive communication on audit policies, audit plans, and audit implementation status through the regular or ad-hoc meetings with the accounting auditor and the Internal Auditing Office.

Previously, we dedicated a staff to assist the Audit & Supervisory Board members in response to their request. In July 2021, the Audit & Supervisory Board Office with three full-time personnel was newly established to reinforce the function of Audit & Supervisory Board members.

Internal Control

NGK SPARK PLUG formulated its basic policy on internal control and has been implementing it for the sustainable growth of the company and medium- to long-term increase of its corporate value, while ensuring the appropriateness of its business operations. In line with the policy, we will also fulfill our fiduciary responsibilities to shareholders as well as responsibilities to stakeholders.

Stocks Held for Reasons Other than Pure Investment Purposes

Policy on the stocks held for reasons other than pure investment purposes

NGK SPARK PLUG holds the stocks of its suppliers and others basically to maintain and enhance stable business relationships with them, when the company decides that holding the stocks will help increase its corporate value after verifying the economic rationality from medium- to long-term viewpoints. The Board of Directors annually checks whether it is rational and useful in terms of enhancing its corporate value to keep the stocks individually for each of the investee companies, in consideration of the capital cost and comparing the related risks and returns on a medium- to long-term basis. When the Board decides that the company should not continue to hold any of the stocks, the company will sell them as appropriate, in consideration of the market trend.

Criteria for the exercise of voting rights

For the exercise of voting rights for the stocks owned by our company, we will decide whether to exercise the rights for each item of the agenda, considering whether it will contribute to increasing the corporate value of the investee company and of our own company. In particular for the selection of directors, appropriation of retained earnings and other items that have a large impact on shareholder value, we will exercise the voting rights according to the criteria set for the rights.

Enhancement of Group Governance

NGK SPARK PLUG has corporate officers who were locally recruited at its regional headquarters (RHQs) for the Americas and EMEA in order to ensure that speedy and accurate managerial decisions are made at bases closer to the markets they serve in view of the company's globally expanding business environment. We have also formed unique governance teams at the RHQs to build an optimal decentralized system on a group-wide basis and enhance corporate governance as the entire Group.

Moreover, the Global Group Governance Headquarter is in place as an organization that audits the effectiveness of the Group's governance as an entity that is separate from its business execution. This organization formulates and implements measures to carry out audits on the management of Group companies and RHQs and on the core business operations of each department. It also formulates and implements measures to enhance internal control across the Group and thus plays an important role for the enhancement of the Group's governance.

Interview with Outside Directors



Outside Director
Morihiko Otaki

Outside Director
Kanemaru Yasui

Outside Director
Mackenzie Donald Clugston

Outside Director
Miwako Doi

Supporting challenge aimed at the transformation of business portfolio, the co-creation of innovation, and risk taking by executive departments

We'd like to hear your opinions about the transformation of the business portfolio.

Clugston It's said that engine-powered cars equipped with plugs, the company's mainstay products, are probably going to be replaced by electric vehicles (EVs) and fuel cell vehicles (FCVs) over the next 20 to 30 years. The 2030 Long-term Management Plan "NITTOKU BX" presents a framework for responding to these major changes in our operating environment, and progress has been made with preparations for the transformation of the business portfolio. Right now, we're at the stage of exploring possible options. The potential of the new technologies and businesses within the Group is great, and we should also explore opportunities in terms of M&A and business partnerships in order to speed things up.

Yasui That's right. At the Board of Directors meetings, we have looked back on the previous Medium-term Management Plan, and all the directors realize that a transformation of the business portfolio is necessary, so we have lively discussions based on that common understanding. Although we still haven't got to specifics, as these will come later, lots of topics come up not only about business, but also about methodology. These topics cover things like personnel evaluation systems, bringing in talent from outside the company, and changing the name of the company.

Otaki Progress has already been made with the reform of organizational structure, which encompasses things like hiring outside talent and promoting foreign nationals, and the reforms have already started to produce results.

Although a framework is in the process of being put together, a concrete vision for the businesses that are going to be born out of that still hasn't come into view. That being said, I think the executive departments are thinking really hard and moving things forward.

Doi In parallel to the methodology discussions, the company also has to develop new businesses to drive the business portfolio transformation, doesn't it? But it takes a long time, 10 years or 20 years, for a new business to begin to flourish. We outside directors will strongly push for the establishment of a new organizational structure to generate innovations that can serve as buds for new businesses.



Please tell us about issues for NGK SPARK PLUG's sustainability (ESG).



Yasui The opinion statement published following the meeting of the Council of Experts Concerning the Follow-up of Japan's Stewardship Code and Japan's Corporate Governance Code that was held on April 6, 2021 recommended that sustainability initiatives be regarded not just as risks, but also as profit-earning opportunities. Even now, the company is planning to invest a considerable amount of money in ESG measures, but from the independent standpoint of an outside director, I would like to get involved in the question of how these measures are leading to the enhancement of corporate value.

Doi Automobiles employing our Group's precious metal plugs emit less CO₂ than ones employing conventional plugs. I think that ESG measures based on products like this could be made more visible. Looking at the earth as a whole, EVs do not emit CO₂ directly, but if the electricity they run on is generated thermally, CO₂ is emitted at that stage. And hydrogen is produced using electrolysis. So I

think it's important to avoid adopting the simplistic viewpoint that international combustion engines (ICEs) are bad. Rather, I believe it vital that after considering the big picture, which encompasses the energy mix, the company clarify its position, namely its commitment to contributing to CO₂ emissions reduction through the development and sale of high-function products, and communicate that externally.

Otake To reduce the environmental burdens, the manufacturing sector needs to go one step further to cut CO₂ emissions. For example, companies could consider utilizing renewable energy, even if it means incurring costs. From the viewpoint of philanthropic activity, however, it's a shame that we don't see activities that give us the feeling that employees think that philanthropy is something that concerns them personally. If an employee-centric organization were created, and employee-participation-driven philanthropic activity, whereby employees take the lead, were conducted, we'd likely see far better results.

Clugston I'm interested in an aspect that's different to the environment and philanthropy, as I'm focusing on diversity. The promotion of foreigners and women to managerial and executive posts has been increasing, and I myself am one of the beneficiaries of that. When it comes to this immense managerial task of transformation of the business portfolio, I think it will be important to revisit longstanding practices and bring change to the corporate climate. Of course, you can't change such things overnight, but increasing the number of employees from a variety of backgrounds can be expected to speed up the creation of new business pillars.

An in-house company system was introduced in April 2021.

Please tell us about issues that have occurred and how they have been dealt with.

Yasui The opinion statement I mentioned earlier recommended that the Internal Auditing Office shift away from direct reporting to the CEO and move in the direction of working with directors and Audit & Supervisory Board members. I agree with the recommendation, and because the Board of Directors can't be expected to keep a close eye on every internal company, I think cooperation with the Internal Auditing Office should be considered for the sake of the governance of the internal companies.

Otake I have big expectations for the introduction of the in-house company system. This is because each internal company is delegated authority and responsibilities, which will increase the speed of decision making and reinforce the

transformation of our Group's business portfolio. However, among the measures taken independently by each internal company, some might not be aligned with the Group's overall strategy or policy. I want to do whatever I can to enable the company to grow into an organization that will nurture a new corporate culture by overcoming such issues related to partial optimization and total optimization.

Doi Transmitting messages from senior management to personnel within the Group is another of the roles of the introduction of the in-house company system. "The Group is endeavoring to change. And it has to change." These sentences describe the sense of crisis and the pressure felt by senior management, and it has probably trickled down

naturally and been absorbed by the employees." On the other hand, if each internal company is completely independent, like a vehicle component, the human network required to combine the company's technology and

generate new products will cease to function properly. I think DX (digital transformation) is urgently needed, and that it should include the creation of a digital platform to compensate for this problem.

Clugston Change is crucial, but it is also important to convey an image that shows what sort of company NGK SPARK PLUG is. For example, in commercials from American companies, the style has shifted from one of "Please buy this product or service" to one of "We're this wonderful company." Expressions like that are being used more and more often. It is increasingly difficult to achieve differentiation through products and services, so consumers and society are looking for value in the future stories that companies tell. And of course, this sort of corporate branding is also effective for hiring personnel. It is important for the company to establish a structure for properly transmitting to the outside world the message that this is a place where fresh graduates would like to work.



Please tell us about the aspects of NGK SPARK PLUG's governance that you would like to strengthen going forward.

Clugston What's worthy of note with regard to our Group's governance is that from the perspective of nurturing CEO and senior management successors, the company has established a system whereby the Nomination and Remuneration Committees have each corporate officer candidate give a presentation, after which they ask the candidate questions, assign them a score, deliberate on the results, and finally decide whether to promote them. There's an open atmosphere, and outside directors have an opportunity to meet directly face to face with the candidates, and the deliberation on the results of the scoring is highly transparent, so decisions cannot be made arbitrarily. Even now the in-house company system has been introduced, I intend to take advantage of this mechanism to play a part in the nurturing of successors from the standpoint of an outside director.

further. This is because the timing of technology and market development as well as the market environment, which includes moves by rival companies, differs for each internal company, so each will behave more dynamically and will be in a hurry to grow. There is therefore a danger of the seeds of wrongdoing being impossible to see. My feeling is that the company has entered a new phase, during which it will strengthen governance even more through the sharing of values that bind the Group together and the heightening of awareness of ethics and compliance.

Yasui Until now, the NGK SPARK PLUG Group has approached things with a sense of unity, with "everyone singing from the same hymn sheet," and has succeeded in expanding and growing its business. But going forward, as it develops and nurtures new business pillars, the executive departments are going to need to make the right decisions about what to select and focus on, and they are going to need to make these decisions rapidly. Amid such an environment, it is essential that we outside directors provide support in selecting and focusing as well as in taking on risk, so that the executive departments do not wither and atrophy.

Doi Certainly, breaking away from the notion of "everyone singing from the same hymn sheet" is the mission of ours as outside directors in promoting the transformation of the business portfolio. In the field of ceramic materials, the Group can expect to enjoy the potential for expansion in the development of new businesses by making its tacit knowledge, as exemplified by the notion of "everyone singing from the same hymn sheet," visible, such as by introducing materials informatics. I also want to proactively support this sort of risk taking by the R&D departments, too.



Otake With the introduction of the in-house company system, the Group's governance ought to be improved



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Segment Highlights

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Segment Highlights

Automotive Components



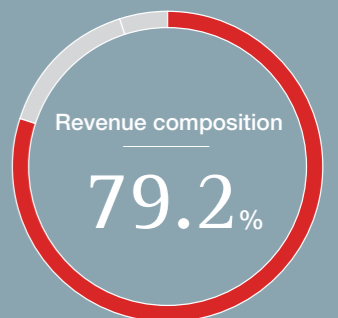
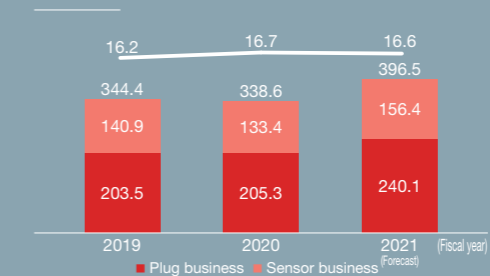
Revenue

338.6 billion yen

Operating income ratio

16.7%

Revenue (billions of yen) and operating income ratio (%)



Overview of FY2020

Although revenue of the plug business for the first quarter was stagnant in all regions except China due to the impact of the COVID-19 pandemic, the revenue increased year on year and hit a record high, driven by a strong recovery in demand, especially for aftermarket parts, from the second quarter onward. In China, our long-standing efforts to build a sales network paid off and resulted in strong sales of spark plugs for both new automobiles and the aftermarket.

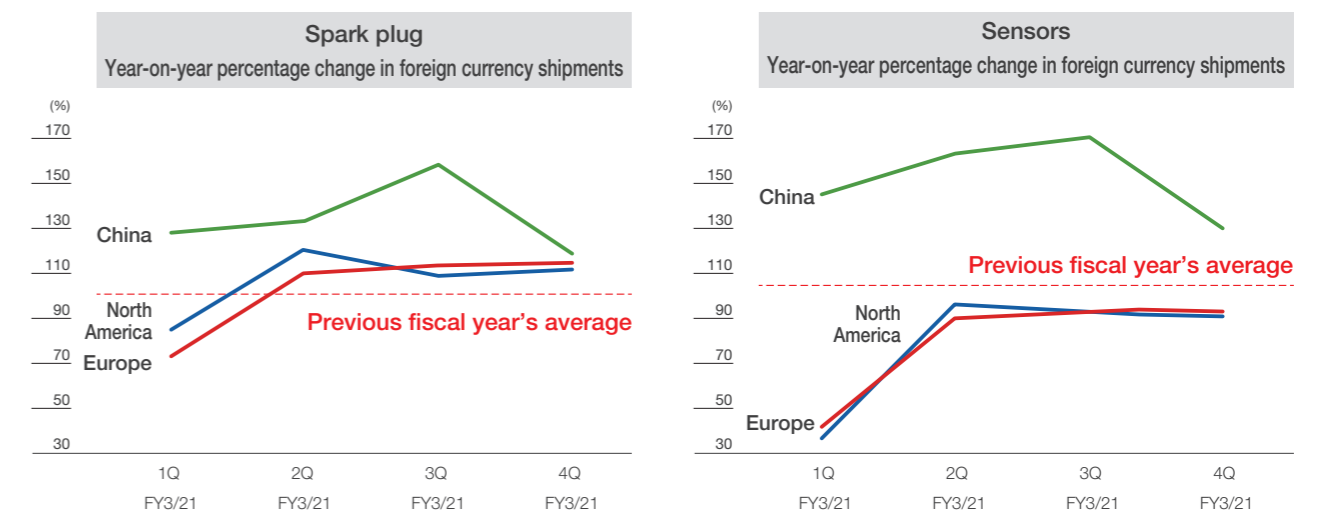
While the global market environment deteriorated, with automobile production decreasing by 7.0% year on year, we managed to limit the year-on-year decrease in the sales volume of our spark plugs to 1.0%, a rate outperforming the market average. In China in particular, the sales volume of our spark plugs for new automobiles and the aftermarket rose by 26.6% and 27.3%, respectively, as a result of the expanded sales network and our efforts to drive our brand penetration.

Outlook for the future

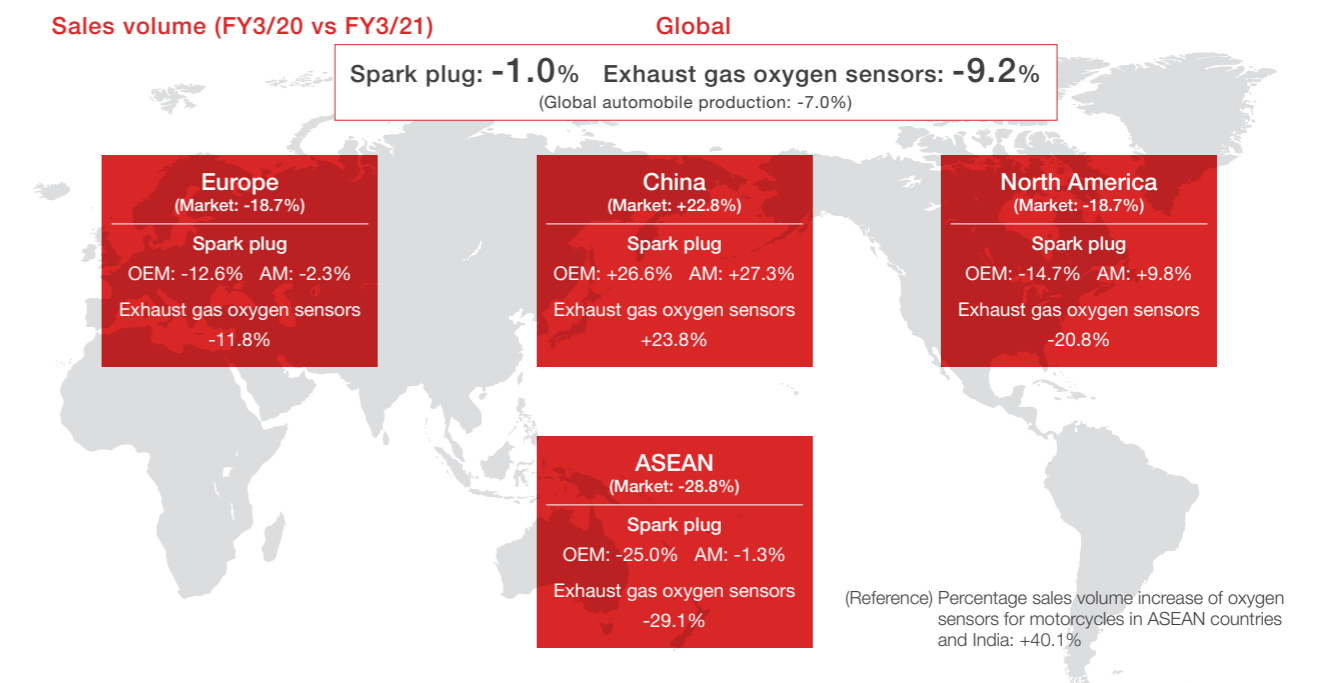
Although the COVID-19 pandemic is expected to come to an end, the market environment uncertainty is likely to continue, against the backdrop of factors including a shortage of automotive semiconductors. Under such circumstances, we expect that sales will increase again in FY2021 based on the anticipation that strong demand will return once automobile production starts to recover.

Further, price hikes of some platinum group metals are expected to put downward pressure on profit. To cope with such a situation, we are planning to take concurrent measures to mitigate the impact on profit by passing on increased costs to selling prices of spark plugs for both new automobiles and the aftermarket and switching to alternative materials.

Foreign currency shipments by product (year-on-year change)



Changes in sales volumes of automotive products by region



* The figures for spark plugs include those for motorcycles.

Overview of FY2020

As in the case of spark plugs for new automobiles, the market environment deteriorated, particularly with automobile production decreasing in the first quarter, and the sales of our exhaust gas sensors decreased. The sales volumes of our exhaust gas oxygen sensors in North America, Europe and ASEAN countries decreased year on year by 20.8%, 11.8% and 29.1%, respectively. However, 23.8% sales volume increase in China limited the overall decline to just 9.2%. Product-wise, tightened environmental regulations boosted sales increase, especially of high value-added products. In China, sales of wide range oxygen sensors rose due to the shift from oxygen sensors to wide range oxygen sensors driven by the introduction of the China 6 emission standards. The demand for oxygen sensors for motorcycles also expanded due to the adoption of BS6 emission norms in India. Moreover, the demand for temperature sensors increased as the delivery of sensors for GPF equipped vehicles had started in China.

Outlook for the future

Despite the uncertainty about the impact of the shortage of automotive semiconductors on sales as in the plug business, the sales of sensors are expected to pick up when automakers resume production.

Capitalizing on the trust we have earned based on our strong technological capabilities, we will continue our efforts to increase the sales volume and market share of products that help customers meet exhaust gas emission requirements, while also accelerating the input of resources into the Business Creation Company, a new internal company whose mission is to create new businesses.

Segment Highlights

Ceramics

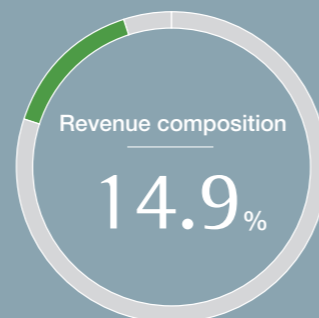
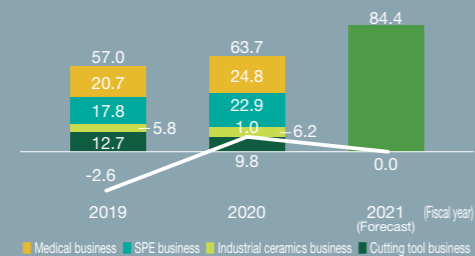
Revenue

63.7 billion yen

Operating income ratio

1.0%

Revenue (billions of yen) and operating income ratio (%)



*1. The semiconductor business has been transferred from the new businesses segment to the ceramics segment from the FY2021 forecast.
*2. The medical segment has been consolidated into the ceramics segment from the FY2021 forecast.

Overview of FY2020

- SPE business...**The demand for semiconductors for PCs and data centers has grown due to an increase in work from home amid the COVID-19 pandemic. The demand in the semiconductor production equipment market has also been strong, stemming from growth in capital investments due to the shortage of semiconductors caused by the US-China trade frictions. Revenue and operating income in the SPE business increased year on year against a backdrop of such strong demands.
- Medical business...**Revenue from the respiratory-related business in the medical business increased year on year as the demand for stationary home oxygen concentrators rose due to the tight bed availability at medical facilities caused by the spread of COVID-19. Meanwhile, operating income decreased year on year, reflecting the impact of a rise in components procurement costs due to the stronger demand.
- Cutting tool business...**The cutting tool business saw year-on-year decreases in both revenue and operating income due to declines in sales for the automobile and aircraft industries affected by COVID-19.
- Industrial ceramics business...**Despite the impact of COVID-19, revenue and operating income in the industrial ceramics business increased year on year due to a gradual recovery in sales of silicon nitride balls as well as our ongoing efforts for cost reduction.

Outlook for the future

- SPE business...**The demand for semiconductor production equipment is expected to expand, stemming from strong demand for uses in 5G smartphones, PCs and data center servers, as well as active investments in latest technologies by Taiwanese foundries. Moreover, we are looking ahead to further growth in profit by promoting inventory optimization and capacity utilization improvement to increase productivity.
- Medical business...**We expect a decrease in revenue from the respiratory-related business in the medical business along with the prevalence of COVID-19 vaccines. On the other hand, we estimate an increase in operating income as more profitable portable oxygen concentrators are expected to be more widely used.
- Cutting tool business...**Revenue and operating income in the cutting tool business are expected to be back on the recovery path along with a recovery in automobile production.
- Industrial ceramics business...**In the industrial ceramics business, the recovery in demand for products used in ultrasonic scalpels has been delayed with a decrease in surgeries performed due to the impact of COVID-19. However, we expect a rise in sales, given the buoyant state of the semiconductor production equipment market and recovery in the demand for silicon nitride balls used in machine tools. On the other hand, operating income is expected to decrease year on year due to an increase in R&D expenses for new businesses, such as lead-free piezoelectric products and silicon nitride balls.

New Businesses

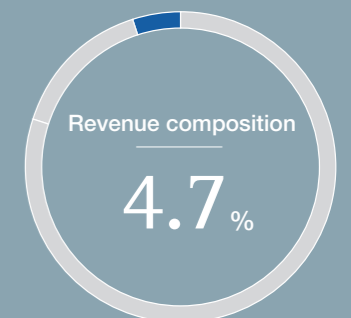
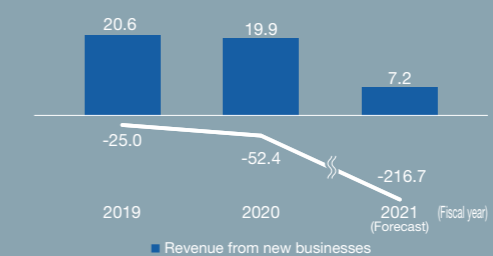
Revenue

19.9 billion yen

Operating income ratio

-52.4%

Revenue (billions of yen) and operating income ratio (%)



Overview of FY2020

We have been developing solid oxide fuel cells (SOFCs) since 1999 by mobilizing our know-how and technologies, including multilayering and metal-ceramics bonding technologies, which have been built up through many years of experience in manufacturing spark plugs, automotive oxygen sensors and semiconductor packages. Because SOFCs are more energy efficient than other fuel cells and considered effective in reducing CO₂ and other greenhouse gas emissions, they are expected to become an important source of clean energy. The heat generated in the chemical reaction process can also be used for the supply of hot water. Although the market size for hydrogen fuel cells is still small, it is expected to substantially expand toward 2030.

In March 2021, MORIMURA SOFC TECHNOLOGY launched the mass production of SOFC cell stacks, which play a central role in SOFC power generation systems for commercial and industrial uses. MORIMURA SOFC TECHNOLOGY has been working on the development of planar cell stacks for residential, commercial and industrial uses, with a focus on SOFC, which has high power generation efficiency among fuel cells. The simultaneous pursuit of reducing size and weight and achieving high power density has long been an issue to be resolved for SOFCs. The SOFC cell stacks for commercial and industrial uses, for which mass production has recently been started, have resolved this issue and achieved lower costs. As such, we expect further adoption not only for commercial and industrial uses but also for various uses including residential use.

