

# *IGNITE YOUR SPIRIT*

NGK SPARK PLUG CO., LTD.

## Integrated Report 2022

Year ended March 31, 2022

On April 1, 2023, NGK SPARK PLUG CO., LTD. will change its name to Niterra Co., Ltd.



# To an energy efficient and environmentally-friendly society

## Environment & Energy

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



# To a mobile society that is fun and convenient

## Mobility

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



# To bring advanced medical care to people all over the world

## Medical

- Non-invasive diagnosis and treatment, provision of preventive equipment and services using ultrasound technology



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

## Communication

- Provide infrastructure parts to support high-speed communication



## The Future We Envision Realization of a sustainable society



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.

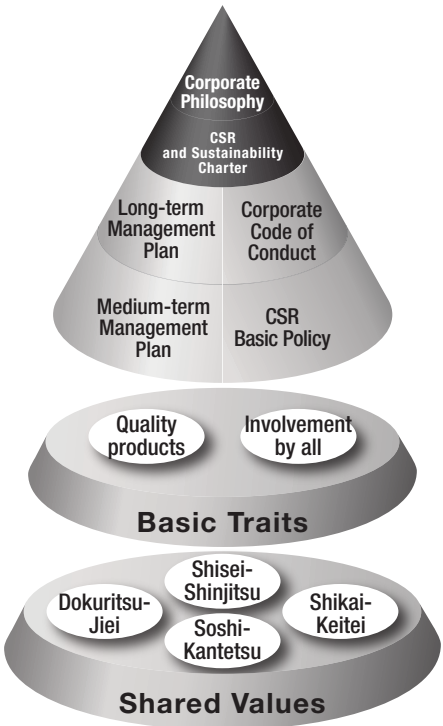
We will enhance our competitive advantage by understanding and adapting to global changes.

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.

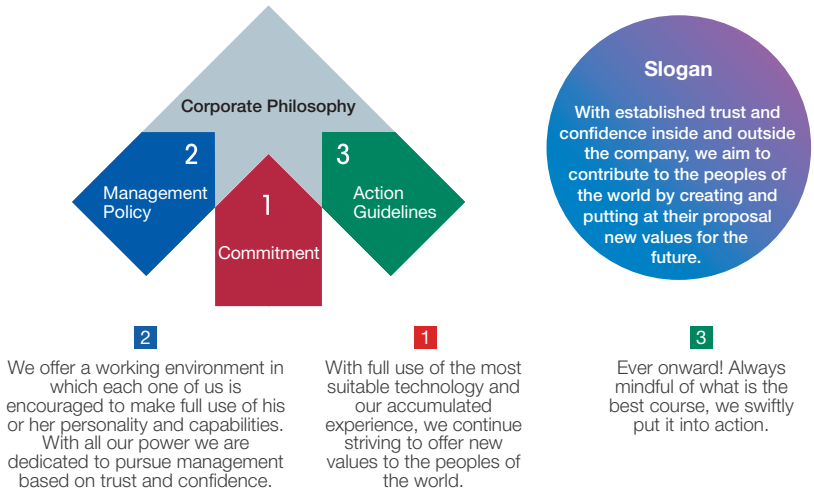
About the Morimura Group, see ⇒ P.07



Corporate Philosophy

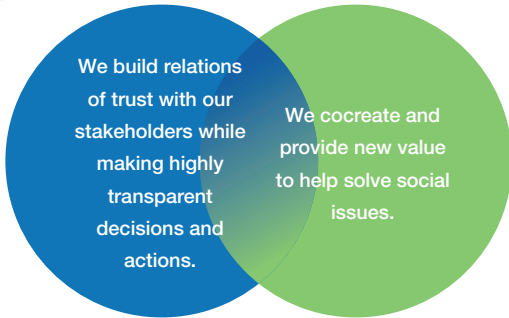
At NGK SPARK PLUG, we aim to contribute to people all over the world by linking people to technologies and delivering new values. As a truly global corporation, we want to build stronger ties not only with customers and communities, but also with the local and global environments. We are always working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

Three elements constitute our corporate philosophy.



CSR and Sustainability Charter

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



We are committed to delivering new value to people all over the world and contributing to society, as expressed in our corporate philosophy. This commitment is associated with our concept of sustainability, which is to help solve social issues through business activities. The CSR and Sustainability Charter presents a summary of this concept.

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.

# Introduction

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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.

Under the 2030 Long-term Management Plan "NITTOKU BX" we formulated in 2020, our 2040 Vision is to "change drastically beyond the current way," and we have established the slogan "Beyond ceramics, exceeding imagination." Based on the vision, we have been pursuing business beyond ceramics while keeping ceramics at the core of our operations, along with the major strategic theme of transforming our business portfolio that centers on the Automotive Components Group. In FY2021, to achieve the Long-term Management Plan, we have formulated a medium-term management plan, implementation of which will end in FY2024. This report provides an explanatory overview of these plans and their progress, 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

FY2021 (From April 1, 2021 to March 31, 2022)  
\*Also includes some information about our FY2022 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.

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## 3 Foundation for Value Creation

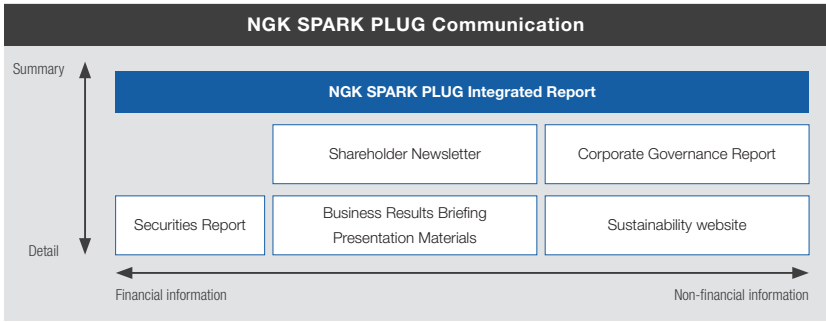
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<https://www.ngkntk.co.jp/english/>

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.







# 1

## About Us

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## Message from the Chairman

The business environment is drastically changing. It is time companies had the courage and readiness to change with it. It is time to create new businesses that go beyond the current way. How can values be transformed, and how should the reason for existence be established as a company? We asked Chairman of the Board Shinichi Odo for his thoughts.

### The role of the automobile industry toward the realization of a decarbonized society

The NGK SPARK PLUG Group, since its founding in 1936, has embraced the challenge of developing various technologies in order to contribute to the development of society based on the core technology of ceramics. 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. We have built relationships of trust with our customers and a stable revenue base.

However, the automotive components business, with which we have grown together during our more than 80 years of history, is now entering a new era. The structure of the industry itself is undergoing a major transformation amid accelerating global moves toward achieving carbon neutrality (a decarbonized society) and progress with technological innovations such as electric vehicles (EVs).

According to the International Energy Agency (IEA), the combined sales of plug-in hybrid vehicles (PHEVs) in 2021 totaled 6.6 million new EVs worldwide, which is 2.2 times higher than the previous year. More than 30 million new EVs are expected to be sold globally by 2030. Racing to keep pace with China, Europe and the U.S., manufacturers in Japan have also announced EV production and sales strategies.

Amid these waves of change, we have been working to shift to a business model that does not rely on internal combustion

engines. In 2020, we announced our long-term 2040 Vision, “Beyond ceramics, eXceeding imagination.” To face the challenges of the world so that we can help bring about a better society, we must venture beyond the field of ceramics rather than being bound by our current businesses. We are working to create new business pillars with the readiness for change.

Meanwhile, the world has many internal combustion engines in operation. The automobile industry has an obligation to meet demand for the maintenance of those engines. As a company with a leading global market share in aftermarket parts, we must fulfill our supply obligations to the end, while working in collaboration with parts manufacturers.

**We will solve social  
issues with an attitude of  
cocreation and establish  
a unique purpose**

Representative Director Chairman of the Board



### An era for cocreation across generations and organizations

In FY2021, we faced not only environmental issues but also threats to the sustainability of society in the form of the spread of the novel coronavirus (COVID-19) that began in FY2020. In addition, Russia's invasion of Ukraine triggered new risks. In addition to confrontations among the major advanced countries, which have been concerns for some time, new rifts formed in the geopolitical structure. Furthermore, an unforeseen energy crisis now looms. Given the challenge of balancing stable energy supply with progress toward decarbonization, securing energy presents a major issue related to global market competitiveness particularly for Japan, which lacks natural energy resources. Industry, government, and academia must work together to find solutions.

While the impact of COVID-19 has begun to subside, the threat of infections has not disappeared, as seen in the lockdown

in Shanghai, China. Russia's invasion of Ukraine is also a concern, as is its unexpectedly protracted timeline.

Even amid such a lack of visibility, however, one thing is certain: the goal of achieving a decarbonized society by 2050 remains unchanged. Although the pace of progress has been slowed by the energy crisis, we must work together globally.

Initiatives toward achieving carbon neutrality are currently led by large companies. However, if they are to operate in Europe and other areas where environmental standards are stringent, they must carry out such measures across the entire supply chain, including suppliers such as small and medium-sized enterprises. Otherwise there is no point. In the efforts toward decarbonization, we are beginning to see a movement of collaboration beyond the barriers of organizations and industries.





## Message from the Chairman

It will become important to also have an approach of working together with competitors for the benefit of the earth.

I also believe that one of the keys to driving innovation toward solving social issues such as carbon neutrality is to activate communication between generations. Generation Z, made up of people born in the 1990s or later who tend to focus on how to be useful in society rather than monetary value, is the generation that will be responsible for the next generation of consumption. It is also the generation that is serious about solving social issues. How can we bring out their opinions and connect them to sustainable business? What is needed is the experience and knowledge of Generation X, born between 1965 and 1980, and Generation Y, born between 1981 and 1994.

It is not a question of which needs to align with which. Instead, we should look to communicate toward combining the different values of the X, Y and Z generations. Using diversity, we can

create new things. We must also actively promote collaboration beyond the barriers of organizations. Rather than conducting business based on conventional competition, we must take on the challenge of solving social issues with a spirit of cocreation. That approach is one of the ways that companies grow.

From that point of view, we should also consider the decline in in-person communication stemming from the digitalization that has advanced during the COVID-19 pandemic. Online meetings have without question become the norm. They are highly efficient as they are excellent as a place for reporting and resolving agendas. Meanwhile, they are difficult to function as a forum for free discussion from which new concepts and ideas emerge. While DX (digital transformation) is an urgent challenge for companies, I believe that a phase has arrived where we need to validate once again the merits of in-person communication and use it effectively in combination with digital communication.

Last year, we introduced an in-house company system to clarify the responsibilities and authorities of each business and individual. From this year, we have focused on developing “self-disciplined creative human resources” who aim to improve performance by disciplining oneself and demonstrating creativity. To incentivize this, we set up a remuneration system aligned to the roles and achievements of the management class.

It is also important to create an organization where diverse talent can play active roles without any constraint. From that point of view, we need to go beyond purely numerical results. We need to add another dimension to our evaluation. For example, employees may choose to work more efficiently and study a language in their spare time. Even if it does not link directly to the work at hand, it is worth including such efforts in our evaluation. If employees feel that the company values their work and is also investing in their growth, they will feel happy. They will improve their human qualities, which in turn is a benefit for the company. Improving employee engagement enhances corporate value. It is important to spread this idea throughout the organization, especially to the next generation of leaders and management candidates who will be in a position to lead the company in the future.

For leader development, we have the HAGI Program, a next-generation managerial human resource development program that I have been working on for many years. We also have the Nittoku Business School, which selects human resources from the sectional manager class who are almost qualified to participate in the HAGI Program, as well as the Raise UP Program, for the appointment of female managers. Step by step, our young leaders have developed. I look forward to watching them grow in the future.

In the past, leadership has always needed to follow a top-down, strong leadership style. When it is difficult to see the correct answer, we actively involve external human resources, foreign nationals, or women into the management team in order to complement each other’s strong areas and weak areas. In addition to the recruitment of diverse human resources, which is already underway, it will be important to bring more diversity into our management system.

Although leadership styles may be diverse, I believe that there are common and essential qualities to become professional leaders. I constantly communicate the following two things to our young leadership candidates, in a way to also remind myself.

The first is, “Always have the courage to change.” Of course, there is no guarantee that change will improve a situation. In that sense, we need to be prepared and courageous, not in a halfhearted way. If after making a change, we choose to go back to the original, do we have a firm belief that the original way is the best for realizing our dreams and ideals? In our judgement criteria, we need an “axis that does not shake.”

Another important point that relates to this is that it is important to “follow through on what you decide to do.” Whether you fail or succeed, do everything you can to follow through and deliver results. We will learn from the results and carry them forward. When you cannot see the right answer, it is important to repeat the effort by trial and error, step by step. That is why we need to train our people not to be afraid of becoming the proverbial “nail that sticks out.” We need people who can have breakthrough ideas, so it is important to create the right conditions to nurture them.

## Having the courage to change, and the importance of following through

In order to take on challenges for new fields and work to enhance corporate value, we must nurture and strengthen the human capital that serves as the source of such efforts.

Unfortunately, Japanese companies as a whole currently have the lowest human investment per capita compared to other advanced countries. Investing in developing human resources is more important than ever. In the past, labor was seen as a cost. Growth was to be achieved by reducing costs through efficiency. We must move away from such management style. We must

instead invest for the future with a long-term view, in line with the national commitment of human capital investment as a growth strategy under the “new capitalism.”

The COVID-19 pandemic dramatically changed how people and companies interact, as well as values for working. 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.



“It is important to have the courage to change. It is also important that, whether you fail or succeed, once you decide to do something, you follow through.”

## Establishing a unique purpose

We are now in the position of evolving current businesses while fulfilling our obligation to supply products for internal combustion engines. At the same time, we will develop new businesses. Practicing what is known in management theory as ambidextrous management can involve some difficult steering. However, we will look for an exit for the ICE business while this current business is performing well. As we do so, we will increase the proportion of the non-ICE business and shift our business portfolio. We consider it as our important mission to find a balance between these two wheels if we are to bring about a society where we can coexist with all stakeholders.

As we have strengthened the development of human resources, our self-disciplined creative human resources are gradually developing. We now have a situation where they can think, make judgments, and act on their own. We also had some small success stories in new businesses we developed by advancing initiatives on four themes: Environment & Energy,

Medical, Communication, and Mobility. I look forward to seeing this younger generation achieve major successes. Their energy will drive further progress for our business going forward.

We have grown together with the automobile industry, as a leading company in the field of internal combustion engine products thanks to the support of all our stakeholders. We are in a time of great change in the surrounding environment and in people’s values. What should be the purpose (reason for existence) of the NGK SPARK PLUG Group going forward? We have the shared value (axis) that we have developed so far, the Nittoku Way. We will keep that as we work to solve social issues with a strong commitment of each of our employees. Through this process, we will establish a purpose that is unique to our company.

I would appreciate your understanding toward the challenges of the NGK SPARK PLUG Group along with your continuing support.



## History of Value Creation

Timeline from Morimura Gumi to  
NGK SPARK PLUG

Ichizaemon Morimura (right side) and Toyo in 1889

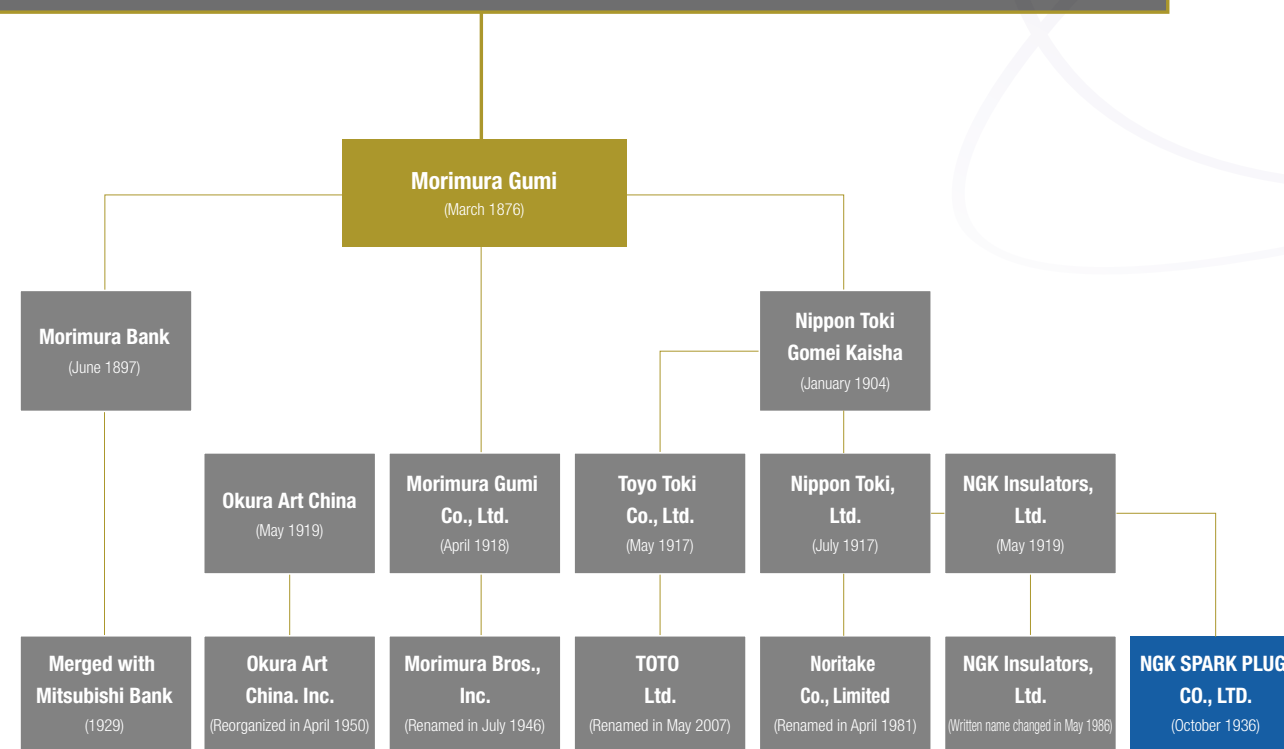
Morimura Group's  
Background

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\*<sup>1</sup> to launch a pioneering foreign trade business in the country.

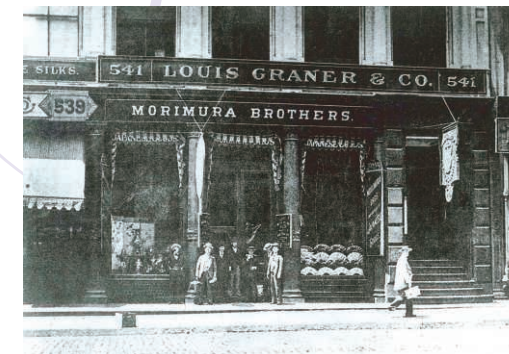
The Group's involvement in the ceramics industry began in 1904, when the founders of Morimura Gumi formed Nippon Toki Gomei Kaisha\*<sup>2</sup>, from which the sanitary ware division and insulator division were subsequently spun off into Toyo Toki Co., Ltd.\*<sup>3</sup> (1917) and NGK Insulators, Ltd.\*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



Ichizaemon Morimura in 1863

In New York,  
Morimura Brothers Broadway 539, around 1893

1876~

1910~

1876

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

1881

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

1897

Nippon Toki Gomei Kaisha established.

1904

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

1917

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

1919

NGK Insulators started research on manufacturing of spark plugs.

1921

NGK Insulators put spark plugs on the market.

1930



Nippon Toki Gomei Kaisha in 1904



History of Value Creation

Our History of Challenges



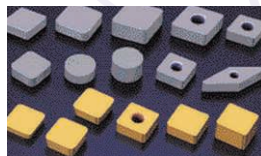
Magoemon Ezoe, first president



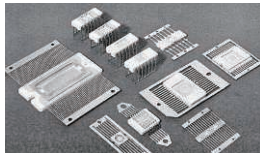
NGK Spark Plug



CERAMICA E VELAS DE IGNICAO NGK DO BRASIL LTDA



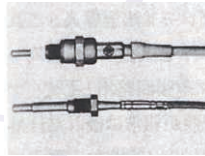
Cutting tools



IC packages



Electrostatic chucks



Temperature sensors for automobiles



Oxygen sensors for automobiles



Medical-use oxygen concentrator



Hydrogen Leak Detection Sensor



Solid Oxide Fuel Cell (SOFC)

Startup period (from 1930)

Growth period (from 1940)

Establishment period (from 1960)

Development period (from 1990)

From present to future

Historical background and social issues

Our History of Challenges

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.

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.

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.

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.

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.

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.

1937

Automotive Components

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.

1949

Ceramics

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

Ceramics

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.

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.

1967

Ceramics

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.

1982

Automotive Components

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.

1989

Ceramics

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.

1999

New Businesses

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.

2000~

New Businesses

Building new business pillars

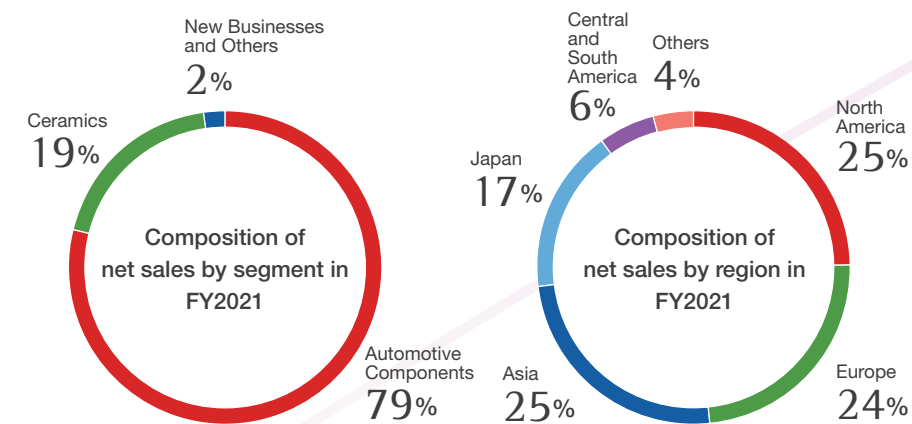
Under the NITTOKU SHINKARON long-term management plan started in FY2010, we accelerated efforts to establish new business pillars. The 2030 Long-term Management Plan "NITTOKU BX" also started in FY2020, aiming to transform our business portfolio by 2040. We continue with these challenging efforts, seeking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












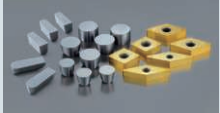
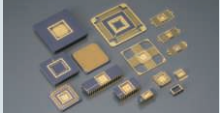













Revenue trend



## Business Overview and Business Model

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.



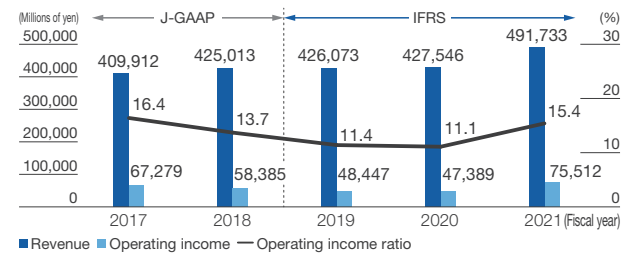
Business segments	Main businesses	Customers	End-users	Value offered
<div>Automotive Components</div> 	 Plugs  Sensors	 Automobile and motorcycle manufacturers  General purpose engine manufacturers  Components distributors	 Automobile and motorcycle users  General purpose engine users  Automobile industry	<div>Higher fuel economy</div> <div>Cleaner exhaust gas</div> <div>Contribution to a convenient mobile society</div>
<div>Ceramics</div> 	 SPE  Cutting tools  Semiconductor packages  Medical (oxygen concentrators)	 Semiconductor production equipment manufacturers  Automotive and aircraft components manufacturers Tool distributors  Semiconductor manufacturers Semiconductor inspection components manufacturers Assembly manufacturers  Rental operators	 Semiconductor industry Communication industry Automobile industry  Metal components processing users  Electronic device industry Automobile industry  Home patients Medical institutions	<div>Enhanced performance of semiconductors</div> <div>Contribution to a digital society</div> <div>Reduction of manufacturing lead time</div> <div>Achievement of precision components machining</div> <div>Higher performance of electronic devices</div> <div>Improvement of symptoms</div> <div>Higher quality of life</div>
<div>New Businesses (SOFC)</div> 	 SOFC cell stacks	 Machine manufacturers	 Power generation business operators Plants Data centers Public facilities Retail facilities Households, etc.	<div>Distributed power sources</div> <div>BCP preparedness</div> <div>Contribution to a decarbonized society</div>



# Changes in Financial and Non-financial Position

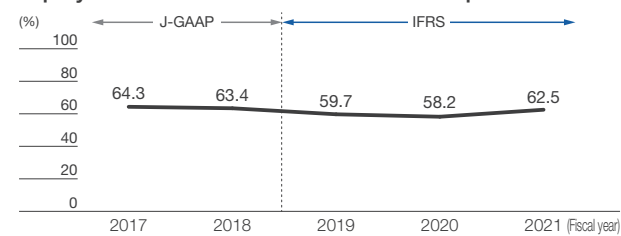
## Financial Highlights

### Revenue/Operating income/Operating income ratio



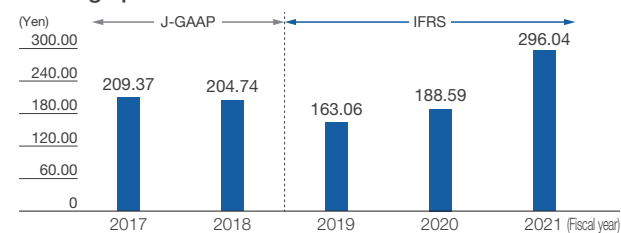
In the Automotive Components business, our revenue and profits increased year on year due to an increase in sales of aftermarket parts of spark plugs and the expansion of scale of the Ceramics business, despite an impact of the shortage of semiconductors.

### Equity ratio attributable to owners of the parent



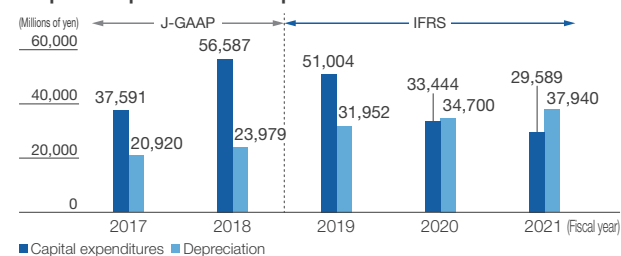
Equity ratio attributable to owners of the parent increased year on year due to the partial repayment in FY2021 of bank borrowings, which were taken out in FY2020 to secure liquidity on hand following the spread of COVID-19.