Column

MORIMURA SOFC TECHNOLOGY Co., Ltd., a joint company belonging to Noritake Co., Limited, TOTO Ltd., NGK Insulators, Ltd. and NGK SPARK PLUG, commenced its operation in December 2019. The new company brings together the SOFC-related technologies and know-how of the four partners and integrates their management resources to achieve the common goal of commercializing SOFCs as soon as possible.

NGK SPARK PLUG and Mitsubishi Power, Ltd. established their joint company, CECYLLS Co., Ltd., in January 2020. The new company will combine Mitsubishi Power's technology to design cylindrical cell stacks, which feature a long life and efficient heat utilization capabilities, with our ceramics mass production technology to produce and sell high-quality cylindrical cell stacks in mass volumes.





5

Financial/Corporate Information

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Financial Results Highlights for the Past 11 Years

J-GAAP										IFRS	
(Fiscal year)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenue	269,232	284,746	302,798	329,758	347,636	383,272	372,919	409,912	425,013	426,073	427,546
Operating income (loss)	28,770	24,478	23,754	51,661	62,196	66,284	53,595	67,279	58,385	48,447	47,389
Ordinary income (loss)	27,379	23,740	27,674	54,960	67,907	64,483	55,559	69,094	59,258	—	—
Profit (loss) attributable to owners of the parent	23,680	25,524	20,909	32,704	36,753	30,815	25,602	44,335	42,638	33,698	38,367
Capital expenditures	8,767	14,004	24,012	41,034	36,372	45,339	36,328	37,591	56,587	51,004	33,444
Depreciation	16,646	15,438	12,798	11,567	13,337	16,834	19,601	20,920	23,979	31,952	34,700
R&D expenses	15,763	16,036	17,100	19,400	21,337	23,123	23,416	25,283	28,072	28,315	26,115
Cash flows from operating activities	35,398	21,079	26,194	54,697	36,593	56,465	49,764	65,707	43,704	59,787	63,397
Cash flows from investing activities	(20,412)	(15,850)	(15,442)	(61,148)	(12,865)	(82,331)	(53,410)	(26,422)	(48,380)	(52,926)	(42,523)
Free cash flows	30,684	8,507	8,456	3,541	13,995	(25,866)	6,335	29,636	(21,356)	4,627	41,398
Dividend payout	3,594	4,789	4,788	5,223	7,181	8,487	9,055	10,823	14,601	14,435	12,230
Total equity	218,159	235,613	268,309	302,793	343,380	341,044	354,710	388,115	401,505	399,737	451,626
Total assets	337,318	340,295	366,489	458,148	485,497	526,103	563,801	599,972	629,417	663,374	771,293
Interest bearing debt	36,697	37,399	27,418	57,339	46,153	80,212	99,275	98,115	110,755	152,946	197,194
											(Yen)
Earnings (losses) per share	108.71	117.25	96.06	150.26	168.88	141.60	119.44	209.37	204.74	163.06	188.59
Equity attributable to owners of the parent per share	994.36	1,075.24	1,223.41	1,381.38	1,566.80	1,557.16	1,660.06	1,837.46	1,917.04	1,946.10	2,206.18
Cash dividends per share	22.00	22.00	22.00	28.00	36.00	42.00	42.00	60.00	70.00	70.00	60.00
Operating income ratio (%)	10.7	8.6	7.8	15.7	17.9	17.3	14.4	16.4	13.7	11.4	11.1
Return on Sales revenue (%)	8.8	9.0	6.9	9.9	10.6	8.0	6.9	10.8	10.0	7.9	8.8
Gross profit on sales (%)	27.4	25.1	24.2	32.6	35.8	35.6	33.0	34.6	33.8	31.4	30.5
ROE (Return on equity) (%)	11.2	11.3	8.4	11.5	11.4	9.1	7.4	12.0	10.9	8.4	9.1
ROA (Return on assets) (%)	7.1	7.5	5.9	7.9	7.8	6.1	4.7	7.6	6.8	5.1	4.9
ROIC (Return on invested capital) (%)	8.0	6.5	5.8	11.0	11.6	11.4	8.5	10.0	8.2	6.3	5.5
Equity ratio (%)	64.2	68.8	72.7	65.6	70.2	64.4	62.5	64.3	63.4	59.7	58.2
Total asset turnover (%)	0.8	0.8	0.9	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.6
Dividend payout ratio (%)	20.2	18.8	22.9	18.6	21.3	29.7	35.2	28.7	34.2	42.9	31.8

Consolidated Financial Statements

Consolidated statement of financial position

March 31, 2020 and 2021

		Millions of yen		Thousands of U.S. dollars
	Notes	2020	2021	2021
Assets				
Current assets				
Cash and cash equivalents	6	¥ 86,092	¥139,520	\$1,256,937
Trade and other receivables	7	92,604	111,339	1,003,054
Other financial assets	14	5,897	26,266	236,631
Inventories	8	116,720	126,837	1,142,676
Other current assets		13,189	11,903	107,234
Total current assets		314,505	415,868	3,746,559
Noncurrent assets				
Property, plant and equipment	9	251,010	251,230	2,263,333
Goodwill and intangible assets	10	15,774	16,440	148,108
Right-of-use assets	12	9,541	8,992	81,009
Investments accounted for using the equity method	13	13,615	15,081	135,865
Other financial assets	14	43,557	54,310	489,279
Deferred tax assets	28	14,296	8,438	76,018
Other noncurrent assets		1,073	930	8,378
Total noncurrent assets		348,869	355,424	3,202,018
Total assets		663,374	771,293	6,948,586
Liabilities and equity				
Liabilities				
Current liabilities				
Trade and other payables	15	43,681	52,264	470,847
Bonds and borrowings	16	45,257	46,759	421,252
Other financial liabilities	17	3,126	3,217	28,982
Income taxes payable		2,240	9,316	83,928
Other current liabilities	18	31,176	32,598	293,676
Total current liabilities		125,481	144,157	1,298,712
Noncurrent liabilities				
Bonds and borrowings	16	97,406	140,779	133,144
Net defined benefit liabilities	19	29,494	23,836	214,739
Other financial liabilities	17	8,038	7,025	63,288
Deferred tax liabilities	28	24	491	4,423
Other noncurrent liabilities	18	3,191	3,377	30,423
Total noncurrent liabilities		138,155	175,509	1,581,162
Total liabilities		263,636	319,666	2,879,874
Equity				
Capital stock	21	47,869	47,869	431,252
Capital surplus	21	54,791	54,856	494,198
Retained earnings	21	291,122	325,187	2,929,613
Treasury stock	21	(1,602)	(1,554)	(14,000)
Other components of equity	21	3,696	22,473	202,459
Total equity attributable to owners of the parent		395,876	448,831	4,043,523
Noncontrolling interests		3,861	2,794	25,171
Total equity		399,737	451,626	4,068,703
Total liabilities and equity		¥663,374	¥771,293	\$6,948,586

Consolidated statement of profit or loss

For the fiscal years ended March 31, 2020 and 2021

	Notes	Millions of yen		Thousands of U.S. dollars
		2020	2021	2021
Revenue	4,24	¥ 426,073	¥ 427,546	\$ 3,851,766
Cost of sales		(292,292)	(297,331)	(2,678,658)
Gross profit		133,781	130,214	1,173,099
Selling, general and administrative expenses	25	(87,292)	(83,871)	(755,595)
Share of profit of investments accounted for using the equity method	4,13	1,135	1,088	9,802
Other income	26	1,542	1,644	14,811
Other expenses	26	(718)	(1,686)	(15,189)
Operating profit	4	48,447	47,389	426,928
Finance income	27	3,068	5,679	51,162
Finance expenses	27	(6,766)	(1,067)	(9,613)
Profit before income taxes		44,749	52,001	468,477
Income tax expenses	28	(11,118)	(14,420)	(129,910)
Profit		33,631	37,580	338,559
Profit (loss) attributable to				
Owners of the parent		33,698	38,367	345,649
Noncontrolling interests		¥ (67)	¥ (786)	\$ (7,081)

	Notes	Yen		U.S. dollars
		2020	2021	2021
Earnings per share	29			
Basic earnings per share		¥163.06	¥188.59	\$1.70
Diluted earnings per share		—	—	—

Consolidated statement of comprehensive income

For the fiscal years ended March 31, 2020 and 2021

	Notes	Millions of yen		Thousands of U.S. dollars
		2020	2021	2021
Profit		¥ 33,631	¥37,580	\$338,559
Other comprehensive income (net of tax effects)				
Items that will not be reclassified to profit or loss				
Financial assets measured at fair value through other comprehensive income	30	(7,535)	13,243	119,306
Remeasurements of defined benefit plans	30	(710)	3,950	35,586
Share of other comprehensive income of investments accounted for using the equity method	13,30	(5)	2	18
Total of items that will not be reclassified to profit or loss		(8,251)	17,196	154,919
Items that may be reclassified subsequently to profit or loss				
Exchange differences on translation of foreign operations	30	(11,975)	9,091	81,901
Share of other comprehensive income of investments accounted for using the equity method	13,30	(576)	627	5,649
Total of items that may be reclassified subsequently to profit or loss		(12,551)	9,718	87,550
Total other comprehensive income (net of tax effects)		(20,803)	26,915	242,477
Comprehensive income		¥ 12,828	¥64,495	\$581,036
Comprehensive income attributable to				
Owners of the parent		13,119	65,073	586,243
Noncontrolling interests		¥ (291)	¥ (577)	\$ (5,198)

Consolidated statement of changes in equity

For the fiscal years ended March 31, 2020 and 2021

		Millions of yen											
		Equity attributable to owners of the parent										Non-controlling interests	Total equity
		Other components of equity											
Notes	Capital Stock	Capital surplus	Retained earnings	Treasury stock	Financial assets measured at fair value through other comprehensive income	Exchange differences on translation of foreign operations	Remeasurements of defined benefit plans	Total	Total				
Balance as at April 1, 2019		¥47,869	¥54,835	¥284,228	¥(1,741)	¥25,462	¥ (3,226)	¥ —	¥ 22,235	¥407,427	¥2,564	¥409,991	
Profit				33,698					—	33,698	(67)	33,631	
Other comprehensive income						(7,541)	(12,327)	(710)	(20,578)	(20,578)	(224)	(20,803)	
Total comprehensive income		—	—	33,698	—	(7,541)	(12,327)	(710)	(20,578)	13,119	(291)	12,828	
Purchase of treasury stock					(10,074)				—	(10,074)		(10,074)	
Sales of treasury stock					49				—	49		49	
Cancellation of treasury stock				(10,164)	10,164				—	—		—	
Dividends	22			(14,601)					—	(14,601)	(254)	(14,855)	
Share-based remuneration transactions	23		48						—	48		48	
Changes in ownership interests in subsidiaries			(92)						—	(92)	1,843	1,751	
Transfer from other components of equity to retained earnings				(2,039)		1,329		710	2,039	—		—	
Total transactions with owners		—	(44)	(26,804)	139	1,329	—	710	2,039	(24,670)	1,588	(23,081)	
Balance as at March 31, 2020		47,869	54,791	291,122	(1,602)	19,250	(15,553)	—	3,696	395,876	3,861	399,737	
Balance as at April 1, 2020		47,869	54,791	291,122	(1,602)	19,250	(15,553)	—	3,696	395,876	3,861	399,737	
Profit				38,367					—	38,367	(786)	37,580	
Other comprehensive income						13,246	9,508	3,950	26,705	26,705	209	26,915	
Total comprehensive income		—	—	38,367	—	13,246	9,508	3,950	26,705	65,073	(577)	64,495	
Purchase of treasury stock					(7)				—	(7)		(7)	
Sales of treasury stock				(0)	55				—	55		55	
Dividends	22			(12,231)					—	(12,231)	(55)	(12,286)	
Share-based remuneration transactions	23		51						—	51		51	
Changes in ownership interests in subsidiaries			14						—	14	(433)	(419)	
Transfer from other components of equity to retained earnings				7,928		(3,978)		(3,950)	(7,928)	—		—	
Total transactions with owners		—	65	(4,302)	47	(3,978)	—	(3,950)	(7,928)	(12,118)	(489)	(12,607)	
Balance as at March 31, 2021		¥47,869	¥54,856	¥325,187	¥(1,554)	¥28,518	¥ (6,044)	¥ —	¥ 22,473	¥448,831	¥2,794	¥451,626	

Thousands of U.S. dollars													
	Notes	Equity attributable to owners of the parent											
		Capital stock	Capital surplus	Retained earnings	Treasury stock	Other components of equity				Total	Total	Non-controlling interests	Total equity
						Financial assets measured at fair value through other comprehensive income	Exchange differences on translation of foreign operations	Remeasurements of defined benefit plans	Total				
Balance as at April 1, 2020		\$431,252	\$493,613	\$2,622,721	\$(14,432)	\$173,423	\$(140,117)	\$ —	\$33,297	\$3,566,450	\$34,784	\$3,601,234	
Profit				345,649					—	345,649	(7,081)	338,559	
Other comprehensive income						119,333	85,658	35,586	240,586	240,586	1,883	242,477	
Total comprehensive income		—	—	345,649	—	119,333	85,658	35,586	240,586	586,243	(5,198)	581,036	
Purchase of treasury stock					(63)				—	(63)		(63)	
Sales of treasury stock				(0)	495				—	495		495	
Dividends	22			(110,189)					—	(110,189)	(495)	(110,685)	
Share-based remuneration transactions	23		459						—	459		459	
Changes in ownership interests in subsidiaries				126					—	126	(3,901)	(3,775)	
Transfer from other components of equity to retained earnings				71,423		(35,838)		(35,586)	(71,423)	—		—	
Total transactions with owners		—	586	(38,757)	423	(35,838)	—	(35,586)	(71,423)	(109,171)	(4,405)	(113,577)	
Balance as at March 31, 2021		\$431,252	\$494,198	\$2,929,613	\$(14,000)	\$256,919	\$ (54,450)	\$ —	\$202,459	\$4,043,523	\$25,171	\$4,068,703	

Consolidated statement of cash flows

For the fiscal years ended March 31, 2020 and 2021

	Notes	Millions of yen		Thousands of U.S. dollars
		2020	2021	2021
Cash flows from operating activities				
Profit before income taxes		¥ 44,749	¥ 52,001	\$ 468,477
Depreciation and amortization		31,952	34,700	312,613
Impairment losses		—	464	4,180
Foreign exchange (gain) loss		2,873	(2,019)	(18,189)
Interest and dividends income		(2,167)	(1,613)	(14,532)
Interest expenses		899	850	7,658
Share of profit of investments accounted for using the equity method		(1,135)	(1,088)	(9,802)
Loss on disposal of noncurrent assets		637	1,220	10,991
(Increase) decrease in trade and other receivables		2,716	(12,706)	(114,468)
Increase in inventories		(6,560)	(4,859)	(43,775)
Increase in trade and other payables		4,401	406	3,658
(Decrease) increase in net defined benefit liabilities		1,867	(244)	(2,198)
Other, net		(4,041)	2,191	19,739
Subtotal		76,191	69,303	624,351
Dividends received		1,689	1,442	12,991
Interest received		989	618	5,568
Interest paid		(766)	(804)	(7,243)
Income taxes paid		(18,316)	(7,162)	(64,523)
Net cash provided by operating activities		59,787	63,397	571,144
Cash flows from investing activities				
Net (increase) decrease in time deposits		2,288	(2,524)	(22,739)
Net increase in short-term investment securities		(54)	(18,000)	(162,162)
Purchase of property, plant and equipment		(50,629)	(26,972)	(242,991)
Proceeds from sale of property, plant and equipment		225	428	3,856
Purchase of intangible assets		(2,931)	(2,601)	(23,432)
Payments for acquisition of business	5	—	(998)	(8,991)
Purchase of investment securities		(1,575)	(403)	(3,631)
Proceeds from sale and redemption of investment securities		363	8,199	73,865
Other, net		(613)	348	3,315
Net cash used in investing activities		(52,926)	(42,523)	(383,090)
Cash flows from financing activities				
Net increase (decrease) in short-term loans payable	31	(16,404)	17,916	161,405
Proceeds from long-term loans payable	31	30,000	60,747	547,270
Repayments of long-term loans payable	31	(9,924)	(4,962)	(44,703)
Proceeds from issuance of bonds	31	29,852	—	—
Redemption of bonds	31	—	(30,000)	(270,270)
Repayments of lease liabilities	31	(2,637)	(2,825)	(25,450)
Purchase of treasury stock	21	(10,074)	(7)	(63)
Dividends paid to owners of the parent	22	(14,596)	(12,228)	(110,162)
Dividends paid to noncontrolling interests		(254)	(55)	(495)
Capital contribution from noncontrolling interests		1,470	—	—
Other, net		—	(419)	(3,775)
Net cash provided by financing activities		7,432	28,166	253,748
Effect of exchange rate change on cash and cash equivalents		(2,605)	4,388	39,532
Net increase (decrease) in cash and cash equivalents		11,687	53,427	481,324
Cash and cash equivalents at the beginning of the period	6	74,404	86,092	775,604
Cash and cash equivalents at the end of the period	6	¥ 86,092	¥139,520	\$1,256,937

[Notes to Consolidated Financial Statements]

1. Reporting Entity

NGK Spark Plug Co., Ltd. (hereafter, “the Company”) is a company domiciled in Japan. Information on the address of its registered head office and main business offices is presented on the Company’s website (https://www.ngkntk.co.jp/english/).

The consolidated financial statements of the Company, as of March 31, 2021, are composed of the financial statements of the Company and its consolidated subsidiaries (hereafter, “the Group”) and its interests in associates.

The Group is primarily engaged in manufacturing and sale of automotive components, ceramics components, medical products and new businesses products.

2. Basis of Preparation

(1) Statement of compliance with IFRS

As the Company meets all the requirements of “Specified Company Complying with Designated International Accounting Standards” stipulated in Article 1-2 of the Ordinance on Consolidated Financial Statements, it prepares its consolidated financial statements in accordance with IFRS pursuant to the provisions of Article 93 of the Ordinance.

The Group’s consolidated financial statements for the fiscal year ended March 31, 2021 were approved by Takeshi Kawai, Representative Director, President and Chief Operating Officer, on July 29, 2021.

(2) Basis of measurement

The consolidated financial statements of the Group have been prepared on a historical cost basis, except for financial instruments, etc., measured at fair value as stated in “Note 3: Significant Accounting Policies.”

(3) Functional currency and presentation currency

The consolidated financial statements of the Group are presented in Japanese yen, which is the functional currency of the Company. All financial information presented in Japanese yen is rounded down to the nearest million.

The translation of the Japanese yen amounts into U.S. dollar amounts is included solely for the convenience of readers outside Japan, using the approximate exchange rate prevailing as at March 31, 2021, which was ¥111 to U.S. \$1.00. The translation should not be construed as a representation that the Japanese yen amounts have been, could have been or could in the future be converted into U.S. dollars at this or any other rate of exchange.

Certain comparative figures have been reclassified to conform to the current year’s presentation.

(4) Early adoption of new standards

No items to report.

(5) New standards and interpretations issued but not yet adopted by the Group

None of the new standards and interpretations issued but not yet adopted have a material impact on the Group’s consolidated financial statements.

(6) Use of estimates and judgments

The preparation of the consolidated financial statements in accordance with IFRS requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results could differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognized in the period in which the estimates are revised and in the future periods in which these revisions have an impact.

The following notes contain information about assumption and estimation uncertainties that may have a significant risk of resulting in material adjustment to the carrying amounts of assets and liabilities in the next fiscal year.

- Impairment loss on nonfinancial assets – “Note 3: Significant Accounting Policies (10) Impairment loss on nonfinancial assets” and “Note 11: Impairment Loss on Nonfinancial Assets.”
- Possibility of future outcome of litigation associated with the violation of antitrust law – “Note 34: Contingencies”

Regarding the impact of COVID-19, there is no unified view on when it will be fully contained, so there is uncertainty regarding the future impact on the Group.

With the assumption that the effect of COVID-19 will be generally contained in the fiscal year ending March 31, 2022, the Group made accounting estimates for the impairment of nonfinancial assets and the recoverability of deferred tax assets during the current fiscal year. There are uncertainties in this assumption, and if the effects are prolonged, it could affect the financial position and operating results of the Group for the next fiscal year.

3. Significant Accounting Policies

The significant accounting policies of the Group are as follows and are applied continuously to all periods presented in the consolidated financial statements, unless otherwise stated.

(1) Basis of consolidation

The consolidated financial statements of the Group include financial statements of the Company and its consolidated subsidiaries, and interests in associates that are accounted for using the equity method.

1) Subsidiaries

Subsidiaries are entities controlled by the Group. The Group controls an entity when it has power over the entity, is exposed to variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

The financial statements of the subsidiaries are included in the consolidated financial statements from the date on which control is obtained until the date on which control is lost. In the event that the Group disposes of a portion of its ownership interest in a subsidiary while control is retained, the change in ownership interest of the Group is accounted for as an equity transaction, and the difference between the adjustment of noncontrolling interests and the fair value of the consideration is directly recognized in equity as equity attributable to owners of the parent. If control is lost, any gain or loss arising from the loss of control is recognized in profit or loss.

The consolidated financial statements include investments in subsidiaries with different fiscal year-ends from that of the Company and for which it is impracticable to align fiscal year-ends due to laws and regulations of the location where the subsidiaries operate that require different fiscal year-ends from that of the parent. For such subsidiaries, financial statements prepared with a provisional closing date set on the same date as that of consolidated financial statements are used.

Where the accounting policies applied by a subsidiary are different from those applied by the Group, adjustments are made as necessary to the relevant subsidiary’s financial statements. Intra-group balances of payables and receivables and intra-group transactions, as well as unrealized gains or losses arising from intra-group transactions, are eliminated on consolidation.

2) Associates

Associates are entities over which the Group has significant influence over financial and operating policy decisions, but not control or joint control. Investments in associates are accounted for using the equity method.

Investments in associates are initially recognized at cost. The Company’s investments include goodwill recognized on acquisition. The Group’s share in the profit or loss and other comprehensive income of its associates is recognized as changes in the Group’s investments in associates from the date significant influence is acquired until the date significant influence ceases.

The consolidated financial statements include investments in associates with different fiscal year-end from that of the Company, as it is impracticable to align the dates due to relationships with other shareholders or other factors. For such associates, financial statements prepared with a provisional closing date set on the same date as that of consolidated financial statements are used.

If the Group’s share of losses of an associate exceeds its interest in the associate, the carrying amount of the investment is reduced to zero and no further losses are recognized unless the Group has incurred obligations or made payments on behalf of the associate.

If an associate applies accounting policies that differ from those of the Group, the associate’s financial statements are adjusted as necessary.

(2) Business combinations

Business combinations are accounted for using the acquisition method. Noncontrolling interests are measured at the proportionate share in the fair value of the acquiree’s identifiable assets and liabilities.

When the aggregate of the consideration transferred, the amount of any noncontrolling interest in the acquiree and, in a business combination achieved in stages, the acquisition-date fair value of the acquirer’s previously held equity interest in the acquiree exceeds the net amount of identifiable assets acquired and liabilities assumed at the date of acquisition, the excess is recognized as goodwill. Conversely, if this aggregate consideration is less than the net amount of the identifiable assets acquired and liabilities assumed, the difference is recognized as a gain in profit or loss.

Acquisition related costs of business combinations are accounted for as expenses when incurred, except for costs of issuing debt or equity securities.

If the initial accounting treatment of a business combination is not completed by the end of the fiscal year in which the business combination took place, provisional amounts for the items for which the accounting is incomplete are reported. In the event the Company obtained new information about the facts and circumstances which were in existence at the acquisition date that, if known, would have affected the measurement of the amounts recognized on the acquisition date and that such information was obtained during the period in which it is likely to have affected the measurement of the amounts recognized (hereafter, the “measurement period”), the provisional amounts recognized on the acquisition date are adjusted retrospectively to reflect such information. The new information may require the additional recognition of assets and liabilities, and the measurement period shall not exceed one year.

Business combinations under common control are business combination involving entities or businesses in which all the combining entities or businesses are ultimately controlled by the same party or parties both before and after the business combination and in which the control is not transitory. Such transaction continues to be accounted for using carrying amounts.

(3) Foreign currency translation

1) Foreign currency-denominated transactions

Foreign currency-denominated transactions, namely transactions in currencies other than the functional currency of each company, are translated into the functional currency using the exchange rates in effect on the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies are translated into the functional currency at the exchange rate of the fiscal year-end date. Nonmonetary assets and liabilities that are measured at fair value in a foreign currency are translated into the functional currency using the exchange rate at the date when the fair value was determined. Exchange differences arising from the translation are recognized in profit or loss.

Nonmonetary items denominated in a foreign currency that are measured at historical cost are translated using the exchange rate in effect on the date of the transaction.

2) Foreign operations

Assets and liabilities of foreign operations (consolidated subsidiaries and branch offices) are translated into the presentation currency at the exchange rate as of the fiscal year-end date. Profit or loss and cash flows are translated into the presentation currency at the exchange rates of the transaction dates or the average exchange rate for the period that approximates the exchange rates of the transaction dates. Translation differences arising as a result are recognized in other comprehensive income.

In the event of disposal of the entire ownership interest in a foreign operation or a part of the interest that results in a loss of control, the cumulative amount of the exchange differences of the foreign operation that were recognized in other comprehensive income are reclassified to profit or loss in the period when the disposal occurred.

(4) Financial instruments

1) Nonderivative financial assets

(i) Initial recognition and measurement

Stocks and bonds are initially recognized on the trade date. All other financial assets are initially recognized on the date on which the Group becomes a party to the contractual provisions of these instruments.

At initial recognition, a financial asset is classified either as financial asset measured at amortized cost or that measured at fair value, as follows.

(a) Financial assets measured at amortized cost

A financial asset is classified as financial asset measured at amortized cost if both of the following two conditions are met.

- The financial asset is held within a business model whose objective is to hold assets in order to collect contractual cash flows.
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

(b) Financial assets measured at fair value

Financial assets other than those measured at amortized cost described above are classified as financial assets measured at fair value through profit or loss or other comprehensive income.

For debt instruments, these are classified as debt instrument asset measured at fair value through other comprehensive income if the following conditions are met.

- The financial asset is held within a business model whose objective is to hold assets in order to collect contractual cash flow or sell financial assets.
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

With respect to investments in equity instrument for purposes other than sale, the option is available at initial recognition to make an irrevocable election to present subsequent fair value changes in other comprehensive income. The Group makes such designation for individual assets.

Except for financial assets that are classified as financial assets measured at fair value through profit or loss, financial assets are individually measured at fair value plus transaction costs that are directly attributable to the asset.

Trade receivables that do not contain a significant financial component are measured at transaction price.

For financial assets that are measured at fair value through profit or loss, transaction costs are recognized in profit or loss when incurred.

(ii) Subsequent measurement

(a) Financial assets measured at amortized cost

These are recognized at amortized cost calculated by the effective interest method, and interest income is recognized as “Finance income” in profit or loss.

(b) Financial assets measured at fair value

For financial assets measured at fair value through profit or loss, changes in fair value are recognized in profit or loss.

For debt instrument assets measured at fair value through other comprehensive income, changes in fair value, other than impairment gains or losses and foreign currency gains or losses, are recognized as other comprehensive income until derecognition or change in classification. When the financial asset is derecognized, the gains or losses recognized in the prior years are reclassified from other comprehensive income to profit or loss.

For equity instruments for which the Group elected to designate as financial assets measured at fair value through other comprehensive income, changes in fair value are recognized as other comprehensive income. Cumulative gains or losses are reclassified to retained earnings on derecognition or if there is a significant decrease in fair value. Dividends, however, are recognized in profit or loss as “Finance income.”

(iii) Impairment of financial assets

With respect to financial assets measured at amortized cost and debt instrument assets measured at fair value through other comprehensive income, the Group recognizes allowance for doubtful accounts in an amount equal to lifetime expected credit loss if credit risk on the financial asset has increased significantly since initial recognition. If credit risk of a financial asset has not increased significantly since initial recognition, an amount equal to 12-month expected credit loss is recognized as allowance for doubtful accounts. Assessment on whether credit risk of a financial asset has increased significantly since initial recognition is described in “Note 20: Financial Instruments (2) Financial risk management 4) Credit risk.”

However, for trade receivables, allowance for doubtful accounts is always recognized at an amount equal to lifetime expected credit loss. Estimates of expected credit losses of financial instruments are measured in a manner that reflects the following:

- (a) An unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes
- (b) Time value of money

- (c) Reasonable and supportable information that is available without undue cost or effort at the reporting date about past events, current conditions and forecasts of future economic conditions
 - The amount associated with the above measurement is recognized in profit or loss.
- (iv) Derecognition of financial assets
 - The Group derecognizes a financial asset when the contractual rights to the cash flows from the financial asset expire, or when the Group assigns the financial asset whereby substantially all the risks and rewards of ownership of the financial asset are transferred.

2) Nonderivative financial liabilities

(i) Initial recognition and measurement

Financial liabilities are classified as amortized cost. A financial liability is initially recognized at amortized cost on the trade date on which the Group becomes a party to the contractual provisions of the instrument.

A financial liability measured at amortized cost is initially recognized at fair value less transaction costs directly attributable to its issuance.

(ii) Subsequent measurement

A financial liability is recognized at amortized cost calculated by the effective interest method, and interest is recognized as “Finance expenses” in profit or loss.

(iii) Derecognition of financial liabilities

A financial liability is derecognized when it is extinguished, which is when the obligation specified in the contract is either discharged, cancelled or expires.

3) Derivatives

The Group uses derivative transactions, including foreign exchange forward contracts, interest rate and currency swaps, and currency options, to hedge currency and interest rate fluctuation risks.

Derivatives are initially recognized at fair value. After initial recognition, the fair value is remeasured and changes are recognized in profit or loss.

4) Offsetting financial assets and financial liabilities

Financial assets and financial liabilities are offset and presented as a net amount only when the Group has a legally enforceable right to set off the recognized amounts and intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

(5) Cash and cash equivalents

Cash and cash equivalents comprise cash on hand, demand deposits, and short-term, highly liquid investments with a maturity of 3 months or less that are readily convertible to cash and subject to insignificant risk of changes in value.

(6) Inventories

Inventories are measured at the lower of acquisition cost and net realizable value. The acquisition cost of inventories is mainly calculated by the moving average method and includes all costs of purchasing and processing, as well as other costs incurred in bringing the inventories to their present location and condition. Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and the estimated costs necessary to make the sale.

(7) Property, plant and equipment

Property, plant and equipment are measured using the cost model and are stated at cost less accumulated depreciation and accumulated impairment loss.

The cost of property, plant and equipment includes costs directly attributable to the acquisition of the property, plant and equipment; estimated costs of dismantling and removing the assets and restoring the site; and borrowing costs that satisfy the requirements for capitalization. If the useful life of a component of an item of property, plant and equipment varies, it is accounted for as a separate item of property, plant and equipment.

Property, plant and equipment, except for land and construction in progress, are depreciated using the straight-line method over the estimated useful life of each asset from the date when it became available for use. The estimated useful lives of major assets are as follows.

- Buildings and structures: 8 to 50 years
- Machinery, equipment and vehicles: 4 to 10 years

As part of the depreciation method, residual values and useful lives are reviewed annually and adjusted when necessary.

Items of property, plant and equipment are derecognized on disposal or when no future economic benefit is expected from their continued use or disposal. The gain or loss arising from derecognition is recognized in profit or loss at the time of derecognition of the relevant item of property, plant and equipment.

(8) Goodwill and intangible assets

1) Goodwill

Goodwill is not amortized but is allocated to an asset, a cash-generating unit or a group of cash-generating units that are identified according to location and type of business. It is tested for impairment at the same time every year or when an indication of impairment is identified. Impairment loss on goodwill is recognized in profit or loss and no reversal is made.

After initial recognition, goodwill is stated at cost less accumulated impairment losses.

- 2) Capitalization of development cost
- Expenditures on research activities to gain new scientific or technical knowledge are expensed when incurred. Expenditures on development activities are capitalized only if the Company can demonstrate that all of the following requirements are met.
- (a) The technical feasibility of completing the intangible asset so that it will be available for use or sale

(b) Its intention to complete the intangible asset and use or sell it

(c) Its ability to use or sell the intangible asset

(d) How the intangible asset will generate probable future economic benefits

(e) The availability of adequate technical, financial and other resources to complete the development and use or sell the intangible asset

(f) Its ability to measure reliably the expenditure attributable to the intangible asset during its development
- The amount initially recognized for an internally generated intangible asset is the sum of the expenditures incurred from the time the intangible asset first meets all the recognition criteria listed above to the completion of the development phase. This amount is amortized using the straight-line method over the asset's estimated useful life. The cost at initial recognition less accumulated amortization and accumulated impairment loss is recognized in the consolidated statement of financial position.
- Development cost that does not meet the above requirements for capitalization is recognized in profit or loss when incurred.
- 3) Other intangible assets
- Intangible assets are measured at cost less accumulated amortization and accumulated impairment loss.
- Intangible assets acquired separately are measured at cost at the time of initial recognition. Intangible assets acquired in business combinations are measured at fair value as of the date of the business combination.
- Acquisition and development costs of software for internal use are accounted for as intangible asset if it is probable that the future economic benefits that are attributable to the asset will flow to the Group.
- Intangible assets with finite useful lives are amortized using the straight-line method over their estimated useful lives. The estimated useful lives of major intangible assets are as follows.
- Software: 5 years

Development assets: 5 to 10 years

Customer-related assets: 8 years
- As part of the amortization method, residual values and useful lives are reviewed annually and adjusted when necessary.
- Intangible assets are derecognized on disposal or when no future economic benefit is expected from their continued use or disposal.
- The gain or loss arising from derecognition of an intangible asset is recognized in profit or loss at the time of derecognition of the asset.

(9) Leases

- 1) Lessee
- The Group assesses whether a contract is or contains a lease at the inception of the contract.
- Lease liability in a lease transaction is measured on the commencement date of the lease at the discounted present value of the lease payments over the lease term that are not yet paid. A right-of-use asset is initially measured at cost, consisting of the amount of the lease liability at the initial measurement, with adjustments made for initial direct costs, any lease payments made before or at the commencement date, etc., restoration obligations required under the lease agreement and other costs. The right-of-use asset is depreciated systematically over the lease term. The lease term includes the periods covered by an option to extend or an option to terminate if the Group is reasonably certain to exercise the extension option or not exercise the termination option on the basis of past practice relating to the period over which the underlying asset has been used and the economic reasons for doing so.
- Lease payments are allocated between finance expenses and repayable portion of the remaining balance of lease liability, to produce a constant periodic rate of interest on the remaining balance of the lease liability. Finance expenses are shown in the consolidated statement of profit or loss separately from the depreciation charge for the right-of-use asset.
- For leases with the lease terms of 12 months or less, and leases for which the underlying assets are of low value, lease payments for such leases are recognized as expenses on either a straight-line basis or some other systematic basis over the lease term.
- 2) Lessor
- The Group classifies a lease as a finance lease if substantially all of the risk and rewards incidental to ownership of the underlying asset are transferred to the lessee. All other lease contracts are classified as operating leases.
- In operating lease transactions, lease payments are recognized as revenue over the lease term using the straight-line method.

(10) Impairment loss on nonfinancial assets

For nonfinancial assets, excluding inventories and deferred tax assets, an assessment is made at the end of each fiscal year for each asset or cash-generating unit to which an asset is allocated to determine whether there is any indication that an asset may be impaired. If such indication exists, an impairment test is performed.

An individual asset or cash-generating unit on which impairment test is performed is the smallest unit (or group of units) which, based on management accounting categories, generates independent cash flows. Corporate assets are allocated to individual cash-generating units for which a reasonable and consistent allocation method can be identified. Idle property is grouped by each individual asset.

The recoverable amount of an individual asset or a cash-generating unit is the higher of its value in use and its fair value, less the costs of disposal. In calculating value in use, the estimated future cash flows are discounted to their present value using a pretax discount rate that reflects the time value of money and the risks specific to the asset. For the calculation of fair value less the costs of disposal, an appropriate valuation model is used that is supported by available fair value indicators.

If the carrying amount of an asset or a cash-generating unit exceeds the recoverable amount, an impairment loss is recognized in profit or loss. For individual assets, the carrying amount of the asset is reduced to the recoverable amount. When impairment loss is recognized in

relation to a cash-generating unit, it is allocated first to reduce the carrying amount of any goodwill allocated to the cash-generating unit, and then to the other assets in the unit proportionately to the carrying amount of each asset in the unit.

In calculating the recoverable amount, certain assumptions are made regarding the estimated future cash flows and discount rates, etc. These assumptions may be affected by future uncertain economic conditions, such as the long-term effects of COVID-19. A revision of these assumptions because of the future uncertain economic conditions could have a significant impact on the recoverable amounts recognized in the next fiscal year's consolidated financial statements.

Impairment loss on goodwill is not reversed. For impairment loss on nonfinancial assets other than goodwill, the recoverable amount of the asset is estimated if there is an indication that the impairment loss may no longer exist or may have decreased, and the impairment loss is reversed if the recoverable amount exceeds the carrying amount net of depreciation or amortization. A reversal of an impairment loss on an asset is recognized in profit or loss only to the extent that the carrying amount of the asset does not exceed the carrying amount that would have been determined had no impairment loss been recognized in prior years.

(11) Employee benefits

- 1) Post-employment benefits
- The Company and certain consolidated subsidiaries have defined benefit-type corporate pension plans and lump-sum retirement benefit plans, while certain overseas consolidated subsidiaries have defined contribution plans.
- (i) Defined benefit plans

The present value of defined benefit obligations as well as related current and past service costs are determined using the projected unit credit method.

The discount rate is determined by reference to market yields at the fiscal year end on high-quality corporate bonds for the corresponding discount period that is set based on the period up to the expected future benefit payment dates in every fiscal year.

Asset and liability associated with post-employment benefit plans are recognized at the present value of defined benefit obligations less the fair value of plan assets. Service cost and net interest on the net defined benefit liabilities are recognized in profit or loss.

Gains and losses arising from remeasurement of defined benefit plans are recognized in full in other comprehensive income in the fiscal year that these are incurred and immediately transferred to retained earnings. All past service costs are recognized in profit or loss when incurred.
- (ii) Defined contribution plans

For defined contribution plans, the contribution payable to the plan is recognized as an expense when the related service is rendered by the employees.
- 2) Short-term employee benefits
- For short-term employee benefits, the undiscounted amount of benefits is recognized as an expense when the related service is rendered.
- With respect to bonus payments and paid leave costs, the expected amount to be paid under relevant arrangements is recognized as liability when the Group has legal or constructive obligation to make such payments and a reliable estimate of the expected obligations can be made.
- 3) Other long-term employee benefits
- The obligations with respect to long-term employee benefits other than post-employment benefits are measured at the estimated future benefits that employees have earned in return for their services rendered in the current and prior fiscal years, discounted to the present value.

(12) Share-based payments

The Company has adopted equity-settled share-based payment plans for its directors (excluding outside directors) and executive officers in the form of Board Incentive Plan Trust (hereafter, "BIP Trust") and Employee Stock Ownership Plan Trust (hereafter, "ESOP Trust"). Shares of the Company held by the two trusts are recognized as treasury stock. Compensation for services received is measured with reference to the fair value of the Company's shares as of the date of grant, and is recognized as an expense over the vesting period. The same amount is recognized as an increase in equity.

(13) Provisions

Provisions are recognized when the Group has a present legal or constructive obligation as a result of past events, when it is probable that an outflow of economic resources will be required to settle the obligation and a reliable estimate can be made of the amount of the resources outflow.

When the impact of the time value of money is material, provisions are measured by the present value of the estimated expenditure required to settle the obligation. The present value is measured by discounting using a pretax rate that reflects the time value of money and the specific risks of the liability. Any increase in the provision reflecting the effects arising from the passage of time is recognized as finance expenses.

(14) Shareholders' equity

- 1) Ordinary shares
- With respect to equity instruments issued by the Company, the proceeds are recorded in capital stock and capital surplus, and costs directly attributable to issue of the shares (net of tax effects) are recognized as a deduction from capital surplus.

2) Treasury stock
Treasury stock is measured at acquisition cost and recognized as a deduction from equity. Gains or losses from purchase, sale and cancellation of treasury stock are not recognized. The difference between the carrying amount and the consideration received from disposal is recognized as capital surplus.

(15) Revenue

The Group recognizes revenue based on the following five-step approach.

- Step 1: Identify the contract with the customer
- Step 2: Identify the performance obligations in the contract
- Step 3: Determine the transaction price
- Step 4: Allocate the transaction price to the performance obligations in the contract
- Step 5: Recognize revenue when the entity satisfies a performance obligation

The Group engages mainly in the sale of spark plugs, glow plugs, various automotive sensors and other automotive components; cutting tools for machine tools, ceramics products for industrial use and products for semiconductor manufacturing equipment; products for medical use, including artificial bones and oxygen concentrators, and IC packages; and other semiconductor components. Revenue from the sale of these goods is recognized when control of the goods is transferred to the customer and the performance obligation is satisfied. Revenue is measured at the amount of the consideration promised under the contract with the customer, less rights of return, discounts, rebates, etc.

(16) Government grants

A government grant is recognized at fair value when there is reasonable assurance that all the conditions attached to the grant are complied with and the grant will be received.

Government grant associated with revenue is recognized in profit or loss on a systematic basis over the period that the related costs for which it is intended to compensate are recognized.

For government grant associated with assets, the asset's carrying amount is measured by deducting the grant amount from the acquisition cost of the asset.

(17) Finance income and finance expenses

Finance income consists mainly of interest income, dividend income, and foreign exchange gain. Interest income is recognized when incurred using the effective interest method. Dividend income is recognized when the Group's right to receive payment is established.

Finance expenses consist mainly of interest expense and foreign exchange loss. Interest expense is recognized when incurred using the effective interest method.

(18) Income taxes

Income tax expense is stated as the total of current taxes and deferred taxes.

Current taxes are measured at the expected amount of taxes payable to or recoverable from tax authorities, using tax rates enacted or substantively established by the fiscal year-end date. These are recognized in profit or loss for the fiscal year, except for those related to business combinations and items that are recognized either in other comprehensive income or directly in equity.

Deferred tax assets and deferred tax liabilities are measured at the tax rates that are expected to apply to the fiscal year when the asset is realized or the liability is settled, based on tax rates that have been enacted or substantively enacted by the end of the fiscal year. Deferred tax assets and deferred tax liabilities are measured based on temporary differences between their carrying amounts for accounting purposes and tax base amounts, and tax loss carryforwards and tax credit carryforwards. A deferred tax asset is recognized for deductible temporary difference, tax loss carryforward and tax credit carryforward only to the extent it is probable that future taxable profit will be available against which the deductible temporary difference, tax loss carryforward or tax credit carryforward can be utilized.

The expected amount of taxable income in the future will fluctuate depending on the business performance at that time, so it may be affected by uncertain future economic conditions such as the prolongation of COVID-19. When factors that have a significant effect on the status of taxable income in the following years emerge, the amount recognized in the next fiscal year's consolidated financial statements may be materially affected.

Deferred tax assets and deferred tax liabilities are not recognized for temporary difference arising from initial recognition of an asset or liability in a transaction that is not a business combination and which affects neither accounting income nor taxable income at the time of transaction. Furthermore, deferred tax liabilities are not recognized if the taxable temporary difference arises from initial recognition of goodwill.

Deferred tax liabilities are recognized for taxable temporary differences associated with investments in consolidated subsidiaries and associates. However, deferred tax liabilities are not recognized if it is possible to control the timing of the reversal of the temporary differences and probable that the temporary differences will not be reversed in the foreseeable future. Deferred tax assets arising from deductible temporary differences associated with investments in consolidated subsidiaries and associates are recognized only to the extent that it is probable that the temporary difference will reverse in the foreseeable future and taxable profit will be available.

Deferred tax assets and deferred tax liabilities are offset only when there is a legally enforceable right to set off current tax assets against current tax liabilities and when these relate to income taxes levied on the same taxable entity by the same tax authority.

(19) Earnings per share

Basic earnings per share are calculated by dividing profit for the year attributable to owners of the parent by the weighted-average number of ordinary shares outstanding during the fiscal year, adjusted for the number of treasury stocks.

4. Segment Information

(1) Summary of reportable segments

The reportable segments of the Group are the business units for which the Group is able to obtain separate financial information in order for the Board of Directors to conduct periodic reviews to determine the allocation of management resources and evaluate business results.

The Group has its business units identified by product. Each business unit plans comprehensive domestic and overseas strategies for its own products and conducts its own business activities. Therefore, the Group is composed of business units identified by products organized in segments.

For the purpose of this reporting, several business segments are grouped together in consideration of the product nature, markets and other similarities to present the four reportable segments of Automotive components, Ceramics, Medical and New businesses.

Automotive components is a segment that manufactures and sells primarily spark plugs, exhaust gas sensors, and other automotive components. Ceramics is a segment that manufactures and sells cutting tools, industrial ceramics and products for semiconductor manufacturing equipment. Medical is a segment that manufactures and sells artificial bones and oxygen concentrators. New businesses is a segment that manufactures and sells products related to new businesses such as the environmental and energy businesses.

Due to the change of the Company's constitution as of April 1, 2020, the reportable segments, which used to be Automotive components and Technical ceramics consisting of Semiconductor and Ceramics, were converted into the four reportable segments of Automotive components, Ceramics, Medical and New businesses. New businesses such as that for environmental and energy related products, which used to be included in Other in the previous reportable segments, is now included in New businesses. Semiconductor businesses, which used to be included in Technical ceramics in the previous reportable segments, was reorganized into the organization concentrating upon the development of new products. Therefore, semiconductor business is also transferred from Technical ceramics to New businesses. Expecting growth in the coming years, Medical business, which used to be included in Other in the previous reportable segments has become a new reportable segment. Due to the newly organized segment of New businesses, how to allocate research and development expenses associated with the new businesses has changed.

Accordingly, the segment information for the fiscal year ended March 31, 2020 is made and reported based on the reportable segments for the fiscal year ended March 31, 2021.

(2) Segment revenue and results

Fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020)

	Reportable segments					Other (Note 1)	Total	Adjustments	Consolidated (Note 2)
	Automotive components	Ceramics	Medical	New businesses	Total				
Revenue									
External customers	¥344,398	¥36,311	¥20,671	¥20,630	¥422,012	¥4,060	¥426,073	—	¥426,073
Inter-segment	—	—	—	—	—	—	—	—	—
Total	¥344,398	¥36,311	¥20,671	¥20,630	¥422,012	¥4,060	¥426,073	—	¥426,073
Segment profit (loss)	¥ 55,689	¥ (1,106)	¥ (427)	¥ (5,158)	¥ 48,996	¥ (549)	¥ 48,447	—	¥ 48,447
Finance income									¥ 3,068
Finance expenses									¥ (6,766)
Profit before income taxes									¥ 44,749
Other material items									
Depreciation and amortization	¥ 25,600	¥ 3,530	¥ 982	¥ 1,838	¥ 31,951	¥ 1	¥ 31,952	—	¥ 31,952
Share of profit (loss) of investments accounted for using the equity method	¥ 484	—	¥ 638	¥ 18	¥ 1,141	¥ (6)	¥ 1,135	—	¥ 1,135
Impairment losses	—	—	—	—	—	—	—	—	—

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Reportable segments					Other (Note 1)	Total	Adjustments	Consolidated (Note 2)
	Automotive components	Ceramics	Medical	New businesses	Total				
Revenue									
External customers	¥338,612	¥38,915	¥24,805	¥ 19,905	¥422,238	¥5,307	¥427,546	—	¥427,546
Inter-segment	—	—	—	—	—	—	—	—	—
Total	¥338,612	¥38,915	¥24,805	¥ 19,905	¥422,238	¥5,307	¥427,546	—	¥427,546
Segment profit (loss)	¥ 56,633	¥ 1,849	¥ (1,184)	¥(10,434)	¥ 46,863	¥ 526	¥ 47,389	—	¥ 47,389
Finance income									¥ 5,679
Finance expenses									¥ (1,067)
Profit before income taxes									¥ 52,001
Other material items									
Depreciation and amortization	¥ 27,085	¥ 3,978	¥ 1,094	¥ 2,541	¥ 34,699	¥ 0	¥ 34,700	—	¥ 34,700
Share of profit (loss) of investments accounted for using the equity method	¥ 475	—	¥ 608	—	¥ 1,083	¥ 4	¥ 1,088	—	¥ 1,088
Impairment losses	—	—	¥ 464	—	¥ 464	—	¥ 464	—	¥ 464

	Thousands of U.S. dollars								
	Reportable segments					Other (Note 1)	Total	Adjustments	Consolidated (Note 2)
	Automotive components	Ceramics	Medical	New businesses	Total				
Revenue									
External customers	\$3,050,559	\$350,586	\$223,468	\$179,324	\$3,803,946	\$47,811	\$3,851,766	—	\$3,851,766
Inter-segment	—	—	—	—	—	—	—	—	—
Total	\$3,050,559	\$350,586	\$223,468	\$179,324	\$3,803,946	\$47,811	\$3,851,766	—	\$3,851,766
Segment profit (loss)	\$ 510,207	\$ 16,658	\$ (10,667)	\$ (94,000)	\$ 422,189	\$ 4,739	\$ 426,928	—	\$ 426,928
Finance income									\$ 51,162
Finance expenses									\$ (9,613)
Profit before income taxes									\$ 468,477
Other material items									
Depreciation and amortization	\$ 244,009	\$ 35,838	\$ 9,856	\$ 22,892	\$ 312,604	\$ 0	\$ 312,613	—	\$ 312,613
Share of profit (loss) of investments accounted for using the equity method	\$ 4,279	—	\$ 5,477	—	\$ 9,757	\$ 36	\$ 9,802	—	\$ 9,802
Impairment losses	—	—	\$ 4,180	—	\$ 4,180	—	\$ 4,180	—	\$ 4,180

(Notes) 1. “Other” represents businesses such as material sales and welfare program service, which are not included in reportable segments.
2. Segment profit (loss) is reconciled to operating profit in the consolidated financial statements.