### Earnings per share



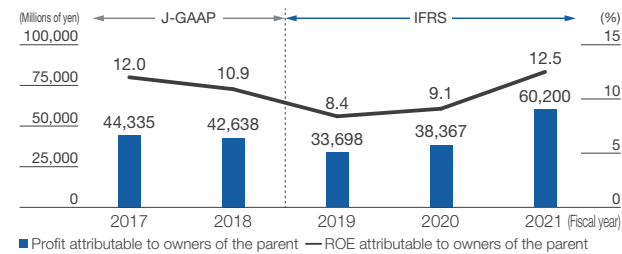
Earnings per share increased year on year due to an increase in the profit attributable to owners of the parent.

### Capital expenditures/depreciation



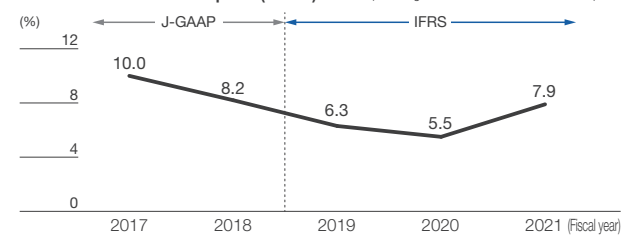
Automotive-related activities centered on improving the efficiency of production of existing equipment. We maintained the same level of capital expenditures. We will continue to invest in the non-ICE business for medium- and long-term growth.

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



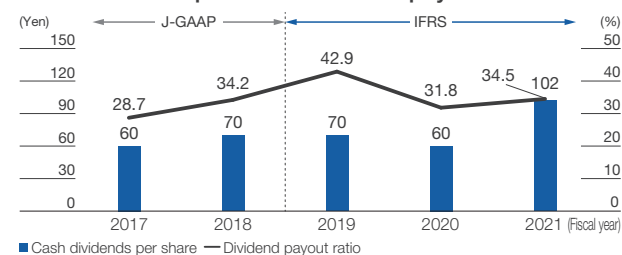
ROE increased by 3.4% year on year due to an increase in the profit attributable to owners of the parent.

### Return on invested capital (ROIC)



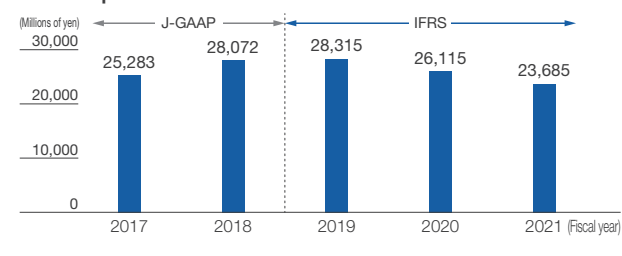
ROIC was 7.9% for FY2021 due to an increase in profits driven by an increase in sales of spark plugs for aftermarket parts in the Automotive Components business and SPE products in the Ceramics business, although inventories were built up due to logistics disruptions.

### Cash dividends per share/Dividend payout ratio



The basic policy of the dividend payout ratio is 40% as stated in the Medium-term Management Plan. In addition, the dividend amount is linked to the profit attributable to owners of the parent, excluding temporary gains and losses, which are generated separately from ordinary business activities. As a result, the full-year cash dividend increased by 42 yen year on year to 102 yen per share in FY2021.

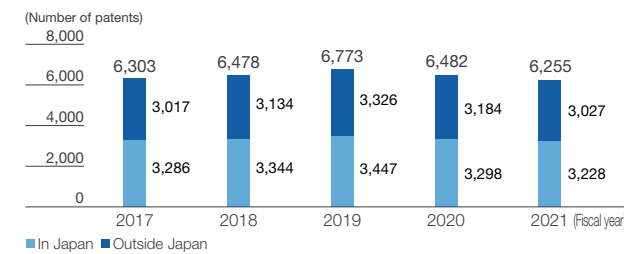
### R&D expenses



Our ratio of R&D expenses to sales has been in the range of 5% to 6%. It reached 4.8% in FY2021.

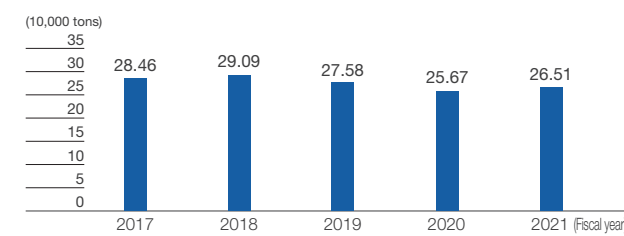
## Non-financial Highlights

### Number of patents held



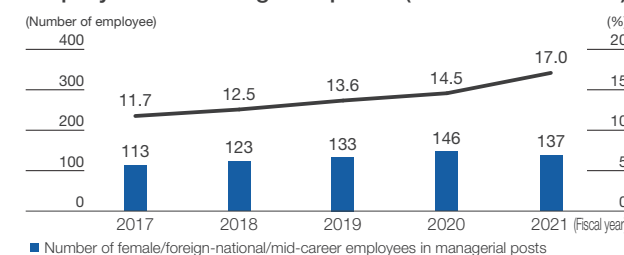
Since FY2021, the intellectual property department and internal companies are working together to build the appropriate profile of patent holdings toward the transformation of our business portfolio.

### CO<sub>2</sub> emissions



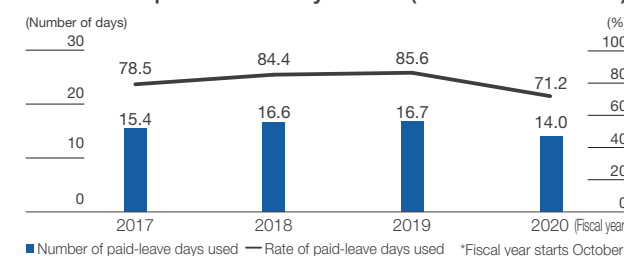
CO<sub>2</sub> emissions as a cause of climate change has been on a declining trend due to our CO<sub>2</sub> reduction efforts and a decline in the CO<sub>2</sub> emissions conversion factor of electric power. As a priority issue to tackle, we aim at reducing CO<sub>2</sub> emissions by 30% by FY2030 from the FY2018 level.  
\* Calculated based on the CO<sub>2</sub> emissions conversion factors of respective fiscal years.

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



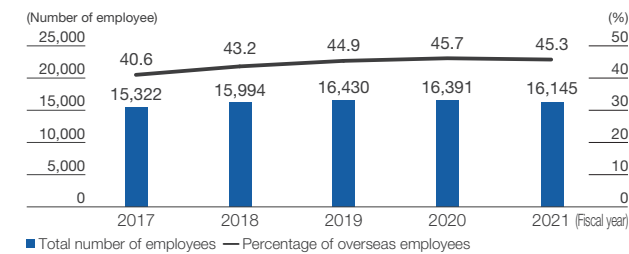
We are promoting the diversity of management personnel, including women. As a priority issue, we have set a target of increasing the percentage of women, foreign nationals and mid-career employees in managerial posts to 25%.

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



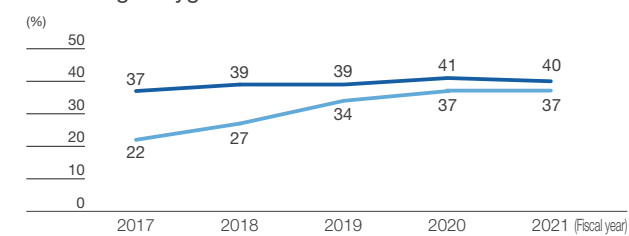
The management and labor cooperate in encouraging the use of paid leave, and the number of paid-leave days used has increased year by year. However, the number of paid-leave days used in FY2020 (October 2020 to September 2021) fell mainly due to the impact of suspension of business caused by the COVID-19 pandemic.

### Number of employees at work/percentage of overseas employees



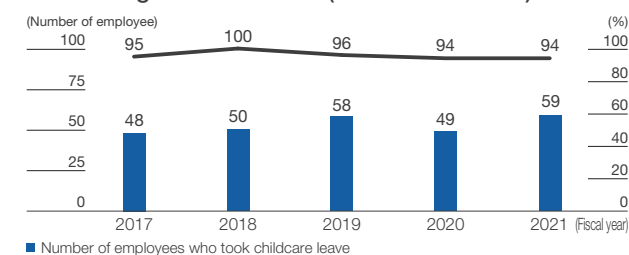
Against the background of M&As in and outside Japan, etc., the consolidated number of employees tended to increase.

### Sales percentage of precious metal plugs and wide range oxygen sensors



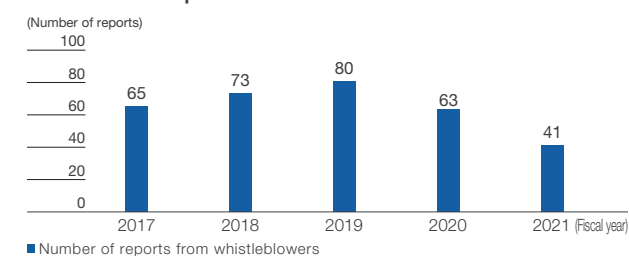
As a priority issue, we aim to increase the sales percentage of precious metal plugs and wide range oxygen sensors, which are part of our environmentally friendly products "Nittoku Green Products," to 50% or more.

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



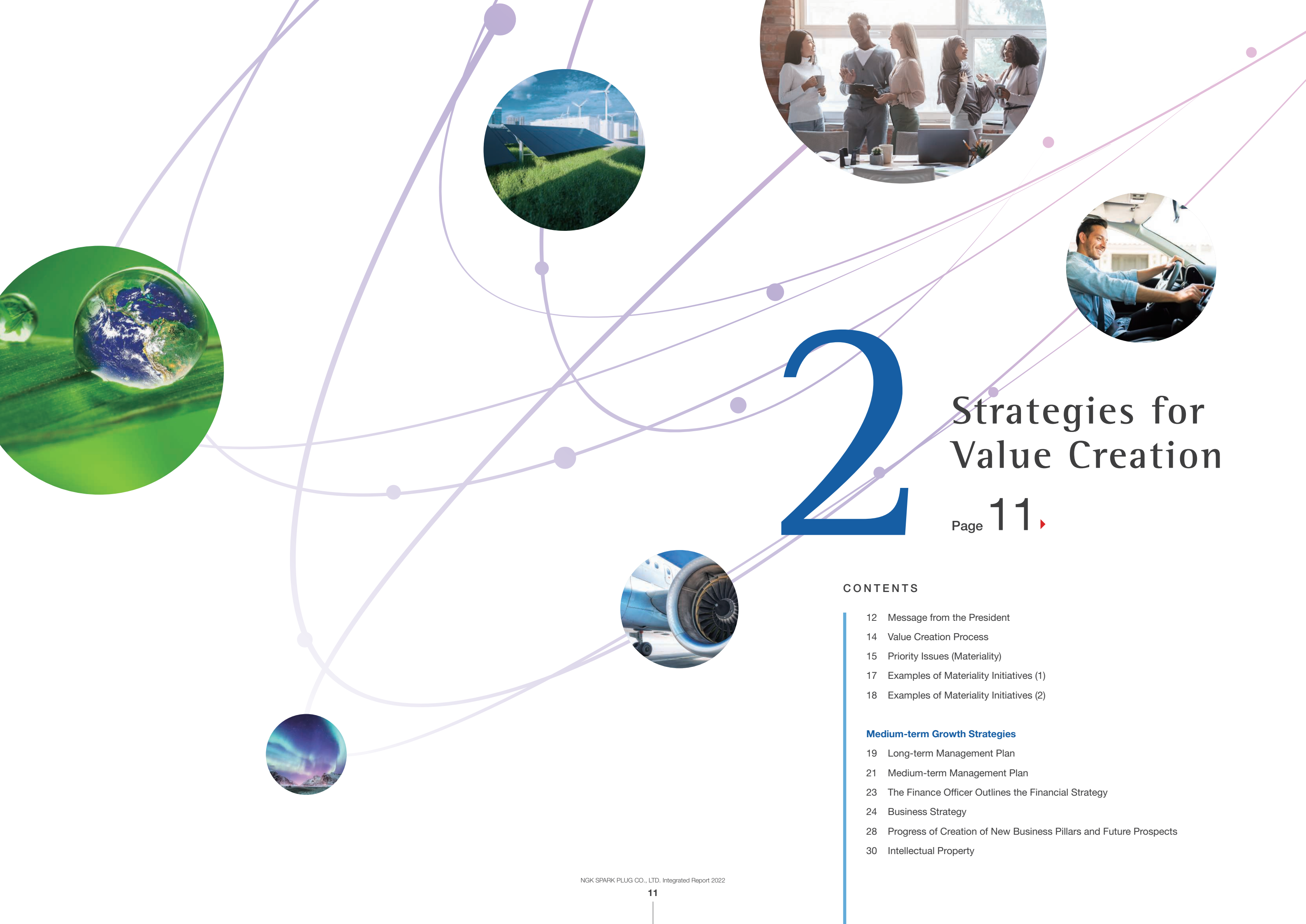
A total of about 50 employees, male and female employees combined, take childcare leave every year. The return-to-work rate has remained consistently high over the years.

### 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 Strategies for Value Creation

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## Message from the President

We have completed the first year of our Medium-term Management Plan, which began in April 2021. Under the slogan, “Break to change. Change to create,” what changes have we carried out toward the transformation of our business portfolio? Representative Director, President Takeshi Kawai talks about the new challenges that have emerged as we move forward.

### The importance of constantly sharing the sense of crisis across the entire company

Over its history of more than 80 years, NGK SPARK PLUG has grown against the backdrop of economic development in Japan and overseas by improving and advancing its products used in internal combustion engines (ICEs), such as spark plugs and sensors. However, technological innovations such as electric vehicles (EVs) are rapidly progressing in the automobile industry amid accelerating efforts around the world to achieve carbon neutrality (decarbonized society) by 2050. The automobile industry is hurtling into an era in which we will need to embrace challenges that surpass conventional commonsense and imagination.

In the face of these changes in the business environment, we have been working hard to further strengthen our current businesses, create new businesses, and strengthen our business infrastructure. In addition, in 2020, we formulated the 2030 Long-term Management Plan “NITTOKU BX,” the primary thrust of which is the transformation of our business portfolio. We are working to transform our business portfolio based on a scenario where products for internal

combustion engines peak in the mid-2030s. By 2030, we aim for the ICE business, which had accounted for 80% of revenue, to account for 60%, and the non-ICE business to account for 40%.

We have further broken down NITTOKU BX to form our Medium-term Management Plan, which began in April 2021. The slogan is “Break to change. Change to create.” Under our policy of Dokuritsu-Jiei, we have also embarked on a transformation of our organizational structure, starting with the introduction of an in-house company system. Changing a conventional approach significantly in a challenging market environment will involve some pain. However, in order to achieve sustainable growth for both society and the Company, we must carry out our vision to “Change drastically beyond the current way.”

In addition to the need for responding to the sustainability of society, FY2021 brought various challenges, such as the lingering threat of the COVID-19 pandemic since the previous fiscal year and ongoing semiconductor shortages and soaring materials prices. From the end of the fiscal year, the world was also exposed to a severe energy crisis caused by Russia’s invasion of Ukraine. We need to closely monitor risk factors such as rising raw materials prices, transportation costs, and energy prices due to the Russia-Ukraine situation, as well as the impact of these factors on the global shift to EVs.

Meanwhile, as we work toward transformation, each of our business companies was able to respond with a sense of speed to unexpected crises such as soaring raw materials prices. We consider this experience as a pathway to transforming our business model in the future.

### In-house company system improves our ability to adapt to changes

In FY2021, the Company recorded record-high revenue of 491.7 billion yen and operating income of 75.5 billion yen. There were three main reasons for this. The first is that spark plug aftermarket parts boosted sales. Due to the semiconductor shortage, automobile production slowed down, and sales of products for new automobiles fell. Meanwhile, the market for used cars was revitalized. Sales of profitable aftermarket parts were strong, and the weakening of the yen gave us a further tailwind.

Second, overseas transportation costs, energy prices, and the prices of precious metals used as raw materials for high-

performance plugs all soared. In response, we moved fast to negotiate raw materials prices and pass on the increased costs to selling prices. The in-house company system that we introduced in the previous year enabled us to better adapt to changes in the market environment as a role of each business company.

Third, we also made steady progress in revenue and operating income of the non-ICE business. By leveraging the core ceramics technology, products for semiconductor production equipment positioned in the growth business boosted sales and contributed to revenue. In terms of new businesses, the solid

**Without change, there is no growth. Without risk, there is no opportunity.**

**We will be constantly on the lookout for “Something New,” as we strive to contribute to the sustainability of society**

Representative Director President Chief Operating Officer

*T. Kawai*



## Message from the President

oxide fuel cell (SOFC) business began mass production in FY2020. We are building a structure that can generate profits for the non-ICE business as a whole.

Based on these results, our FY2022 full-year plan forecasts revenue of 570.5 billion yen (up 16% year on year) and operating income of 96.0 billion yen (up 27.1% year on year). In the Automotive Components, we expect that sales of products for new automobiles will grow as the semiconductor market recovers. In terms of growth businesses, in addition to strong sales of products for semiconductor production equipment, we expect growth in areas such as the respiratory business in the medical field as issues such as component shortages and transportation network problems are resolved.

In terms of risk factors, precious metal prices, energy prices, and transportation costs all continue to rise mainly due to the

impact of the Russia-Ukraine situation. We also need to keep a close watch on the possibility that the recovery of automotive semiconductors could take longer than expected. However, we assume that the direct impact on sales in the Russian market will be minor. In FY2021, we achieved a total annual price increase of 4.5 billion yen for products for new automobiles and the aftermarket as a response to soaring raw material prices. We will continue negotiations in FY2022, targeting an annual price increase of 5.1 billion yen. We are also working to streamline design changes for precious metal plugs used in the aftermarket and building a business structure that, even at manufacturing sites, is resilient to the impact of raw material prices.

For annual dividends, we plan to increase the dividends by 36 yen from the previous year to 138 yen per share, based on the policy of a dividend payout ratio of 40%.

## From point to surface. We will target growth from one small business seed

We have completed the first year of our Medium-term Management Plan, which began in April 2021. Under the plan, we have been working to take on challenges beyond the current way and drive transformations. Although the business environment has changed more than expected, we have produced positive results, while also identifying areas to improve.

In terms of business, as mentioned above, the growth business, including the semiconductor production equipment business, has become one of our pillars of revenue. In new businesses, we are also moving forward with mass production in the fuel cell business. We are making steady progress toward our goal of transforming our business portfolio. Going forward, we face the question of how we can continuously shape the next set of new businesses to help resolve social issues. We must move toward a phase in which each of the separate business that we have set up links with other surrounding businesses and collaborates. This will expand our business from point to surface, thereby contributing to society more broadly.

For example, marine pollution has caused the social issue of smaller catches and food shortages. In response to this, we have used sensing technology to create a water quality sensing system for land-based aquaculture businesses. By expanding this business with a focus on water quality management, we expect to broaden its scope of use beyond the industrial sector

to aquariums and household aquariums. In addition, at the end of November 2021, we launched Doctor Link, a preventive maintenance service for automobile maintenance shops that utilizes our sales network and connected technology. Using data on automobile usage and maintenance history of connected vehicles, the service proposes the optimal timing and content of maintenance to automobile maintenance shops. Going forward, we plan to expand this business as a data service, in collaboration with the insurance and non-life insurance industries.

However, as we pursue new businesses, we should not just take on anything at all. We must be able to say why we need to do that business. We must start by asking the question, “Why NITTOKU?” The business might be one that draws from our strengths. Or it might give us a way to collaborate with external companies so that we can add missing pieces to our core assets.

In terms of the question of what business we should do, we must invest not only in new businesses but also in the Automotive Components Business. While we meet the obligation to supply aftermarket parts for internal combustion engines, we will also collaborate and invest in equipment as necessary in the Automotive Components Group.

## Those who work hard will be rewarded. Launch of new personnel system

To transform our business infrastructure to align with the Medium-term Management Plan, we have put in place an in-house company system that clarifies responsibilities and authorities. This has helped us to respond to changes in the business environment.

While we are better able to adapt to change, and to do so faster, certain challenges have come to light. Among these is a tendency at each internal company to shortsightedly focus on boosting numbers so that they can meet their KPIs or KGIs. To correct this situation, the strategic department at the

“Regardless of the era, we return to our company’s DNA, which we have carried through a history of challenges and transformations.”



headquarters must take a long-term view in its judgments. We must closely work together to strengthen governance while striking a balance between the long term and the short term.

In April 2022, we launched a new personnel system that ties into the performance of each internal company. It sets desired skills, rewards, etc. based on the role, difficulty, etc. Regardless of the position or career, for example, we have set a wide range of salaries, even for the same position. In this way, those who have worked hard will earn greater rewards.

Our goal is to change the distribution of capital and improve employee engagement so that those who work hard will be rewarded. If anyone feels that their evaluation is lower than expected, I ask them to share their thoughts and ideas with their managers and departments at headquarters. In order to transform the Company, to change drastically beyond the current way, we need to foster a corporate culture that deliberates on matters thoroughly without fear of confrontation.

## A company that lets the earth shine. Showing our commitment to the world

Alongside the development of society, we have established our value of existence with a focus on products for internal combustion engines and built relationships of trust with our stakeholders. In this era of dramatic changes in society and in values, if we are to grow sustainably, it is indispensable to remain committed to contributing to the sustainability of society. For this reason, in addition to creating new businesses, we have responded to new trends such as the shift to EVs. While meeting the supply needs of products for internal combustion engines, we have also created a large number of environmentally friendly products.

To reflect this situation, we decided to change the English name of the Company from NGK SPARK PLUG to Niterra. This is part of our way of showing our future path and our commitment to work toward our goals. “Niterra” is a coined

word that combines the Latin terms “Niteo,” which means to shine, and “terra,” which means the planet earth. It conveys our determination to be a company that lets the earth shine.

Regardless of the era, our company’s history has been a series of challenges and transformations. We need to return to that DNA. Although new challenges always bring risks, you cannot create opportunities without taking some risks. Each of our employees needs to have a strong awareness of that. Under the company-wide concept of “Change (transformation) with (co-existence) Will (will)!!,” which is set forth in the Action Guidelines, we will work to solve social issues while remaining aware of our new mindset of “Something New.” I would like to thank all of our stakeholders for your continued support and guidance.



## Value Creation Process

### 2040 Vision

## Change drastically beyond the current way

#### External environment

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

⇒ P.15: Priority Issues (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.15: Priority Issues (Materiality)

Our 2040 Vision is to “change drastically beyond the current way.”

In the past, as we thought about “What ceramics can do,” we made our journey as a manufacturing corporation.

The world has changed. There are technological innovations such as the electrification of automobiles and higher demand for semiconductors. We must face challenges such as climate change. To help bring about a better society, we must not limit ourselves to thinking about “What ceramics can do.” We must meet the challenge of going “beyond ceramics” and “exceeding the imagination” of society and ourselves.

“Beyond ceramics, eXceeding imagination” is our 2040 Vision, and we will create a new NGK SPARK PLUG Group.

Response to social issues

### Business Model

Business Fields ⇒ P.21: Medium-term Management Plan, P.24: Business Strategy



Business infrastructure ⇒ P.31: Foundation for Value Creation

#### Action against Priority Issues

#### Corporate Governance

Management Strategies ⇒ P.20: 2030 Long-term Management Plan “NITTOKU BX,” P.21: Medium-term Management Plan

#### 2030 Long-term Management Plan “NITTOKU BX”



The Nittoku Way

Enforcement of Managerial Capital

#### Managerial capital

FY2021

##### Financial capital

Cash flows from operating activities **71,910 million yen**

Rating: **A+** (R&I) **AA-** (JCR)

Capital adequacy ratio: **62.5%**

##### Manufacturing capital

**37** bases in Japan **47** bases outside Japan

##### Intellectual capital

R&D expenses: **23,685 million yen**

Number of patents: **6,255**

##### Human capital

Consolidated number of employees: **16,145**

##### Social capital

Number of countries where our products are sold: about **140**

##### Natural capital

Electricity: **485,250 MWh**

Input of raw materials: **56,000 tons**

Input of water resources: **1,650,000 m³**

#### Value offered

##### Environment & Energy

- Cleaner automotive exhaust gas
- Higher fuel economy
- Reduction of environmental pollutants
- Reduction of energy consumption in manufacturing
- Using sensing technology to improve industrial efficiency
- Stable supply of renewable energy

##### Mobility

- Safety in automobile driving
- Providing maintenance services according to your lifestyle

##### Medical

- Higher QOL
- Safety in surgical operations

##### Communication

- Higher performance of electronic devices

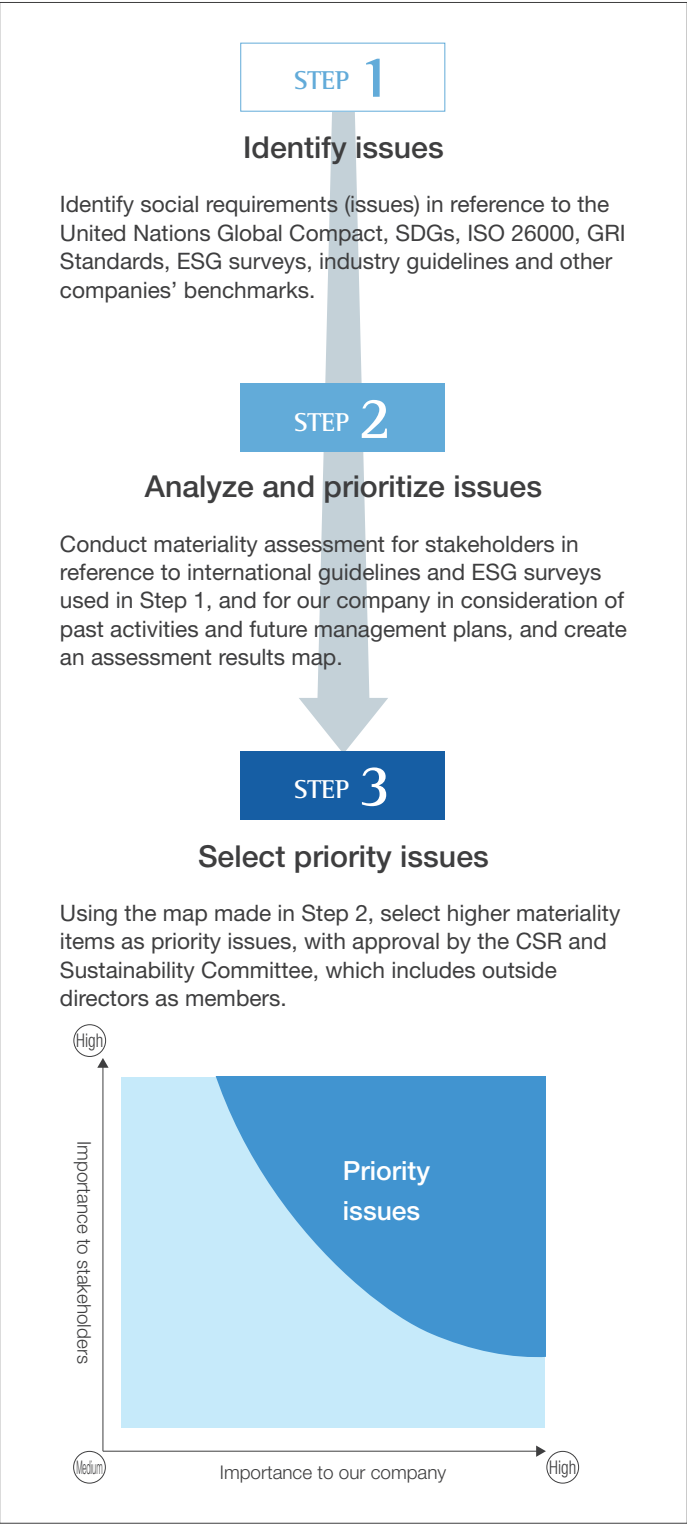


Priority Issues (Materiality)

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.