(3) Information on products and services

Disclosure is omitted as the same information is presented in “(1) Summary of reportable segments” and “(2) Segment revenue and results.”

(4) Information by geographical region

1) Revenue from external customers for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Japan	¥ 81,408	¥ 79,739	\$ 718,369
United States	117,786	117,015	1,054,189
Germany	87,503	80,733	727,324
China	42,077	61,638	555,297
Other	97,297	88,418	796,559
Total	¥426,073	¥427,546	\$3,851,766

(Note) Revenue is classified based on the location of the Company and its consolidated subsidiaries.

2) Noncurrent assets as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Japan	¥204,395	¥201,588	\$1,816,108
Asia	38,706	42,241	380,550
(Thailand)	(27,113)	(29,292)	(263,892)
Other	34,297	33,764	304,180
Total	¥277,399	¥277,594	\$2,500,847

(5) Information on principal customers

This information is omitted because no single customer accounts for 10% or more of the revenue presented in the consolidated statement of profit or loss.

5. Business Combinations

Fiscal year ended March 31, 2020

No items to report.

Fiscal year ended March 31, 2021

(Business combination by acquisition)

(1) Outline of the business combination

1) Name and description of business of the acquiree

Spirosure, Inc.

Development, manufacture and sale of asthma monitors

2) Main reasons for business combination

The Company implemented the business combination to improve the line of products in the treatment of asthma patients in combination with the oxygen concentrators for COPD patients handled by the Company and subsidiary CAIRE Inc. to expand the respiratory business by incorporating the asthma diagnostic equipment handled by the acquiree into the Group.

3) Date of acquisition

June 2, 2020

4) Method of obtaining control of acquiree

A consolidated subsidiary of the Company acquired the business of acquiree with cash paid as consideration.

(2) Breakdown of fair value of assets acquired, liabilities assumed and consideration transferred at the date of acquisition

	Millions of yen	Thousands of U.S. dollars
	Fair value	
Fair value of assets acquired and liabilities assumed		
Cash and cash equivalents	¥ 2	\$ 18
Trade and other receivables	2	18
Inventories	11	99
Intangible assets	813	7,324
Trade and other payables	(64)	(577)
Borrowings	(86)	(775)
Fair value of assets acquired and liabilities assumed, net	678	6,108
Goodwill	322	2,901
Total	1,000	9,009
Fair value of consideration transferred		
Cash and cash equivalent	1,000	9,009
Total	¥1,000	\$9,009

(Notes) 1. Acquisition-related costs of ¥78 million (\$703 thousand) arising from the business combination was recorded in Selling, general and administrative expenses.
2. Goodwill arising from the business combination represents future excess earnings power expected from future business development, and no part of it is tax deductible.

(3) Cash flows arising from the acquisition

	Millions of yen	Thousands of U.S. dollars
Cash and cash equivalents used for the acquisition	¥1,000	\$9,009
Cash and cash equivalents held by the acquiree at the time of acquisition	(2)	(18)
Total	¥ 998	\$8,991

(4) Effects on business performance

Loss generated after the date of acquisition on acquiree was ¥432 million (\$3,892 thousand) and revenue generated after the date of acquisition on acquiree was omitted because its effect was insignificant. Disclosure was omitted with respect to information on revenue and profit for the year with the assumption that the business combination took place at the beginning of the fiscal year as it was insignificant.

6. Cash and Cash Equivalents

The components of cash and cash equivalents as of March 31, 2020 and 2021 were as follows. The balance of “Cash and cash equivalents” in the consolidated statement of financial position at March 31, 2020 and 2021, agree with the respective balances in the consolidated statement of cash flows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Cash and deposits	¥49,892	¥ 73,020	\$ 657,838
Short-term investments	36,200	66,500	599,099
Total	¥86,092	¥139,520	\$1,256,937

(Note) Cash and cash equivalents are classified as financial assets measured at amortized cost.

7. Trade and Other Receivables

The components of trade and other receivables as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Notes and accounts receivable — trade	¥87,940	¥105,335	\$ 948,964
Other accounts receivable	4,664	6,004	54,090
Total	¥92,604	¥111,339	\$1,003,054

(Note) Trade and other receivables are classified as financial assets measured at amortized cost.

8. Inventories

The components of inventories as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Finished goods	¥ 59,997	¥ 65,778	\$ 592,595
Work in progress	32,779	34,241	308,477
Raw materials and supplies	23,943	26,817	241,595
Total	¥116,720	¥126,837	\$1,142,676

The amounts of inventories recognized as expenses and included in cost of sales for the fiscal years ended March 31, 2020 and 2021 were approximately the same as “Cost of sales” amounts in the consolidated statement of profit or loss.

The amounts of write-downs of inventories that were included in cost of sales and recognized as expenses were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Amount of write-downs	¥947	¥609	\$5,486

9. Property, Plant and Equipment

(1) Changes

Changes in the carrying amounts of property, plant and equipment were as follows.

	Millions of yen					
	Land	Buildings and structures	Machinery, equipment and vehicles	Construction in progress	Other	Total
April 1, 2019	¥27,900	¥71,376	¥108,261	¥ 25,625	¥ 4,848	¥238,012
Acquisitions	0	234	813	44,841	188	46,078
Depreciation (Note 1)	—	(6,039)	(19,266)	—	(1,549)	(26,855)
Sales or disposals	(9)	(157)	(621)	(1)	(17)	(807)
Foreign currency exchange differences	(245)	(991)	(2,942)	(799)	(186)	(5,164)
Other (Note 2)	88	10,581	37,467	(50,535)	2,144	(252)
March 31, 2020	¥27,734	¥75,005	¥123,711	¥ 19,130	¥ 5,428	¥251,010
Acquisitions	—	682	565	27,511	78	28,838
Depreciation (Note 1)	—	(6,221)	(21,758)	—	(1,607)	(29,587)
Sales or disposals	(31)	(47)	(1,363)	—	(162)	(1,605)
Foreign currency exchange differences	288	726	1,760	156	58	2,991
Other (Note 2)	129	1,921	24,598	(28,514)	1,448	(416)
March 31, 2021	¥28,120	¥72,066	¥127,513	¥ 18,284	¥ 5,244	¥251,230

	Thousands of U.S. dollars					
	Land	Buildings and structures	Machinery, equipment and vehicles	Construction in progress	Other	Total
March 31, 2020	\$249,856	\$675,721	\$1,114,514	\$ 172,342	\$ 48,901	\$2,261,351
Acquisitions	—	6,144	5,090	247,847	703	259,802
Depreciation (Note 1)	—	(56,045)	(196,018)	—	(14,477)	(266,550)
Sales or disposals	(279)	(423)	(12,279)	—	(1,459)	(14,459)
Foreign currency exchange differences	2,595	6,541	15,856	1,405	523	26,946
Other (Note 2)	1,162	17,306	221,604	(256,883)	13,045	(3,748)
March 31, 2021	\$253,333	\$649,243	\$1,148,766	\$ 164,721	\$ 47,243	\$2,263,333

(Notes) 1. Depreciation of property, plant and equipment is included in "Cost of sales" and "Selling, general and administrative expenses" in the consolidated statement of profit or loss.
2. Transfers from construction in progress account to each line item are included in "Other."
3. The amounts of government grants deducted to measure the carrying amounts of property, plant and equipment for the fiscal years ended March 31, 2020 and 2021 were ¥1 million and ¥150 million (\$1,351 thousand), respectively.

(2) Opening and closing balances of acquisition cost, accumulated depreciation (aggregated with accumulated impairment losses) and carrying amount

	Millions of yen					Total
	Land	Buildings and structures	Machinery, equipment and vehicles	Construction in progress	Other	
April 1, 2019						
Acquisition cost	¥27,943	¥ 176,607	¥ 312,051	¥25,625	¥ 16,432	¥ 558,659
Accumulated depreciation	(43)	(105,230)	(203,790)	—	(11,583)	(320,647)
Carrying amount	¥27,900	¥ 71,376	¥ 108,261	¥25,625	¥ 4,848	¥ 238,012

	Millions of yen					Total
	Land	Buildings and structures	Machinery, equipment and vehicles	Construction in progress	Other	
March 31, 2020						
Acquisition cost	¥27,777	¥ 184,766	¥ 334,502	¥19,130	¥ 17,830	¥ 584,007
Accumulated depreciation	(43)	(109,761)	(210,790)	—	(12,401)	(332,996)
Carrying amount	¥27,734	¥ 75,005	¥ 123,711	¥19,130	¥ 5,428	¥ 251,010

	Millions of yen					Total
	Land	Buildings and structures	Machinery, equipment and vehicles	Construction in progress	Other	
March 31, 2021						
Acquisition cost	¥28,164	¥ 188,062	¥ 353,438	¥18,284	¥ 18,484	¥ 606,434
Accumulated depreciation	(43)	(115,995)	(225,925)	—	(13,240)	(355,204)
Carrying amount	¥28,120	¥ 72,066	¥ 127,513	¥18,284	¥ 5,244	¥ 251,230

	Thousands of U.S. dollars					Total
	Land	Buildings and structures	Machinery, equipment and vehicles	Construction in progress	Other	
March 31, 2021						
Acquisition cost	\$253,730	\$ 1,694,252	\$ 3,184,126	\$164,721	\$ 166,523	\$ 5,463,369
Accumulated depreciation	(387)	(1,045,000)	(2,035,360)	—	(119,279)	(3,200,036)
Carrying amount	\$253,333	\$ 649,243	\$ 1,148,766	\$164,721	\$ 47,243	\$ 2,263,333

(3) Commitments

Contractual commitments to acquire property, plant and equipment were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Commitments to acquire property, plant and equipment	¥20,749	¥11,312	\$101,910

10. Goodwill and Intangible Assets

(1) Changes

Changes in the carrying amounts of goodwill and intangible assets were as follows.

	Millions of yen				
	Intangible assets				Total
	Goodwill	Software	Development assets	Other (Note 3)	
April 1, 2019	¥3,430	¥ 5,718	¥1,996	¥4,532	¥15,678
Acquisitions	—	2,495	—	11	2,506
Additions through internal development	—	—	424	—	424
Acquisitions through business combinations	—	—	—	—	—
Amortization (Note 1)	—	(1,791)	(359)	(599)	(2,750)
Sales or disposals	—	(8)	—	—	(8)
Foreign currency exchange differences	(60)	(72)	—	(89)	(222)
Other	—	(88)	—	234	145
March 31, 2020	¥3,369	¥ 6,253	¥2,061	¥4,089	¥15,774
Acquisitions	—	2,193	—	64	2,257
Additions through internal development	—	—	343	—	343
Acquisitions through business combinations	322	—	—	813	1,135
Amortization (Note 1)	—	(1,786)	(244)	(645)	(2,676)
Impairment losses (Note2)	(317)	—	—	(146)	(464)
Sales or disposals	—	(54)	—	—	(54)
Foreign currency exchange differences	48	62	—	63	174
Other	—	(92)	—	42	(50)
March 31, 2021	¥3,422	¥ 6,576	¥2,161	¥4,281	¥16,440

	Thousands of U.S. dollars				
	Intangible assets				Total
	Goodwill	Software	Development assets	Other (Note 2)	
March 31, 2020	\$30,351	\$ 56,333	\$18,568	\$36,838	\$142,108
Acquisitions	—	19,757	—	577	20,333
Additions through internal development	—	—	3,090	—	3,090
Acquisitions through business combinations	2,901	—	—	7,324	10,225
Amortization (Note 1)	—	(16,090)	(2,198)	(5,811)	(24,108)
Impairment losses (Note2)	(2,856)	—	—	(1,315)	(4,180)
Sales or disposals	—	(486)	—	—	(486)
Foreign currency exchange differences	432	559	—	568	1,568
Other	—	(829)	—	378	(450)
March 31, 2021	\$30,829	\$ 59,243	\$19,468	\$38,568	\$148,108

(Notes) 1. Amortization of intangible assets is included in "Cost of sales" and "Selling, general and administrative expenses" in the consolidated statement of profit or loss.
2. Impairment losses on goodwill and intangible assets are included in "Selling, general and administrative expenses" in the consolidated statement of profit or loss.
3. "Other" includes customer-related assets, etc.
4. The aggregate amounts of research and development expenditure recognized as an expense for the fiscal years ended March 31, 2020 and 2021 are ¥28,250 million and ¥26,115 million (\$235,270 thousand), respectively. They are included in "Cost of sales" and "Selling, general and administrative expenses" in the consolidated statement of profit or loss.

(2) Opening and closing balances of acquisition cost, accumulated amortization (aggregated with accumulated impairment losses) and carrying amount

	Millions of yen				
	Intangible assets				Total
	Goodwill	Software	Development assets	Other	
April 1, 2019					
Acquisition cost	¥3,430	¥13,336	¥ 3,212	¥ 6,588	¥26,567
Accumulated amortization	—	(7,617)	(1,215)	(2,055)	(10,888)
Carrying amount	¥3,430	¥ 5,718	¥ 1,996	¥ 4,532	¥15,678

	Millions of yen				
	Intangible assets				Total
	Goodwill	Software	Development assets	Other	
March 31, 2020					
Acquisition cost	¥3,369	¥15,312	¥ 3,637	¥ 6,704	¥ 29,023
Accumulated amortization	—	(9,058)	(1,575)	(2,615)	(13,249)
Carrying amount	¥3,369	¥ 6,253	¥ 2,061	¥ 4,089	¥ 15,774

	Millions of yen				
	Intangible assets				Total
	Goodwill	Software	Development assets	Other	
March 31, 2021					
Acquisition cost	¥3,754	¥17,303	¥ 3,981	¥ 7,768	¥ 32,807
Accumulated amortization	(331)	(10,727)	(1,820)	(3,487)	(16,366)
Carrying amount	¥3,422	¥ 6,576	¥ 2,161	¥ 4,281	¥ 16,440

	Thousands of U.S. dollars				
	Intangible assets				Total
	Goodwill	Software	Development assets	Other	
March 31, 2021					
Acquisition cost	\$33,820	\$155,883	\$ 35,865	\$ 69,982	\$ 295,559
Accumulated amortization	(2,982)	(96,640)	(16,396)	(31,414)	(147,441)
Carrying amount	\$30,829	\$ 59,243	\$ 19,468	\$ 38,568	\$ 148,108

11. Impairment Loss on Nonfinancial Assets

(1) Cash-generating units

The Group has its business assets grouped based on the segmentation in its management accounts. Idle assets are grouped individually.

(2) Impairment loss

The components of assets for which impairment loss is recognized, by asset class, were as follows.
Impairment loss is recorded in Selling, general and administrative expenses in the consolidated statement of profit or loss.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Goodwill and intangible assets			
Goodwill	¥—	¥317	\$2,856
Other	¥—	¥146	\$1,315
Total impairment loss	¥—	¥464	\$4,180

For the fiscal year ended March 31, 2021, impairment loss was recognized in a part of a cash-generating unit in the Medical segment, including goodwill as a result of an impairment test in which the carrying amount exceeded the recoverable amount.
The recoverable amount of the cash-generating unit was measured at the value in use, which was estimated using a market growth rate of 3.0% and discount rate of 33.5%, representing the pretax weighted-average capital cost.

(3) Impairment tests

- 1) Other than goodwill
For the fiscal year ended March 31, 2021, the Group performed an impairment test as there was an indication of impairment in a part of a cash-generating unit in the Ceramics segment, including property, plant and equipment and intangible assets which had a finite useful life in the amount of ¥2,219 million (\$19,991 thousand) because of consecutive years of operating losses in this segment due to a decrease in orders from major customers as a result of COVID-19 and issues in the product mix, etc.
The recoverable amount of the cash-generating unit was measured at the value in use, which was estimated using a discount rate of 9.3%, representing the pretax weighted-average capital cost. As a result of the impairment test, the Group determined that the recoverable amount exceeded the carrying amount. Therefore, no impairment loss was recognized with respect to this cash-generating unit. The estimated future cash flows used in the measurement of the value in use were based on the mid-term business plan which was predicted on the assumptions that the demand would recover and the product mix would improve by an increase in sales to major customers with an introduction of new products in the future. However, as a result of uncertainty, the actual outcomes may be different from the estimates.
- 2) Goodwill
The Group performs impairment tests on goodwill each fiscal year and whenever there is any indication of impairment.
Goodwill arising from business combinations is allocated on the acquisition date to the cash-generating unit or group of cash-generating units to which the future benefits from the business combination were expected to be generated.
The carrying amount of goodwill by cash-generating unit as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
NTK CERATEC CO., LTD.	¥ 307	¥ 307	\$ 2,766
CAIRE Inc.	3,062	3,115	28,063
Total	¥3,369	¥3,422	\$30,829

Goodwill that is of significance was a consequence of the Company's acquisition of all of the shares of CAIRE Inc., CAIRE Medical Limited and CAIRE Medical Technology (Chengdu) Co., Ltd. (hereafter, CAIRE) which, together with their five subsidiaries, became subsidiaries of the Company.

In impairment tests, the recoverable amount is calculated based on the value in use. The value in use is calculated as estimated future cash flows discounted to the present value based on the four-year business plan approved by the Board of Directors and the growth rate. The growth rate used in the estimation for the period subsequent to the approved business plan is determined based on the average long-term growth rate of the markets to which the cash-generating units belong. The growth rates used to measure the value in use were 1.8% and 2.0% for the fiscal years ended March 31, 2020 and 2021, respectively. The discount rates used were 14.8% and 13.5% for the fiscal years ended March 31, 2020 and 2021, respectively. As a result of the impairment tests, no impairment loss has been recognized with respect to the goodwill.

Even if the major assumptions used in the impairment tests were to change within a reasonable range, the Group determined that the possibility that the cash-generating unit would incur significant impairment loss was low. The estimated future cash flows used in the measurement of the value in use were predicted on the assumptions that the sales of major products would increase by growth in the market, the introduction of new products and the expansion of sales channels and that costs would be reduced. However, as a result of uncertainty, the outcomes may be different from the estimates.

12. Leases

Lessee

The Group deems that a contract is or contains a lease if it conveys the right to control the use of a specific asset for a period of time in exchange for consideration, and recognizes a right-of-use asset and a lease liability at the commencement date of the lease. Principal lease transactions are in leases of office buildings, warehouse, vehicles and metal dies.

Lease transactions mentioned above contain contracts with an option for the lessee to extend or terminate the lease in order to notably secure flexibility for the Group's business offices.

The option to extend the lease will be exercised if it is deemed necessary to do so by taking into consideration all relevant facts and circumstances which include the need for the underlying asset in the execution of business, the degree of difficulty in acquiring an alternative asset, and conditions for exercising the option. The Group considers that it cannot be reasonably certain to exercise the option given the extreme difficulty to conclude, at the commencement of a lease, whether or not the option would be exercised in the future. Consequently, the period covered by the option is not included in the lease period, and lease payment for the said period is not included in measuring lease liability. The period covered by an extension option and lease payment associated with the period covered by the option are normally the same or similar to the initial contract period and lease payment.

The option to terminate the lease allows early termination primarily when a party so notifies the other party a certain period in advance of the end date of the lease.

The Group reassesses as necessary whether it can be reasonably certain to exercise an extension option or not to exercise a termination option. The financial impact of such reassessment for the fiscal year ended March 31, 2021 was insignificant.

Contracts entered into by the Group that include variable lease payments or residual value guarantees and leases committed but not yet commenced do not have materiality.

The components of right-of-use assets were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Right-of-use assets			
With buildings and structures as underlying assets	¥7,180	¥6,569	\$59,180
With machinery, equipment and vehicles as underlying assets	1,970	2,001	18,027
With tools, furniture and fixtures as underlying assets	145	126	1,135
With land as underlying asset	240	233	2,099
With software as underlying asset	4	61	550
Total	¥9,541	¥8,992	\$81,009

Changes in the amounts of right-of-use assets, lease-related expenses and cash outflows for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Depreciation of right-of-use assets			
With buildings and structures as underlying assets	¥1,270	¥1,415	\$12,748
With machinery, equipment and vehicles as underlying assets	625	626	5,640
With tools, furniture and fixtures as underlying assets	138	136	1,225
With land as underlying asset	186	193	1,739
With software as underlying asset	16	11	99
Total depreciation of right-of-use assets	¥2,237	¥2,381	\$21,450
Interest on lease liabilities	¥ 82	¥ 90	\$ 811
Short-term lease expenses	¥ 761	¥ 753	\$ 6,784
Expenses associated with leases for which the underlying assets are of low value	¥ 24	¥ 1	\$ 9
Variable lease payments not included in the measurement of lease liabilities	—	—	—
Income from subleases	—	—	—
Gains or losses arising from sale and leaseback transactions	—	—	—
Cash outflow related to lease	¥3,423	¥3,580	\$32,252
Changes in the carrying amount of right-of-use assets	¥3,650	¥1,544	\$13,910

Maturity analysis of lease liabilities is presented in "Note 20: Financial Instruments".

13. Investments Accounted for Using the Equity Method

Investments accounted for using the equity method are all related to associates and individually immaterial.

14. Other Financial Assets

The components of other financial assets as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Items classified as financial assets measured at amortized cost			
Bonds, etc.	¥ —	¥18,000	\$162,162
Time deposits	5,462	8,148	73,405
Other	1,078	1,034	9,315
Items classified as financial assets measured at fair value through profit or loss			
Bonds, etc.	¥ 54	¥ 33	\$ 297
Derivative assets	50	—	—
Items classified as financial assets measured at fair value through other comprehensive income			
Stocks	¥42,809	¥53,361	\$480,730
Total	¥49,454	¥80,577	\$725,919
Current portion	¥ 5,897	¥26,266	\$236,631
Noncurrent portion	¥43,557	¥54,310	\$489,279

15. Trade and Other Payables

The components of trade and other payables as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Accounts payable	¥31,892	¥35,414	\$319,045
Other payables	11,788	16,850	151,802
Total	¥43,681	¥52,264	\$470,847

(Note) Trade and other payables are classified as financial liabilities measured at amortized cost.