Steps to define priority issues



Social issues



Global environmental issues

- Climate change
- Decarbonized society
- Environmental destruction



International issues

- Protectionism
- Emerging economies
- Disparities in society
- Human rights



Establishment of a society where economic development and resolution of social issues are compatible






































- 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

Risks and opportunities related to businesses

Environment	● Decline in the number of internal combustion engine vehicles	Risk	
	● Reduction of greenhouse gas emissions	Risk	Opportunity
	● Change in people's preferences regarding transportation means and consumption	Risk	Opportunity
	● Stricter environmental regulations		Opportunity
	● Expanding demand for automobiles in emerging economies		Opportunity
Society	● Effective use of renewable energy		Opportunity
	● Distributed power sources, and local production and consumption of energy		Opportunity
	● Efficient use of CO <sub>2</sub> for a decarbonized society		Opportunity
	● Stricter regulations on hazardous chemicals	Risk	Opportunity
	● Expansion of the sensing field		Opportunity
Governance	● Diversification of human resources	Risk	Opportunity
	● Respect for human rights	Risk	
	● Diversification of work styles and values	Risk	Opportunity
	● Diversification of management personnel	Risk	Opportunity
	● Speedier business decisions		Opportunity
Governance	● Stable procurement of raw materials	Risk	
	● Geopolitical risks	Risk	
	● Earthquakes and disasters caused by climate change	Risk	
	● Implementation of compliance	Risk	
	● Measures for information security (cyberattacks)	Risk	



Priority Issues (Materiality)

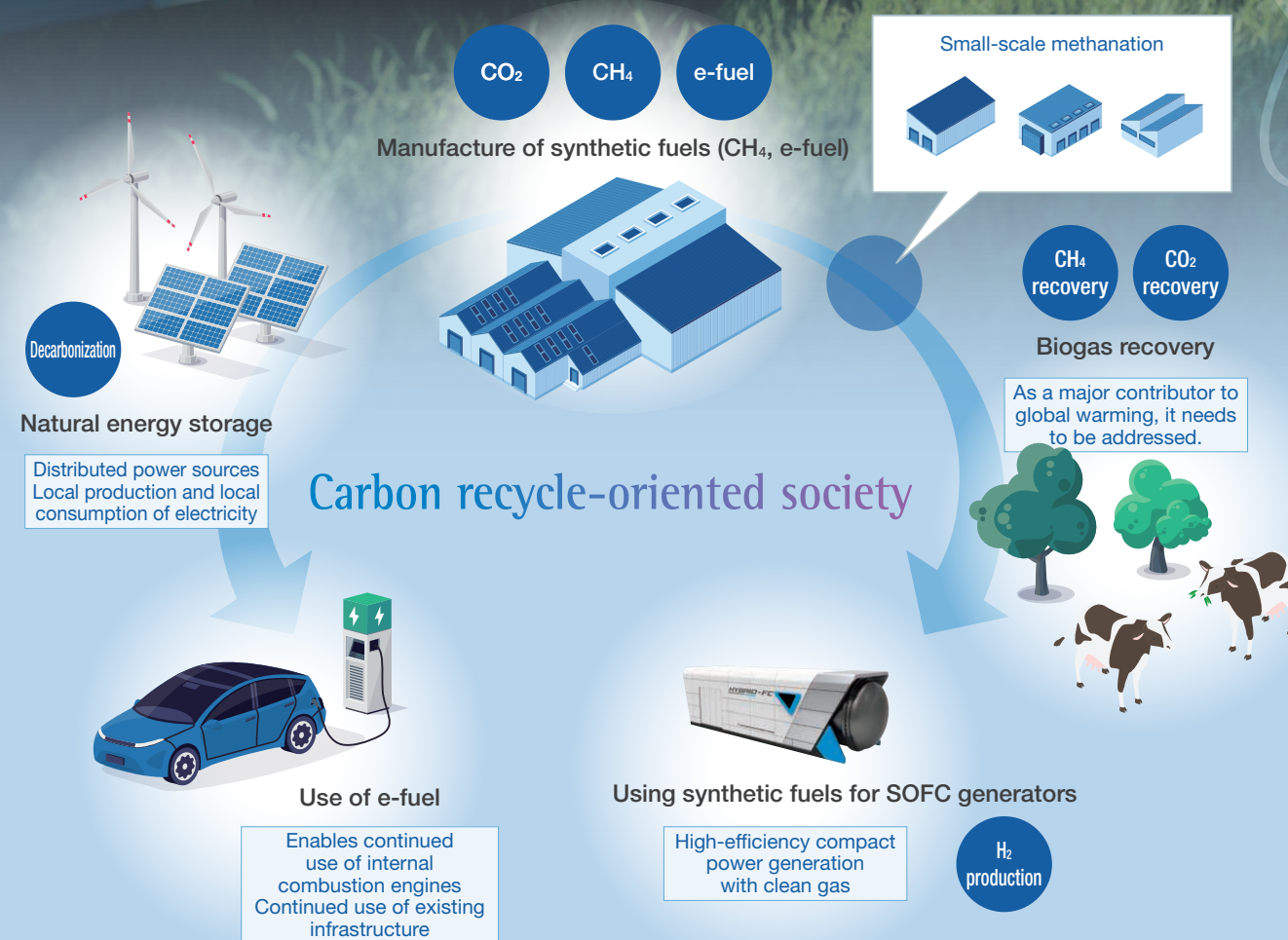
Priority Issues		Reasons for Identification as Priority Issue	Major Initiatives	Goals and Outputs	Reference Page	Contribution to SDGs
<div>  </div> <div>Environment</div>	Responding to climate change	<ul style="list-style-type: none"> <li>The impact of climate change, including the increased severity of natural disasters, hinders the sustainable development of society. For this reason, the world faces the common challenge of reducing CO<sub>2</sub> and other greenhouse gas emissions that cause climate change, while aiming to realize a decarbonized society. The Group also recognizes that reducing CO<sub>2</sub> emissions from business activities and supply chains is an important issue.</li> </ul>	Reduction of CO <sub>2</sub> emissions	<ul style="list-style-type: none"> <li>CO<sub>2</sub> emissions: <b>30%</b> reduction from the FY2018 level by FY2030</li> </ul>	<div>  ⇒ P.35            </div>	<div>    </div>
	Providing environmentally friendly products	<ul style="list-style-type: none"> <li>The earth's resources are limited. To preserve the earth's limited resources for future generations, we must minimize the environmental impact of the products and services used by the current generation. The Group has a bird's-eye view of the entire lifecycle, from when products and services are used to when they are disposed of. We will use that position to contribute to the sustainable development of society by providing products and services with lower environmental impact.</li> </ul>	Dissemination and expansion of environmentally friendly products	<ul style="list-style-type: none"> <li>Sales ratio of precious metal plugs: at least <b>50%</b></li> <li>Sales ratio of wide range oxygen sensors: at least <b>50%</b></li> </ul>	<div>  ⇒ P.18            </div>	<div>    </div>
<div>  </div> <div>Society</div>	Development of technologies, products, and businesses contributing to the resolution of social issues	<ul style="list-style-type: none"> <li>The Group is committed to taking on the challenges of the world. We will cocreate and provide new value to help solve these challenges, so that we can contribute to realizing a better society. The world faces various challenges from climate change to food shortages. We continue to use our technology and our accumulated experience to offer new value to people around the world.</li> </ul>	Development of fuel cells	<ul style="list-style-type: none"> <li>Dissemination of high-efficiency distributed power supply systems with an eye on the use of CO<sub>2</sub>-free hydrogen fuel</li> </ul>	<div>  ⇒ P.30            </div>	<div>    </div>
			Development of lead-free piezoelectric materials	<ul style="list-style-type: none"> <li>Promoting substitution for lead-based piezoelectric materials</li> </ul>	<div>  ⇒ P.18            </div>	
			Development of sensing IoT business	<ul style="list-style-type: none"> <li>Improving operational efficiency through automation, optimization and generalization</li> </ul>	<div>  ⇒ P.29            </div>	
			Carbon Neutral as a service	<ul style="list-style-type: none"> <li>Establishing and introducing a synthetic fuel (methane) manufacturing system</li> </ul>	<div>  ⇒ P.17            </div>	
	Global human resources management	<ul style="list-style-type: none"> <li>The Group acknowledges that employees are the most important management resources. We believe that respecting the diversity and individuality of our more than 16,000 employees around the world and creating an environment in which each and every employee can play active roles will lead to the development of the Group.</li> </ul>	Recruitment of female, foreign national and mid-career employees	<ul style="list-style-type: none"> <li>Percentage of female/foreign national/mid-career employees in managerial posts: at least <b>25%</b></li> </ul>	<div>  ⇒ P.39            </div>	<div>    </div>
			Development of new personnel system	<ul style="list-style-type: none"> <li>Improved results of employee satisfaction surveys</li> </ul>	<div>  ⇒ P.38            </div>	
<div>  </div> <div>Governance</div>	Corporate governance	<ul style="list-style-type: none"> <li>To achieve sustained growth and improve medium- and long-term corporate value, we believe that it is important to structure the Board of Directors with a team of people from different backgrounds with a variety of expertise and experience. We also focus on enhancing the supervisory function of the Board of Directors and ensuring transparency in decision-making by improving the percentage of outside directors on the Board of Directors.</li> </ul>	Increasing the percentage of female and foreign national directors	<ul style="list-style-type: none"> <li>Percentage of female and foreign national directors: at least <b>30%</b></li> </ul>	<div>  ⇒ P.46            </div>	<div>   </div>
			Increasing the percentage of outside directors	<ul style="list-style-type: none"> <li>Percentage of outside directors: at least <b>one-third</b></li> </ul>	<div>  ⇒ P.46            </div>	
	Risk management	<ul style="list-style-type: none"> <li>In the modern era of dramatic changes in the environment surrounding business, the risks that companies face are also diversifying. Responding to risks the wrong way could put a company's survival at risk. The Group strives to carry out risk management from day to day, so that it can enhance its corporate value.</li> </ul>	Management of signs of serious incidents and prevention of their occurrence	<ul style="list-style-type: none"> <li>Establishing a risk management system that contributes to management decision making</li> </ul>	<div>  ⇒ P.49            </div>	<div>   </div>
	Compliance	<ul style="list-style-type: none"> <li>To develop the business of our Group, we must continue to be a company that is trusted by society. With recognition that our Group is a member of society, we aim to be a company that is trusted by all our stakeholders by appropriately meeting social demand.</li> </ul>	Awareness surveys and continuous education for officers and employees	<ul style="list-style-type: none"> <li>Conducting compliance questionnaire surveys and disclosing the results</li> </ul>	<div>  ⇒ P.50            </div>	<div>  </div>
	Information security	<ul style="list-style-type: none"> <li>Information technology is becoming more sophisticated every day, and we handle a variety of information assets in our business. Meanwhile, as cyberattacks and other risks increase, bolstering information security is key. The Group will also enhance information security by positioning information assets as one of its management resources. We will make effective use of them while protecting them appropriately.</li> </ul>	Maintenance and enhancement of the incident response organization and establishment of a prevention system	<ul style="list-style-type: none"> <li>Establishing an information security management system</li> </ul>	<div>  ⇒ P.48            </div>	<div>    </div>



# Boosting efforts to achieve carbon neutrality

We have set priority issues (materiality) for ESG as we shift our focus on the ICE-related business to new businesses that can support a sustainable society. In the field of “Environment,” our materiality includes “Responding to climate change” and “Providing environmentally friendly products.” In the former, we will promote areas such as “initiatives aimed at realizing a carbon recycle-oriented society” and “internal carbon pricing.” Through these initiatives, we will contribute to the realization of a sustainable recycle-oriented society.

## Initiatives aimed at realizing a carbon recycle-oriented society (Carbon Neutral as a service)



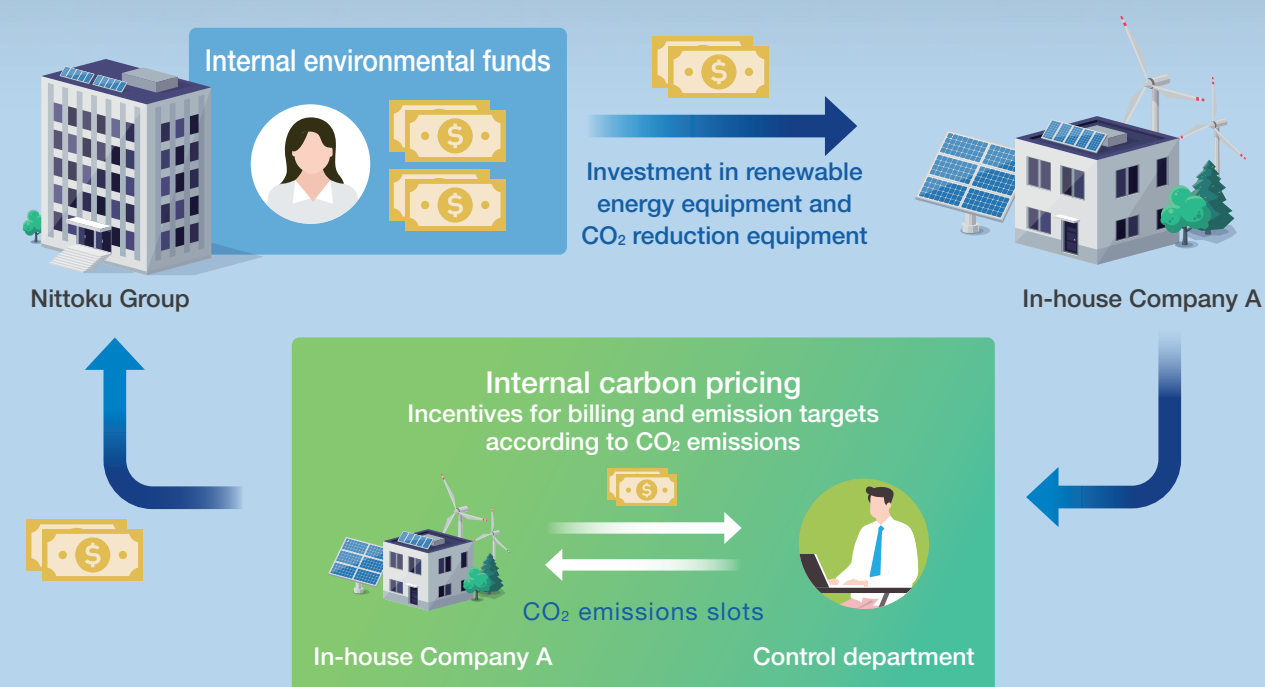
## Internal carbon pricing system and internal environmental funds

To accelerate efforts to reduce CO<sub>2</sub> emissions across the company, we have launched the SX (Sustainability Transformation) Project and are putting together a framework that includes, among other things, an internal carbon pricing system.

The internal carbon pricing system began in July 2021 with a framework that contributes subsidies for environmental investment by internal companies from an internal environmental fund, which imposes a carbon tax commensurate based on the amount of CO<sub>2</sub> emitted by each internal company and uses the collected tax as its source. By visualizing CO<sub>2</sub> emissions as an amount, we aim to increase incentives for achieving environmental goals, thereby promoting internal companies' voluntary capital investment in response to climate change issues.

In addition, we launched a system for evaluating CO<sub>2</sub> emissions at each internal company and consolidated subsidiaries in April 2022. We aim to create and introduce environmental financial indicators that promote sustainability management, while using these systems as drivers for reducing CO<sub>2</sub> emissions.

- For CO<sub>2</sub> emitted, a “carbon tax” is temporarily set aside
- The collected amount is allocated as an internal environmental fund for use in investment support and infrastructure development for decarbonization



Regarding climate change issues, we aim to reduce CO<sub>2</sub> emissions by 30% by FY2030 from the FY2018 level, with the goal of achieving carbon neutrality by 2050.

To achieve this, we are focusing on carbon recycling mechanisms, such as separating and recovering CO<sub>2</sub> and using it as fuel, or using CO<sub>2</sub> and hydrogen emitted from factories to create synthetic fuels. We are considering reducing CO<sub>2</sub> emissions in the future by separating and recovering CO<sub>2</sub> in the atmosphere and reusing it as fuel. We will use these and other methods to reduce our internal CO<sub>2</sub> emissions and develop them as new businesses. We will also help to bring about a society in which CO<sub>2</sub> emissions steadily decrease, thereby helping to solve climate change issues.

Methanation: Technology for artificially synthesizing CH<sub>4</sub> from CO<sub>2</sub> and hydrogen

CH<sub>4</sub>: Methane

e-fuel: Fuel produced by synthesizing CO<sub>2</sub> and hydrogen



# Aiming to manufacture products that contribute to the realization of a sustainable society

## Environmental considerations in the product lifecycle

The Group has set the goal: "All products contribute to the improvement of the global environment and contribute to making sustainable society come true" as our 2040 Vision. We are working to develop and provide environmentally friendly products. For this reason, we are certifying products that have particularly high environmental performance as "Nittoku Green Products" and expanding them throughout the product lifecycle.

	Examples of environmental considerations	Examples of environmental effects
Manufacturing of raw materials	Reduction of materials input	<ul style="list-style-type: none"> <li>Effective utilization of resources</li> <li>Reduction of CO<sub>2</sub> emissions in material manufacturing</li> </ul>
Transport of raw materials	Change of transportation method	<ul style="list-style-type: none"> <li>Reduction of CO<sub>2</sub> emissions in transportation for procurement</li> </ul>
Manufacture in the Group	Streamlining within the Group	<ul style="list-style-type: none"> <li>Reduction of CO<sub>2</sub> emissions in product manufacturing, saving resources</li> <li>Reduction of emissions of substances of concern</li> </ul>
Shipping	Change of transportation method	<ul style="list-style-type: none"> <li>Reduction of CO<sub>2</sub> emissions in product transportation</li> </ul>
Usage at the customer	Reduced energy consumption in machining	<ul style="list-style-type: none"> <li>Reduction of CO<sub>2</sub> emissions in machining</li> </ul>
End-user usage	Higher product performance	<ul style="list-style-type: none"> <li>Reduction of CO<sub>2</sub> emissions in use</li> <li>Reduction of emissions of substances of concern</li> </ul>
Disposal	Recovery of products	<ul style="list-style-type: none"> <li>Saving resources through product recycling</li> </ul>

## Initiatives in the design and development of products and services

Processes that create new products and services or improve them for the better include research, development, process design, and packaging specification design.

In these processes, the Group also checks whether CO<sub>2</sub> emissions can be reduced, whether resources can be reduced or used effectively, and whether there are any substance of concern included or used. If we find a significant impact on the environment, we implement necessary measures.

We will also ensure that our products and services comply with environmental and other laws and regulations, and that there are no ethical issues.



## Environment-friendly product certification system "Nittoku Green Products"

The Group is committed to developing and providing environmentally friendly products. In this sense, all our products can be described as environmentally friendly. Among our products, an environment-friendly product certification system certifies products that have particularly high environmental performance from a product lifecycle perspective. At the Environmentally Friendly Products Certification Committee (held twice a year), which is headed by the Central Environmental Committee Chairman, products that meet the certification criteria are certified as "Nittoku Green Products" based on the evaluation in three environmental categories: energy saving, resource saving, and substances of concern.

In FY2021, when the system was launched, eight products were certified. Through this system, the Group will promote environmental considerations throughout the product lifecycle and communicate to all our stakeholders the excellent environmental performance of our products.

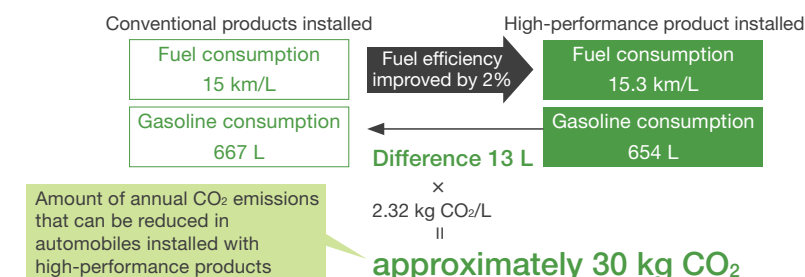
### Examples of products certified as "Nittoku Green Products"



### Example of estimated reduction of CO<sub>2</sub> emissions: Precious metal plugs and wide range oxygen sensors

We assume that installing a precious metal plug or a wide range oxygen sensor improves automobile fuel efficiency by 2%, from 15 km/L to 15.3 km/L.

Over the course of driving 10,000 km in a year, gasoline consumption is reduced by 13 L per unit per year. This lowers CO<sub>2</sub> emissions by approximately 30 kg.

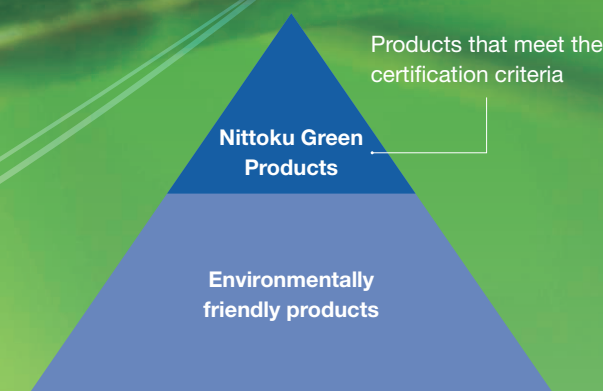


If precious metal plugs are installed in 80 million automobiles, it will reduce CO<sub>2</sub> emissions by approximately 2.4 million tons per year.

Likewise, assuming that wide range oxygen sensors have been installed in 25 million units, approximately 750,000 tons of CO<sub>2</sub> emissions will be reduced.

<Calculation criteria>

- CO<sub>2</sub> conversion coefficient of gasoline: 2.32 kg CO<sub>2</sub>/L (from Ministry of the Environment data)
- Assuming installation in an automobile with a four-cylinder engine



### Evaluation categories

Categories	Evaluation items (product lifecycle perspective)
Energy saving	Reduced energy consumption
Resource saving	Lightweighting, use of recycled raw materials, longer life, etc.
Substances of concern	Non-use or reduced use of substances of concern, etc.

### Example of estimated reduction of CO<sub>2</sub> emissions: Solid Oxide Fuel Cell (SOFC)

#### CO<sub>2</sub> emissions when purchasing electricity from electricity companies

When purchasing 1.66 million kWh\* of electricity, the CO<sub>2</sub> emissions associated with electricity generation by power companies will be approximately 770 tons of CO<sub>2</sub>.

\* Annual power generation of SOFC system with an output of 200 kW



#### CO<sub>2</sub> emissions when generated by fuel cells (SOFCs)

When the fuel cell (SOFC) generates 1.66 million kWh of electricity, the CO<sub>2</sub> emissions will be approximately 530 tons of CO<sub>2</sub>.

\* CO<sub>2</sub> emission coefficient 0.46



Approximately 240 tons less CO<sub>2</sub> emissions than when purchasing electricity

When using 1.66 million kWh of electricity, electricity generated by fuel cells (SOFCs) can reduce CO<sub>2</sub> emissions by approximately 240 tons compared to electricity purchased from power companies. In addition, by using the heat from fuel cells (SOFCs), the effect of reducing CO<sub>2</sub> emissions is improved.



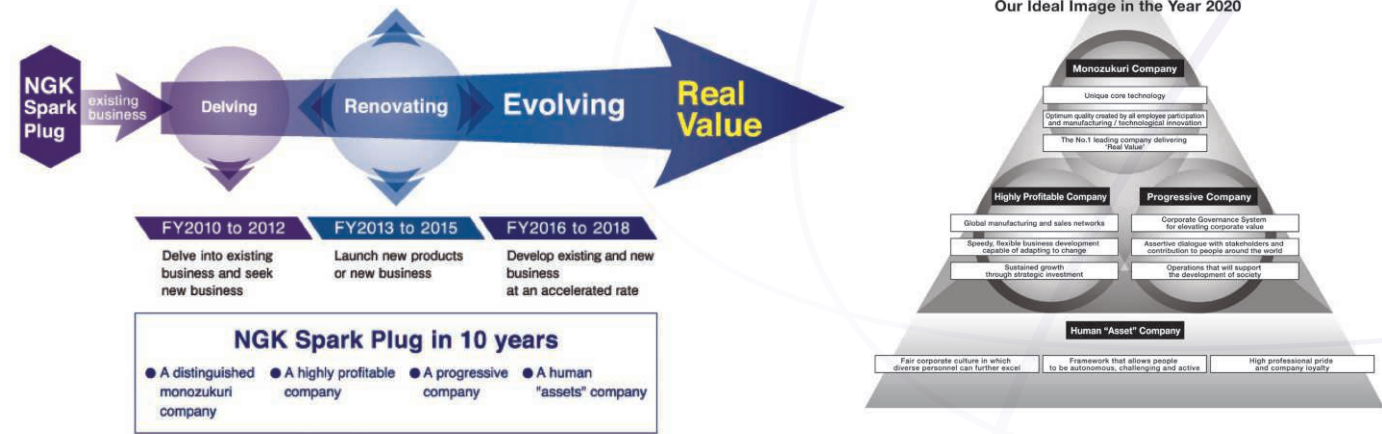
## Long-term Management Plan

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.

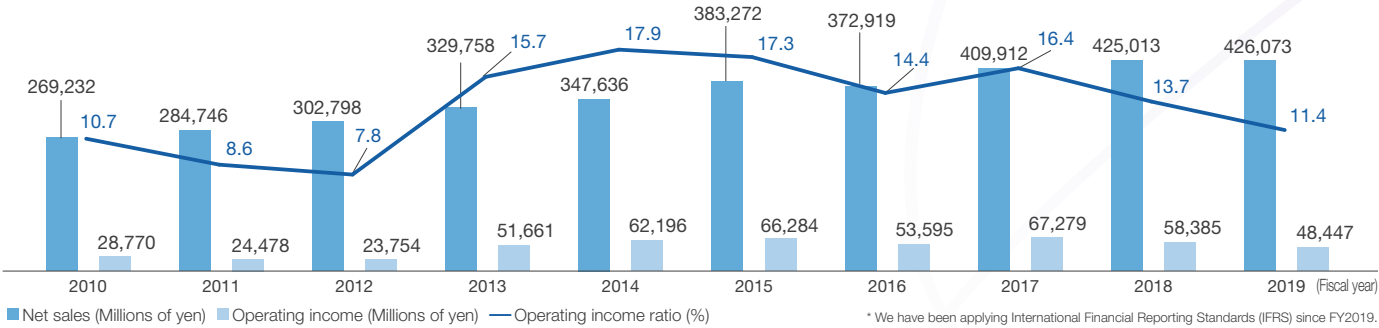
Long-term Management Plan “NITTOKU SHINKARON”(from FY2010 to FY2019)

2030 Long-term Management Plan “NITTOKU BX”(from FY2020 to FY2029)

### Looking back on “NITTOKU SHINKARON”



### Net sales, operating income and operating income ratio



### Our Ideal Image in the Year 2020

<b>Monozukuri Company</b>	Unique core technology Optimum quality created by all employee participation and manufacturing/technological innovation The No.1 leading company delivering "Real Value"	<ul style="list-style-type: none"> <li>Established a dominant position in spark plugs</li> <li>Top market share of exhaust gas sensors</li> </ul>
<b>Highly Profitable Company</b>	Global manufacturing and sales networks Speedy, flexible business development capable of adapting to change Sustained growth through strategic investment	<ul style="list-style-type: none"> <li>Average operating income ratio of approx. 15% over 5 years</li> <li>Overseas production ratio improvement (30% → 40%)</li> <li>Starting the RHQ system of delegated authority and strengthening the Group's abilities</li> </ul>
<b>Progressive Company</b>	Corporate governance system for elevating corporate value Assertive dialogue with stakeholders and contribution to people around the world Operations that will support the development of society	<ul style="list-style-type: none"> <li>Livelier discussions including outside directors and strengthening of governance</li> <li>Strategic M&amp;A, establishment of joint ventures (WELLS, Japan MDM, NTK CERATEC, CAIRE, MORIMURA SOFC TECHNOLOGY, CECYLLS)</li> </ul>
<b>Human "Asset" Company</b>	Fair corporate culture in which diverse personnel can further excel Framework that allows people to be autonomous, challenging and active High professional pride and company loyalty	<ul style="list-style-type: none"> <li>Established The Nittoku Way. All employees share the values that Nittoku Group should adhere to, and pass on to the next generation.</li> </ul>

**Overview of NITTOKU SHINKARON**

Our current businesses grew even more strongly. In our new businesses, although we continued to sow seeds, we have not yet demonstrated our growth vision.

### 2040 Vision and the Long-term Management Plan

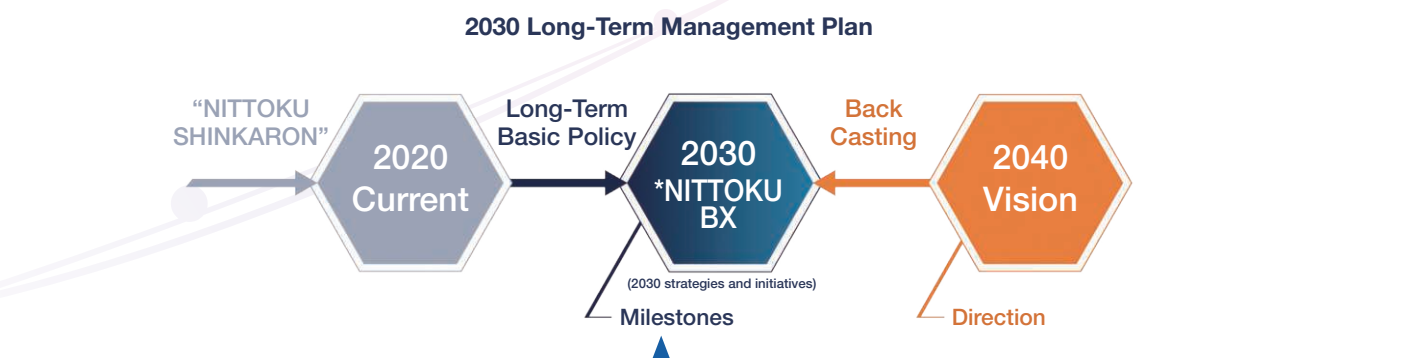
2040 Vision

Change drastically beyond the current way

**Beyond ceramics, eXceeding imagination**

Beyond ceramics, eXceeding imagination

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.



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.

**7th Medium-Term Management Plan**

**Medium-Term Management Plan (4 years)**

**Medium-Term Management Plan (5 years)**

**Eco Vision 2030**

April 2020 → April 2021 → April 2025 → March 2030

1. Further evolving current businesses  
2. Establishing new business pillars  
3. Establish strong business infrastructures

**Break to change. Change to create.**  
Respect Dokuritsu Jiei. Start from scratch.

**Extend for the future. Spread out to exceed.**  
To foster a new corporate culture, we will work toward sustainable growth.

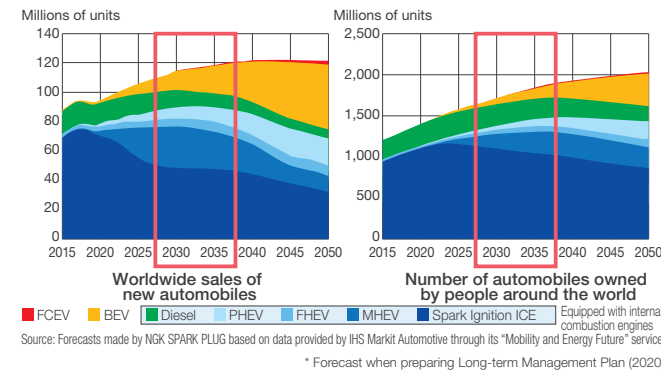
⇒ P.21



## 2030 Long-term Management Plan “NITTOKU BX”

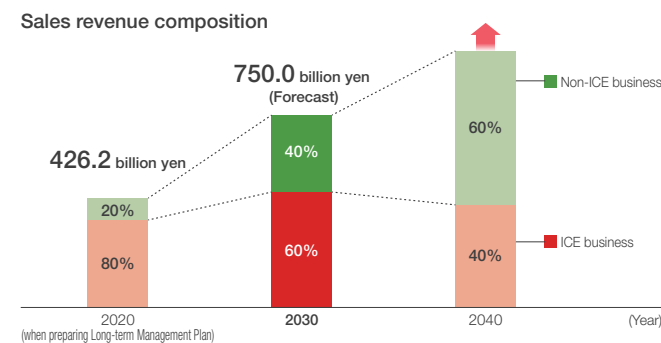
### Changes in the external business environment

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.

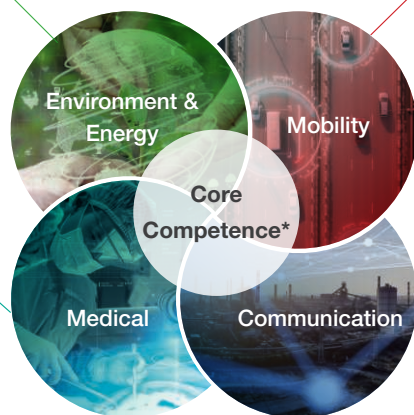
#### To an energy efficient and environmentally-friendly society

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



#### To bring advanced medical care to people all over the world

- Non-invasive diagnosis and treatment, and provision of preventive equipment and services using ultrasound technology



#### 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



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

- Provide infrastructure parts to support high-speed communication



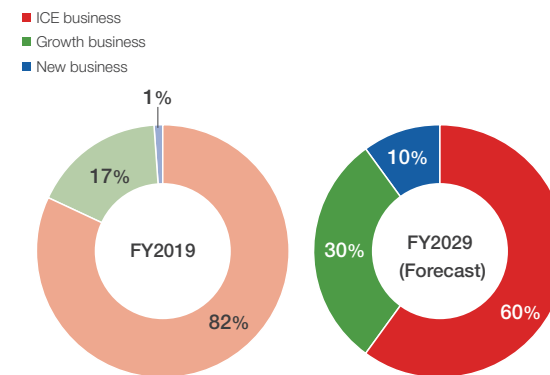
\*Ceramic material technology, application technology in harsh environments, disparate material bonding technology, sensing technology, rapid high-temperature heating technology, and global production and sales system

## Strategy

# “Transformation of Our Business Portfolio” 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

ICE business	Super efficiency and cash generation
Growth business	Drastic development exceeding the market growth rate
New business	Selecting and choosing theme and commercializing cutting-edge themes

## Specific measures

### 1 Management Innovation

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

### 2 Clarification of Responsibilities and Authority

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

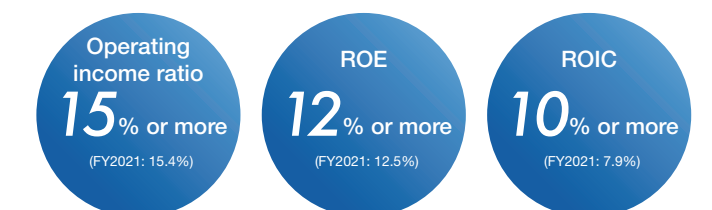
### 3 Willful Cultural Change

- 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.





Eco Vision 2030

Protecting the global environment is the foundation of a sustainable society. For all our stakeholders, we must face it head on as a key management issue.

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.

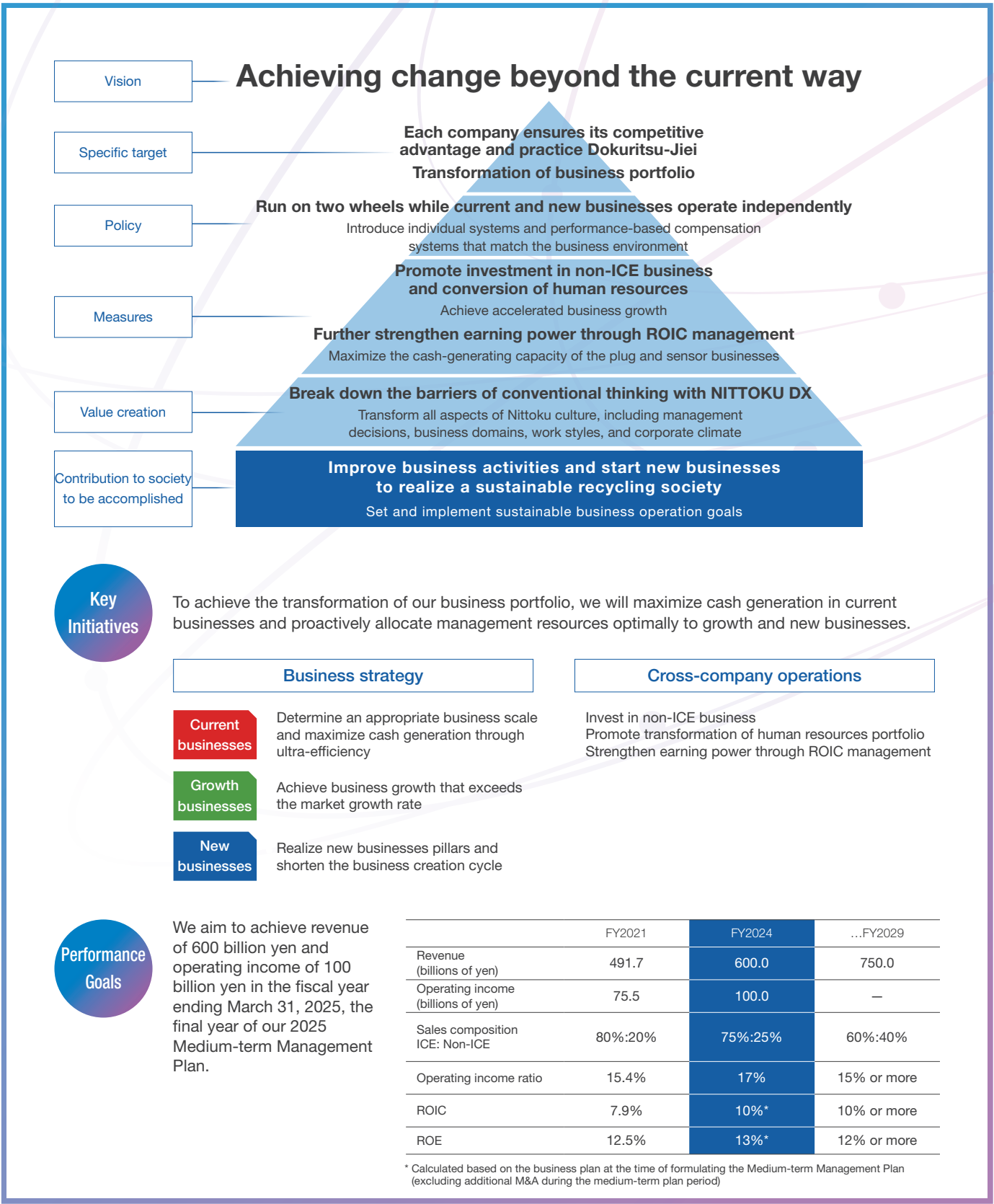
For Eco Vision 2030, the impacts that our businesses and products would have on society and our company were analyzed, and 13 issues that would have a large impact were selected. Among them, the four issues that were considered to have a greater impact – “Responding to Climate Change,” “Expanding Environmentally 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		
Eco Vision 2030 issues	The milestone to be achieved in 2030	Our vision for 2040
Responding to Climate Change	CO <sub>2</sub> 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 issues		
Eco Vision 2030 issues	The milestone to be achieved in 2030	Our vision for 2040
Upgrading EMS	Integration with management	Incorporate global environmental issues into business strategy Environmental KPI (Eco Vision 2030) initiatives and management commitment to achieve them
	Globalization of EMS	Continuing to incorporate global environmental issues into business strategy
	Analysis of climate-related risks and opportunities	Continuing to carry out environmental information sharing with overseas Group companies as well as monitoring and supervisory functions
	Implementing environmental compliance (compliance with environmental laws and regulations and elimination of environmental accidents)	Ensuring business sustainability by analyzing climate change risks and opportunities and incorporating responses into business strategy
	Raising environmental awareness	Aim for zero violations of environmental laws and regulations and zero environmental accidents All employees take environmental education programs and actively engage in environmental conservation activities
		Being a company trusted by society by maintaining zero violations of environmental laws and regulations and zero environmental accidents
Chemical substances management		Carry out appropriate chemical substances management and reduce environmental impact Continuously carrying out appropriate chemical substances management to help conserve biodiversity
Green procurement		Achieving 100% introduction of the green procurement system Carrying out procurement with a low environmental impact so that we can help realize a sustainable society
Green logistics		Promoting green logistics and reducing CO <sub>2</sub> emissions by optimizing logistics efficiency Achieving green logistics globally
Enhancement of environmental information disclosure		Responding to stakeholder requests and using communication to foster dialogue Responding to stakeholder requests and using communication to foster dialogue

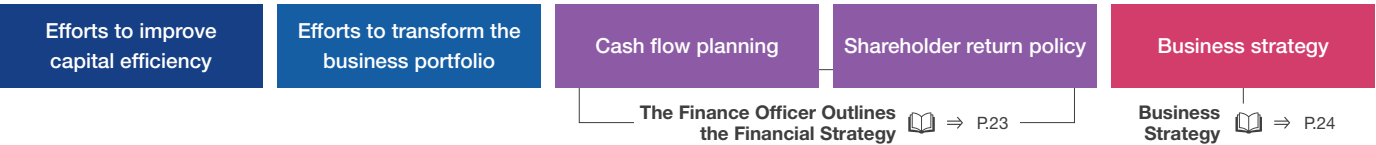
Medium-term Management Plan

In our 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.



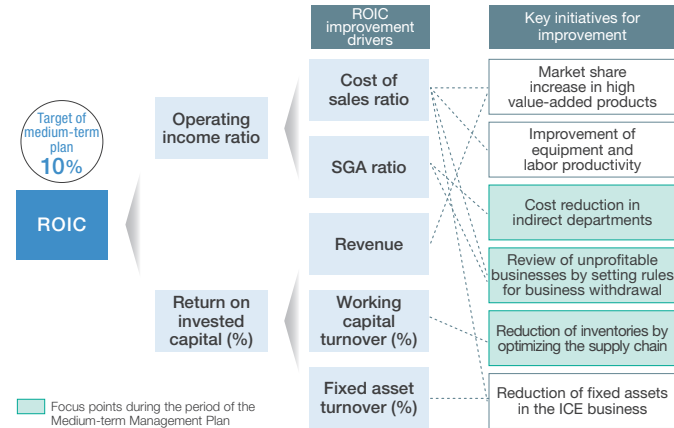


Specific efforts



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

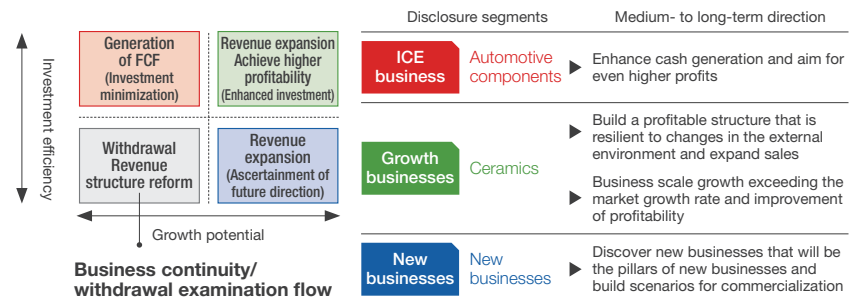
Introduction of an in-house company system

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 Strategy Division and Business Partner / Company, and a small number of strategic staff are assigned to the Global Strategy Division. 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 Division	● 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 <b>Improvement of company-wide earning capacity contributed by Business Partners (BP) /</b>
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

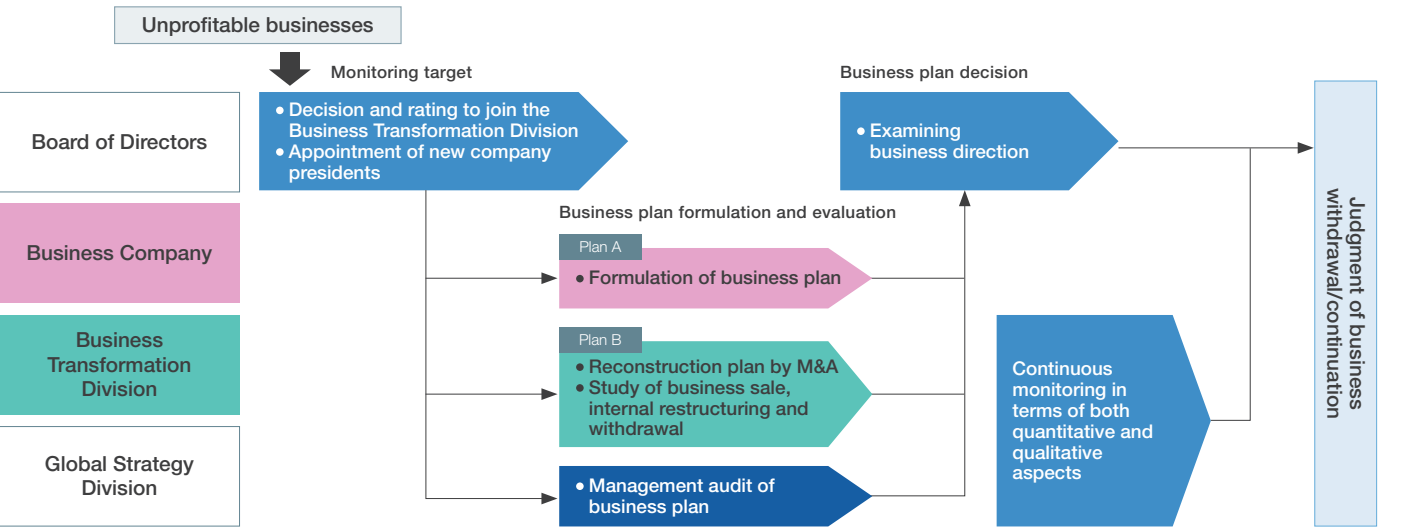
Business portfolio management

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 president. Simultaneously, the Business Transformation Division formulates another revitalization plan under different point of view. Finally, the Global Strategy Division 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 Division have all been strengthened with outside human resources to establish a system that enables a rational decision-making.



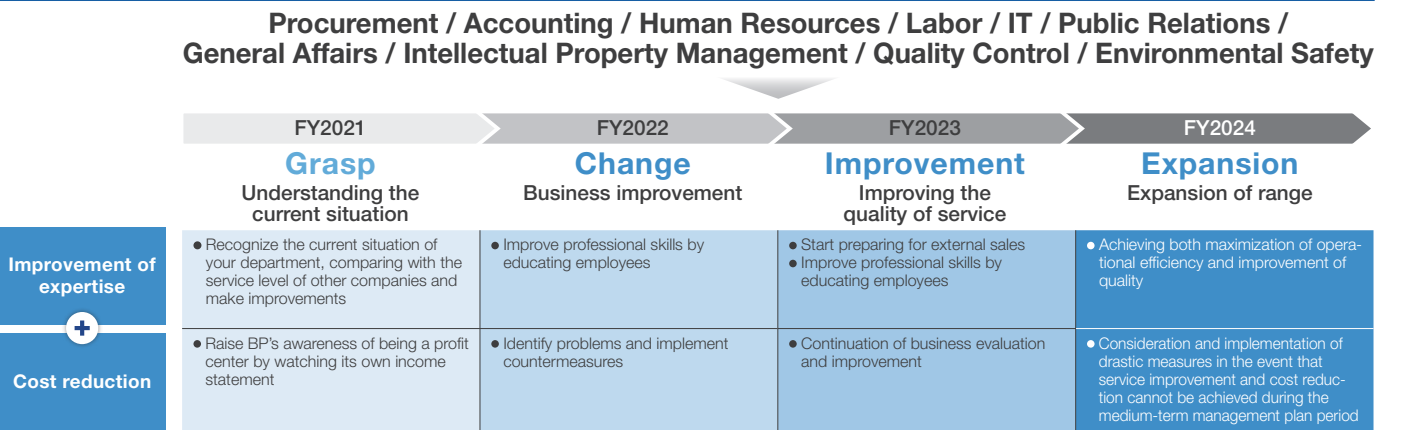
Improvement of company-wide profitability by introducing Business Partners (BP) system

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





## The Finance Officer Outlines the Financial Strategy



While aiming to improve capital efficiency, we will steadily work toward the next phase of growth.

**Kenji Isobe**  
Executive Officer

### Achieved growth in both revenue and profits for the FY2021 performance

FY2021 was a year in which we were exposed to a variety of external factors, including soaring raw material prices and sluggish automobile production due to a shortage of semiconductors, as well as problems stemming from Russia's invasion of Ukraine in February 2022.

The consolidated performance resulted in growth in both revenue and profits. These results were buoyed significantly by exchange rate fluctuations and higher sales of our profitable automotive aftermarket parts, which improved the product mix.

Operating income increased in FY2021. This resulted in an improvement in ROIC, one of the key management control indicators, which was 7.9%. However, from a qualitative standpoint, challenges remain for the ROIC management that we aim to achieve.

In adopting ROIC as a management indicator, we started from an awareness of the issue that although we are a highly profitable company, there may be room for us to increase capital efficiency.

Returning to that perspective and reviewing our business in FY2021, we were forced to raise inventory levels due to factors such as logistics disruptions and rising maritime transportation costs. As a result, although operating income increased, we were unable to reduce inventories in working capital. This meant that our improvements fell short of ROIC management targets, so challenges remain.

### Assess profitability and growth to determine whether continuation of business is viable

Our business is broadly divided into three businesses: the ICE business, which includes the Automotive Components; the growth business, which includes the Ceramics; and the new businesses that we will create to transform our business portfolio. The biggest need for improvements to ROIC is in our cash cow, the Automotive Components (ICE business). We break down ROIC by business, set targets, and track progress in the Automotive Components, as well as the Ceramics, which we plan to grow.

In addition, each internal company breaks down ROIC into trees and manages them individually. Furthermore, apart from the ROIC for each business, we set the WACC (weighted average capital cost). We maintain awareness of ROIC and WACC as we operate the business and make investment decisions.

Meanwhile, we may decide to withdraw from low profit businesses or businesses that are not expected to grow in the future. For example, in FY2021, we withdrew from some products in the medical business and sold all of our shares in Japan Medical Dynamic Marketing, INC., an equity method affiliate. We believe that through selection and concentration of such businesses, we will achieve improvements in ROIC in the medium to long term.

### Aim to reduce inventories by rectifying production and logistics

We hope that the logistics disruptions that have continued since last year will be resolved as soon as possible. However, we cannot afford to look on at the situation without doing anything.

We are carrying out a project aimed at supply chain reforms. In this project, we are working to rectify production and logistics by reviewing them globally. We want to prevent the problems such as bottlenecks and backflow that can arise when things and information are not organized in production and logistics. For example, one of these efforts is to reduce the number of product numbers, which reduces the amount of time that products and work in process remain at the production site or in the warehouse. By bringing production processes and logistics closer to optimization in this way, we can reduce inventories. We expect that we will see the effects of this rectification gradually emerge in FY2023.

Through this rectification approach, as well as other measures within the Group, we aim to improve ROIC by reducing working capital, which is the denominator of ROIC. By also withdrawing from the unprofitable business mentioned earlier, we aim to achieve the Medium-term Management Plan target of 10% ROIC.

### Allocating earned cash for the next phase of growth

Our basic idea of how to use earned cash has not changed. The ICE business is a cash cow of the Group. The cash earned from this business is actively distributed to new businesses, including growth businesses, in a balanced manner to maximize long-term profits.

### Determine investment based on recoverability

Now I will talk more about how we use cash. It is not our policy to distribute all cash earned from the Automotive Components to other businesses.