16. Bonds and Borrowings

The components of bonds and borrowings as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars	
	2020	2021	2021	Term of payment
Short-term loans payable with interest rate of 0.61%	¥ 10,931	¥ 28,943	\$ 260,748	—
Current portion of long-term loans payable with interest rate of 0.05%	4,353	17,816	169,505	—
Current portion of bonds (Note 3)	29,971	—	—	—
Long-term loans payable (except portion due within one year) with interest rate of 0.30%	47,633	90,966	819,514	from 2022 to 2029
Bonds (Note 3)	49,772	49,812	448,757	—
Total	¥142,663	¥187,538	\$1,689,532	—
Current portion	¥ 45,257	¥ 46,759	\$ 421,225	—
Noncurrent portion	¥ 97,406	¥140,779	\$1,268,279	—

(Notes) 1. Bonds and borrowings are classified as financial liabilities measured at amortized cost.
2. Interest rates shown are weighted-average interest rates for the outstanding balance as at March 31, 2021.
3. The issuing terms of the bonds were as follows.

Name of bond	Date of issuance	Millions of yen		Thousands of U.S. dollars
		2020	2021	2021
0.296% unsecured bonds due October 27, 2020	October 27, 2015	¥30,000	¥ —	\$ —
0.110% unsecured bonds due June 14, 2023	June 14, 2018	10,000	10,000	90,090
0.370% unsecured bonds due June 14, 2028	June 14, 2018	10,000	10,000	90,090
0.110% unsecured bonds due June 20, 2024	June 20, 2019	20,000	20,000	180,180
0.270% unsecured bonds due June 20, 2029	June 20, 2019	10,000	10,000	90,090
Total	—	¥80,000	¥50,000	\$450,450

17. Other Financial Liabilities

The components of other financial liabilities as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Items classified as financial liabilities measured at amortized cost			
Other	¥ 5	¥ 4	\$ 36
Lease liabilities	10,283	9,655	86,982
Items classified as financial liabilities measured at fair value through profit or loss			
Derivative liabilities	876	583	5,252
Total	¥11,165	¥10,243	\$92,279
Current portion	¥ 3,126	¥ 3,217	\$28,982
Noncurrent portion	¥ 8,038	¥ 7,025	\$63,288

18. Other Liabilities

The components of other liabilities as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Accrued expenses	¥10,552	¥11,455	\$103,198
Accrued bonuses	8,664	8,487	76,459
Accrued paid leave	8,134	8,220	74,054
Other (Note)	7,016	7,811	70,369
Total	¥34,367	¥35,975	\$324,099
Current portion	¥31,176	¥32,598	\$293,676
Noncurrent portion	¥ 3,191	¥ 3,377	\$ 30,423

(Note) "Other" in the fiscal year ended March 31, 2021 includes the provision for the violation of antitrust law. See "Note 34: Contingencies (2) Litigation, etc."

19. Employee Benefits

The Company and certain consolidated subsidiaries have a defined benefit plan and a lump-sum retirement benefit plan, while certain overseas consolidated subsidiaries have a defined contribution plan. In the defined benefit plan, the amount of benefits is calculated based on the accumulated number of points earned by employees each year during their period of service, the number of their service years and other conditions.

The Company and certain consolidated subsidiaries have instituted a contract-type pension plan based on pension provision. The Company and certain consolidated subsidiaries have established corporate pension provisions which, by agreement with their employees, stipulate the contents of the pension plan such as eligibility requirements, contents and method of payments, and burden of contributions. The pension provisions have obtained the approval of the Minister of Health, Labour and Welfare. Administration of the pension plans, including payment of contributions and management of accumulated funds, is undertaken by insurance companies, trust banks and other institutions with which contracts have been signed. In addition to the administration and management of pension assets, these companies also perform actuarial calculation and payments of annual and lump-sum benefits.

The Company and certain consolidated subsidiaries are required to comply with laws, the dispositions issued by the Minister of Health, Labour and Welfare pursuant to laws and provisions, and to faithfully perform their duties for the benefit of plan participants, etc. They are prohibited from entering into any contract for administration and management of the assets for the purpose of pursuing their own interests or the interests of third parties other than the participants, and from giving instructions for specific methods concerning management of the pension reserves.

(1) Defined benefit plan

1) Reconciliation of defined benefit obligations and plan assets

The relationships between defined benefit obligations and plan assets, and net defined benefit liabilities and assets recorded in the consolidated statements of financial position were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Present value of funded retirement benefit obligations	¥49,870	¥50,268	\$452,865
Fair value of plan assets	41,904	46,566	419,514
Subtotal	¥ 7,965	¥ 3,702	\$ 33,351
Present value of unfunded retirement benefit obligations	21,528	20,133	181,378
Net defined benefit liabilities or assets	¥29,494	¥23,836	\$214,739
Amounts recognized in the consolidated statement of financial position			
Retirement benefit liability	29,494	23,836	214,739
Net amount	¥29,494	¥23,836	\$214,739

2) Reconciliation of present value of defined benefit obligations

Changes in the present value of defined benefit obligations for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Opening balance of present value of defined benefit obligations (Note 1)	¥70,122	¥71,398	\$643,225
Current service cost	3,572	3,595	32,387
Interest expenses	544	539	4,856
Remeasurement	276	(1,904)	(17,153)
Actuarial gains and losses arising from changes in demographic assumptions	118	(120)	(1,081)
Actuarial gains and losses arising from changes in financial assumptions	290	(2,020)	(18,198)
Actuarial differences arising from revisions to results	(133)	236	2,126
Past service cost	36	—	—
Benefits paid	(3,065)	(3,417)	(30,784)
Other (Note 2)	(87)	190	1,712
Closing balance of present value of defined benefit obligations (Note 1)	¥71,398	¥70,402	\$634,252

(Notes) 1 The weighted-average durations of defined benefit plans in the fiscal years ended March 31, 2020 and 2021 were 14.5 years and 14.4 years, respectively.
2 "Other" includes translation differences of defined benefit obligations of overseas consolidated subsidiaries.

3) Reconciliation of the fair value of plan assets

Changes in the fair value of plan assets for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Opening balance of fair value of plan assets	¥42,923	¥41,904	\$377,514
Interest income	325	340	3,063
Remeasurement	(535)	3,610	32,523
Return on plan assets (excluding interest income)	(535)	3,610	32,523
Contributions from the employer	1,129	2,696	24,288
Benefits paid	(1,915)	(1,959)	(17,649)
Other (Note)	(23)	(25)	(225)
Closing balance of fair value of plan assets	¥41,904	¥46,566	\$419,514

(Note) "Other" includes translation differences of defined benefit assets of overseas consolidated subsidiaries.

The Group plans to contribute ¥2,614 million (\$23,550 thousand) in the fiscal year ending March 31, 2022.

4) Components of plan assets by category

The fair value of plan assets by category as of March 31, 2020 and 2021 were as follows.

	Millions of yen						Thousands of U.S. dollars		
	2020			2021			2021		
	Quoted market prices in active markets		Total	Quoted market prices in active markets		Total	Quoted market prices in active markets		Total
	Yes	No		Yes	No		Yes	No	
Shares	¥ 5,796	¥ —	¥ 5,796	¥ 8,485	¥ —	¥ 8,485	\$ 76,441	\$ —	\$ 76,441
Bonds	15,654	—	15,654	15,925	—	15,925	143,468	—	143,468
General account	—	11,614	11,614	—	11,912	11,912	—	107,315	107,315
Alternatives (Note)	—	3,397	3,397	—	3,675	3,675	—	33,108	33,108
Other	3,683	1,758	5,441	4,696	1,871	6,567	42,306	16,856	59,162
Total	¥25,134	¥16,770	¥41,904	¥29,106	¥17,459	¥46,566	\$262,216	\$157,288	\$419,514

(Note) Alternatives represent primarily investments in private debt and infrastructure funds.

Management of plan assets aims to secure total return in the long term within the acceptable range of risks, which is necessary to ensure stable payments of pension benefits, lump-sum benefits and other payments in the future.

To this end, the Group seeks to maintain a portfolio of assets that represents optimal asset allocation in the years ahead with due consideration to expected rate of return of investment assets, risks and other factors.

5) Significant actuarial assumption

Significant actuarial assumption used in the calculation is as follows.

	Percentage	
	2020	2021
Discount rate	0.6	0.6

In addition to the above, actuarial assumptions include future salary increases, the mortality rate and the expected retirement rate.

6) Sensitivity analysis

The table below shows the effect of a 0.5% change in the discount rate used in actuarial calculations on the present value of defined benefit obligations. This analysis assumes that all other assumptions remain constant. In actuality, however, the sensitivity analysis may be affected by changes in other assumptions.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
0.5% increase in the discount rate	¥(5,127)	¥(4,712)	\$(42,450)
0.5% decrease in the discount rate	¥ 5,643	¥ 5,150	\$ 46,396

(2) Defined contribution plan

The amount recognized as an expense in relation to the defined contribution plan was ¥631 million and ¥644 million (\$5,802 thousand) for the fiscal years ended March 31, 2020 and 2021, respectively.

(3) Employee benefit cost

In the consolidated statement of profit or loss, the total of employee benefit cost included in "Cost of sales" and "Selling, general and administrative expenses" was ¥111,078 million and ¥105,348 million (\$949,081 thousand) for the fiscal years ended March 31, 2020 and 2021, respectively.

20. Financial Instruments

(1) Capital risk management policy

The Group's capital management aims to achieve sustainable growth and maximization of corporate value while maintaining a balance between financial soundness and capital efficiency.

To achieve financial soundness, the Group strives to maintain solid financial strength and high credit rating to ensure low-cost financing.

To achieve capital efficiency, the Group strives to make effective use of financing while maintaining a balance with financial soundness, and thereby reduce overall cost of capital.

The Group is not subject to any significant capital restrictions.

(2) Financial Risk Management

The Group is exposed to financial risks in the course of conducting its business activities and performs risk management to mitigate such risks.

Financial risks mainly include currency fluctuation risk, interest rate fluctuation risk, market price fluctuation risk, credit risk and liquidity risk.

1) Currency fluctuation risk

As the Group is engaged in operations globally, it is exposed to risks from currency fluctuations arising from transactions denominated in currencies other than its functional currency. In order to avoid such currency risks, the Group uses forward exchange contracts and interest currency options for trade receivables denominated in foreign currencies, and interest rate and currency swap arrangements as derivative transactions for borrowings denominated in foreign currencies, in conformity with internal control regulations within the scope of actual demand.

Currency sensitivity analysis

The following table represents the Group's sensitivity analysis and shows the impact that a 1% change in the rate of Japanese yen against the relevant currencies would have on profit or loss and equity. The analysis does not include the impact of translation, from functional currency into yen, of financial instruments as well as assets and liabilities, revenue and expenses of foreign operations. Furthermore, it assumes that other variable factors (balances, interest rates, etc.) are constant.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
U.S. dollar	¥113	¥160	\$1,441
Euro	¥ 46	¥ 40	\$ 360
Chinese yuan	¥102	¥114	\$1,027
Thai baht	¥171	¥228	\$2,054

2) Interest rate fluctuation risk

The Group is exposed to interest rate fluctuation risk as it has foreign currency-denominated borrowings with floating interest rates. In order to avoid interest rate fluctuation risks, the Group uses interest rate and currency swap arrangements as derivative transactions in conformity with its internal control regulations within the scope of actual demand.

Through these measures, the Group deems its exposure to interest rate fluctuation risk to be limited and the impact of interest rate fluctuations to be insignificant.

3) Market price fluctuation risk

The Group is exposed to the risk of fluctuations in the stock prices of equity instruments (stocks). Equity instruments that the Group holds are for the purpose of maintaining and strengthening continuous and stable relationships with its customers and other counterparties. No equity instruments are held for trading purposes. The Group regularly checks the fair value of the stocks and the financial status of the issuing companies.

Price sensitivity analysis

The following table represents the Group's sensitivity analysis showing the impact on equity that would result from a 1% change in the market prices of equity instruments that the Group holds as of the end of the fiscal year. The analysis assumes that other variable factors are constant.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Equity	¥264	¥339	\$3,054

4) Credit risk

Credit risk is the risk of financial loss to the Group if a customer or counterparty (which includes financial institutions, etc.) fails to meet its contractual obligations due to deterioration in credit risk, bankruptcy or other causes. The Group manages its credit risk by setting credit limits on its counterparties in accordance with its credit management regulations, etc.

For derivative transactions, the Group only deals with financial institutions, etc. with high credit rating in order to reduce counterparty risks. Therefore, the Group believes that the effect of a credit risk is limited.

The Group has neither significant credit risk exposure to any particular customer, nor excessive concentration of credit risk that requires special management.

The carrying amount, after impairment losses, of financial assets presented in the consolidated financial statements represents the maximum exposure of the Group's credit risk, without considering the appraised value of the related collateral.

- (i) Credit risk management practices
- The Group determines whether credit risk has increased significantly with reference to such information as internal and external ratings. Objective evidence showing significant increase in credit risk includes default or delinquency, and indications of debtor insolvency.
- The Group assesses a financial asset to be in default if the debtor has, or is highly probable to have, significant financial difficulty and its credit to be impaired when bankruptcy or other reorganization proceedings have commenced with respect to the debtor.
- For trade receivables, allowance for doubtful accounts is always measured at an amount equal to the lifetime expected credit losses. Expected credit losses are measured by multiplying the amount of receivables by the provision rate that is based on historical credit loss rate. For receivables other than trade receivables, etc., allowance for doubtful accounts is in principle recorded at an amount equal to the 12-month expected credit losses. However, if the credit risk has increased significantly since the initial recognition, allowance for doubtful accounts is recorded at an amount equal to the lifetime expected credit losses. If it is assessed that the credit risk has not increased significantly, the expected credit loss for such receivables is calculated by multiplying the amount of receivables by the provision rate that is based on historical credit loss rate. With respect to assets whose credit risk has been assessed to have increased significantly, and receivables, etc. that are treated as credit-impaired financial assets, the expected credit losses are measured by taking into account such factors as the debtor's financial condition, estimated realizable collateral value, compensation by guarantee deposits and repayment schedule.
- When there are no reasonable expectations that a financial asset will be recoverable in its entirety or a portion thereof, the carrying amount of the financial asset is directly written off.

- (ii) Changes in allowance for doubtful accounts and underlying assets
- Changes in allowance for doubtful accounts were as follows.

Allowance for doubtful accounts

	Millions of yen				
	Measured at 12-month expected credit losses	Measured at lifetime expected credit losses			Total
		Financial assets that are not credit impaired	Credit-impaired financial assets	Trade receivables	
Balance as at April 1, 2019	¥—	¥119	¥—	¥ 496	¥ 616
Increase during the fiscal year	—	—	—	98	98
Decrease during the fiscal year	—	—	—	(140)	(140)
Other	—	—	—	(28)	(28)
Balance as of March 31, 2020	¥—	¥119	¥—	¥ 425	¥ 545
Increase during the fiscal year	—	138	—	117	255
Decrease during the fiscal year	—	—	—	(95)	(95)
Other	—	—	—	34	34
Balance as at March 31, 2021	¥—	¥257	¥—	¥ 482	¥ 740

	Thousands of U.S. dollars				
	Measured at 12-month expected credit losses	Measured at lifetime expected credit losses			Total
		Financial assets that are not credit impaired	Credit-impaired financial assets	Trade receivables	
Balance as of March 31, 2020	\$—	\$1,072	\$—	\$3,829	\$4,910
Increase during the fiscal year	—	1,243	—	1,054	2,297
Decrease during the fiscal year	—	—	—	(856)	(856)
Other	—	—	—	306	306
Balance as at March 31, 2021	\$—	\$2,315	\$—	\$4,342	\$6,667

The aggregate carrying amounts of financial assets held were as follows.

Carrying amounts

	Millions of yen				
	Measured at 12-month expected credit losses	Measured at lifetime expected credit losses			Total
		Financial assets that are not credit impaired	Credit-impaired financial assets	Trade receivables	
FY 2019 (March 31, 2020)	¥11,193	¥132	¥—	¥ 88,365	¥ 99,691
FY 2020 (March 31, 2021)	¥33,110	¥334	¥—	¥105,818	¥139,263

	Thousands of U.S. dollars				
	Measured at 12-month expected credit losses	Measured at lifetime expected credit losses			Total
		Financial assets that are not credit impaired	Credit-impaired financial assets	Trade receivables	
FY 2020 (March 31, 2021)	\$298,288	\$3,009	\$—	\$953,315	\$1,254,622

- (iii) Risk profile
- The components of credit risk profile based on due date as of March 31, 2020 and 2021 were as follows.

Trade receivables

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Lifetime expected credit losses			
Not past due	¥78,587	¥100,255	\$903,198
Up to 30 days past due	5,912	3,790	34,144
Over 30 days past due	2,277	554	4,991
Over 60 days past due	488	198	1,784
Over 90 days past due	1,098	1,018	9,171
Total	¥88,365	¥105,818	\$953,315

Other payables and other financial assets

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Measured at an amount equal to 12-month expected credit losses			
Not past due	¥5,718	¥6,961	\$62,712
Past due	12	—	—
Total	¥5,730	¥6,961	\$62,712

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Lifetime expected credit losses (financial assets that are not credit-impaired)			
Not past due	¥132	¥334	\$3,009
Past due	—	—	—
Total	¥132	¥334	\$3,009

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Lifetime expected credit losses (credit-impaired financial assets)			
Not past due	¥—	¥—	\$—
Past due	—	—	—
Total	¥—	¥—	\$—

(Note) Of financial assets that are measured at amortized cost and debt instrument assets that are measured at fair value through other comprehensive income, financial instruments with clearly low credit risk, such as time deposits that are held with major financial institutions, are not included in the above chart as no expected credit losses are recorded.

- 5) Liquidity risk
- Liquidity risk is the risk that the Group will encounter difficulty in meeting its repayment obligations and not be able to pay on the payment due date of its financial liabilities.
- Trade and other payables, borrowings and other financial liabilities are exposed to liquidity risk. The Group manages these risks through measures that include development and revisions of finance plans as appropriate, and establishment of committed lines of credit with financial institutions.

Maturity analysis

The balance of major financial liabilities (including derivatives) by contractual maturities were as follows.

March 31, 2020	Millions of yen							
	Carrying amount	Contractual cash flows	Not later than 1 year	Later than 1 year, not later than 2 years	Later than 2 years, not later than 3 years	Later than 3 years, not later than 4 years	Later than 4 years, not later than 5 years	Later than 5 years
Nonderivative financial liabilities								
Trade and other payables	¥ 43,681	¥ 43,681	¥43,681	—	—	—	—	—
Borrowings	¥ 62,919	¥ 63,443	¥15,351	¥7,725	¥ 59	¥ 159	¥ 59	¥40,088
Bonds	¥ 79,743	¥ 80,797	¥30,185	¥ 97	¥ 97	¥10,091	¥20,075	¥20,251
Lease liabilities	¥ 10,283	¥ 10,786	¥ 2,624	¥1,865	¥1,500	¥ 1,095	¥ 696	¥ 3,004
Derivative financial liabilities								
Interest rate and currency swaps	¥ 876	¥ 876	¥ 602	¥ 273	—	—	—	—
Total	¥197,504	¥199,585	¥92,445	¥9,962	¥1,656	¥11,346	¥20,831	¥63,343

March 31, 2021	Millions of yen							
	Carrying amount	Contractual cash flows	Not later than 1 year	Later than 1 year, not later than 2 years	Later than 2 years, not later than 3 years	Later than 3 years, not later than 4 years	Later than 4 years, not later than 5 years	Later than 5 years
Nonderivative financial liabilities								
Trade and other payables	¥ 52,264	¥ 52,264	¥ 52,264	—	—	—	—	—
Borrowings	¥137,726	¥139,279	¥ 47,214	¥5,208	¥ 313	¥ 143	¥11,678	¥74,721
Bonds	¥ 49,812	¥ 50,611	¥ 97	¥ 97	¥10,091	¥20,075	¥ 64	¥20,187
Lease liabilities	¥ 9,655	¥ 9,933	¥ 2,692	¥1,828	¥ 1,297	¥ 1,023	¥ 721	¥ 2,368
Derivative financial liabilities								
Forward exchange contracts	¥ 402	¥ 402	¥ 402	¥ —	—	—	—	—
Interest rate and currency swaps	¥ 180	¥ 180	¥ 180	¥ —	—	—	—	—
Total	¥250,042	¥252,672	¥102,851	¥7,133	¥11,702	¥21,242	¥12,464	¥97,277

March 31, 2021	Thousands of U.S. dollars							
	Carrying amount	Contractual cash flows	Not later than 1 year	Later than 1 year, not later than 2 years	Later than 2 years, not later than 3 years	Later than 3 years, not later than 4 years	Later than 4 years, not later than 5 years	Later than 5 years
Nonderivative financial liabilities								
Trade and other payables	\$ 470,847	\$ 470,847	\$470,847	—	—	—	—	—
Borrowings	\$1,240,775	\$1,254,766	\$425,351	\$46,919	\$ 2,820	\$ 1,288	\$105,207	\$673,162
Bonds	\$ 448,757	\$ 455,955	\$ 874	\$ 874	\$ 90,910	\$180,856	\$ 577	\$181,865
Lease liabilities	\$ 86,982	\$ 89,486	\$ 24,252	\$16,468	\$ 11,685	\$ 9,216	\$ 6,495	\$ 21,333
Derivative financial liabilities								
Forward exchange contracts	\$ 3,622	\$ 3,622	\$ 3,622	—	—	—	—	—
Interest rate and currency swaps	\$ 1,622	\$ 1,622	\$ 1,622	—	—	—	—	—
Total	\$2,252,631	\$2,276,324	\$926,586	\$64,261	\$105,423	\$191,369	\$112,288	\$876,369

(3) Fair value

(i) Fair value measurement methodology

The fair values of financial instruments are measured in the following manner.

(Cash and cash equivalents, trade and other receivables, other financial assets, trade and other payables, other financial liabilities)

For instruments that are settled in the short term, the carrying amount is a reasonable approximation of fair value. For other instruments, the present value of future cash flows, discounted by an interest rate that takes into account remaining maturity and credit risk, is mainly used to measure the fair value. The above are classified as Level 2 of the fair value hierarchy.

(Other financial assets, other financial liabilities)

The fair values of listed stocks are based on their market prices at the end of the fiscal year. These are classified as Level 1. The fair values of bonds and similar instruments are measured by referencing quotes obtained from financial institutions with which the Group has a relationship, using reasonable valuation methods based on available information. These are classified as Level 2 or 3. The fair values of unlisted stocks, etc. are measured primarily by the net asset value method. These are classified as Level 3. Measurement of the fair value for financial instruments classified as Level 3 is performed in accordance with relevant internal rules. In the measurement of the fair value, the Group uses the valuation method and inputs that most appropriately reflect the nature, characteristics and risks of the financial instrument being measured. Results of the fair value measurement are reviewed by the senior management.

For financial instruments classified as Level 3, no significant change in the fair value will result even if unobservable inputs were changed to reasonably possible alternative assumptions.

The fair values of derivative and similar transactions are measured based on observable market inputs such as interest rates and foreign exchange rates obtained from financial institutions with which the Group has relationship, etc. These are classified as Level 2 as their fair values are measured using observable market data.

(Bonds and borrowings)

The fair values of bonds are measured by the quotes obtained from financial institutions with which the Group has a relationship.

The fair values of short-term borrowings are based on their carrying amounts as the fair values are considered to approximate their carrying amounts.

The fair values of long-term borrowings are measured by the sum of the principal and interest discounted by an interest rate applicable to new borrowings under the same conditions. Both bonds and borrowings use observable market inputs to measure their fair values. These are all classified as Level 2.

(ii) Fair value hierarchy

The fair value hierarchy in the measurement of financial instruments categorizes the inputs as follows.

Level 1: Fair value measured by quoted prices in active markets

Level 2: Fair value measured by inputs other than quoted prices included in Level 1 that are observable, either directly or indirectly

Level 3: Fair value measured using valuation techniques that include unobservable inputs

Major financial instruments measured at amortized cost

March 31, 2020	Millions of yen				
	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
Liabilities					
Bonds	¥ 79,743	¥—	¥ 79,804	¥—	¥ 79,804
Borrowings	51,987	—	51,992	—	51,992
Total	¥131,731	¥—	¥131,796	¥—	¥131,796

March 31, 2021	Millions of yen				
	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
Liabilities					
Bonds	¥ 49,812	¥—	¥ 49,773	¥—	¥ 49,773
Borrowings	108,783	—	108,386	—	108,386
Total	¥158,595	¥—	¥158,159	¥—	¥158,159

March 31, 2021	Thousands of U.S. dollars				
	Carrying amount	Fair value			
		Level 1	Level 2	Level 3	Total
Liabilities					
Bonds	\$ 448,757	\$—	\$ 448,405	\$—	\$ 448,405
Borrowings	980,027	—	976,450	—	976,450
Total	\$1,428,784	\$—	\$1,424,856	\$—	\$1,424,856

(Notes) 1. Bonds and borrowings include balance of instruments to be redeemed or repaid within one year.
2. Short-term financial assets and financial liabilities are not included in the above table as their carry-ing amounts approximate their fair values.