For example, there are areas where there is room for growth in the Automotive Components, so we will invest if we have a viable plan for recovery. In doing so, we will also consider the WACC mentioned earlier.

In that sense, there is also plenty of potential to redistribute the earned cash to the Automotive Components. We will review and make decisions each time so that we do not miss opportunities for business expansion and profit maximization in the medium and long term.

The automotive components business is expected to decline after internal combustion engines have peaked. However, our strength is that we still have the earning power in the market for aftermarket parts. We can expect that situation to continue for a while. New businesses in the Automotive Components could also emerge from the global distribution network that operates in the market for aftermarket parts. In that sense, there is room for investing in new projects in the Automotive Components to recover proceeds and return them to shareholders.

In addition, we of course distribute cash to areas such as growth businesses. From a longer-term perspective, we also feel a need to consider investing in human resources. Money is not the only asset a company has. People are also assets. I believe that we should also invest in people, which are a company's valuable assets, as we drive the transformation of the business portfolio.

### Adhere to the profit return policy and promote IR with a focus on fostering dialogue

With respect to shareholder returns, from FY2021, dividends were fully performance-linked. We significantly changed our annual dividend payout ratio to 40%. Our idea is basically to continue this policy.

In the last few years, we have seen the stock price behave like that of an internal combustion engine stock. We feel that there is a gap between the evaluation from the stock market and the actual situation. There were occasions when I felt that despite our performance being not so bad and that our profit margins very high, our performance was not properly evaluated.

When we meet with shareholders and investors, we first tell them about how well our company is performing. In particular, after the automotive components business peaks, the business for aftermarket parts will remain for the next 10 or 20 years, considering the number of automobiles owned. Our products have a high market share and a high profit margin, so there is still room for steady growth. Focusing on these strengths in the Automotive Components, we have explained them to shareholders and investors over the past year in particular. I think the stock market now appreciates that the automotive components business has continued to grow and continues to provide a source of revenue. This has contributed to a recovery of the stock price.

In addition, we announced that we will change the Company's English name to Niterra in FY2023. We did this out of consideration that the former company name "NGK SPARK PLUG" leads to the categorization as an internal combustion engine stock. That can become an initial barrier that holds back overseas investors' investments.

In FY2022, we held a business briefing for shareholders and investors in May. As well as our strengths in the Automotive Components, we took the opportunity to communicate our growth strategies in other businesses. For example, given that the semiconductor sector is very dynamic, we explained about the SPE business, which deals with products for semiconductor production equipment. We also talked about our new business, the fuel cell business.

This kind of dialogue with shareholders and investors is also a valuable opportunity. We will use IR activities such as briefings to thoroughly communicate our business strategies and growth strategies.



## KGI (New Medium-term Management Plan)



## External environment

### Decarbonized society

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 CO<sub>2</sub> 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) are likely to dominate over the long term.

However, although the number of vehicles equipped with ICE is expected to decrease after 2030, demand from the repair parts market is expected to continue over the long term, as 60% of the total number of vehicles will still be equipped with ICE as of 2050, and more than three-quarters will remain compared to the peak year.

### Stricter environmental regulations

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.

## Vision

### (1) Market share expansion in high value-added products

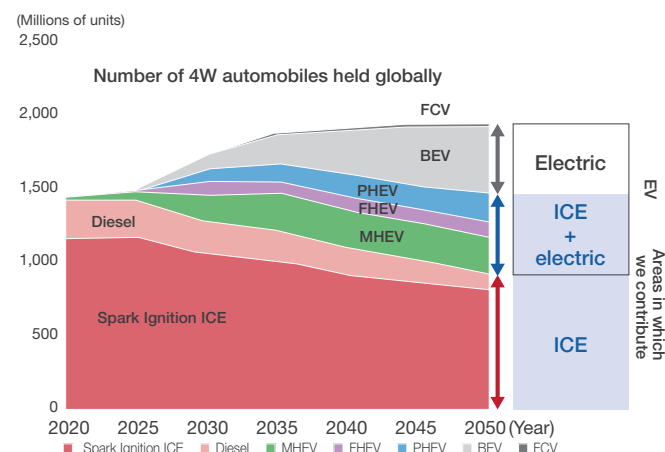
**Plugs** Against the backdrop of these rapid moves toward decarbonization, the need for electrically-powered vehicles that offer high levels of fuel efficiency, such as HEVs and PHVs, is increasing. Our range of spark plugs include the regular nickel type as well as precious metal types, which are highly fuel efficient. The precious-metal spark plugs are said to offer fuel efficiency that is around 2% higher than the regular types. Precious-

## Strength

**Integrated production system from material development to manufacturing**

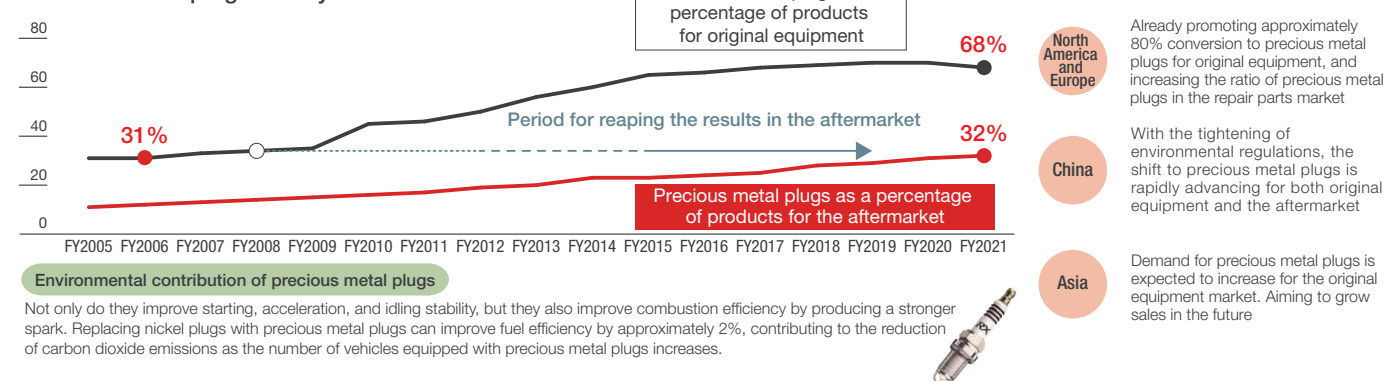
**Unique sales channels around the world**

### Projected ICE demand



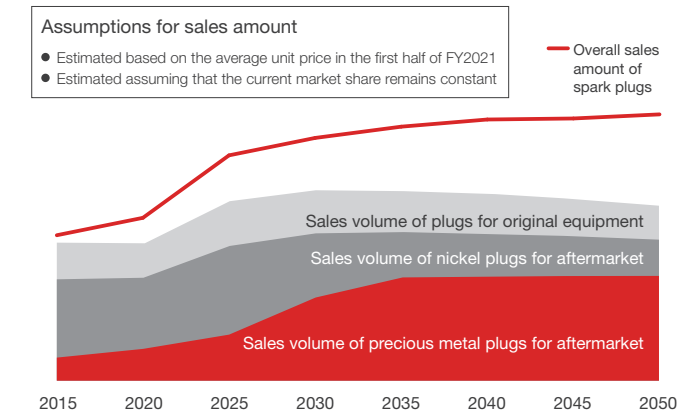
metal spark plugs already account for around 40% of sales, and by replacing regular nickel spark plugs with them, it would be possible to achieve a significant improvement in fuel efficiency. By selling precious-metal spark plugs, which help boost fuel efficiency, we will meet the needs of the market.

### Precious metal plug ratio by commercial distribution



Precious metal plugs, which are high value-added products, already account for nearly 70% of original equipment plugs, but account for only about 30% of products for the aftermarket. Because the percentage of precious metal plugs for original equipment tends to indicate the percentage of precious metal plugs in the aftermarket 10 to 15 years from now, we expect that precious metal plugs will increase in the aftermarket at an accelerated pace in the next fiscal year and beyond. Automobile production is expected to peak out in 2030, and sales of products for original equipment are also expected to start declining, but sales of precious metal plugs will continue to increase because replacement demand for aftermarket products will continue beyond that time. In terms of unit sales prices, those of aftermarket products are higher than those of products for original equipment, so even if the overall sales volume of spark plugs starts to decline, sales are expected to continue to grow beyond 2030, contributing to earnings.

### Forecast of spark plug sales volume and amount and performance of aftermarket products by type



### Sensors

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 CO<sub>2</sub> emissions through more precise measurement of oxygen concentrations, and they therefore allow compliance with strict environmental regulations.

Although HEVs and ZEVs are expected to increase over the medium to long term, this does not mean that ICE equipped vehicles will disappear immediately. Because it is important to reduce CO<sub>2</sub> emissions during the transitional period of electrification, we will continue to provide high value-added products to the market and contribute to the environment.

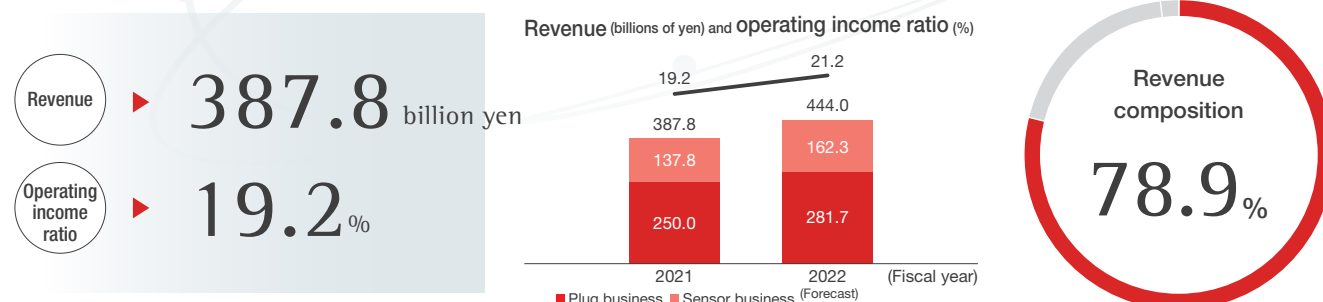
### (2) Curtailing of investment thanks to productivity improvement and increase in capital efficiency thanks to inventory reduction

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.



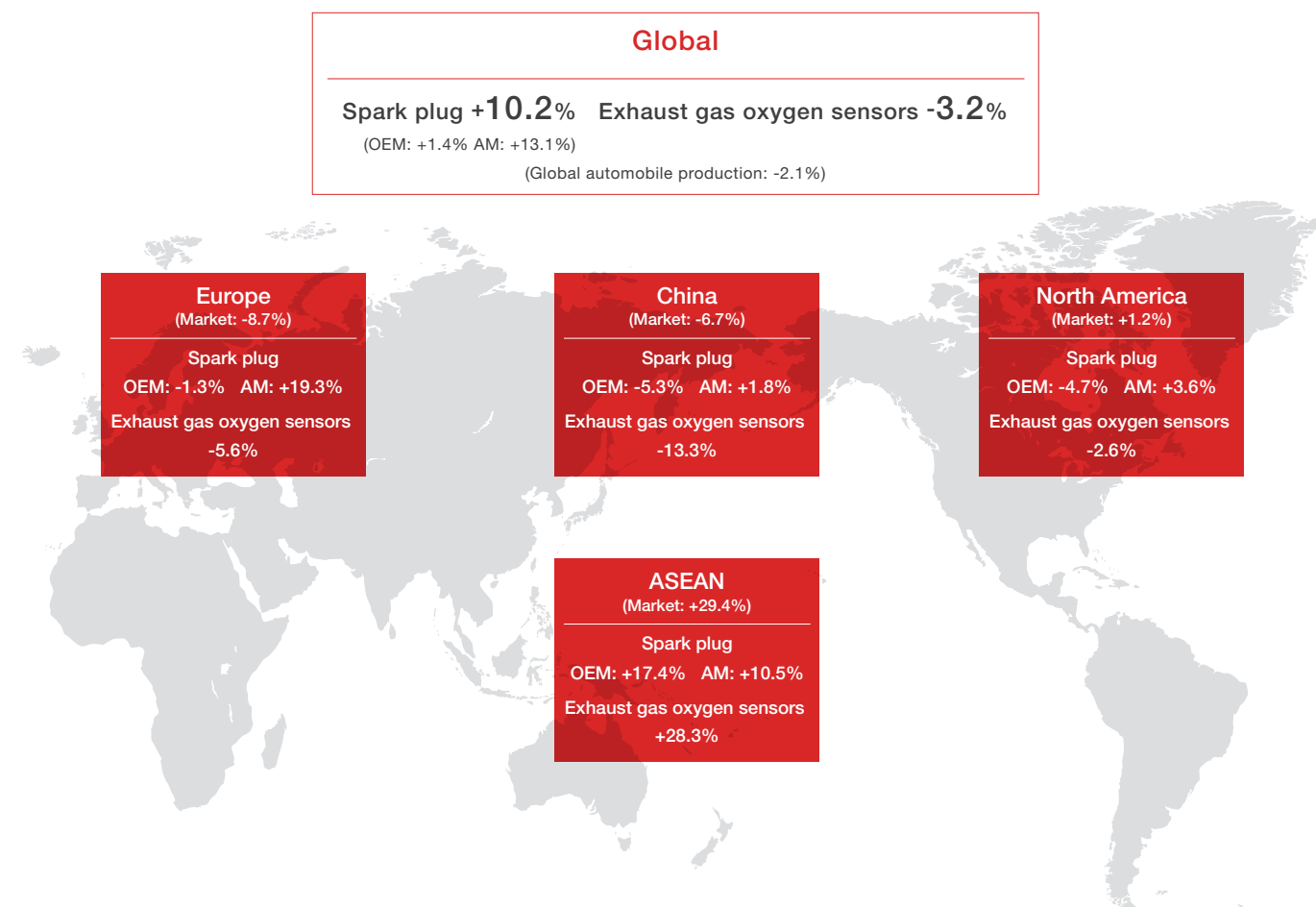
## Automotive Components

## Looking back on the first year of the Medium-term Management Plan



## Changes in sales volumes of automotive products by region

Sales volume by region (FY3/21 vs FY3/22)



\*The figures for spark plugs include those for motorcycles.

## Overview of FY2021

## Plugs

Revenue increased by 22% year on year, reaching a new record high. Sales of spark plugs for original equipment were noticeably sluggish in major regions as automakers' production was constrained by the shortage of automotive semiconductors, which had been continuing since the beginning of the period. Compared to FY2020, which saw a large drop in sales due to the impact of the spread of COVID-19, sales remained slightly higher. On the other hand, strong demand for aftermarket spark plugs continued due to an increase in maintenance demand, and sales exceeded those of the same period of the previous year, especially in North America, Europe, and China, resulting in overall sales of spark plugs for the aftermarket showing a double-digit growth rate year on year. Although the sharp rise in raw material prices since the beginning of the fiscal year was a negative factor for operating income, we have made efforts to reduce the impact through price revisions for both original equipment and aftermarket spark plugs to offset the sharp rise in prices. In addition, due to strong sales of high-margin aftermarket spark plugs, operating income in the Automotive Components Group, including the sensor business, reached a record high.

## Sensors

Although sales volume declined throughout the year, foreign exchange effects resulted in a 3% increase in revenue compared to the previous fiscal year. As with spark plugs for original equipment, the unstable automobile production continued throughout the year due to factors such as the shortage of automotive semiconductors. Therefore, sales volume declined for all major products with the exception of some products. From the fourth quarter onward, although automobile production in North America, Europe, and other regions gradually recovered, sales declined slightly year on year when excluding the impact of foreign exchange rates. Sales volume of exhaust gas oxygen sensors decreased 2.6% year on year in North America, 5.6% year on year in Europe, and 13.3% year on year in China, falling below the level a year ago in all major markets and 3.2% year on year overall. Demand for oxygen sensors for motorcycles, which increased significantly last year with the adoption of emission norms in India, has also settled down, and results were almost on a par with the previous year.

## Outlook for FY2022

## Plugs

Although we expect the supply shortage of components such as automotive semiconductors to continue, we anticipate a gradual recovery from the second quarter onward. As automobile production recovers, we estimate that sales of spark plugs for original equipment will also increase and that sales of spark plugs for aftermarket will remain at last year's level, and we plan to achieve a new record high in our revenue in FY2022 as well. With regard to price revisions due to soaring raw material prices, we were unable to reflect all the effects of the price revisions throughout the year in FY2021 because we started our initiatives during the period, but we will be able to reflect them from the beginning of FY2022. In addition, we will continue negotiations with manufacturers with whom we are negotiating prices of spark plugs for original equipment, with the aim of further improving profitability. Through these measures, we plan to achieve record-high operating income in FY2022 as well.

## Sensors

As in the case of plugs, we plan a year-on-year increase in sales due to an expected recovery in automobile production from the second quarter as a result of the resolution of supply shortages of semiconductors and other components. While the sensor business, which is mainly OEM supply, is expected to face headwinds in the form of lower demand due to the accelerating shift to EVs, we will continue to fulfill our obligation to supply high-quality products and meet the expectations of customers so that the automotive industry as a whole can continue its business. Even after demand peaks out, we will continue to contribute to the resource cycle for the creation of new business pillars by leveraging our advantages in terms of high market share to improve profitability.

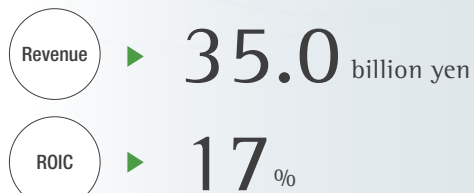


## Ceramics

## SPE

## KGI (New Medium-term Management Plan)

## Strength



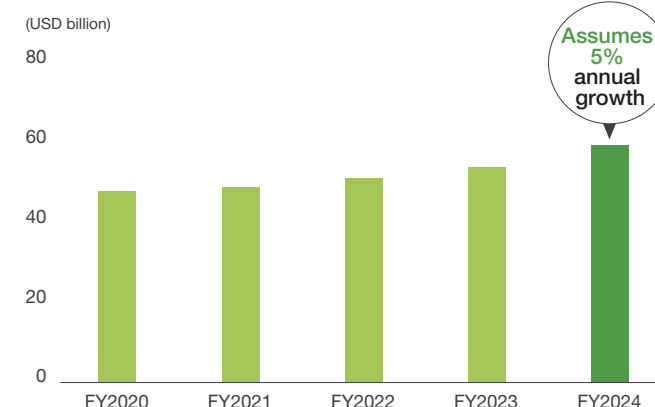
Ceramic material technology that can withstand high-power plasma

Ceramic sheet lamination technology that contributes to surface temperature homogenization, low particles, and wide-ranging surface temperatures

## External environment

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 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.

## Outlook for semiconductor production equipment market



## Vision

Differentiation through proprietary technology that meets customer requirements

Annual average growth rate of revenue:  
**12% or more**

Establishment of production structure that is resilient to market changes

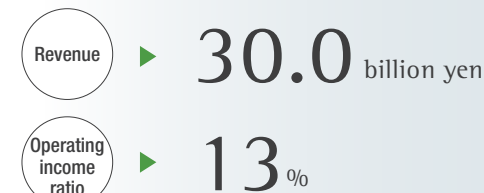
Inventory optimization, increase in capacity utilization rates, increase in labor productivity, etc.

Labor productivity improvement:  
improved by **30%**  
(compared to FY2020)

## Medical

## KGI (New Medium-term Management Plan)

## Strength



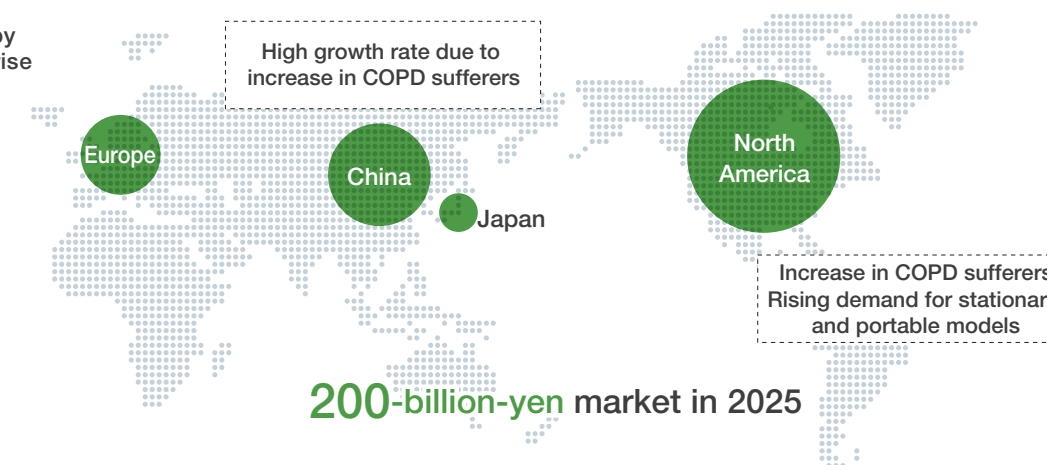
A lineup including portable and stationary oxygen concentrators

Sales channels around the world

## External environment

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



## Vision

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 expanding our product line-up and our sales channels led by CAIRE.

Development of new oxygen concentrators

Launch of new products  
(FY2024)

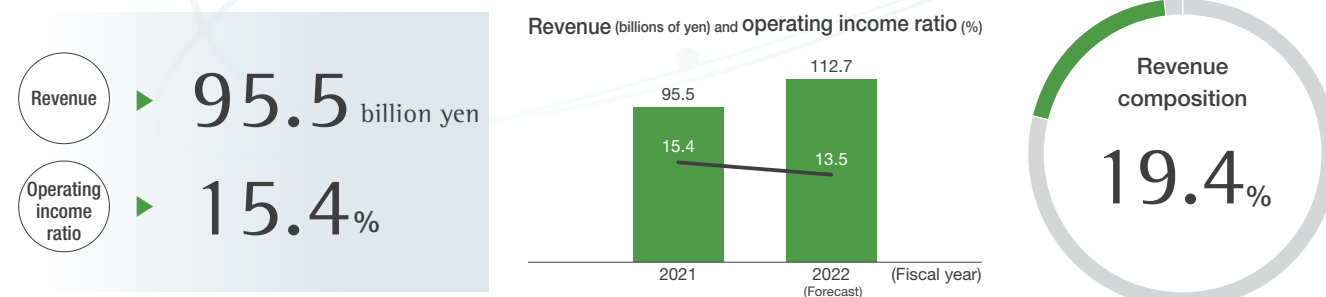
Diversification of sales channels and sales regions

Revenue from Chinese market  
Annual average growth rate:  
**25% or more**



## Ceramics

## Looking back on the first year of the Medium-term Management Plan



## Overview of FY2021

- SPE:** Against the backdrop of rapid digitization in society and the economy triggered by the global spread of COVID-19, e-commerce and social media use are increasing, leading to increased investment in data centers and servers, 5G, and AI. In these circumstances, the demand in the semiconductor production equipment market rose due to strong capital investment by semiconductor memory and logic manufacturers, which led to parts shortages and longer delivery times in various areas. However, the Group's efforts to increase manufacturing capacity, such as by improving capacity utilization rates, resulted in a 28% year-on-year increase in revenue in the semiconductor production equipment components business, significantly exceeding the previous year's results.
- Medical:** Revenue was almost on a par with the previous year's figure, increasing 4% year on year. Up until the third quarter, high demand continued for oxygen concentrators for home treatment use due to the resurgence of COVID-19. In the fourth quarter, although the situation of COVID-19 infection began to subside to a certain extent, revenue landed at a high level on a par with the previous year's results. In the medical equipment field, we terminated the capital and business alliance agreement with Japan Medical Dynamic Marketing, INC., with whom we had been collaborating in areas such as joint product development and utilization of sales channels. As a result, we transferred all of our shares in Japan Medical Dynamic Marketing, INC., and a gain on sales of approximately 8.5 billion yen was recorded in the fiscal year ended March 31, 2022. This resulted in a significant one-time increase in operating income.
- Packages:** The semiconductor industry as a whole is very active, including for data centers, due to the stay-at-home demand caused by COVID-19. Driven by this, demand for our semiconductor packages has also been strong. In addition, the effects of productivity improvement activities that have been underway since FY2020 have contributed to higher sales and profits in the semiconductor package business year on year.
- Cutting tool business:** Cutting tools for the automotive and aircraft industries improved after being impacted by COVID-19, resulting in a 23% increase in revenue year on year. Sales of ceramic and cemented carbide products to these industries increased, especially in the Japanese, European, and U.S. markets. Sales to the aircraft industry are still in the process of recovery, but steadily increasing.

## Outlook for FY2022

- SPE:** We expect demand in the semiconductor production equipment component business to increase as investment in data centers and servers, 5G, and AI continues to grow and demand for semiconductors continues to rise. In these market conditions, by integrating the proprietary technologies of our Sendai and Komaki sites, and by continuing to implement fundamental reforms such as cost reductions and lead-time reductions through production innovation, we are looking to increase our share of the current businesses and also to increase sales and profit by enhancing our manufacturing capacity. Furthermore, in new product development, we aim to capture new demand through differentiated services by continuing to strengthen promotions to customer development departments with timely prototype support through the expansion of prototype and express lines.
- Medical:** In the respiratory equipment-related business of the medical business, although demand for stationary home oxygen concentrators is expected to decrease as the situation of COVID-19 infection has started to subside, demand for portable oxygen concentrators is expected to increase as people will likely go out more often. As a result, revenue is expected to decrease slightly year on year. On the other hand, operating income is expected to decrease year on year, despite our plans to raise prices for customers and improve production efficiency, as we expect increases in costs due to soaring raw material and transportation costs as well as component supply issues and the resulting deterioration in production efficiency.
- Packages:** In FY2022, demand for semiconductors remains strong as in the previous fiscal year, but the current situation is affected by the uncertain outlook for the situation in Russia and Ukraine and the sharp depreciation of the yen, which has caused raw material and fuel costs to rise. Therefore, we will continue to promote productivity improvement activities, as we did in the previous fiscal year, in order to secure profits. Because the semiconductor market is a growth area and is expected to continue to expand in the future, we will increase revenue in areas where we can take advantage of our strengths in ceramics.
- Cutting tool business:** Cutting tools for the automobile industry are expected to perform well in conjunction with the recovery of production by automobile manufacturers, and cutting tools for the aircraft industry are expected to recover gradually from when engine parts production was affected by COVID-19. Revenue is expected to grow as a result. In addition to the increase in sales, we also expect an increase in profit due to cost reduction activities.

## TOPICS

## Construction of a new plant to meet growing demand for semiconductors

Demand for semiconductors is increasing against the backdrop of the rapid digitization of society and the economy. In order to increase its ability to meet semiconductor demand, NTK CERATEC CO., LTD., a member of the NGK SPARK PLUG Group, has acquired a site in the Takayashiki Nishi district of Tomiya City, Miyagi Prefecture, to construct a new plant. The new plant will manufacture electro-static chucks, structural ceramics products, and other products, aiming to realize highly efficient and high-quality manufacturing by optimizing the production lines. The new plant will cover an area of approximately 12.4 hectares and is scheduled to start operation in April 2025 as the main plant of NTK CERATEC.

**NTK**  
**CERATEC**



## Progress of New Business Creation and Future Prospects



We will contribute to the  
harmonious coexistence  
of humans, the Earth,  
and the universe

### Toru Matsui

Representative Director, Member of the  
Board, Executive Vice President, Assistant  
to President  
Mirai Creation M&A Dept., R&D Div., and  
Business Creation Company

### Future vision of new business creation

What should our new business creation look like as we look toward our 2040 Vision, which defines “changing drastically beyond the current way” as our future direction? Discussions were held to create a stronger and more concrete image of our business in 2040 and to draw a roadmap toward this vision. The task force team members thought freely from perspectives not bound by conventional frameworks, and through repeated exchanges of opinions, arrived at a vision of how businesses should support people’s living environment in a future society and contribute to its maintenance and development.

In a future where people will migrate to outer space and to the moon’s surface beyond the Earth, it is likely that a regenerative circulatory system that circulates water, air, food, and energy, keeps them clean and generates no waste, will be realized as the living environment there. Assuming that by 2040, something similar to a regenerative circulatory system will be introduced to the general living environment on the Earth to avoid further burden on the global environment, we have set our contribution toward the realization of such a world as an ideal to aim for.

When we think about what we should do and can do to help create new businesses in this direction, we realized that our technologies and products already had several elements that can contribute to a regenerative circulatory society. A major activity for the future will be to re-evaluate, evolve, and develop those

elements from the perspective of a regenerative circulatory system that detects air, water, and energy, recovers and concentrates them, and transforms them into a different state.

However, it is difficult for us alone to accomplish the innovations required for a regenerative circulatory society. It is necessary to complement what we do not have or what we lack through M&As and collaboration with other companies, and build a structure that can provide more advanced solutions while enhancing synergies.

As the organizational reform to this end, we established the Mirai Creation M&A Dept. within the Global Strategy Division as of April 1, 2022. The Mirai Creation M&A Dept. will consolidate and accumulate knowledge, experience, and know-how related to M&A, which were previously dispersed throughout the company, as a knowledge base, and will engage in M&A toward business portfolio transformation. It will also have a second opinion function for M&As in current business areas. It can be said that this department plays an important role in facilitating our move toward the 2040 Vision.

### Challenges of the Business Creation Company

Businesses classified as our new business pillars are broadly divided into two categories: the solid oxide fuel cell (SOFC) cell stack business, which has begun production at Group companies MORIMURA SOFC TECHNOLOGY Co., Ltd. and CECYLLS Co.,

Ltd., respectively, and various new businesses being developed by the Business Creation Company (BCC), which was established in April 2021. BCC is an in-house company renamed from the Global Innovation Division, which was established in April 2020 to consolidate the development of new business pillars other than the SOFC business, which had previously been undertaken by several divisions.

BCC has a shared awareness internally of its mission, which is to provide solutions that create a better quality of life for people around the world. Going forward, we would like to further refine the direction of future new business creation mentioned earlier with BCC, and create a situation where we can promote this direction together as one. Currently, BCC is developing its business in three main areas: Utilities (decentralized utilities), mainly in the environmental and energy fields; Smart Mobility, mainly in the mobility field; and Smart Health, mainly in the medical field.

As progress to date, in the Utilities area, we have launched two new products in 2021: the ozone gas generator Sumikaze and water quality sensing. The ozone gas generator Sumikaze has been developed as a product effective in combating infectious diseases, as it exerts an inhibitory effect on airborne bacteria, viruses, and odors. Water quality sensing is a technology for land-based shrimp aquaculture that automatically measures ammonia and other substances in seawater, and we are continuing to build systems for further labor-saving and automation in the aquaculture business.

In the Smart Mobility field, in 2021 we launched Doctor Link, a smartphone app that provides preventive maintenance services connecting automobile maintenance shops and users.

In the Smart Health field, we launched SAMPO Touch, a health solution that sends photos of family members and grandchildren to a smartphone by holding the smartphone over a dedicated NFC tag\* on the way to and from a walk, encouraging middle-aged and elderly people to take a walk while at the same time providing a way for family members to keep an eye on them. In addition, we are steadily developing services related to femtech, which uses technology to solve women’s physical issues, including a service that uses multiple sensors to relieve the anxiety of pregnant women and a service that uses sensors to detect the movement of pelvic floor muscles after childbirth and inform whether pelvic floor muscle training is being performed appropriately. We are also working on a collaborative project for medical-related solutions through investments in two startup companies. Specifically, we are developing and marketing an affordable and easy-to-use therapeutic gas generation device and a device that uses low-temperature plasma to treat chronic wounds.

The BCC new business projects will continue to require up-front investment for the time being, and their contribution to our

business performance will be some time in the future. Meanwhile, we expect sales from the launch of solid oxide fuel cell (SOFC) cell stacks by Group companies MORIMURA SOFC TECHNOLOGY Co., Ltd. and CECYLLS Co., Ltd.

### Transcending departmental barriers to create a collaborative system

The R&D Div. is expected to create inventions that will form the basis of core technologies, and its efforts from a medium- to long-term perspective have a different time horizon from those of BCC, which aims to quickly launch new businesses. For this reason, until now, the efforts of the R&D Group and BCC have not been very well coordinated, with each developing in a different direction. Going forward, however, we intend to strengthen cooperation between the R&D Group and BCC, and to promote development in a flexible and active manner while mutually stimulating each other. As a leading example, a cross-functional project team was formed with R&D members, BCC members, and members of the Production Engineering Company. In October last year, the team began developing a solution to synthesize CO<sub>2</sub> recovered from gas furnaces and other sources in plants with hydrogen and reuse it as fuel.

Carbon neutrality is one of the key themes for the R&D Div. in FY2022, and we will devote our resources to this area, focusing on the development of elemental technologies to improve the efficiency of CO<sub>2</sub> recovery and reuse in plants as mentioned above, as well as on research into functional materials for EV applications. We also plan to accelerate R&D activities through DX.

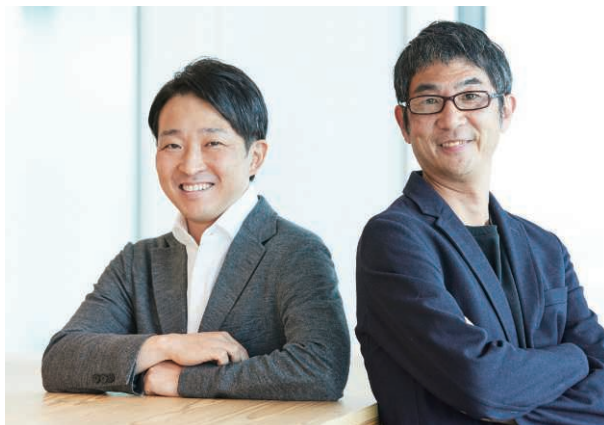
We look forward to your continued support as we go through changes and take on challenges going forward.

\*NFC tag: A tag equipped with near field communication technology.





## Progress of New Business Creation and Future Prospects



## Examples of new business activities (1)

### First attempt in the service field by leveraging the sales network

Automobile preventive maintenance service “Doctor Link”

**Sei Kawamoto and Takanori Horiguchi**

Mobility Business Dept.,  
Business Creation Company

#### Taking on the challenge of entering the digital service field

Doctor Link is a preventive maintenance service developed for automobile maintenance shops. By attaching a dedicated device to a vehicle, the condition of the vehicle and the wear and tear of its parts can be checked through a smartphone app. This allows users to know the appropriate timing for maintenance, and allows maintenance shops to make persuasive maintenance proposals to users based on quantitative data. In addition to bringing a high level of convenience to users, the product will also make a significant contribution to maintenance shops in terms of strengthening relationships with users and improving operational efficiency.

It is a bold challenge for us to enter the completely new field of digital services. As the market environment surrounding us changes dramatically, we need to leverage our strengths while changing drastically beyond the current way in order to develop new business pillars. Therefore, we have focused on digital services that meet the needs of maintenance shops as a business that can leverage the strengths we have developed up until now and that is scalable for the future. We saw many opportunities in the automobile maintenance industry, a market worth more than 5 trillion yen annually and facing a variety of challenges in a changing market environment.

#### Strengths of the sales network and partnerships

Over the years, the Automotive Components Group has developed a commercial distribution network for the aftermarket, in which products are wholesaled to parts distributors in a wide area and from there sold to maintenance shops through parts dealers in various regions, who are secondary wholesalers. The distributors' association, which has about 400 parts dealers as members, is able to approach about 80% of the more than 70,000 maintenance shops in Japan. The breadth of this network and the partnerships with local parts dealers are two major strengths that no other company has.

In the start-up phase survey, we visited dozens of maintenance shops through the introduction of parts dealers affiliated with the

distributors' association, and conducted a questionnaire survey of approximately 1,000 users and 200 maintenance shops. The survey results highlighted issues that maintenance shops and users were facing, and we came up with the idea of digital service solutions that would connect both parties with keywords such as peace of mind, trust, and satisfaction.

The development of Doctor Link was our first challenge in creating a service as a company that had specialized in manufacturing. We had to establish an operation system groping our way, and there were several times when we ran into obstacles. Although it also took time to establish technologies to provide solid value, such as linking dedicated devices and smartphone apps, we were able to successfully launch the service in November 2021.

#### Forming a large business group with digital services

To expand sales of Doctor Link to maintenance shops, we are currently holding seminars for parts distributors in a wide area and local parts dealers to communicate the value of introducing the service, and are actively developing a website to demonstrate the service and its usage in an easy-to-understand manner to increase awareness among users and maintenance shops. Through such sales and marketing activities, we will incorporate market feedback and continue to add functions and make improvements to meet the needs of our customers.

In the future, we would like to introduce Doctor Link to 6,000 maintenance shops. However, we do not intend to specialize in this area, but rather to expand the range of our services through future development. We are also looking to create new value by utilizing the data obtained from vehicles with Doctor Link, and our goal is to form a large business group with these services.

In addition, we have established a network of sales channels to local maintenance shops in regions across the world, and we would like to consider the possibility of providing digital services including Doctor Link in the same way as we do in Japan in these regions.



## Examples of new business activities (2)

### Developing new markets by considering the ways to provide value

Land-based aquaculture technology “water quality sensing”

**Seiji Oya**

Utility Business Dept.,  
Business Creation Company

#### Application of exhaust gas detection technology to shrimp aquaculture

We have developed a water quality monitoring system utilizing water quality sensing technology for land-based whiteleg shrimp aquaculture facilities and began marketing the system in November 2021. This system utilizes the technology (structural design, reliability design, etc.) cultivated through the development of exhaust gas oxygen sensors, one of our core businesses, to automatically measure nitrogenous components such as ammonia, which is harmful to marine products in seawater, and visualize water quality information.

Land-based aquaculture with qualified management of water quality enables the provision of safe and secure marine products without the use of chemicals, and contributes to addressing social challenges such as the depletion of marine resources due to overfishing and the resulting tight supply and demand of protein sources, as well as environmental pollution caused by offshore aquaculture. In particular, Japan relies on imports for more than 90% (220,000 tons) of its annual shrimp consumption, and the widespread use of land-based aquaculture is expected to eliminate future supply risks.

#### Learning aquaculture know-how and restructuring the value proposition

Sensing does not lead to much value by itself. We believe that the sensing technology we provide should include proposals for what to do and what to realize with the sensed information.

The water quality monitoring system developed this time automates ammonia detection, which is conventionally done manually in shrimp aquaculture, and visualizes water quality data. Although the value of this system is well understood by operators with experience in shrimp aquaculture, there are very few such existing operators. For this reason, we target operators who are considering new entry into land-based shrimp aquaculture. However, because they do not know how to utilize this system and how to improve the efficiency of their farming, it does not lead to value provision to our customers. Having gained an understanding of this situation through interviews with the target audience, we are working to rebuild our value proposition by starting with learning aquaculture know-how ourselves in order to be able to make post-sensing proposals regarding initiatives related to water quality monitoring systems.

As part of these efforts, we are currently developing the NTK Shrimp Aquaculture System, which combines a water quality

monitoring system, an automatic feeding system, and an automatic water change system. Of the three major elements of aquaculture operations, namely, feeding, water change, and cleaning, the new system will save labor in feeding and water change. Going forward, we will accumulate more aquaculture know-how and reflect it in the development of the system to further reduce labor, thereby raising the value of the system to a level where even newcomers to the shrimp aquaculture industry can farm shrimp after receiving short-term training.

We hope to promote similar operational reforms for primary industry-type aquaculture businesses, which lag behind in quantification, labor saving, and systemization, by leveraging the assets we have cultivated in the secondary industry, thereby transforming them into highly sustainable businesses. We recognize that this is a solution to a problem that only we can solve with our deep experience in the secondary industry and that it is also our social responsibility.

#### Technology with potential for expanding various possibilities

As a new development in water quality sensing, we are currently developing a system that not only detects nitrogenous components such as ammonia, but also measures other parameters to determine the state of shrimp growth and link this to a labor-saving system to further improve the efficiency of aquaculture operations.

In addition, we have an internal team that is developing a seawater filtration system, and if a filtration system for aquaculture is realized there, it will be possible to construct a fully circulating land-based aquaculture system. This would make it possible to conduct aquaculture business not only in coastal areas where seawater is abundant, but also in inland areas, making the U.S. market, which is the world's second largest shrimp consumer but where aquaculture has not been promoted, a future target.

Another perspective is to focus on nutrients contained in wastewater from shrimp aquaculture systems. If these nutrients are used as fertilizer for hydroponic cultivation of vegetables, the clean water from the system can be circulated for shrimp aquaculture again.

In this way, water quality sensing has a wide range of potential, and we believe that by firmly establishing a scheme for providing value, we can expect significant growth.



## Progress of New Business Creation and Future Prospects

### Fuel cell business strategy

Among the new business pillars that we are focusing on, the fuel cell business is currently the largest in scale and is expected to contribute to a sustainable society. Solid oxide fuel cells (SOFCs), which have particularly high power generation efficiency and can efficiently use a wide variety of fuels, are expected to see further diffusion and growth in Japan and overseas in response to the accelerating trend toward decarbonization.

MORIMURA SOFC TECHNOLOGY Co., Ltd.\*<sup>1</sup> and CECYLLS Co., Ltd.\*<sup>2</sup> have launched a business strategy for cell stacks that are key components of SOFCs to develop a full lineup of SOFCs for residential, commercial, and industrial use in the fuel cell market.

\*1: Joint venture by five companies: Noritake Co., Limited, TOTO Ltd., NGK Insulators, Ltd., Morimura Bros., Inc., and NGK SPARK PLUG

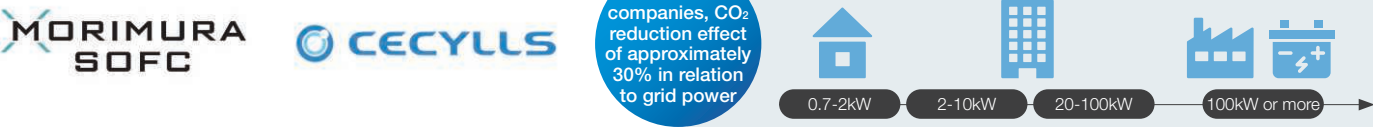
\*2: A joint venture by Mitsubishi Heavy Industries, Ltd. and NGK SPARK PLUG

The development of SOFCs for residential and commercial use targeting the Japanese market is pursuing smaller, lighter, and cheaper products by leveraging their ultra-high efficiency potential and high degree of design freedom. On the other hand, industrial-use SOFCs are targeted at the North American, European, and Korean markets, where we plan to demonstrate our superiority in life-cycle costs, such as long life and high heat utilization.

In March 2021, MORIMURA SOFC TECHNOLOGY Co., Ltd. launched mass production of SOFCs for commercial and industrial use that realized simultaneously reducing size and weight and high power density and achieved lower cost. Going forward, we plan to expand the adoption of SOFC in various forms, including for residential use. Meanwhile, CECYLLS Co., Ltd. started mass production of SOFC cell stacks for high-power fuel cell systems in August 2021.

The Group will continue to develop next-generation stacks and at the same time, will consider investments for business expansion to prepare for the full-scale orders expected in the future. The fuel cell market is expected to grow to 200 billion yen in the fiscal year ending March 31, 2030, and the Group intends to acquire sales of 45 billion yen in this market.

#### 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. In the first fiscal year, we made small investments in three venture companies that fit our strategy out of the many venture companies listed through sourcing. We will continue to 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"> <li>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</li> <li>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</li> <li>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</li> </ul>
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"> <li>To acquire a business, technology, intellectual property, customer base, or human resources that matches, complements, and expands our portfolio of new business pillars</li> <li>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</li> <li>To expand our business portfolio and achieve rapid commercialization in business domains with a high degree of affinity with our projects</li> </ul>

## 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.

#### Action Guidelines

- 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”

One of the major strategic pillars of our Long-term Management Plan is the transformation of our business portfolio. We are promoting various measures for the tasks, positioning intellectual property activities as an important element in this management strategy.

1. Protect new technologies and inventions from the initial stage of development 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.

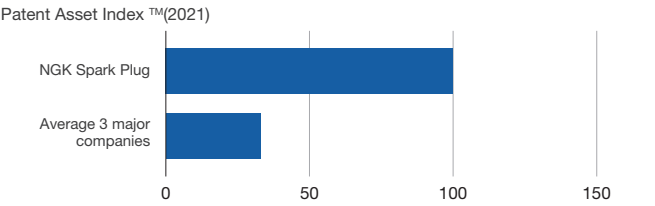
\*Current businesses are related to the Automotive Components Group, growth businesses include business related to components for semiconductor production equipment and respiratory-related business, and new business pillars are related to the focus areas of Smart Health, Utilities, and Smart Mobility, as well as fuel cell business.

### Intellectual property activities by business field

#### Current businesses

In our current businesses, which are the pillars of our earnings, we aim to secure a competitive advantage through IP mix activities that protect our technologies and know-how in multiple aspects, and continue to contribute to maximizing profitability.

#### Patent asset index for spark plugs (comparison with competitors with our company as 100)



Source: Created from LexisNexis PatentSight  
The Patent Asset Index of LexisNexis® PatentSight® is used for the evaluation. The Patent Asset Index is an index that comprehensively takes into account the technology perspective, market perspective, and number of patent applications and rights with valid legal status (pending applications and patents that have been granted).

#### Growth businesses

Based on the intellectual property activities of current businesses, we aim to support business execution and growth from an intellectual property perspective by building a patent network and conducting clearance activities to investigate infringement of third-party intellectual property rights.

#### New businesses

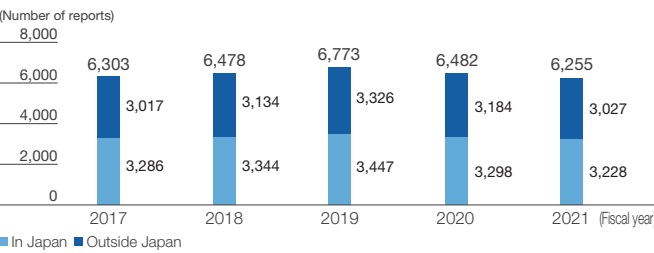
The number of patent application publications in new business areas has increased over the past three years. We are also pursuing patent applications overseas in anticipation of future business development. In the future, we will promote efforts to shorten the business creation cycle by utilizing an IP landscape\* as one of the materials for consideration at the initial stage of business creation, together with the Business Creation Company, which is in charge of creation of new business pillars.

\*IP landscape: Analysis that incorporates IP information into management and business information when formulating management and business strategies, and sharing the results (including a bird's-eye view of the current situation and future prospects) with management and business managers.

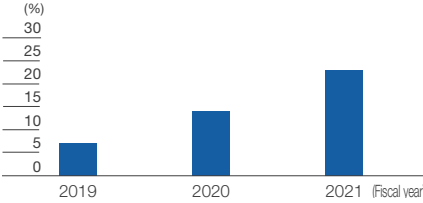
#### Examples of intellectual property mix activities

- Defense with a superiority patent portfolio
- Brand protection by detecting and eliminating counterfeit products
- Defense through know-how secrecy

#### Number of patents held



#### Trends in the ratio of the number of published patent applications related to new business pillars in the past three years (Total is 100%)







# 3

## Foundation for Value Creation

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## Message from the Sustainability Officer



We will promote activities to solve social issues while pursuing “transformation beyond the current way”

**Hiroyuki Maeda**  
Executive Officer

### Transformation of sustainability activities beyond the current way

Sustainability management, which aims at sustainable development of companies and enhancement of social value, has been attracting attention in recent years. Taking the environmental field as an example, as awareness of the global warming crisis grows around the world, the Japanese government declared in October 2020 that the country will achieve carbon neutrality by 2050, and Japan is now steering toward a full-fledged carbon-neutral society. In April 2022, I assumed the position of Sustainability Officer, and I am keenly aware that we are facing the tidal wave of major change.

Under these circumstances, if our activities do not go beyond the current framework, we will remain far from the goal of achieving our objectives. Because we are committed to “change drastically beyond the current way,” we will continue to pursue “transformation beyond the current way” in our sustainability activities as well.

### Activities to resolve ESG issues under the Long-term Management Plan

One of the “transformations beyond the current way” is a change in the way the CSR and Sustainability Committee operates. Previously, the committee was chaired by an internal director, but from FY2022, it has been chaired by an outside director and will engage in lively discussions, sometimes involving external experts.

The major approach of ESG-related activities is expressed in the eight issues identified as priority challenges in the 2030 Long-term Management Plan “NITTOKU BX.” One of these challenges, responding to climate change, has been addressed by setting a target of reducing CO<sub>2</sub> emissions by 30% from the 2018 level by 2030. In addition, with regard to providing environmentally friendly products, we are focusing on the diffusion and expansion of environmentally friendly products that contribute to the realization of a zero-emission and recycling-oriented society.

Concerning corporate governance, we have transitioned to a company with the Audit and Supervisory Committee to further speed up management decision-making and execution.

In addition to the eight issues mentioned above, we have also established a working group to address human rights issues and have started activities since FY2022 to ensure that human rights are taken into consideration throughout the entire supply chain of the Group.

### Group-wide initiatives to reduce CO<sub>2</sub> emissions

As for the reduction of CO<sub>2</sub> emissions mentioned above, it is important to make it a company-wide effort in the course of our manufacturing activities. Last year, we launched an internal carbon pricing system and an internal environmental fund in order to create a situation in which each and every employee, including those in the business departments that account for a large percentage of our CO<sub>2</sub> emissions, is involved in reducing CO<sub>2</sub> emissions as a personal concern.

Under the internal carbon pricing system, when a business department (company) introduces equipment, it converts the CO<sub>2</sub> emitted during the use of the equipment into a monetary value and adds it to the equipment price when applying for the equipment. A carbon tax of 10,000 yen per ton of CO<sub>2</sub> emitted is also imposed on CO<sub>2</sub> emitted from within the company, and an internal environmental fund that accumulates the tax collected is used to subsidize investment in environmentally friendly equipment.

These systems were discussed and structured by the Sustainability Transformation (SX) Project, which includes directors and key business department personnel. Furthermore, the Sustainability Strategy Dept. has held dozens of briefing sessions and repeatedly explained the systems to promote understanding among managers and even staff in the field. Through this process, the importance of the initiatives has been understood by the business departments, and recently I feel that the mindset has changed to one of trying to use the fund's money

to promote environmentally friendly capital investment at as low a cost as possible.

### Certifying environmentally friendly products and promoting them both internally and externally

Another pillar of our activities in the environmental field is the manufacture and dissemination of environmentally friendly products. We have been striving to improve environmental performance by developing products with enhanced functions to reduce exhaust gas emissions and improve fuel efficiency. In FY2021, we launched a system to certify products with particularly high environmental performance from the three perspectives of energy efficiency, resource conservation, and environmentally hazardous substances as Nittoku Green Products. In the first year of the project, eight products were certified, including precious metal plugs and wide range oxygen sensors. Through the operation of this system, we will make information on environmentally friendly products visible to the public, first of all, to promote awareness within the company and encourage development with a higher level of environmental awareness, and also externally, to make our stakeholders aware of our environmental contribution.

### Envisioning a service that contributes to the realization of carbon neutrality

Furthermore, we envision carbon neutral as a service as a way to contribute to the reduction of CO<sub>2</sub> emissions in the region. This is a cyclical system that collects CO<sub>2</sub> emitted from factories and other sources and reacts it with hydrogen to produce methane gas, which is used as a power source to drive machinery. This system is provided as a service by integrating it with our specialty products and technologies. Although similar systems have been proposed in the gas and electric power industries, they require very large facilities. We aim to provide a relatively small, highly efficient service in a price range that is affordable to businesses that are not so large.

In order to realize this service, it is necessary to incorporate a variety of elemental technologies, and we are looking to collaborate with other companies. We will create the Hydrogen Forest in Komaki City, Aichi Prefecture, as a demonstration site for a recycling-based system, and accelerate our efforts toward its practical application.

### Creating a workplace where diverse human resources can thrive and play active roles

In order to “change drastically and transform beyond the current way” as mentioned at the beginning, we must also change our human resource portfolio. What we are looking for now is people who can bring about transformation. Although we may hire such people from outside the company, we believe it is fundamental to develop them internally.

I also believe that change and transformation can only occur when human resources with diverse individualities coexist. One of our priority issues is to promote the recruitment of women, foreign nationals, and career professionals, and recently we have been focusing on the development of female managers in particular. In the Raise UP Program that we launched in 2019, several

executives serve as mentors to support participants. In fact, I am one of the mentors, and I took on the role of mentor because I wanted female managers to always have a higher perspective. I actually feel that the awareness of the participants has improved as a result of the program.

Furthermore, we invite outside lecturers to hold annual lectures for executives, managers, and supervisors, aiming to give employees, regardless of gender, a diverse range of perspectives. Because many of our employees have limited opportunities to interact with people outside the company, we provide an opportunity for them to learn how society is advancing today by having lecturers introduce forward-looking examples.

### The Group will work together in order to achieve the transformation

We conducted another employee satisfaction survey in FY2021, which resulted in a 46.6% satisfaction rate. This result indicates that there is still a gap in awareness between the management team and staff in the field.