Financial instruments that are measured at fair value on a recurring basis

March 31, 2020	Millions of yen				
	Carrying amount	Fair value			Total
		Level 1	Level 2	Level 3	
Assets					
Financial assets measured at fair value through other comprehensive income:					
Stocks	¥42,809	¥38,147	¥ —	¥4,661	¥42,809
Financial assets measured at fair value through profit or loss:					
Bonds, etc.	54	—	—	54	54
Derivative assets	50	—	50	—	50
Total	¥42,913	¥38,147	¥ 50	¥4,715	¥42,913
Liabilities					
Financial liabilities measured at fair value through profit or loss:					
Derivative liabilities	¥ 876	¥ —	¥876	¥ —	¥ 876
Total	¥ 876	¥ —	¥876	¥ —	¥ 876

March 31, 2021	Millions of yen				
	Carrying amount	Fair value			Total
		Level 1	Level 2	Level 3	
Assets					
Financial assets measured at fair value through other comprehensive income:					
Stocks	¥53,361	¥48,875	¥ —	¥4,486	¥53,361
Financial assets measured at fair value through profit or loss:					
Bonds, etc.	33	—	—	33	33
Total	¥53,394	¥48,875	¥ —	¥4,519	¥53,394
Liabilities					
Financial liabilities measured at fair value through profit or loss:					
Derivative liabilities	¥ 583	¥ —	¥583	¥ —	¥ 583
Total	¥ 583	¥ —	¥583	¥ —	¥ 583

March 31, 2021	Thousands of U.S. dollars				
	Carrying amount	Fair value			Total
		Level 1	Level 2	Level 3	
Assets					
Financial assets measured at fair value through other comprehensive income:					
Stocks	\$480,730	\$440,315	\$ —	\$40,414	\$480,730
Financial assets measured at fair value through profit or loss:					
Bonds, etc.	297	—	—	297	297
Total	\$481,027	\$440,315	\$ —	\$40,712	\$481,027
Liabilities					
Financial liabilities measured at fair value through profit or loss:					
Derivative liabilities	\$ 5,252	\$ —	\$5,252	\$ —	\$ 5,252
Total	\$ 5,252	\$ —	\$5,252	\$ —	\$ 5,252

Reconciliation from the opening balances to the closing balances of financial instruments classified as Level 3 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Opening balance	¥ 4,983	¥4,715	\$42,477
Total gains (losses)	(1,937)	202	1,820
Profit (loss) (Note 1)	(11)	1	9
Other comprehensive income (Note 2)	(1,926)	200	1,802
Acquisitions	1,665	392	3,532
Disposals	—	(805)	(7,252)
Other	4	13	117
Closing balance	¥ 4,715	¥4,519	\$40,712

(Notes) 1. Gains and losses included in profit or loss relate to financial assets measured at fair val-ue through profit or loss as of the end of the fiscal year. These gains and losses are presented in "Fi-nance income" and "Finance expenses" in the consolidated statement of profit or loss.
2. Gains and losses included in other comprehensive income relate to financial assets measured at fair value through other comprehensive income as of the end of the fiscal year. These gains and loss-es are presented in "Financial assets measured at fair value through other comprehensive in-come" in the consolidated statement of comprehensive income.

(4) Equity instruments

For investments in equity instruments that are made with the objective of maintaining and strengthen-ing business relationships, the Group classifies such equity instruments as financial assets measured at fair val-ue through other comprehensive income, in view of the objective of holding these instruments.

Of these financial assets, the names and fair values of the major stocks that are traded in an active market were as follows.

Stock name	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
TOTO Ltd.	¥ 9,158	¥17,323	\$156,063
Honda Motor Co., Ltd.	7,518	10,240	92,252
Toyota Motor Corporation	11,259	9,942	89,568
Mitsubishi UFJ Financial Group, Inc.	3,714	5,453	49,126
NGK INSULATORS, LTD.	1,371	1,958	17,640
Noritake Co., Ltd.	722	745	6,712
Rinnai Corporation	447	733	6,604
NTN Corporation	197	356	3,207
Meiko Trans Co., Ltd.	307	331	2,982
ANA HOLDINGS INC.	324	316	2,847

(Note) Financial assets that do not have an active market are primarily investments in new busi-nesses such as environment/energy, medical, and next-generation automobiles. The fair value of investments in new businesses as of March 31, 2020 and March 31, 2021 were ¥3,078 million and ¥2,837 million (\$25,559 thousand), respectively.

Equity instruments are sold as appropriate, paying attention to market trends, if the Group judges it is no longer appropriate to continue holding the instrument upon assessment of the effects from the point of view of the ration-ality of holding the stocks and enhancement of corporate value, based on a comparison of capital cost with medi-um-term to long-term risk and return, and other factors. The fair value of stocks sold during the fiscal year, as of the date of sale, and cumulative gains or losses recognized in other components of equity (before tax effects) were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Fair value at the time of sale	¥363	¥8,199	\$73,865
Cumulative gains (before tax effects)	¥118	¥5,985	\$53,919

(5) Offsetting financial assets and financial liabilities

For some of the financial assets and financial liabilities, the Group has a legally enforceable right to set off the recognized amounts of a financial asset and financial liability, and has the intention to settle on a net ba-sis or realize the asset and settle the liability simultaneously. Accordingly, these financial assets and finan-cial liabilities are offset and the net amount is presented in the consolidated statement of financial position.

Of financial assets and financial liabilities recognized to the same counterparty, the breakdown of the amount offset and the amount recognized in the consolidated statement of financial position were as follows.

	Millions of yen		
	Gross amount of financial assets	Gross amount of financial liabilities set off in the consolidated statement of financial position	Net amount of financial assets presented in the consolidated statement of financial position
March 31, 2020			
Trade and other receivables	¥95,350	¥2,745	¥92,604
	Gross amount of financial liabilities	Gross amount of financial assets set off in the consolidated statement of financial position	Net amount of financial liabilities presented in the consolidated statement of financial position
Trade and other payables	¥46,426	¥2,745	¥43,681

	Millions of yen		
	Gross amount of financial assets	Gross amount of financial liabilities set off in the consolidated statement of financial position	Net amount of financial assets presented in the consolidated statement of financial position
March 31, 2021			
Trade and other receivables	¥115,706	¥4,366	¥111,339
	Gross amount of financial liabilities	Gross amount of financial assets set off in the consolidated statement of financial position	Net amount of financial liabilities presented in the consolidated statement of financial position
Trade and other payables	¥56,631	¥4,366	¥52,264

	Thousands of U.S. dollars		
	Gross amount of financial assets	Gross amount of financial liabilities set off in the consolidated statement of financial position	Net amount of financial assets presented in the consolidated statement of financial position
March 31, 2021			
Trade and other receivables	\$1,042,396	\$39,333	\$1,003,054
	Gross amount of financial liabilities	Gross amount of financial assets set off in the consolidated statement of financial position	Net amount of financial liabilities presented in the consolidated statement of financial position
Trade and other payables	\$510,189	\$39,333	\$470,847

(6) Hedge accounting

The Group is exposed to currency fluctuation risks associated with foreign currency-denominated trade re-ceivables and the repayment and interest payment of foreign currency-denominated borrowings. The Group us-es forward exchange contracts, currency options and interest rate and currency swaps for the purpose of hedg-ing transactions against currency fluctuation risk, but does not apply hedge accounting.

21. Equity and Other Components of Equity

(1) Capital stock and capital surplus

The Companies Act of Japan (hereafter, the “Act”) stipulates that one-half or more of the proceeds from share issue shall be credited to capital stock and the remainder shall be credited to capital reserve included in capital surplus. The Act also stipulates that, by resolution of a general meeting of shareholders, capital reserve may be transferred to capital stock.

Changes in the number of authorized shares, number of issued shares and balance of capital stock, etc. were as follows.

	Number of authorized shares (shares)	Number of issued shares (shares)	Capital stock (Millions of yen)	Capital surplus (Millions of yen)
April 1, 2019	390,000,000	208,911,620	¥47,869	¥54,835
Changes during the fiscal year (Note 2)	—	(4,736,300)	—	(44)
March 31, 2020	390,000,000	204,175,320	¥47,869	¥54,791
Changes during the fiscal year	—	—	—	65
March 31, 2021	390,000,000	204,175,320	¥47,869	¥54,856

	Number of authorized shares (shares)	Number of issued shares (shares)	Capital stock (Thousands of U.S. dollars)	Capital surplus (Thousands of U.S. dollars)
March 31, 2020	390,000,000	204,175,320	\$431,252	\$493,613
Changes during the fiscal year	—	—	—	586
March 31, 2021	390,000,000	204,175,320	\$431,252	\$494,198

(Notes) 1. All the shares issued by the Company are non-par-value ordinary shares with no restrictions on rights, and all issued shares are fully paid.
2. The decrease of issued shares is due to the cancellation of treasury stock.

(2) Retained earnings

The Act stipulates that one-tenth of the dividends of retained earnings shall be accumulated as capital reserve or legal reserve until the aggregate amount of the capital reserve and legal reserve equals one-fourth of the capital stock. The accumulated legal reserve may be appropriated to reduce a deficit. The Act also states that the legal reserve may be used by a resolution at a general meeting of shareholders.

(3) Treasury stock

The Act stipulates that a company may acquire its treasury stock upon determination of the number of shares to be acquired, the total amount to be delivered in exchange for the acquisition and other factors, which must be within the amount available for distribution to its shareholders and approved by a resolution at a general meeting of shareholders. Furthermore, a company may purchase its treasury stock by a resolution of the Board of Directors if such a transaction is undertaken in the market or through a tender offer pursuant to its Articles of Incorporation and within the requirements stipulated in the Act.

Changes in the number and outstanding balance of treasury stock were as follows.

	Number of shares (shares)	Amount (Millions of yen)	Amount (Thousands of U.S. dollars)
April 1, 2019	739,357	¥ 1,741	
Increase	4,774,736	10,074	
Decrease	(4,759,494)	(10,213)	
March 31, 2020	754,599	¥ 1,602	\$14,432
Increase	3,637	7	63
Decrease	(26,205)	(55)	(495)
March 31, 2021	732,031	¥ 1,554	\$14,000

(Note) The Company's shares held by the BIP Trust and the ESOP Trust are included in the number of treasury stock. The number of shares included was 430,908 and 407,406 as of March 31, 2020 and 2021, respectively.

(4) Other components of equity

Exchange differences on translation of foreign operations

These are exchange differences arising from the process of consolidating financial statements of foreign operations prepared in foreign currencies.

Financial assets measured at fair value through other comprehensive income

These are valuation differences in the fair values of equity instruments measured at fair value through other comprehensive income. Cumulative gains or losses that were previously recognized in other comprehensive income have been reclassified to retained earnings in the fiscal year in which those equity instruments were derecognized or significant decrease in the fair value was recorded.

Remeasurements of defined benefit plans

Remeasurements of defined benefit plans consist of actuarial gains and losses as well as the return on the plan assets, excluding amounts included in net interest on the net defined benefit liability. These are recognized in the aggregate amount of other comprehensive income as they occur and transferred immediately to retained earnings.

22. Dividends

The Company distributes retained earnings within the amount available for distribution to the shareholders calculated in accordance with the provisions of the Act. The amount available for distribution to the shareholders is calculated based on the amount of retained earnings on the Company's accounting books prepared in accordance with the accounting principles generally accepted in Japan.

Dividend payments were as follows.

Fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020)				
Resolution date	Total amount of dividends	Dividends per share	Record date	Effective date
Board of Directors' meeting held on April 26, 2019 (Note 1)	¥7,300 million	¥35	March 31, 2019	June 4, 2019
Board of Directors' meeting held on October 28, 2019 (Note 2)	¥7,300 million	¥35	September 30, 2019	November 29, 2019

(Notes) 1. The total amount of dividend payments based on the resolution of the Board of Directors' meeting held on April 26, 2019 includes ¥14 million of dividends on the Company's shares held by the Directors' Compensation BIP Trust.
2. The total amount of dividends payments based on the resolution of the Board of Directors' meeting held on October 28, 2019 includes ¥15 million of dividends on the Company's shares held by the Directors' Compensation BIP Trust and the ESOP Trust.

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

Resolution date	Total amount of dividends	Dividends per share	Record date	Effective date
Board of Directors' meeting held on May 25, 2020 (Note 1)	¥7,134 million (\$64,270 thousand)	¥35 (\$0.32)	March 31, 2020	June 17, 2020
Board of Directors' meeting held on November 9, 2020 (Note 2)	¥5,096 million (\$45,910 thousand)	¥25 (\$0.23)	September 30, 2020	November 30, 2020

(Notes) 1. The total amount of dividend payments based on the resolution of the Board of Directors' meeting held on May 25, 2020 includes ¥15 million (\$135 thousand) of dividends on the Company's shares held by the Directors' Compensation BIP Trust and the ESOP Trust.
2. The total amount of dividend payments based on the resolution of the Board of Directors' meeting held on November 9, 2020 includes ¥10 million (\$90 thousand) of dividends on the Company's shares held by the Directors' Compensation BIP Trust and the ESOP Trust.

Dividends with an effective date in the next fiscal year were as follows.

Fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020)

Resolution date	Source of dividends	Total amount of dividends	Dividends per share	Record date	Effective date
Board of Directors' meeting held on May 25, 2020	Retained earnings	¥7,134 million	¥35	March 31, 2020	June 17, 2020

(Note) The total amount of dividend payments includes ¥15 million of dividends on the Company's shares held by the Directors' Compensation BIP Trust and the ESOP trust.

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

Resolution date	Source of dividends	Total amount of dividends	Dividends per share	Record date	Effective date
Board of Directors' meeting held on May 7, 2021	Retained earnings	¥7,134 million (\$64,270 thousand)	¥35 (\$0.32)	March 31, 2021	June 4, 2021

(Note) The total amount of dividend payments includes ¥14 million (\$268 thousand) of dividends on the Company's shares held by the Directors' Compensation BIP Trust and the ESOP Trust.

23. Share-based Payments

The Company has in place equity-settled share-based payment plans for its directors and executive officers.

Expenses recorded in association with the share-based payment plans were ¥113 million and ¥102 million (\$919 thousand) in the fiscal years ended March 31, 2020 and 2021, respectively.

(1) BIP (Board Incentive Plan) Trust scheme

The Company has adopted a scheme called “BIP Trust” for its directors and executive officers (hereafter, the “Directors, etc.”), with the aim of further raising their awareness to contribute to the Group's medium- to long-term performance and improvement of corporate value.

This is a performance-linked, share-based payment plan, under which the Company acquires its shares through the BIP Trust using funds contributed by the Company and, in accordance with the Company's share grant policy, grants the shares and pays an amount of money equivalent to the conversion value of the shares to the respective Directors, etc. based on the number of points granted (1 point = 1 share).

The vesting conditions require, in principle, that the Directors, etc. have served continuously in the position of Directors from the grant date to the vesting date.

In the plan, no exercise price is set as both the Company's shares are granted, and the amount of money equivalent to the conversion value of the Company's shares is paid through the BIP Trust.

The weighted-average fair value of a BIP Trust point as of the grant date was ¥1,959 and ¥1,436 (\$12.94) in the fiscal years ended March 31, 2020 and 2021, respectively. These fair values were measured by reference to the fair values calculated using the Black-Scholes model.

Assumptions used in the model were as follows.

	2020	2021
Share price	¥2,115	¥1,436 (\$12.94)
Expected volatility (Note)	32.4%	36.2%
Expected remaining term	2.3 years	1.3 years
Expected dividend yield	3.3%	— %
Risk-free rate	(0.2)%	(0.1)%

(Note) The expected volatility is calculated based on historical price performance over the expected remaining period.

(2) Employee Stock Ownership Plan (ESOP) Trust

The Company has adopted an ESOP Trust for its employment-type corporate officers (hereafter, “eligible persons”), with the aim of infusing among the eligible persons a sense of belonging to the Company and a sense of management participation, and raising their motivation and morale to contribute to the long-term enhancement of the Group's performance and increase in the stock price.

This is a performance-linked, share-based payment plan, under which the Company acquires its shares through the ESOP Trust using the funds contributed by the Company and, in accordance with the Company's share grant policy, grants the shares and pays an amount of money equivalent to the conversion value of the shares to the respective eligible persons based on the number of points granted (1 point = 1 share).

The vesting conditions require, in principle, that the eligible persons have been in service retaining the eligibility from the grant date to the vesting date.

In the plan, no exercise price is set as both the Company's shares are granted and the amount of money equivalent to the conversion value of the Company's shares is paid through the ESOP Trust.

The weighted-average fair value of an ESOP Trust point as of the grant date was ¥1,762 and ¥1,436 (\$12.94) in the fiscal years ended March 31, 2020 and 2021, respectively. These fair values were measured by reference to the fair values calculated using the Black-Scholes model.

Assumptions used in the model were as follows.

	2020	2021
Share price	¥1,908	¥1,436 (\$12.94)
Expected volatility (Note)	33.2%	36.2%
Expected remaining term	2.2 years	1.3 years
Expected dividend yield	3.7%	— %
Risk-free rate	(0.2)%	(0.1)%

(Note) The expected volatility is calculated based on the historical price performance over the expected remaining period.

24. Revenue

(1) Revenue recognized from contracts with customers

The components of “revenue” in the consolidated statement of profit or loss in the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Revenue recognized from contracts with customers	¥425,798	¥427,417	\$3,850,604
Revenue recognized from other sources	274	129	1,162
Total	¥426,073	¥427,546	\$3,851,766

(Note) Revenue recognized from other sources includes revenue from lease contracts as defined under IFRS 16.

(2) Disaggregation of revenue

Revenue recognized from contracts with customers is disaggregated by segment based on the contracts with the customers. The Group is composed of business units identified by business-unit-based products as the Group is able to obtain separate financial information and the Board of Directors conduct periodic reviews to determine the allocation of management resources and evaluate business results. The relationship between disaggregated revenue and segment revenue for the fiscal years ended March 31, 2020 and 2021 is set forth in the table below.

As noted in “Note 4: Segment Information”, the Group has changed its reportable segments, and the disaggregation of revenue for the fiscal year ended March 31, 2020 is made and reported based on the reportable segments of the fiscal year ended March 31, 2021.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Automotive components	¥344,398	¥338,612	\$3,050,559
Plugs	203,538	205,259	1,849,180
Sensors	140,859	133,352	1,201,369
Ceramics	¥ 36,311	¥ 38,915	\$ 350,586
Medical	¥ 20,671	¥ 24,805	\$ 223,468
New businesses	¥ 20,630	¥ 19,905	\$ 179,324
Other	¥ 4,060	¥ 5,307	\$ 47,811
Total	¥426,073	¥427,546	\$3,851,766

(Note) The table above includes “revenue recognized from contracts with customers” and “revenue recognized from other sources.”

The Automotive components segment principally manufactures and sells automotive components and consists of two subsegments: Plugs, which is the spark plug business, and Sensors, which is which the business of exhaust gas sensors and other types of automotive sensors. Ceramics is a segment that manufactures and sells cutting tools, industrial ceramics and products for semiconductor manufacturing equipment. Medical is a segment that manufactures and sells artificial bones and oxygen concentrators. New businesses is a segment that manufactures and sells products related to new businesses, such as the environmental and energy business.

In the sale of products, revenue is recognized when the control of the product is transferred to the customer; that is, when the product is shipped to a location specified by the customer, and is delivered to and accepted by the customer, upon which the legal title to and the physical possession of the product, as well as the significant risks and rewards of ownership of the product transfer to the customer. No significant financing component is included in the consideration promised by the customer as it is received within one year after the recognition of the revenue.

There are instances in which the products of the Automotive components segment are sold with variable considerations, including rebates that are conditional upon achievement of certain targets, such as sales targets, in terms of volume and amount (hereafter, “achievement rebates”). In such cases, the transaction price is measured at the amount of consideration promised in the contract with the customer, less the estimated amount of achievement rebates or other variable consideration. Achievement rebates are estimated using the most likely amount method, which is based on past results and other data, and revenue is recognized only to the extent that it is highly probable that no significant reversal of the recognized revenue will occur.

(3) Contract liabilities

Contract liabilities relate primarily to payments received from customers in advance. The balance of contract liabilities as of March 31, 2020 and 2021 is as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Contract liabilities	¥342	¥548	\$4,937

The amounts of all contract liabilities included in the opening balance of fiscal years ended March 31, 2020 and 2021 were recognized as revenue for the fiscal years ended March 31, 2020 and 2021, respectively.

25. Selling, General and Administrative Expenses

The components of “Selling, general and administrative expenses” in the consolidated statement of profit or loss for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Depreciation and amortization	¥ 5,509	¥ 5,502	\$ 49,568
Retirement benefit costs	1,184	1,122	10,108
Director compensation and employee salaries and allowances	34,262	34,516	310,955
Packaging and transportation expenses	8,580	10,598	95,477
Advertising expenses	5,612	4,285	38,604
Other	32,142	27,846	250,865
Total	¥87,292	¥83,871	\$755,595

26. Other Income and Expenses

The components of other income for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Gain on sale of property, plant and equipment	¥ 39	¥ 28	\$ 252
Insurance income	57	39	351
Other	1,445	1,576	14,198
Total	¥1,542	¥1,644	\$14,811

The components of other expenses for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Settlement package	¥ —	¥ 518	\$ 4,667
Other	718	1,167	10,514
Total	¥718	¥1,686	\$15,189

27. Finance Income and Finance Expenses

(1) Finance income

The components of finance income for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Interest income			
Financial assets measured at amortized cost	¥ 675	¥ 384	\$ 3,459
Dividend income			
Financial assets measured at fair value through other comprehensive income (Note)	1,492	1,228	11,063
Gain on valuation of derivatives	843	243	2,189
Foreign exchange gains (net)	—	3,785	34,099
Other	56	37	333
Total	¥3,068	¥5,679	\$51,162

(Note) Dividend income includes income from financial assets measured at fair value through other comprehensive income that were derecognized during each fiscal year. This income from financial assets is not presented as a separate component as the amount is immaterial.

(2) Finance expenses

The components of finance expenses for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Interest expense			
Financial liabilities measured at amortized cost (Note)	¥ 899	¥ 850	\$7,658
Foreign exchange loss (net)	5,833	—	—
Other	33	216	1,946
Total	¥6,766	¥1,067	\$9,613

(Note) Interest expense associated with lease liabilities is stated in “Note 12: Leases.”

28. Income Taxes

(1) Deferred tax assets and deferred tax liabilities

The components of major causes of deferred tax assets and deferred tax liabilities were as follows.

Fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020)

	Millions of yen				
	Balance as at April 1, 2019	Recognized through profit or loss	Recognized through other comprehensive income	Other (Note)	Balance as at March 31, 2020
Deferred tax assets					
Operating loss carryforwards	¥ 1,478	¥ (59)	¥ —	¥ 471	¥ 1,890
Retirement benefit liabilities	7,922	468	101	(57)	8,434
Property, plant and equipment, and intangible assets	2,098	649	—	(2)	2,745
Accrued expenses	4,114	(234)	—	(39)	3,840
Inventories	2,904	20	—	(42)	2,881
Unrealized gains	5,988	(202)	—	—	5,786
Other	4,323	(6)	622	(135)	4,804
Total	¥28,830	¥ 635	¥ 724	¥ 192	¥30,383
Deferred tax liabilities					
Retained earnings of affiliates	3,889	106	—	—	3,995
Valuation differences on securities	11,256	8	(2,736)	—	8,529
Property, plant and equipment, and intangible assets	3,278	84	—	(184)	3,177
Other	371	52	—	(15)	409
Total	¥18,796	¥ 251	¥(2,736)	¥(200)	¥16,111
Net deferred tax assets (liabilities)	¥10,034	¥ 384	¥ 3,460	¥ 393	¥14,272

(Note) Foreign currency translation differences are included in “Other.”