We have a history of focusing on automotive-related spark plugs and sensors as our main products, and we are currently trying to transform our portfolio in anticipation of the future peaking out of the internal combustion engine market. However, even among our employees there is a lack of awareness of how we are working toward this goal. We need to make our employees more aware of our new business activities and their significance. Also, as was mentioned earlier, I believe that job satisfaction will improve if there is greater recognition of the fact that our products contribute to solving environmental issues.

However, we will not be able to move in the right direction if it is only something being promoted by senior management. It is essential that top management communicates management policies firmly, that managers deepen their understanding, and that managers convey the same thoughts and feelings as top management to their subordinates.

Recently, due to work style reforms and the response to the COVID-19 pandemic, people are spending less time working in the office. In order to eliminate communication loss arising from such circumstances, I encourage supervisors and subordinates to make time for dialogue and have one-on-one meetings.

### We are committed to solving social issues and demonstrating the value of our existence

Since its establishment in 1936, the NGK SPARK PLUG Group has promoted its business activities while contributing to society by 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).

Whether it is climate change or the depletion of oil resources, these issues have been pointed out for a long time, but recently they have emerged as issues that can impact the entire planet. Rather than standing still and turning our eyes away from these issues, we need to address them with sincerity, transform our own business models, and respond to them by involving other companies in collaboration with us. In pursuing such activities, we intend to firmly demonstrate the value of our existence.



# CSR and Sustainability Committee

## Sustainability activities will be pursued with the strengths of Nittoku at the core.

In June 2022, the General Meeting of Shareholders approved a change in the design of our organization to clarify the separation of management and execution, delegate authority, and strengthen governance. As a result, the CSR and Sustainability Committee will be positioned as an advisory committee to the Board of Directors. Director Takakura, the newly appointed chair of the committee, shared her thoughts.



**Chiharu Takakura**  
Outside Director, Chair of the CSR and Sustainability Committee

### Reducing negative impact to zero and the future beyond

Recently, many companies have come to share a common understanding that solving the various problems facing society, such as the risk of climate change and labor human rights issues, is one of the challenges facing companies. Many of the activities based on this common understanding can be described as activities to reduce the negative impact on society caused by corporate activities to zero. Even more recently, there has been a debate, especially in Europe, about how to recover from negative impacts after they have been reduced to zero.

I believe that we have reached a stage where we should take a long-term perspective on our overall sustainability activities, including the environment.

### Mission and vision of the CSR and Sustainability Committee

Based on the mission and vision of the Medium-term Management Plan, this committee will consider and formulate a new mission and vision that adds a sustainability perspective to our activities.

In our deliberations, we first took the viewpoint that without a sustainability perspective, it will be difficult for both our business and organization to survive in the society of the future, and we looked back at our core competencies and management philosophy, and reaffirmed what we have valued, what is excellent, and what is good. With these elements at the core, we discuss what we can do to solve social issues in a rapidly changing society. The committee will fully discuss these issues and formulate measures in response after submitting them to the Board of Directors.

### Fostering understanding and empathy for sustainability and making it a personal concern

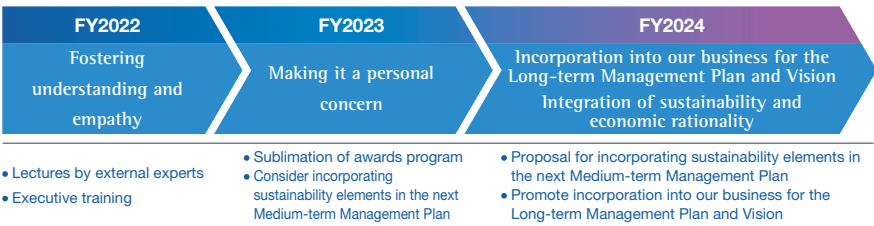
In order to accelerate our sustainability activities, this committee is considering the CSR and Sustainability Committee Medium-term Plan, an action plan for the next three years corresponding to the period covered by the Medium-term Management Plan.

In the first year, we will focus on fostering understanding and empathy for sustainability, mainly within the company. Based on this, from the second year onward, each and every employee will voluntarily link sustainability to their work. This activity is making sustainability a personal concern. Based on these results, in the third year, we will integrate sustainability into our management plan and vision.

### Transformation is possible only in an organization with a heightened sense of self-affirmation

For the Company, integrating sustainability into our management and business activities is a major transformation. The slogan of our Medium-term Management Plan is “Break to change. Change to create.” However, some of our stakeholders may be concerned that the good things that we had up to now may also be destroyed. It can also be said that because of the Company’s successful experience, there is reluctance to take on new challenges because of a fixation on best practices.

This process of transformation is not easy. What is important is to clearly identify the parts that can be destroyed and the parts that should be left behind, and to take on the challenges of the future. The parts that should be left behind are our core competence and management philosophy, the pride and sincerity of our employees, and the source of our desire to contribute to society through our work. I believe that transformation can be brought about only when we recognize these strengths of Nittoku anew and enhance our sense of self-esteem as an organization.



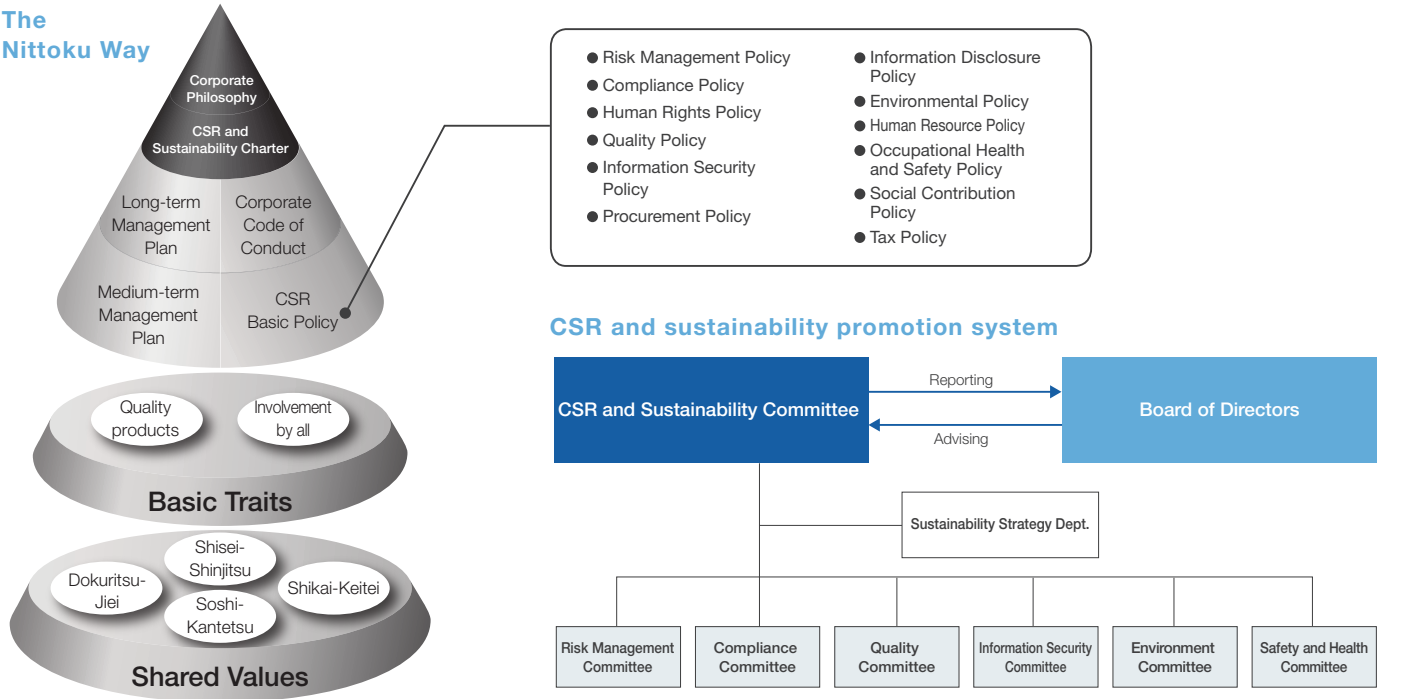
We will continue to pursue sustainability activities from a medium- to long-term perspective, while firmly protecting what should be valued. We hope that you, our stakeholders, will have high expectations for our future sustainability activities and support us in our efforts.

### CSR and Sustainability Charter

- We contribute to developing a sustainable society, thereby improving our corporate value.
- We build relations of trust with our stakeholders while making highly transparent decisions and actions.
  - We co-create and provide new value to help solve social issues.

We are committed to delivering new value to people all over the world and contributing to society, as expressed in our corporate philosophy. This commitment is associated with our concept of sustainability, which is to help solve social issues through business activities.

In April 2020, we established the CSR and Sustainability Charter to present this concept more clearly and to communicate it widely both internally and externally. At the same time, we renamed our CSR Policy, which outlines the Group’s action guidelines for CSR, to the CSR Basic Policy.



### Committee structure

The newly formed CSR and Sustainability Committee is positioned as an advisory committee to the Board of Directors and has two functions: to report and make recommendations in response to the Board of Directors’ advising, and to supervise each expert committee.

In discussions, external experts will be invited to enhance the knowledge and perspective of the committee, the management team, and the Group as a whole, and discussions will be held to promote sustainability management with a long-term perspective.





## Review of Materiality Activities

We have identified eight priority issues (materiality) to be addressed in order to realize a sustainable society. [📄 → See P.15](#)

For these priority issues, we have defined major initiatives, targets, and outputs, and are carrying out activities from a medium- to long-term perspective. For FY2021, we have made progress as follows. We will continue to address these issues and contribute to the realization of a sustainable society.

### Environment ▶ Responding to climate change

Major Initiatives	Reduction of CO <sub>2</sub> emissions	Goals and Outputs	CO <sub>2</sub> emissions: 30% reduction from the FY2018 level by FY2030
Progress in FY2021	Reduced by 8.87% (265,100 tons)		
Specific Activities	<ul style="list-style-type: none"><li>• We have introduced internal carbon pricing and an internal environmental fund as measures to promote the reduction of CO<sub>2</sub> emissions.</li><li>• Each company set its own targets and promoted CO<sub>2</sub> reduction activities.</li><li>• Obtained SBT certification for Scope 1, 2, and 3 reduction targets.</li></ul>		

### Environment ▶ Providing environmentally friendly products

Major Initiatives	Dissemination and expansion of environmentally friendly products	Goals and Outputs	<ul style="list-style-type: none"><li>① Sales ratio of precious metal plugs: at least 50%</li><li>② Sales ratio of wide range oxygen sensors: at least 50%</li></ul>
Progress in FY2021	<ul style="list-style-type: none"><li>① 40%</li><li>② 37%</li></ul>		
Specific Activities	<ul style="list-style-type: none"><li>• Launched the environment-friendly product certification system. Products that meet the criteria will be certified as Nittoku Green Products. Eight products were certified in FY2021.</li><li>• Certified spark plugs with a precious metal (iridium alloy) center and ZFAS®-U3 wide range oxygen sensor as Nittoku Green Products.</li></ul>		

### Society ▶ Development of technologies, products, and businesses contributing to the resolution of social issues

Major Initiatives	<ul style="list-style-type: none"><li>① Development of fuel cells</li><li>② Development of lead-free piezoelectric materials</li><li>③ Development of sensing IoT business</li><li>④ Carbon Neutral as a service</li></ul>	Goals and Outputs	<ul style="list-style-type: none"><li>① Dissemination of high-efficiency distributed power supply systems with an eye on the use of CO<sub>2</sub>-free hydrogen fuel</li><li>② Promoting substitution for lead-based piezoelectric materials</li><li>③ Improving operational efficiency through automation, optimization and generalization</li><li>④ Establishing and introducing a synthetic fuel (methane) production system</li></ul>
Progress in FY2021	<ul style="list-style-type: none"><li>① Established a production system for full-scale mass production of SOFC cell stacks</li><li>② Continued to introduce and propose lead-free piezoelectric materials</li><li>③ Established a showroom for a water quality management system for land-based shrimp aquaculture, and continued to introduce and propose the system</li><li>④ Completed feasibility verification of CO<sub>2</sub> collection and hydrogen production technology</li></ul>		
Specific Activities	<ul style="list-style-type: none"><li>① • In order to improve the efficiency of production activities through integrated production from cells to stacks, the functions of the cell production process at the plant in Ise City, Mie Prefecture, will be consolidated to the plant in Komaki City, Aichi Prefecture, where the stack production process is located. The base consolidation began in FY2022, and operation will start in FY2023.</li><li>• Certified HPDS-6 series planar-type fuel cell E-specifications stacks as Nittoku Green Product.</li><li>② • Exhibited and introduced lead-free piezoelectric materials at the Sustainable Materials Expo (held in December 2021).</li><li>• Certified lead-free piezoelectric ceramics as a Nittoku Green Product.</li><li>③ • Established a showroom and laboratory for a water quality management system for land-based shrimp aquaculture in Komaki City, Aichi Prefecture.</li><li>• Certified the water quality management system as a Nittoku Green Product.</li><li>④ —</li></ul>		

### Society ▶ Global human resources management

Major Initiatives	<ul style="list-style-type: none"><li>① Recruitment of female, foreign national and mid-career employees</li><li>② Development of new personnel system</li></ul>	Goals and Outputs	<ul style="list-style-type: none"><li>① Percentage of female/foreign national/mid-career employees in managerial posts: at least 25%</li><li>② Improved results of employee satisfaction surveys</li></ul>
Progress in FY2021	<ul style="list-style-type: none"><li>① 17.0%</li><li>② Satisfaction level: 46.6% (response rate: 87.6%)</li></ul>		
Specific Activities	<ul style="list-style-type: none"><li>① • Implemented the Raise UP Program (selective female manager promotion training).</li><li>• Held a lecture for those in managerial positions on the theme of diversity to promote awareness-raising and education among managerial personnel.</li><li>② • Held a briefing session on the new personnel system, and it was attended by all applicable employees.</li><li>• Held a briefing session for officers and general managers in order to utilize the results of the employee satisfaction surveys for workplace improvement.</li></ul>		

### Governance ▶ Corporate governance

Major Initiatives	<ul style="list-style-type: none"><li>① Increasing the percentage of female and foreign national directors</li><li>② Increasing the percentage of outside directors</li></ul>	Goals and Outputs	<ul style="list-style-type: none"><li>① Percentage of female and foreign national directors: at least 30%</li><li>② Percentage of outside directors: at least one-third</li></ul>
Progress in FY2021	<ul style="list-style-type: none"><li>① 45% (5 out of 11 directors)*</li><li>② 64% (7 out of 11 directors)*</li></ul>		
Specific Activities	<ul style="list-style-type: none"><li>① In order to achieve sustained growth and enhance corporate value over the medium to long term, the Board of Directors continues to be composed of a diverse group of people with different backgrounds in terms of expertise and experience.</li><li>② In order to strengthen the supervisory function of the Board of Directors and further ensure transparency in decision-making, the Company has transitioned to a company with an Audit and Supervisory Committee, and the majority of the Board of Directors is composed of outside directors.</li></ul>		

\*As of June 24, 2022

### Governance ▶ Risk management

Major Initiatives	Management of signs of serious incidents and prevention of their occurrence	Goals and Outputs	Establishing a risk management system that contributes to management decision making
Progress in FY2021	The risk map was updated by the Risk Management Committee		
Specific Activities	<ul style="list-style-type: none"><li>• The Risk Management Committee met twice and updated the risk map.</li><li>• Risks that have been addressed were excluded from the priority risks in FY2021, and risks newly determined to be of high priority were added to the priority risks in FY2022.</li></ul>		

### Governance ▶ Compliance

Major Initiatives	Awareness surveys and continuous education for officers and employees	Goals and Outputs	Conducting compliance questionnaire surveys and disclosing the results
Progress in FY2021	Conducted compliance questionnaire surveys		
Specific Activities	<ul style="list-style-type: none"><li>• Conducted compliance questionnaire surveys. Approximately 8,800 people were surveyed, for a response rate of 83%.</li><li>• We plan to identify divisions with issues based on the questionnaire results and conduct interviews with them.</li></ul>		

### Governance ▶ Information security

Major Initiatives	Maintenance and enhancement of the incident response organization and establishment of a prevention system	Goals and Outputs	Establishing an information security management system
Progress in FY2021	Group companies in the U.S. and China obtained the TISAX certification (in Japan, the headquarters, related plants, and Group companies have already obtained the certification in FY2020).		
Specific Activities	<ul style="list-style-type: none"><li>• The Information Security Committee met twice.</li><li>• Issued “CSIRT communication” to inform and educate employees about information security.</li></ul>		



# 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 CO<sub>2</sub> 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.

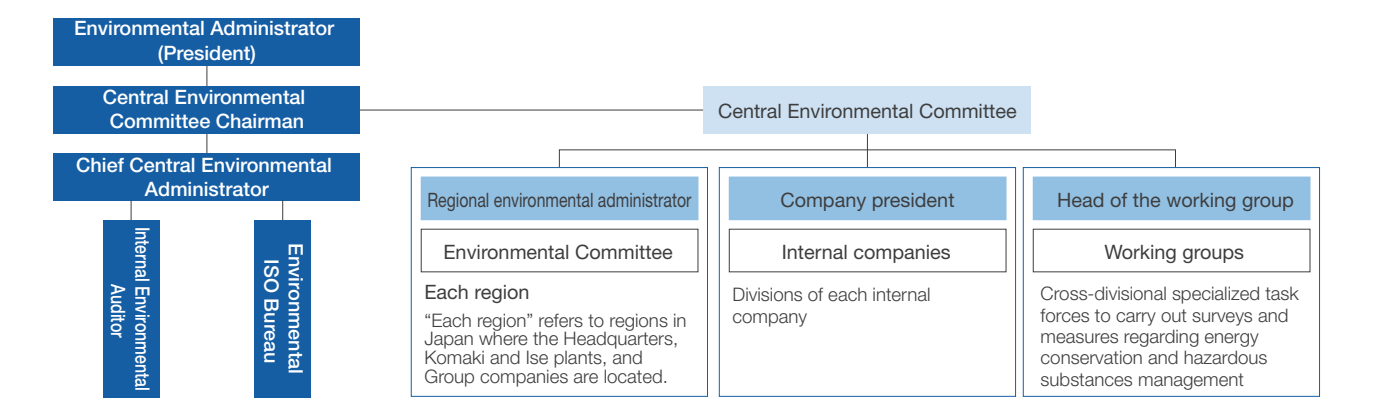
### Promotion system

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.

### Environmental activity promotion organizations



### 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.

⇒ P.21 Eco Vision

# 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.

Regarding the approach of management concerning climate change, the CSR and Sustainability Committee\* (chaired by an outside director and meeting four times a year), an advisory body to the Board of Directors, compiles recommendations based on climate-related risks and opportunities and reports to the Board of Directors, which then makes decisions on these recommendations.

In addition, the sustainability department reports to the CSR and Sustainability Committee on the progress of priority issues, including the response to climate change, which is then reviewed and monitored by the committee. For detailed activities including reduction of CO<sub>2</sub> emissions, the Environmental Committee (twice a year) 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).

The CSR and Sustainability Committee is responsible for supervising the Environmental Committee, Risk Management Committee, and other specialized committees, and information on progress in reduction of CO<sub>2</sub> emissions and risk assessment is also shared with the CSR and Sustainability Committee. In addition, important decisions made by each specialized committee are reported to the Board of Directors through the Corporate Management Committee, which deliberates, decides, and supervises important matters in the execution of business operations.

\*In June 2022, we transitioned to a company with an Audit and Supervisory Committee and positioned the CSR and Sustainability Committee as an advisory body to the Board of Directors.

⇒ P.43 Corporate governance system chart

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): “CO<sub>2</sub> 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, the sustainability department drafted the following risks according to the TCFD risk categories and discussed them with the director in charge of the sustainability department and related departments: 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 CO<sub>2</sub> 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.

Responding to Climate Change

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.			●			
	Markets	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 <sub>2</sub> 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.

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 the transformation of our business portfolio (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 Group	Spark plugs, Glow plugs, Sensors	● Under a 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 387.8 billion yen (FY2021)	450 billion yen (FY2029)
Fuel cell business	Fuel cells	● 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 106 billion yen (FY2021)	300 billion yen (FY2029)
Other businesses	SPE, packages, oxygen concentrators, cutting tools, bearing balls, etc.	● Under either a 2°C or 4°C scenario, the impact on risks and opportunities is small.		

- For the Automotive Components Group, under the 2°C scenario, sales are expected to decline in the future due to stricter regulations. Therefore, the transformation of our business portfolio 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.

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. The risks and opportunities related to climate change are also being addressed by closely monitoring regulatory trends and assessing their respective impacts on business.

The Risk Management Committee evaluates risks from a company-wide perspective by analyzing their impact, likelihood of occurrence, and status of countermeasures to determine whether or not they will have a significant impact on our business activities. Risks evaluated as significant are designated as priority risks and the departments in charge of the risks are selected, and the Risk Management Committee confirms the status of mitigation activities.

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

⇒ P.49 Risk Management

Metrics and targets

In the 2030 Long-term Management Plan “NITTOKU BX,” which was announced in May 2020, our group has set the goal: “CO<sub>2</sub> emissions: 30% reduction from the FY2018 level by FY2030.”

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.

In order to further promote CO<sub>2</sub> emission reductions toward achieving these targets, we have set the CO<sub>2</sub> emission reduction rate as one of the evaluation indicators in the performance-linked stock remuneration system for directors (excluding directors who are Audit and Supervisory Committee Members and outside directors) and corporate officers (excluding employment-type corporate officers). In addition, the Group has introduced internal carbon pricing (ICP) to promote Group-wide efforts to reduce CO<sub>2</sub> emissions. We collect 10,000 yen per ton of CO<sub>2</sub> emissions from emission departments and use the collected amount as an internal environmental fund to support investment and infrastructure development for decarbonization.

Furthermore, we are also working to reduce CO<sub>2</sub> emissions throughout the supply chain. We ask our business partners (suppliers) to set a target for reducing CO<sub>2</sub> emissions and work toward achieving the target. We also offer support for them as deemed appropriate.

CO<sub>2</sub> reduction targets and results

Items	Target	Results
Scope 1 and 2	30% reduction from the FY2018 level by FY2030	Reduced by 8.87% from the FY2018 level in FY2021 [Emissions: 265,100 tons]
Scope 3 Category 1 Purchased goods and services Part of Category 4 Transportation and delivery (upstream) Category 11 Use of sold goods	30% reduction from the FY2018 level by FY2030	Increased by 1.45% from the FY2018 level in FY2021 [Emissions: 11.23 million tons]

\*The above CO<sub>2</sub> reduction targets were certified as well-below 2°C (WB2°C) targets by the SBT Initiative in June 2022 as science-based targets (SBT).



# Human Capital 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, making the most of our self-disciplined creative human resources and striving to promote the further development of our group as a whole.

### Action Guidelines

- We will develop human resources who have ambitions and are capable of taking action to change and transform (self-disciplined creative human resources), and create an environment in which they can play an active role.
- We will foster a corporate culture in which human resources with diverse personalities can demonstrate their abilities, and promote the placement of the right people in the right roles.

### Approach to human capital management

In our Long-term Management Plan “NITTOKU BX,” we have set “Beyond ceramics, eXceeding imagination” as our vision for 2040. The core message of this vision is to be a company that coexists with a diverse range of human resources with aspirations. We are not only concerned with “What ceramics can do,” but also with the acquisition and development of diverse and autonomous employees as a management strategy to take on challenges beyond the realm of ceramics and beyond the world and our own imagination.

Specifically, in January 2021, we announced the Work Style Reform Declaration to promote diverse work styles, and in April of the same year, we introduced an in-house company system and spun off some businesses. In addition to clarifying the responsibilities and authority of each business and individual, we have created an environment that facilitates the individuality and characteristics of each business. Some companies are operating a system to identify the individuality and abilities of employees and match them with jobs in their fields of interest. In addition, we continue to focus on the development of the younger generation through the HAGI Program for developing the next generation of managerial human resources and the Raise UP Program, which promotes the advancement of women. Looking outside the company, we are actively promoting open innovation such as the Venture Lab\*, which is intended to connect with industry, government, academia, or overseas advanced technologies and their groups.

In terms of human resource diversity, the Group has set numerical targets of 25% women, foreign nationals, and career hires in managerial posts and 30% or more women and foreign nationals on the Board of Directors by 2030. At the end of FY2021, the former is 17% and the latter is 18%. These indicators are not set with the intention of focusing solely on gender or nationality. We are committed as a management team to making efforts to create an organization that embraces and makes the most of the colorful individuality and characteristics of our employees.

Furthermore, in April 2022, the personnel system has undergone a major change. In order to accelerate the creation of self-disciplined creative human resources who can realize the themes of the Medium-term Management Plan, “Break to change” and “Change to create,” we have incorporated the Group Human Resource Policy, which clearly defines the direction of human resource policies that the entire Group will pursue, and have created a highly fair personnel system that rewards achievements and challenges regardless of age or other backgrounds.

Also, we promote health and productivity management, believing that it is essential for the sustainable development of the Group that employees work in good physical and mental health. In addition to our annual employee satisfaction survey, we have introduced a quantitative indicator as a tool to visualize engagement that can be checked by line managers, along with the one-on-one meeting between superiors and subordinates, which have been introduced on a trial basis in FY2019. We have also introduced GOOD MORNING COLOR, developed by ignArt, a new company launched in 2020, and are actively working to improve workers' self-care and workplace communication.

In order to combine different “knowledge” to achieve a future that is beyond the current way, the Nittoku Group will continue to work to promote diversity, equity, and inclusion as its management strategy.

\*Bases for creation of new business pillars in Silicon Valley, Tokyo, and Germany

## Human Resources Strategy

Our human resources strategy focuses on how to develop and acquire the human resources needed to achieve the vision of our Long-term Management Plan “NITTOKU BX” and our Medium-term Management Plan. We have defined the image of human resources we seek and are advancing a human resources strategy to bridge the gap between those human resources and current human resources.