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Millions of yen				
	Balance as at April 1, 2020	Recognized through profit or loss	Recognized through other comprehensive income	Other (Note)	Balance as at March 31, 2021
Deferred tax assets					
Operating loss carryforwards	¥ 1,890	¥ (531)	¥ —	¥(531)	¥ 826
Retirement benefit liabilities	8,434	(67)	(1,564)	13	6,816
Property, plant and equipment, and intangible assets	2,745	(265)	—	(47)	2,432
Accrued expenses	3,840	259	—	112	4,212
Inventories	2,881	144	—	97	3,123
Unrealized gains	5,786	(242)	—	—	5,543
Other	4,804	531	(505)	478	5,308
Total	¥30,383	¥ (173)	¥(2,069)	¥ 122	¥28,262
Deferred tax liabilities					
Retained earnings of affiliates	3,995	953	—	—	4,948
Valuation difference on securities	8,529	(18)	3,080	—	11,590
Property, plant and equipment, and intangible assets	3,177	19	—	97	3,294
Other	409	31	—	40	481
Total	¥16,111	¥ 985	¥ 3,080	¥ 138	¥20,316
Net deferred tax assets (liabilities)	¥14,272	¥(1,159)	¥(5,150)	¥ (15)	¥ 7,946

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Thousands of U.S. dollars				
	Balance as at April 1, 2020	Recognized through profit or loss	Recognized through other comprehensive income	Other (Note)	Balance as at March 31, 2021
Deferred tax assets					
Operating loss carryforwards	\$ 17,027	\$ (4,784)	\$ —	\$(4,784)	\$ 7,441
Retirement benefit liabilities	75,982	(604)	(14,090)	117	61,405
Property, plant and equipment, and intangible assets	24,730	(2,387)	—	(423)	21,910
Accrued expenses	34,595	2,333	—	1,009	37,946
Inventories	25,955	1,297	—	874	28,135
Unrealized gains	52,126	(2,180)	—	—	49,937
Other	43,279	4,784	(4,550)	4,306	47,820
Total	\$273,721	\$ (1,559)	\$(18,640)	\$ 1,099	\$254,613
Deferred tax liabilities					
Retained earnings of affiliates	35,991	8,586	—	—	44,577
Valuation difference on securities	76,838	(162)	27,748	—	104,414
Property, plant and equipment, and intangible assets	28,622	171	—	874	29,676
Other	3,685	279	—	360	4,333
Total	\$145,144	\$ 8,874	\$ 27,748	\$ 1,243	\$183,027
Net deferred tax assets (liabilities)	\$128,577	\$(10,441)	\$(46,396)	\$ (135)	\$ 71,586

(Note) Foreign currency translation differences are included in "Other."

Deferred tax assets and deferred tax liabilities in the consolidated statement of financial position as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Deferred tax assets	¥14,296	¥8,438	\$76,018
Deferred tax liabilities	24	491	4,423
Net deferred tax assets	¥14,272	¥7,946	\$71,586

Deductible temporary differences, tax loss carryforwards and tax credit carryforwards for which no deferred tax assets were recognized as of March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Deductible temporary differences	¥ 9,762	¥11,682	\$105,243
Tax loss carryforwards and tax credit carryforwards	¥16,165	¥21,336	\$192,216

The expiration schedule of tax loss carryforwards and tax credit carryforwards for which no deferred tax assets were recognized as of March 31, 2020 and 2021 is as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
First year	¥ 14	¥ —	\$ —
Second year	1	—	—
Third year	—	—	—
Fourth year	—	—	—
Fifth year and beyond	16,148	21,336	192,216
Total	¥16,165	¥21,336	\$192,216

Taxable temporary differences associated with investments in consolidated subsidiaries and associates for which no deferred tax liabilities were recognized as of March 31, 2020 and 2021 are immaterial.

(2) Income tax expenses

The components of income tax expenses for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Current tax expense	¥11,502	¥13,261	\$119,468
Deferred tax expense (Note)	(384)	1,159	10,441
Total	¥11,118	¥14,420	\$129,910

(Note) Deferred tax expense includes the amount of previously unrecognized temporary differences of a prior period. Accordingly, deferred tax expense decreased by ¥1,849 million in the fiscal year ended March 31, 2020 (not applicable for the fiscal year ended March 31, 2021).

(3) Reconciliation of combined statutory tax rate

Reconciliation of combined statutory tax rate and average effective tax rate for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Percentage	
	2020	2021
Combined statutory tax rate	30.6	30.6
(Reconciliation)		
Permanently nondeductible expenses	0.9	0.8
Permanently nontaxable income	(0.4)	(0.5)
Tax credits for experimental research costs, etc.	(3.3)	(3.9)
Differences in statutory tax rates of overseas consolidated subsidiaries	(0.9)	(0.5)
The reassessment of the recoverability of deferred tax assets	(1.5)	1.2
Retained earnings of overseas consolidated subsidiaries and associates	0.3	1.9
Tax exemption on overseas consolidated subsidiaries	(0.3)	(1.2)
Other	(0.6)	(0.6)
Average effective tax rates	24.8	27.8

(Note)The Company is subject to Japanese corporate tax, inhabitant tax and business tax, and the combined statutory tax rates calculated based on these for the fiscal years ended March 31, 2020 and 2021 were both 30.6%. Overseas consolidated subsidiaries are subject to income taxes at their respective jurisdictions.

29. Earnings Per Share

(1) Per share information

	Yen		U.S. dollar
	2020	2021	2021
Basic earnings per share	¥163.06	¥188.59	\$1.70

(Note) Diluted earnings per share information is omitted because the Company does not have dilutive potential ordinary shares.

(2) The basis for the calculation of basic earnings per share for the fiscal years ended March 31, 2020 and 2021 is as follows.

Item	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Profit attributable to owners of the parent	¥33,698	¥38,367	\$345,649

	Thousands of shares	
	2020	2021
Weighted-average number of ordinary shares during the year	206,665	203,439

(Note) In the calculation of basic earnings per share, the Company's shares held by the BIP Trust and the ESOP Trust are deducted from the weighted-average number of ordinary shares.

30. Other Comprehensive Income

The components of other comprehensive income and their tax effects (including noncontrolling interests) for the fiscal years ended March 31, 2020 and 2021 were as follows.

Fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020)

	Millions of yen				
	Amount arising during the fiscal year	Reclassification adjustments	Before tax effects	Amount of tax effects	Net of tax effects
Items that will not be reclassified to profit or loss					
Financial assets measured at fair value through other comprehensive income	¥(10,863)	¥—	¥(10,863)	¥3,328	¥ (7,535)
Remeasurements of defined benefit plans	(812)	—	(812)	101	(710)
Share of other comprehensive income of investments accounted for using the equity method	(5)	—	(5)	—	(5)
Total of items that will not be reclassified to profit or loss	¥(11,681)	¥—	¥(11,681)	¥3,430	¥ (8,251)
Items that may be reclassified subsequently to profit or loss					
Exchange differences on translation of foreign operations	(11,975)	—	(11,975)	—	(11,975)
Share of other comprehensive income of investments accounted for using the equity method	(576)	—	(576)	—	(576)
Total of items that may be reclassified subsequently to profit or loss	¥(12,551)	¥—	¥(12,551)	¥ —	¥(12,551)
Total of other comprehensive income	¥(24,233)	¥—	¥(24,233)	¥3,430	¥(20,803)

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Millions of yen				
	Amount arising during the fiscal year	Reclassification adjustments	Before tax effects	Amount of tax effects	Net of tax effects
Items that will not be reclassified to profit or loss					
Financial assets measured at fair value through other comprehensive income	¥19,516	¥—	¥19,516	¥(6,273)	¥13,243
Remeasurements of defined benefit plans	5,515	—	5,515	(1,564)	3,950
Share of other comprehensive income of investments accounted for using the equity method	2	—	2	—	2
Total of items that will not be reclassified to profit or loss	¥25,035	¥—	¥25,035	¥(7,838)	¥17,196
Items that may be reclassified subsequently to profit or loss					
Exchange differences on translation of foreign operations	9,091	—	9,091	—	9,091
Share of other comprehensive income of investments accounted for using the equity method	627	—	627	—	627
Total of items that may be reclassified subsequently to profit or loss	¥ 9,718	¥—	¥ 9,718	¥ —	¥ 9,718
Total of other comprehensive income	¥34,753	¥—	¥34,753	¥(7,838)	¥26,915

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Thousands of U.S. dollars				
	Amount arising during the fiscal year	Reclassification adjustments	Before tax effects	Amount of tax effects	Net of tax effects
Items that will not be reclassified to profit or loss					
Financial assets measured at fair value through other comprehensive income	\$175,820	\$—	\$175,820	\$(56,514)	\$119,306
Remeasurements of defined benefit plans	49,685	—	49,685	(14,090)	35,586
Share of other comprehensive income of investments accounted for using the equity method	18	—	18	—	18
Total of items that will not be reclassified to profit or loss	\$225,541	\$—	\$225,541	\$(70,613)	\$154,919
Items that may be reclassified subsequently to profit or loss					
Exchange differences on translation of foreign operations	81,901	—	81,901	—	81,901
Share of other comprehensive income of investments accounted for using the equity method	5,649	—	5,649	—	5,649
Total of items that may be reclassified subsequently to profit or loss	\$ 87,550	\$—	\$ 87,550	\$ —	\$ 87,550
Total of other comprehensive income	\$313,090	\$—	\$313,090	\$(70,613)	\$242,477

31. Changes in Liabilities Arising from Financing Activities

Changes in liabilities arising from financing activities for the fiscal years ended March 31, 2020 and 2021 were as follows.

Fiscal year ended March 31, 2020 (from April 1, 2019 to March 31, 2020)

	Millions of yen						
			Noncash changes				
	April 1, 2019	Cash flows	Foreign currency exchange differences	New lease contracts	Changes arising from acquisition of control in subsidiaries	Other	March 31, 2020
Short-term loans payable	¥ 27,587	¥(16,404)	¥(250)	¥ —	¥—	¥ —	¥ 10,931
Long-term loans payable	31,230	20,076	787	—	—	(106)	51,987
Bonds	49,842	29,852	—	—	—	48	79,743
Lease liabilities	9,678	(2,637)	(296)	3,453	—	83	10,283
Total	¥118,339	¥ 30,887	¥ 240	¥3,453	¥—	¥ 25	¥152,946

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Millions of yen						
	April 1, 2020	Cash flows	Noncash changes				March 31, 2021
			Foreign currency exchange differences	New lease contracts	Changes arising from acquisition of control in subsidiaries	Other	
Short-term loans payable	¥ 10,931	¥ 17,916	¥ 95	¥ —	¥86	¥(87)	¥ 28,943
Long-term loans payable	51,987	55,785	949	—	—	60	108,783
Bonds	79,743	(30,000)	—	—	—	68	49,812
Lease liabilities	10,283	(2,825)	329	1,893	—	(24)	9,655
Total	¥152,946	¥ 40,876	¥1,374	¥1,893	¥86	¥ 16	¥197,194

Fiscal year ended March 31, 2021 (from April 1, 2020 to March 31, 2021)

	Thousands of U.S. dollars						
	April 1, 2020	Cash flows	Noncash changes				March 31, 2021
			Foreign currency exchange differences	New lease contracts	Changes arising from acquisition of control in subsidiaries	Other	
Short-term loans payable	\$ 98,477	\$161,405	\$ 856	\$ —	\$775	\$(784)	\$ 260,748
Long-term loans payable	468,351	502,568	8,550	—	—	541	980,027
Bonds	718,405	(270,270)	—	—	—	613	448,757
Lease liabilities	92,640	(25,450)	2,964	17,054	—	(216)	86,982
Total	\$1,377,892	\$368,252	\$12,378	\$17,054	\$775	\$ 144	\$1,776,523

32. Major Subsidiaries

The Company's major subsidiaries are mentioned on the Company's website (<https://www.ngkntk.co.jp/english/>).

33. Related Parties

(1) Transactions with related parties

This information is omitted as neither material related-party transactions nor material outstanding balances of receivables and payables were noted.

(2) Compensation to key management personnel

Compensation to key management personnel for the fiscal years ended March 31, 2020 and 2021 were as follows.

	Millions of yen		Thousands of U.S. dollars
	2020	2021	2021
Remuneration and bonuses	¥ 901	¥794	\$7,153
Share-based payments	113	91	820
Total	¥1,014	¥885	\$7,973

(Notes) 1. Key management personnel are the Company's directors and executive officers working in the respective presented fiscal years.
2. The amounts of share-based payments are the amounts expensed in the fiscal years ended March 31, 2020 and 2021.

34. Contingencies

(1) Guarantee obligations

The Group provides guarantees for borrowings from financial institutions taken by the Group's employees, as follows.

	Millions of yen		Thousands of U.S. dollars
	March 31, 2020	March 31, 2021	March 31, 2021
Guarantees of employees' borrowings	¥5	¥4	\$36
Total	¥5	¥4	\$36

(2) Litigation, etc.

The Group is subject to investigations by foreign authorities on alleged antitrust violations in relation to certain past transactions in the automotive components business. In connection with the investigations, discussions are ongoing with some customers on compensation for damages while for other customers, civil lawsuits have been filed. The Company analyzes the risks individually based on the status of the investigations by the national and antitrust law authorities, the progress of settlement negotiations and the opinions of the lawyers in charge,

and recognizes the estimated amount of liability, such as settlement packages that may occur in the future. The carrying amount of the provision for the violation of antitrust law as of March 31, 2021 was ¥384 million (\$3,459 thousand). The estimated amount of liability that may occur in the future is based on information currently available. However, as a result of uncertainty, if new facts become available in the future, additional loss may result. In accordance with IAS 37, "Provisions, Contingent Liabilities and Contingent Assets," a detailed description of the legal proceedings, etc., is not disclosed to avoid putting the Group at a disadvantage.

35. Subsequent Events

There are no items to report.



Independent auditor's report

To the Board of Directors of NGK SPARK PLUG CO., LTD.:

Opinion

We have audited the accompanying consolidated financial statements of NGK SPARK PLUG CO., LTD. and its consolidated subsidiaries (collectively referred to as "the Group"), which comprise the consolidated statement of financial position as at March 31, 2021, and the consolidated statements of profit or loss, comprehensive income, changes in equity and cash flows for the year then ended and notes, comprising significant accounting policies and other explanatory information.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at March 31, 2021, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS).

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in Japan. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Japan, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Appropriateness of management's judgment as to whether an impairment loss should be recognized on certain goodwill

The key audit matter	How the matter was addressed in our audit
In the consolidated statement of financial position as of March 31, 2021, NGK SPARK PLUG CO., LTD. and its consolidated subsidiaries (hereinafter, referred to as the "Group") recognized goodwill of ¥3,115 million allocated to CAIRE Inc., CAIRE Medical Limited and CAIRE Medical Technology (Chengdu) Co., Ltd.	<p>The primary procedures we performed to assess whether management's judgment with respect to the recognition of an impairment loss on goodwill allocated to CAIRE was appropriate included the following:</p> <p>(1) Internal control testing</p>

(hereinafter, collectively referred to as "CAIRE") in the medical business, which represented approximately 91% of total goodwill and 0.4% of total assets in the consolidated financial statements. The goodwill arose when the Group acquired control of CAIRE.

As described in Note 2, "Basis of Preparation, (6) Use of estimates and judgments," Note 3, "Significant Accounting Policies, (8) Goodwill and intangible assets" and "(10) Impairment loss on nonfinancial assets," and Note 11, "Impairment Loss on Nonfinancial Assets" to the consolidated financial statements, a cash generating unit ("CGU") or a group of CGUs to which goodwill is allocated is tested for impairment at least annually or more frequently whenever it is determined that there is an impairment indicator. In the impairment testing, when the recoverable amount of a group of CGUs is less than the carrying amount, the carrying amount is reduced to the recoverable amount, and the resulting decrease in the carrying amount is recognized as an impairment loss.

In the current fiscal year, the Group used the value in use as the recoverable amount in the impairment testing on goodwill allocated to the group of CGUs. The value in use was measured using the discounted present value of future cash flows estimated based on the four-year management plan approved by the Board of Directors and a terminal growth rate. In the impairment testing for the current fiscal year, since the recoverable amount exceeded the carrying amount, the Group determined that recognition of an impairment loss was not necessary.

In preparing the medium-term management plan, while an increase in the sales of core products resulting from market growth, the launch of new products and the expansion of sales channels as well as cost reductions were expected, these assumptions involved uncertainty and management's judgment thereon had a significant effect on the estimated future cash flows.

In addition, selecting appropriate models and input data for estimating the discount rate used to calculate the value in use required a high degree of expertise in valuation.

We, therefore, determined that our assessment of the appropriateness of management's judgment as

We tested the design and operating effectiveness of certain of the Group's internal controls relevant to measuring the value in use used for the impairment testing on a group of CGUs to which goodwill is allocated. In this assessment, we focused our testing on controls designed to prevent or detect the use of unreasonable assumptions concerning the plan to increase sales of core products and the cost reduction plan during the period of estimated cash flows.

(2) Assessment of the reasonableness of the estimated value in use

In order to assess the reasonableness of key assumptions adopted by management in preparing the medium-term management plan of the business, which was used as the basis for estimating future cash flows, we inquired of the personnel responsible for the business about the basis on which each assumption was developed. In addition, we:

- assessed the consistency of the plan to increase sales of core products as a key assumption incorporated into the estimates included in the management plan through comparison with market forecasts and comparable companies;
- inspected details of the cost reduction plan and compared them with the results of the cost reduction measures undertaken in the past; and
- independently estimated future cash flows by incorporating the effect of specific uncertainty into the management plan and then assessed the possible impact on the judgment as to whether an impairment loss should be recognized.

Furthermore, we performed the following procedures by involving a valuation specialist within our domestic network firms who assisted our evaluation of the discount rate:

- assessed the appropriateness of the model used to estimate the discount rate based on subject matters relevant to valuation and the requirements of accounting standards; and
- assessed the reasonableness of the input data used to calculate the discount rate through

to whether an impairment loss should be recognized on goodwill allocated to CAIRE was one of the most significant matters in our audit of the consolidated financial statements for the current fiscal year and, accordingly, a key audit matter.	comparisons with relevant data published by external organizations.
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Adequacy of the estimates of the provision for losses related to the antitrust law

The key audit matter	How the matter was addressed in our audit
<p>In the consolidated statement of financial position as of March 31, 2021, NGK SPARK PLUG CO., LTD. and its consolidated subsidiaries (hereinafter, referred to as the "Group") recognized a provision for losses related to the antitrust law of ¥384 million and also included associated disclosure in Note 2, "Basis of Preparation, (6) Use of estimates and judgments," Note 3, "Significant Accounting Policies, (13) Provisions," Note 18, "Other Liabilities" and Note 34, "Contingencies" to the consolidated financial statements.</p> <p>In order to prepare for settlement and other payments regarding alleged violations of the antitrust law involving certain past transactions of specific automotive components, the estimates of probable future losses were recognized as a provision for losses related to the antitrust law. The settlement mainly includes: a) penalty payments that may be ordered as a result of investigations conducted by certain countries and antitrust law authorities; b) settlement payments that may be paid as a result of negotiations with plaintiffs of civil lawsuits; and c) settlement payments that may be paid as a result of individual negotiations with each automobile manufacturer.</p> <p>The Group has been making efforts to mitigate the risk of violation of the antitrust law by developing an internal system to deter future violations through intensified measures to prevent a recurrence of past violations and continuous corporate-wide compliance education and awareness-raising activities, among others.</p>	<p>The primary procedures we performed to assess whether the estimates of the provision for losses related to the antitrust law were reasonable included the following:</p> <p>(1) Internal control testing</p> <p>We tested the design and operating effectiveness of certain of the Group's internal controls in which the accounting department discusses with the legal department in a timely manner in order to obtain information necessary for estimating the provision.</p> <p>(2) Assessment of the adequacy of the estimates of the provision for losses related to the antitrust law</p> <p>As the primary procedures, we:</p> <ul style="list-style-type: none"> assessed whether a provision for losses related to the antitrust law should be recognized, by inquiring of the personnel responsible for the legal department of the Group about the status of the cases including contacts from certain authorities, negotiations with automobile manufacturers and progress of civil lawsuits; assessed the reasonableness of the process to determine the provision for losses related to the antitrust law by inquiring of the personnel responsible for the legal department of the Group and assessed the reasonableness of key assumptions adopted by management in light of the investigation status of certain countries and antitrust law authorities, progress of settlement negotiations and history of past settlements; and circularized through a written legal

<p>On the other hand, the probable future losses concerning past transactions were estimated based on the status of investigations conducted by certain countries and antitrust law authorities, the progress of settlement negotiations, and the opinion of the legal counsel handling the case.</p> <p>Since the process of determining penalties and settlement payments involved uncertainty stemming from the intentions of the authorities and the counterparties, management's judgment on the estimates of probable future losses had a significant effect on the estimated amount recognized as a provision.</p> <p>We, therefore, determined that our assessment of the adequacy of the estimates of the provision for losses related to the antitrust law was one of the most significant matters in our audit of the consolidated financial statements for the current fiscal year and, accordingly, a key audit matter.</p>	confirmation with the legal counsel handling the case and assessed the consistency of the response with information obtained from the accounting and legal departments.
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Appropriateness of management's judgment as to whether an impairment loss should be recognized on certain noncurrent assets

The key audit matter	How the matter was addressed in our audit
<p>In the consolidated statement of financial position as of March 31, 2021, NGK SPARK PLUG CO., LTD. and its consolidated subsidiaries (hereinafter referred to as the "Group") recognized property, plant and equipment of ¥251,230 million, goodwill and intangible assets of ¥16,440 million and right-of-use assets of ¥8,992 million, which included a total of ¥2,219 million used in a certain business within the Ceramics segment. The total amount accounted for approximately 0.3% of total assets in the consolidated financial statements.</p> <p>While the noncurrent assets are depreciated/amortized in a systematic manner, they need to be tested for impairment whenever there is an impairment indicator as described in Note 2, "Basis of Preparation, (6) Use of estimates and judgments," Note 3, "Significant Accounting Policies, (7) Property, plant and equipment" and "(10) Impairment loss on nonfinancial assets" and Note 11, "Impairment Loss on Nonfinancial</p>	<p>The primary procedures we performed to assess the appropriateness of management's judgment as to whether an impairment loss should be recognized on noncurrent assets used in a certain business within the ceramics segment included the following:</p> <p>(1) Internal control testing</p> <p>We tested the design and operating effectiveness of certain of the Group's internal controls relevant to determining whether an impairment loss should be recognized on noncurrent assets. In this assessment, we focused our testing on controls designed to prevent or detect the use of unreasonable assumptions concerning the sales growth forecasts to major customers during the period of estimated cash flows.</p> <p>(2) Assessment of the reasonableness of the estimated value in use</p>

Assets" to the consolidated financial statements. In the impairment testing, when the recoverable amount is less than the carrying amount, the carrying amount is reduced to the recoverable amount, and the resulting decrease in the carrying amount is recognized as an impairment loss.

Due to the impact of the novel coronavirus disease ("COVID-19") causing a decline in orders from major customers and issues concerning product mix, the business incurred recurring operating losses. As a result, there were impairment indicators. In the impairment testing for the current fiscal year, however, the recoverable amount exceeded the carrying amount and the Group determined that the recognition of an impairment loss was not necessary.

The Group used the value in use as the recoverable amount in the impairment testing on the cash generating unit ("CGU"). The future cash flows used to measure the value in use were estimated based on the medium-term management plan prepared by management with the assumption that the demand would recover and that the product mix would improve due to factors including an increase in sales to major customers resulting from the launch of new products in the future. In particular, since the sales growth forecasts involved uncertainty, management's judgment had a significant effect on the estimated future cash flows.

In addition, selecting appropriate models and input data for estimating the discount rate used to calculate the value in use required a high degree of expertise in valuation.

We, therefore, determined that our assessment of the appropriateness of management's judgment as to whether an impairment loss should be recognized on noncurrent assets used in a certain business within the Ceramics segment was one of the most significant matters in our audit of the consolidated financial statements for the current fiscal year, and accordingly, a key audit matter.

In order to assess the reasonableness of key assumptions included in the medium-term management plan of the business, which was used as the basis for estimating future cash flows, we inquired of the personnel responsible for the business about the basis on which each assumption was developed. In addition, to assess the reasonableness of key assumptions adopted in the estimated future cash flows, we:

- assessed the reasonableness of the sales growth forecasts as a key assumption incorporated into the estimates included in the management plan, by inspecting materials for the Board of Directors meetings in which the expectation of a recovery in demand during the COVID-19 pandemic were discussed and by assessing the consistency of the expectations with information obtained from major customers on expected orders;
- assessed the consistency of the sales growth forecasts due to the launch of new products with relevant documents describing proposals to major customers and negotiation status; and
- independently estimated future cash flows by incorporating the effect of specific uncertainty into the management plan and then assessed the possible effect on the judgment as to whether an impairment loss should be recognized.

Furthermore, we performed the following procedures by involving a valuation specialist within our domestic network firms who assisted our evaluation of the discount rate:

- assessed the appropriateness of the model used to estimate the discount rate based on subject matters relevant to valuation and the requirements of accounting standards; and
- assessed the reasonableness of the input data used to calculate the discount rate through comparisons with relevant data published by external organizations.

Responsibilities of Management and Corporate Auditors and the Board of Corporate Auditors for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with IFRS, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern in accordance with IFRS and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Corporate auditors and the board of corporate auditors are responsible for overseeing the directors' performance of their duties with regard to the design, implementation and maintenance of the Group's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with auditing standards generally accepted in Japan will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of our audit in accordance with auditing standards generally accepted in Japan, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, while the objective of the audit is not to express an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate whether the presentation and disclosures in the consolidated financial statements are in accordance with IFRS, the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or

business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with corporate auditors and the board of corporate auditors regarding, among other matters, the planned scope and timing of the audit, significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide corporate auditors and the board of corporate auditors with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.


From the matters communicated with corporate auditors and the board of corporate auditors, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Convenience Translation

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended March 31, 2021 are presented solely for convenience. Our audit also included the translation of yen amounts into U.S. dollar amounts and, in our opinion, such translation has been made on the basis described in Note 2(3) to the consolidated financial statements.

Interest required to be disclosed by the Certified Public Accountants Act of Japan


We do not have any interest in the Group which is required to be disclosed pursuant to the provisions of the Certified Public Accountants Act of Japan.

大北 尚史 

Hisashi Ohkita

Designated Engagement Partner

Certified Public Accountant

時々 輪 彰久 

Akihisa Jijiwa

Designated Engagement Partner

Certified Public Accountant

KPMG AZSA LLC

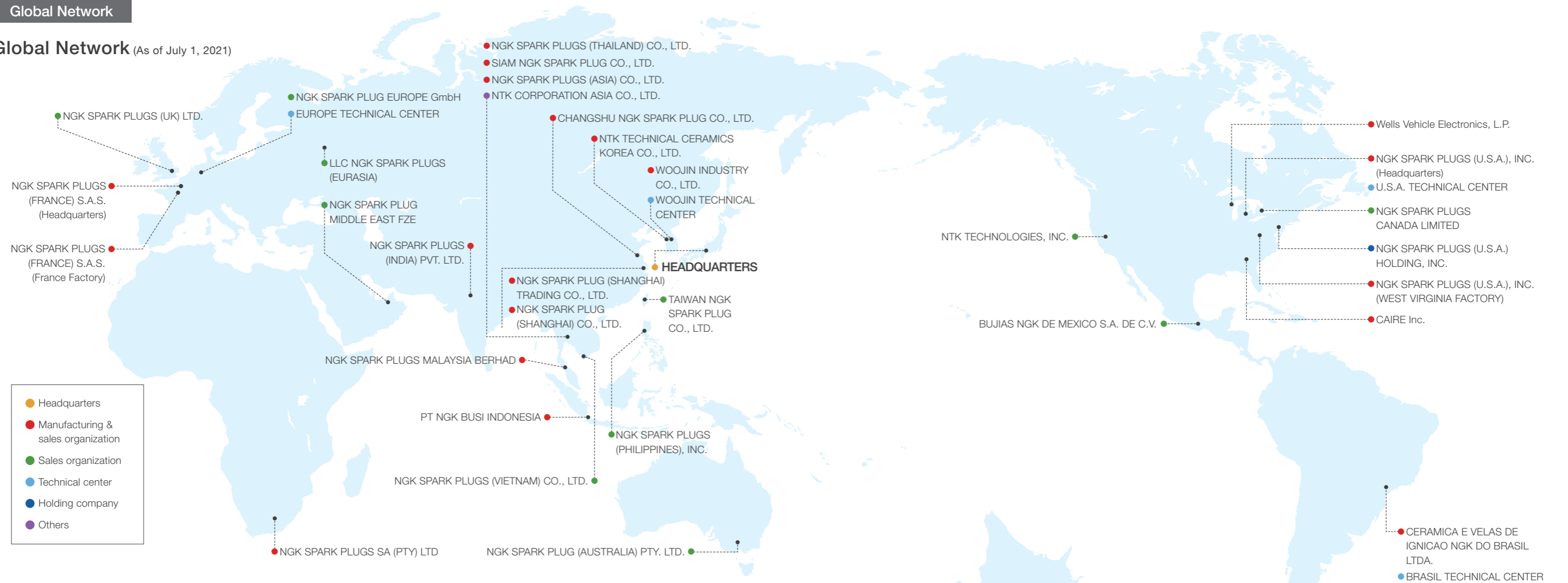
Nagoya Office, Japan

July 29, 2021

Global Network

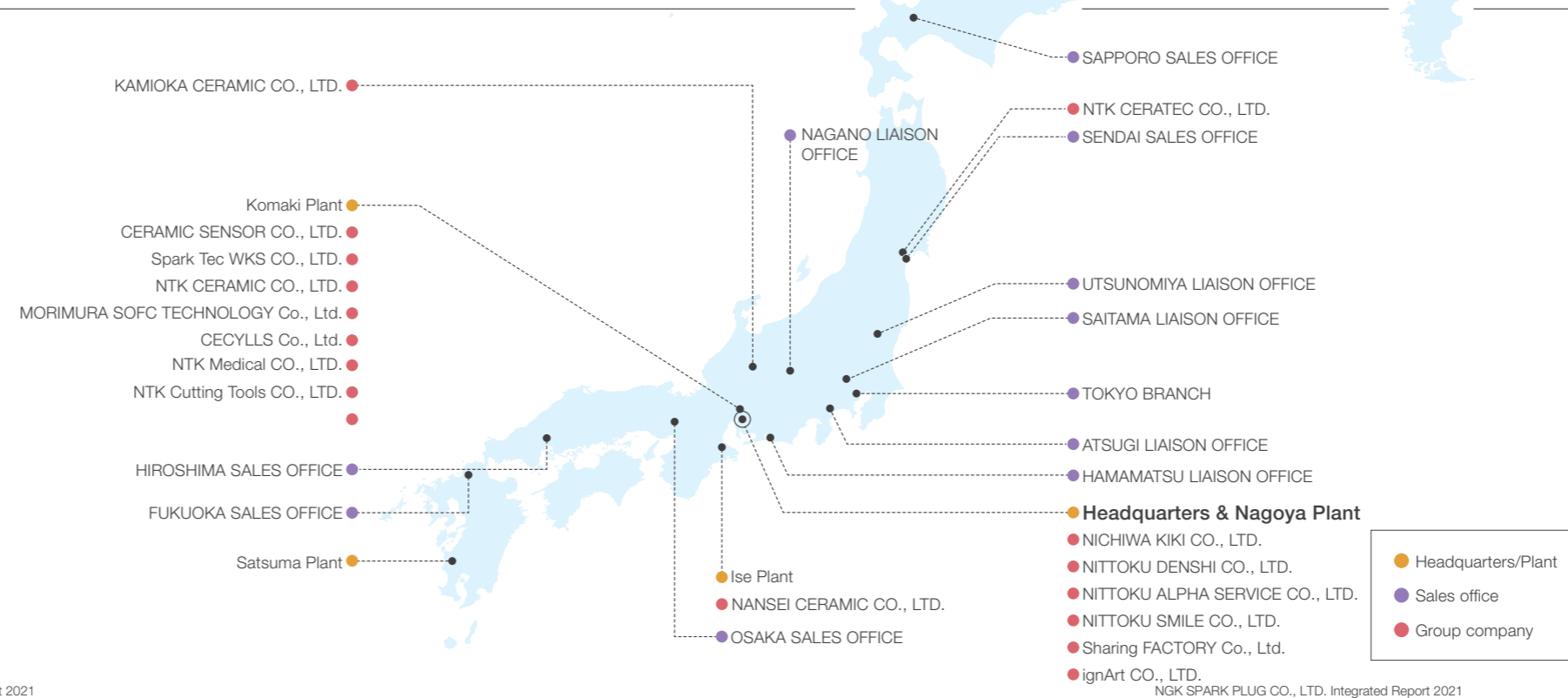
Global Network

Global Network (As of July 1, 2021)



Domestic Network

Domestic Network (As of July 1, 2021)



Corporate Profile and Stock Information

Corporate data (As of March 31, 2021)

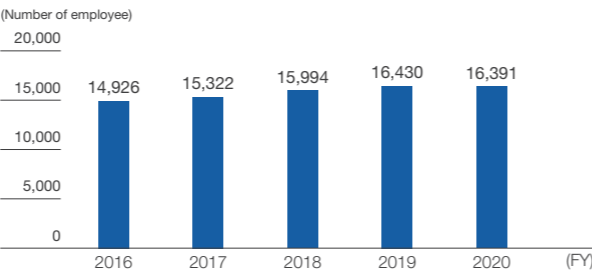
NGK SPARK PLUG CO., LTD.

Headquarters 14-18 Takatsuji-cho, Mizuho-ku, Nagoya
467-8525, Japan

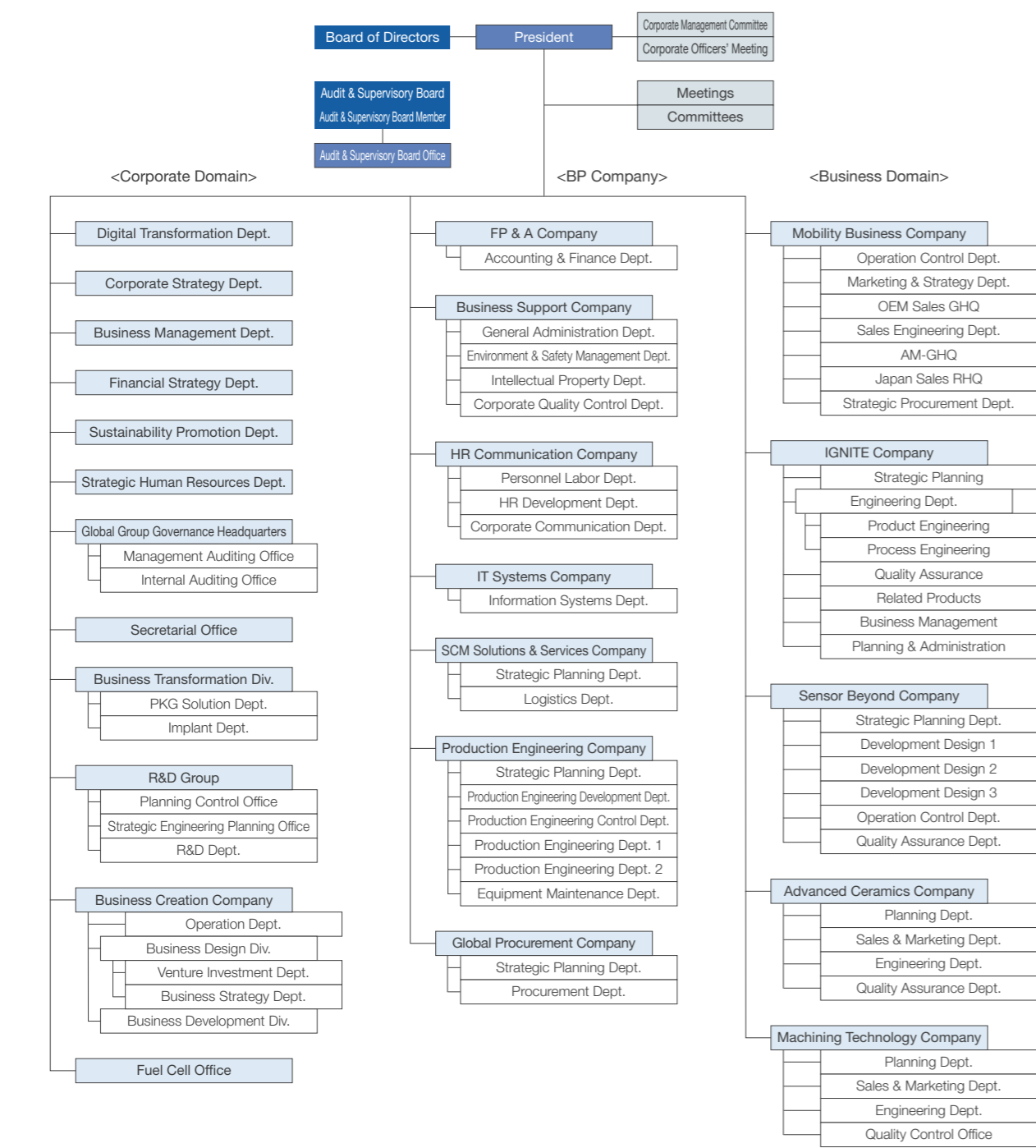
Established October 1936

Number of employees Non-consolidated: 5,891
Consolidated: 16,391

Number of employees at work (consolidated) (As of March 31, 2021)



Organization chart (As of July 1, 2021)



Number of shares and shareholders (As of March 31, 2021)

Paid-in capital 47,869 million yen

Total number of authorized shares 390,000,000

Total number of issued shares 204,175,320

Listed market Tokyo Stock Exchange and Nagoya Stock Exchange (First Section)

Shareholder registry administrator Mitsubishi UFJ Trust and Banking Corporation

Accounting auditor KPMG AZSA LLC

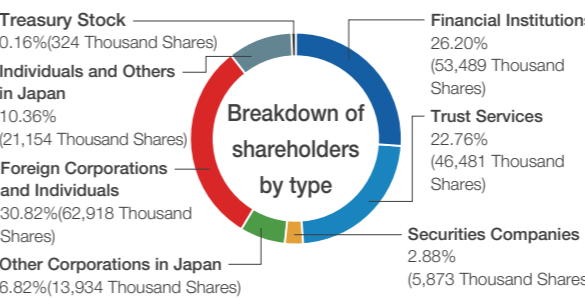
Number of shareholders 19,342

Major shareholders (As of March 31, 2021)

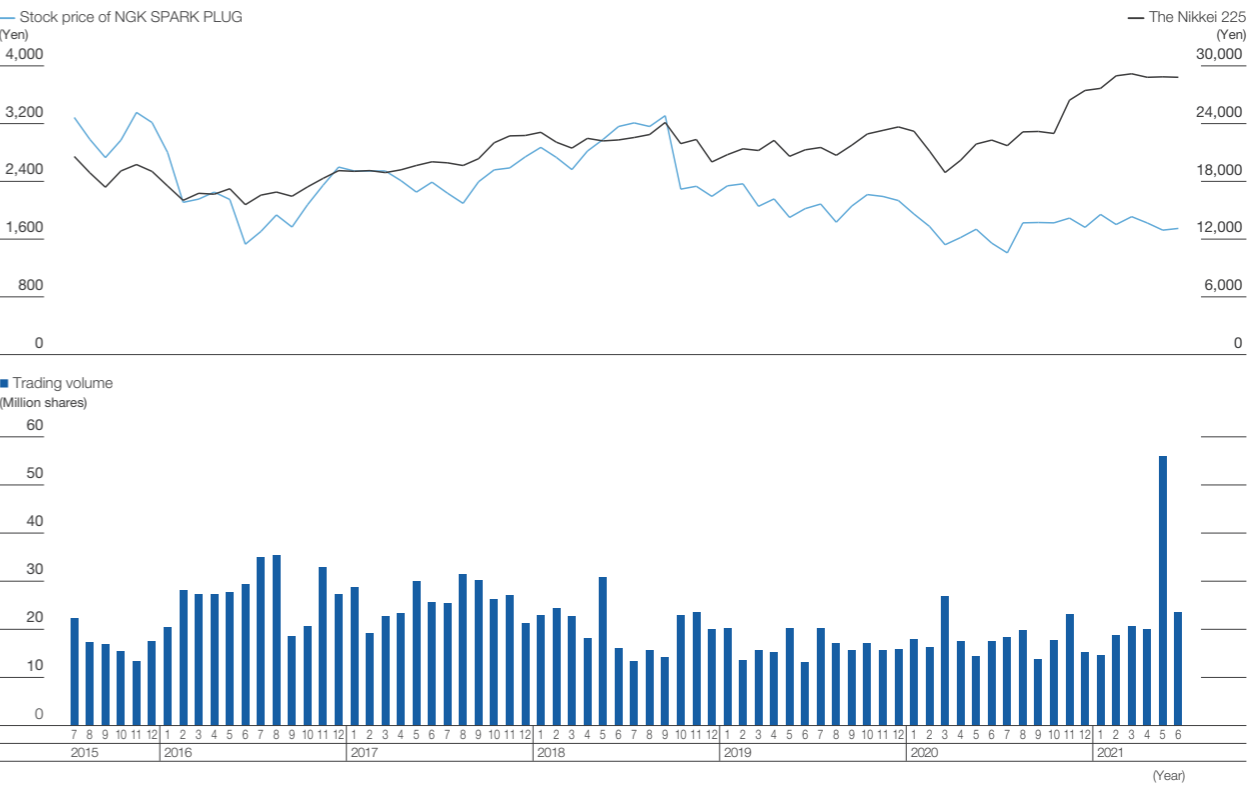
Name of shareholder	Number of shares held (thousand)	Ownership ratio (%)
Meiji Yasuda Life Insurance Company	16,794	8.23
The Dai-ichi Life Insurance Company, Limited	16,752	8.21
The Master Trust Bank of Japan, Ltd. (trust account)	15,932	7.81
Custody Bank of Japan, Ltd. (trust account)	8,041	3.94
National Mutual Insurance Federation of Agriculture Cooperatives	7,404	3.63
MUFG Bank, Ltd.	4,380	2.14
The Master Trust Bank of Japan, Ltd. (for Toyota Motor Corporation)	3,929	1.92
Nippon Life Insurance Company	3,563	1.74
TOTO Ltd.	3,433	1.68
Custody Bank of Japan, Ltd. (trust account 7)	3,322	1.63

Note: Ownership ratio above is calculated excluding treasury stock.

Breakdown of shareholders by type (As of March 31, 2021)



Stock price and trading volume (As of June 30, 2021)



Independent Verification Report



No.1811004117

Independent Verification Report

To: NGK SPARK PLUG CO., LTD.

1. Objective and Scope

Japan Quality Assurance Organization (hereafter "JQA") was engaged by NGK SPARK PLUG CO., LTD. (hereafter "the Company") to provide an independent verification on "FY2020* CSR Data Calculation Report" (hereafter "the Report"). The content of our verification was to express our conclusion, based on our verification procedures, on whether the statement of information regarding GHG emissions, Energy consumption, Water consumption, Waste Amount (Effective Utilization), Waste Amount (Non Effective Utilization), Lost Time Injury Frequency Rate (employees), Lost Time Injury Frequency Rate (temporary employees) and Occupational illness frequency rate (employees) in the Report was correctly measured and calculated, in accordance with the "Standard for Aggregating Rules of Environmental Performance Data (ESKW-027-3)", "Standard for calculating the Injury frequency rate(ZESAF-001-2)" and "Standard for calculating the occupational illness frequency rate" (hereafter "the Rules").

The purpose of the verification is to evaluate the Report objectively and to enhance the credibility of the Report.

*The fiscal year 2020 of the Company ended on March 31, 2021.

2. Procedures Performed

JQA conducted verification in accordance with "ISO 14064-3" for GHG emissions and Energy consumption, and with "ISAE3000" for Water consumption, Waste Amount (Effective Utilization), Waste Amount (Non Effective Utilization), Lost Time Injury Frequency Rate (employees), Lost Time Injury Frequency Rate (temporary employees) and Occupational illness frequency rate (employees), respectively. The scope of this verification assignment covers energy-derived CO2 emissions from Scope 1, 2 as GHG emissions, Energy consumption, Water consumption, Waste Amount (Effective Utilization), Waste Amount (Non Effective Utilization), Lost Time Injury Frequency Rate (employees), Lost Time Injury Frequency Rate (temporary employees) and Occupational illness frequency rate (employees). The verification was conducted to a limited level of assurance and quantitative materiality was set at 5 percent each of the total emissions, total amount of Water consumption and Waste, frequency rates in the Report.

The organizational boundaries of this verification include 41 domestic sites and 33 international sites of the Company and its group companies for GHG emissions, Energy consumption, Water consumption, Waste Amount (Effective Utilization), Waste Amount (Non Effective Utilization) and the Company only for Lost Time Injury Frequency Rates and Occupational illness frequency rate.

Our verification procedures included:

- Performing validation of integrated functions to check the Rules.
- Holding on-site verification at the Company's 3 domestic sites: NTK CERAMIC CO.,LTD. Iijima Plant, SparkTec TONO CO., LTD. Nino Plant and SparkTec TONO CO., LTD. Tono Plant. The number and location of sampling sites for on-site assessment were selected by the Company.
- On-site assessment to check the Report's scope and boundaries; monitoring points of activity data; monitoring and calculation system; and activity data.
- Vouching: Cross-checking the calculation results against evidence.

3. Conclusion

Based on the procedures described above, nothing has come to our attention that caused us to believe that the statement of the information regarding the Company's FY2020 GHG emissions, Energy consumption, Water consumption, Waste Amount (Effective Utilization), Waste Amount (Non Effective Utilization) and Lost Time Injury Frequency Rates and Occupational illness frequency rate in the Report is not materially correct, or has not been prepared in accordance with the Rules.

4. Consideration

The Company was responsible for preparing the Report, and JQA's responsibility was to conduct verification of GHG emissions, Energy consumption, Water consumption, Waste Amount (Effective Utilization), Waste Amount (Non Effective Utilization), Lost Time Injury Frequency Rates and Occupational illness frequency rate in the Report only. There is no conflict of interest between the Company and JQA.

Sumio Asada, Board Director

For and on behalf of Japan Quality Assurance Organization

1-25, Kandasudacho, Chiyoda-ku, Tokyo, Japan

June 29, 2021

Editorial Note

Thank you for taking the time to read our Integrated Report 2021.

We have explained our business strategy and initiatives for sustainability to our shareholders, investors, and all other stakeholders through integrated reports since the first issue in FY2017. During this period, the business environment surrounding us has changed with the speed beyond our imagination, and furthermore, strengthening of response to Environmental (E) and Social (S) issues has been strongly requested, partly affected by the COVID-19 infection. We have prepared this report, focusing on more clearly communicating to stakeholders how we will tackle these environmental changes through our business activities.

Regarding the initiatives for sustainability, we have formulated Eco Vision 2030 in the current fiscal year. On the premise of aiming for carbon neutrality in 2050, we have shown the vision (or goal) of what we want to be by 2030 and the vision of what we will pursue until 2040 through this vision. In addition, last year we announced our support for the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, and in the current fiscal year, we conducted a scenario analysis. We have disclosed the content of the analysis in this report as well as on our website.

Also, in the previous fiscal year, we announced our long-term vision to break away from the business portfolio in which the ICE business accounts for 80% of our total revenue. In the current fiscal year, we formulated the Medium-term Management Plan (from FY2021 to FY2024) as the specific strategy to achieve the long-term vision. In this report, we have explained specific plans to materialize the vision of what we want to be, including an improvement in efficiency and speed of management by the introduction of an in-house company system.

The ICE business is still our main business today, and we sometimes receive critical comments from investors for our repeated trial and error in developing new businesses. On the other hand, as the company holding the top share in spark plugs and sensors market in the world, we believe in the value only we can offer, such as the contribution to solving social issues through the dissemination and expansion of environmentally friendly products. Through this report, we hope you will understand our attitude to continuously promote activities toward realization of a sustainable society, while pursuing to transform our business portfolio in the long run.

We would sincerely appreciate your continued support for the NGK SPARK PLUG Group.

September 2021

Mikihiko Kato,

Member of the Board Executive Officer,
Strategic Human Resources and Sustainability Promotion

Administrative Office of Integrated Report 2021 Project