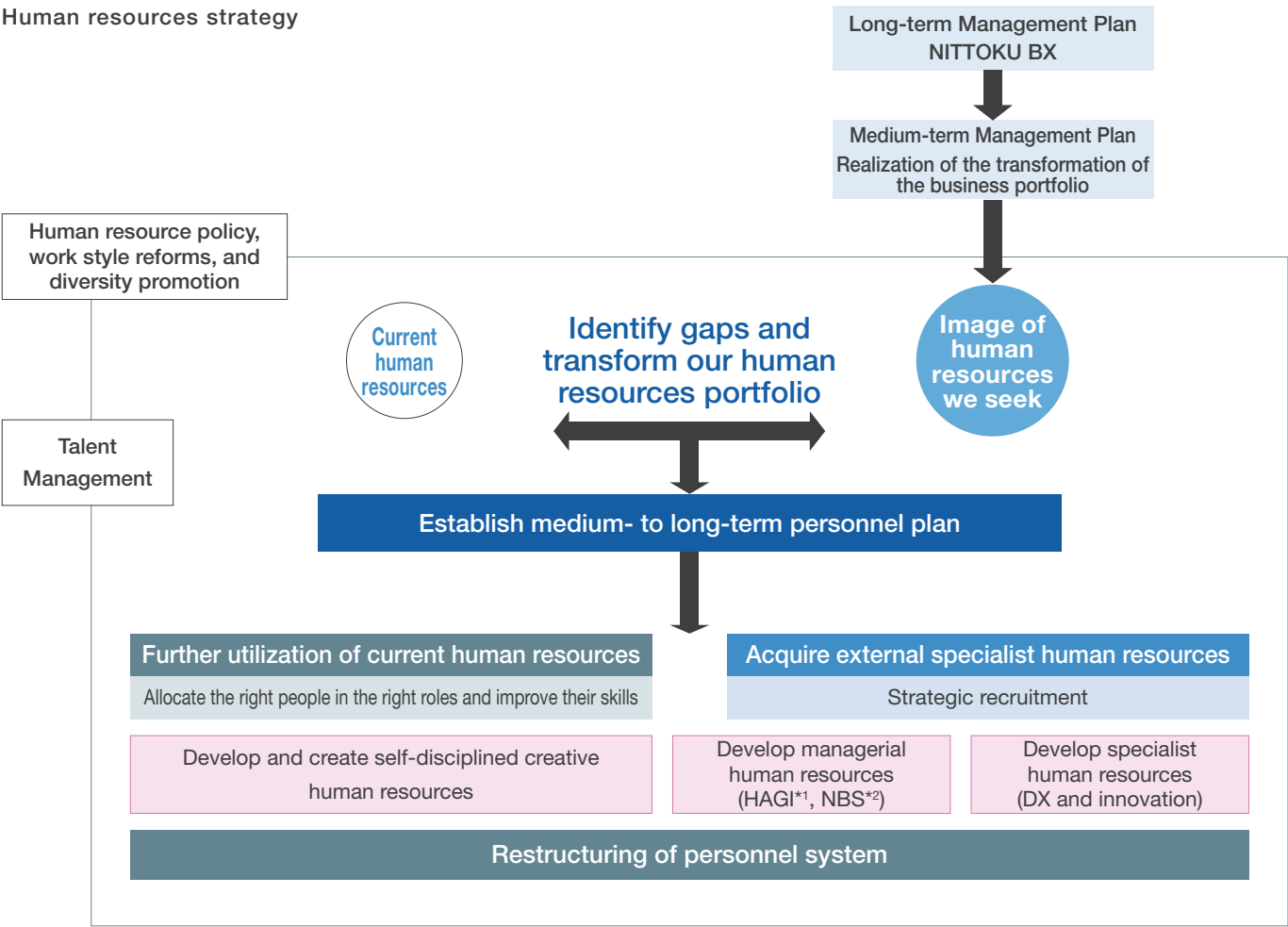
In order to implement our management strategy and realize the transformation of our business portfolio, we seek to develop all of our employees into self-disciplined creative human resources who are able to work independently and create new ideas. Moreover, we select and develop managerial human resources from among these employees, and focus on developing specialist human resources who promote innovation and DX to respond to changes in the environment.

In addition, in order to develop self-disciplined creative human resources, we are building a system to confirm the voluntary will (Will) of employees and assign the right people in the right roles where they can work according to their Will. Furthermore, we will also work to improve the skills of our employees so that they can produce results in the places where they are assigned.

While supporting the further development of existing human resources in this way, we are also proactively seeking external specialist human resources to create technologies and new businesses that can respond to rapid changes in the environment. In addition, we have already created a database for global talent management and have a good understanding of human resources close to management, so we will shift our focus to how to effectively manage them.

The Human Resources Strategy Dept. will take the lead in implementing these measures to develop diverse and autonomous human resources and build a foundation for our sustainable growth.

### Human resources strategy



\*1 HAGI: Program to develop the next generation of global managerial human resources  
\*2 NBS: Nittoku Business School

Human Capital Management

Employee skill enhancement and career development

We conduct a variety of training programs to improve the skills of our employees. In addition to level-specific training for promotion and specialized training participated voluntarily by employees to improve their own skills, we also offer a variety of programs such as training for manufacturing, which focuses on quality and other areas, to support employees’ career development.

In addition, we have a career consultation helpline where employees can consult with us about their daily work and career concerns. Employees certified as career consultants provide one-on-one counseling to employees who visit the counter to discuss their overall career concerns and work-related issues. The career consultants do not provide solutions but instead help the questioners find answers for themselves.

We are also working on My Career, a framework to help employees envision their future careers and think about the approach they want to take. This clarifies each employee’s Will (what kind of work he or she wants to do) and Can (what kind of work he or she is capable of doing). It is an opportunity for each employee to think about his or her own career, and if it is possible to match the indicated Will with the human resources being recruited at each company, we will consider arranging transfers and other measures.

Development and management of managerial human resources

As our business expand 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 practical knowledge from a company-wide perspective. 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 development of business leaders.

In addition, the Human Resources Committee, whose members consist of members of management, has been meeting once a month since FY2018 to discuss personnel matters for core positions within the Group.

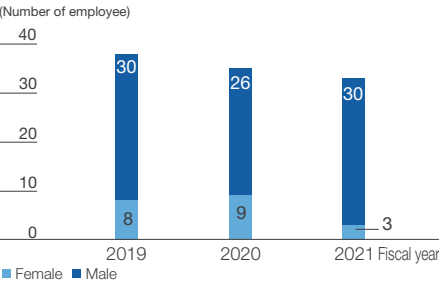
Recruitment strategy

In terms of recruitment, in order to respond quickly to changes in the business environment, we aggressively pursue employment of mid-career personnel who can immediately take on a job effectively, mainly in the new business and IT departments.

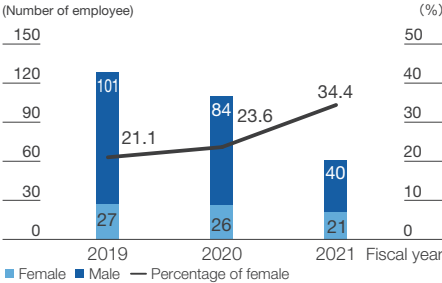
We are also promoting the employment of foreign nationals in our effort to adapt to the rapid advancement of globalization and encourage diverse talent to play active roles. For new graduates, we have been employing around three to five foreign nationals every year, recently with a special focus on the employment of foreign nationals who have acquired not only Japanese language skills but also more specialized skills from overseas universities, in addition to those who have studied in Japan.

We are also conscious of increasing the ratio of female employees and the employment rate of people with disabilities. The inclusion of mid-career employees and foreign nationals in each workplace has helped increase our diversity awareness across the company.

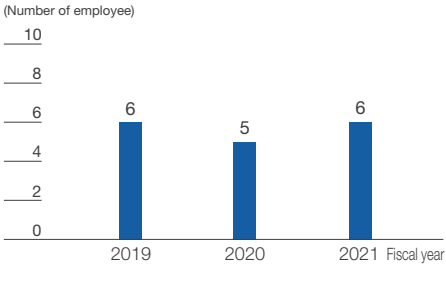
Mid-career employment



New graduates employment



Recruitment of foreign-national new graduates



New personnel system

In order for the NGK SPARK PLUG Group to achieve true “Dokuritsu-Jiei” (independent spirit), it is important to create self-disciplined creative human resources, who are strongly aware of his or her own role and is able to link it to his or her actions. Therefore, we have revised the existing personnel system to a new system aimed at creating self-disciplined creative human resources.

Under the new personnel system, self-discipline, creativity, achievement, and challenge have been newly added as evaluation elements common to the Group. The entire Group will work together to develop self-disciplined creative human resources who can realize the themes of the Medium-term Management Plan to “Break to change” and “Change to create.”

We have introduced a system in which employee compensation reflects the results produced by each company, and we expect each employee to be aware of the output that contributes to our business and performance, and to work in a more efficient manner.

A role grading system was introduced for core positions, and by setting role ranks and salaries according to the roles required, the system was changed so that the actual roles played by the employees and their compensation are aligned, regardless of their years of service. In addition, as core position human resources who contribute to the Company by utilizing their high level of expertise, we have established a qualification as specialist positions (SP positions) that are not limited to research positions. The M positions, the traditional managerial positions, will focus on management, while SP positions will concentrate on demonstrating their expertise to promote more efficient business operations. By further clarifying the roles of each individual, we will realize speedy innovation and the placement of the right people in the right roles to promote the achievement of organizational goals.

The reformed personnel system will be monitored for system evaluation and confirmation of retention status while conducting employee satisfaction surveys, and will be revised and refined as necessary in the future as well.

Qualification system for core positions

Managerial positions (M positions)		Specialist positions (SP positions)	
Functional qualifications	Role grade	SP positions do not have functional qualifications	Role grade
M1 (advisor)	Rank 1		Fellows
	Rank 2		
	Rank 3		SP1 (senior specialist position)
	Rank 4		
M2 (supervisor)	Rank 5		SP2 (lead specialist position)
	Rank 6		
	Rank 7		SP3 (supervising specialist position)

Employee satisfaction survey

The Group conducts employee satisfaction surveys for the following three purposes: (1) to understand employee motivation and sense of burden, (2) to understand the current status, verify the effectiveness, and consider measures for “Change (transformation) with (co-existence) Will (will),” the Action Guidelines set forth in the Long-term Management Plan, and (3) to improve the workplace through examination of the results.

The survey results of each individual department are fed back to the departmental heads to notify them of the department’s situation and challenges indicated by the results. For items with low engagement, countermeasures are considered through exchanges of opinions within departments to improve workplaces, and in some cases, companies launch projects to proactively engage in such activities. The HR development department is also working to offer a better working environment for employees by identifying issues to be resolved through interviews with young employees at each workplace, and the employee satisfaction survey has become an important tool for reform.

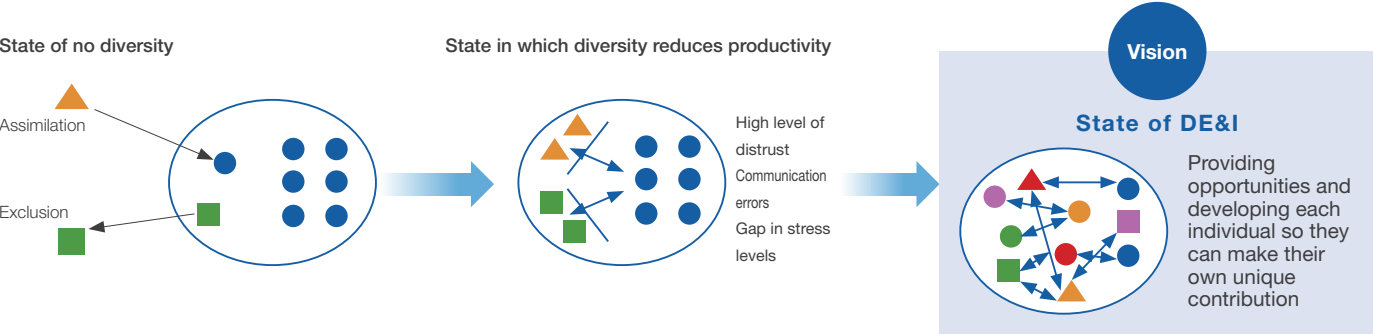
The satisfaction rate in the FY2021 survey was 46.6%, almost unchanged from the previous year. The external environment surrounding the Group is changing rapidly, and the Group is in the midst of a period of major transformation, including the introduction of the in-house company system and spin-offs of some businesses. In order to improve employee engagement, we will not only continue to continuously disseminate information internally, but also invest in people and the work environment by reflecting the efforts of each company and individual in evaluations and compensation, and strive to improve the results of the employee satisfaction survey.



## Diversity, equity, and inclusion (DE&I)

We consider diversity, equity, and inclusion to be one of our most important management strategies as we believe that diversity, equity, and inclusion are essential for companies to attain sound growth and ensure happiness for all employees. We strive to recognize and accept diverse human resources regardless of gender, age, disability, nationality, as well as lifestyle and personality, and to provide each with the best support and opportunities in a fair manner. 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.



### Initiatives to promote DE&I

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.

#### Raise UP Program (selective female manager promotion training)

This is a selective training program for female employees whose next stage of growth will be managerial positions, to acquire the knowledge, skills, and attitude required to become what they want to be. The program embraces the concept “one step forward in a resilient manner while staying true to oneself,” and the first word in the name of the program represents the components that make up the concept: Resilient, Active, I (true to oneself), Smart, and Exceed (one step forward). We have appointed several executives as advisory board members for the program, providing opportunities for trainees to voluntarily seek advice and support for their efforts in the program, and acquire multiple mentors. Trainees will gain the perspective required of managers, and at the end of the training, they will give a presentation in front of the chairman and president. Through the training, we help trainees get ready to become managers and to take on challenges with confidence.

#### Lectures for those in core positions

We hold annual lectures on diversity for executives, managers, and section chiefs, by inviting prominent outside lecturers. By providing opportunities to acquire knowledge of advanced cases, we help participants change the way they think and raise awareness while spreading the significance of promoting diversity.

#### MT training (mimi-tako training)

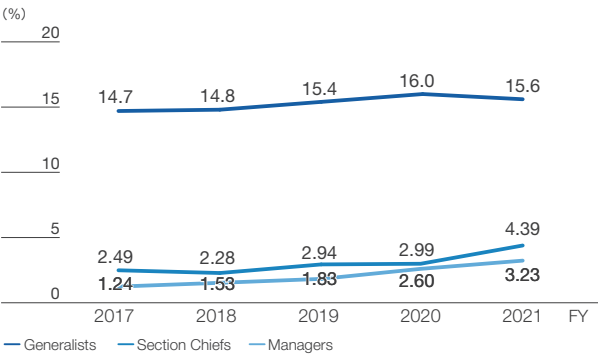
The name of this training, “mimi-tako (MT),” is derived from a Japanese phrase meaning “hear enough.” To raise managers’ awareness, the MT training is held repeatedly under the themes of, for example, diversity, the Nittoku Way, and compliance to the extent that trainees feel they have heard enough.

#### Selected as a Nadeshiko Brand company for FY2021 as a company that promotes the empowerment of women

As a company that excels in the empowerment of women, we were selected as a Nadeshiko Brand company for FY2021, which is jointly selected by the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange. This is the second time for us to be selected as a Nadeshiko Brand company following the selection in FY2018.



#### Proportion of female employees



### Interview with a female manager

## Raise UP Program, a selective female manager promotion training, was implemented based on the concept “one step forward in a resilient manner while staying true to oneself”



Natsuki Hirano

General Manager of Human Resources Strategy Dept., Global Strategy Div.

In 2019, taking over the achievements of the DIAMOND Project implemented up to FY2017, the Diversity Team has taken the lead in launching the Raise UP Program to accelerate the increase in the percentage of women in managerial positions. The program will provide training for approximately six months for a small group of female manager candidates. Upon completion of the training, trainees will take a promotion examination like other candidates for promotion, and if they pass the examination, they will be promoted to managerial posts.

Although this program is often viewed as being only for female manager candidates who undergo training, this is not the case. In order to promote a culture that values diversity, all managers participate in kick-off meetings and listen to the strong ideas expressed by the chairman, president, and executives in charge. In addition, a mentor system is in place during the training, in which multiple executives play a supportive role. There have been comments from executives that they have made new discoveries through interaction with the trainees.

The bonds between trainees are strong, and I think it is great that trainees and experienced trainees are able to work autonomously, discussing their problems during and after the training, and senior trainees giving advice to junior trainees.

On the other hand, it is desirable that the ratio of male to female managers should be equal to the ratio of male to female employees, even without special programs. With that in mind, it is our ultimate goal to dissolve this program.



## After completing the program, which I initially participated in with some hesitancy, my awareness of management posts has changed dramatically

Namiko Nishimoto

Diversity Promotion Team Leader,  
HR Development,  
HR Development Dept.,  
HR Communication Company

When I was first invited to participate in the Raise UP Program, I was a bit hesitant. I had never thought about becoming a manager before. However, I had participated in the DIAMOND Project training program and decided to take part in this program as well because I was interested in the training.

The training in this program was structured in such a way that it enabled me to think carefully about where I want to be, and it was more difficult than any other training I had experienced before, making it a considerable challenge to complete. At the end of the program, we had to make a presentation in front of the chairman and president, and we had to rework our materials many times in order to achieve that goal. The mentor executives also consulted with me and helped me rehearse my presentation. Such experiences were stimulating, and participating in the program was a great opportunity for me to review my career.

My own awareness has changed dramatically as a result of participating in the program, and I feel less discouraged about becoming a manager. Rather, I now feel that I have a special opportunity to become a manager, so I should make the most of it.

Even now, female employees may have an image of female managers as being “special people” or “needing strong leadership to lead their subordinates,” but there are many different kinds of people in management positions, both men and women. We will continue our efforts to increase the number of female managers and other attractive leaders in our company who make the most of their uniqueness.

## 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.

### Promotion system

The Group has identified human rights as one of the issues to be addressed in its CSR and sustainability initiatives, and is taking action to address this issue as part of its CSR and sustainability promotion system.

Labor and management work together to prevent harassment in the workplace. 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. The Anti-Harassment Committee promptly examines issues reported through the contacts and checks facts. It then takes corrective action and gives instructions as needed. The results of the action taken are reported to the Compliance Committee. Other matters related to human rights are handled by the Compliance Committee.

The effectiveness of the compliance system, including anti-harassment measures, is periodically reviewed and reported to the CSR and Sustainability Committee for confirmation.

### Educational activities

The Compliance Guidebook is distributed to employees working for the Group. This guidebook also stipulates compliance with human rights, including respect for human rights and prohibition of various types of harassment (such as 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). The guidebook is also used in daily awareness-raising activities, such as reading sessions at workplaces.

In addition, 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.

### Human rights due diligence

We recognize that the business activities of the Group affect a wide range of people, including employees of the Group, employees of our suppliers, and local residents. Accordingly, with regard to human rights, we are working to identify and mitigate human rights risks related to the Group's business activities.

#### Initiatives on the supply chain

We have issued CSR and Sustainability Procurement Guidelines to our suppliers to promote CSR and sustainability initiatives throughout our supply chain. These guidelines also include compliance items related to human rights such as labor, health and safety.

We are requesting suppliers to survey the status of implementation with a checklist every two years, providing feedback on the evaluation results. For suppliers that require follow-up, we confirm the situation by visiting them and other means. We provide support as appropriate if improvements are necessary.

### 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.

In addition, with the aim of increasing opportunities for our employees to play an active role in the company, we launched a second job system in October 2021. This program is available to those who meet the requirements and obtain permission, and is expected to have positive effects such as the formation of new contacts, acquisition of diverse work styles, personal growth and self-realization, and expansion of business opportunities.

#### 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.

### 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

- The NGK SPARK PLUG Group declares that we will support the health of each and every employee and promote Kenkoikei (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.
- 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.
- 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

\* Kenkoikei is a registered trademark of NPO Kenkoikei.

#### Selected under the Health & Productivity Stock Selection for the first time Certified as one of the Excellent Enterprises of Health and Productivity Management (“White 500”) for the fifth time

We were recognized as one of the brands under the Health & Productivity Stock Selection 2022 jointly selected by the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange. This is the first time that we have been selected under the Health & Productivity Stock Selection. In addition, this is the fifth time for us to be certified as one of the Excellent Enterprises of Health and Productivity Management 2022 (“White 500”) by the Nippon Kenko Kaigi.





## Outside Directors' Roundtable Discussion



Outside Director  
Miwako Doi

Outside Director  
Kanemaru Yasui

Outside Director  
Morihiko Otaki

Outside Director  
Mackenzie Donald Clugston

## Supporting challenge aimed at the transformation of business portfolio

### What developments have you seen with regard to the challenges in evaluating the effectiveness of the Board of Directors in the previous year?

**Otaki** Regarding fulfillment of the supervisory function in light of the introduction of the in-house company system, which was stated as one of the issues, we are still in the process of delegating business-related decisions to each company, and during the past year we have been discussing specifically about defining the scope of authority and responsibility. Because we are still in the process of accumulating information on the performance and effects of activities based on the independent judgment of each company, we have yet to fully confirm the fulfillment of the supervisory function. We will also be implementing a framework in which the Board of Directors checks to see if each company's operations are in line with the direction that the entire Group is aiming for.

**Yasui** With the introduction of the in-house company system, we have delegated authority to each company. We are also encouraging the Board of Directors to shift from a traditional management style to a monitoring style. We transitioned to a company with an Audit and Supervisory Committee in June of this year, and the ratio of outside directors on the Board of Directors has increased to 7 out of 11, which is the result of discussions regarding the transition. On the other hand, the transition to a monitoring system will make it more difficult for directors to get an understanding of the detailed activities of each company, so we will have to be mindful of how we respond to this issue.

**Clugston** I believe that we have a heavier responsibility in terms of control through monitoring. As each company will become more unique, and will proactively engage in M&As and collaboration with other companies, it will be difficult for the Board of Directors to oversee whether these activities are in line with the approach of the Group as a whole, even in terms of expertise. I think this is one of the challenges in monitoring.

**Doi** As a common theme across companies, last year the Board of Directors discussed issues related to the development of ICT infrastructure and personnel systems. I feel that monitoring is still insufficient to ensure effective governance in these areas, and I think that a unified decision-making process is required across all the companies. I wonder how much DX will be adopted in response to this opportunity. This could include a framework for sharing information between companies.

**Otaki** What will become an issue in the future is when there is a conflict between management decisions made by each company and management decisions made from the perspective of company-wide optimization. It is necessary to hold robust discussions while fostering a mindset in which each company pursues the best with autonomy.

**Doi** Regarding another issue in the effectiveness evaluation, enhancing the monitoring function on non-financial indicators, I would like to commend the internal carbon tax that was

introduced in April 2022. This system, in which funds are collected according to the CO<sub>2</sub> emissions of each department and used to invest in renewable energy facilities, will be applied to each company, and is expected to serve as a monitoring function for CO<sub>2</sub> emissions.

**Yasui** While non-financial indicators are of course indicators of our sustainability efforts, I also believe that they should be considered and emphasized as indicators of how well we are stepping into new business areas in the transformation of our business portfolio that the Group aims to achieve. How much investment is being made in new business areas? The Board of Directors has the role of checking whether or not we are working on the transformation of our business portfolio through non-financial indicators.

**Doi** The objective of the transformation of our business portfolio is to improve the extremely high dependence of profits on the Automotive Components Group and to realize a profit structure



## Outside Directors' Roundtable Discussion

that leads to sustainable growth. On the other hand, as an outside director, I would like to focus not only on immediate profits, but also on what kind of technological solutions can be developed to become carbon neutral and contribute to society. If we do not change our business portfolio assuming carbon neutrality, we will not be able to survive as a company that can win in the global market. From this perspective, it will be necessary to emphasize carbon neutrality and encourage efforts to achieve it.



### What were the changes resulting from the transition to a company with an Audit and Supervisory Committee?

**Yasui** Among the members of this roundtable discussion, I am now an outside director serving as an Audit and Supervisory Committee Member. I believe that the roles and functions assumed by outside directors will remain unchanged, but the major change will be the addition to the Board of Directors of executives whose function will be equivalent to that of conventional Audit & Supervisory Board members. In other words, the members involved in auditing will have the same voting rights on proposals as other directors, will participate in discussions at meetings of the Board of Directors as participants rather than as observers, and will be responsible for making decisions.

**Otaki** Audit and Supervisory Board Members can express their opinions as a committee in addition to expressing their opinions as individual directors, so it can be said that monitoring is doubly strengthened in this sense. Another major point is to further strengthen cooperation and information sharing with the Internal Auditing Office, centered around full-time Audit and Supervisory Board Members, in order to collect quality information more efficiently.

**Clugston** Another change is that, with this transition, seven of

the eleven members of the Board of Directors are outside directors, which is a majority. However, outside directors have not found it difficult to speak up in the past because there are more inside directors, and we have had free discussions, so I do not expect any major changes from that standpoint.

**Doi** To take an extreme example, the ratio of outside directors could be significant in an emergency situation, such as when the management system is reformed in response to a significant deterioration in business performance. Even in such a case, however, I do not believe that discussions should be conducted solely from an outsider's perspective, ignoring the unique culture and values that the company has built up and the wishes of the employees working on the front lines.

### What actions are required to realize the 2040 Vision?

**Otaki** With an eye toward 2040, the executives will establish action plans for the next one or two years, and we, the outside directors, will be responsible for monitoring whether these action plans are being properly implemented toward medium- to long-term goals. We have been doing this for some time, but in order to speed up the process of the transformation of our business portfolio, it will be necessary to increase the incentives for and pressure on executives.

**Clugston** The current phase for the Group is one in which we should take advantage of the free thinking. It is important to broaden our perspective and look to the future of the company as much as possible, and I think it is preferable to monitor whether the direction is good or not rather than to control the company too tightly. Too large an investment at this time is risky, while too small an investment will have little effect, so it is the responsibility of the management team to find the right balance and make the decision to execute the investment.



**Doi** I feel that it is difficult to gain the understanding and acceptance of the entire Group regarding the need to transform the business portfolio under the current favorable business conditions. We also need to understand and support the need for investment in growth areas and new fields. However, we should not proceed with investments blindly. Under unstable external circumstances, I think we should set conditions for withdrawal from business based on the assumption of risk in advance.

**Yasui** For the Group, which has basically prioritized safety and soundness, the question of how much risk to take and how much to invest in new areas in the future is a difficult theme to address. We need to minimize investment and maximize profits in the Automotive Components Group, and invest in areas such as decarbonization and unknown areas that have never been experienced before without fearing risks. Of course, it is not enough to invest in everything, but if we do not take risks while making investments, we will not be able to transform our business portfolio.



**Clugston** I would say that our future depends on how much risk we take. In the past, we have avoided risk as much as possible. However, I feel that the momentum to take on new challenges is growing, and I would like to support them greatly while encouraging executives with the incentives and pressure that Mr. Otaki mentioned.

### What are your thoughts on human resource policies, such as improving employee engagement?

**Clugston** As a corporate group that operates globally, we should promote human resource policies that actively employ more talented engineers overseas. For example, we could establish R&D centers in Europe and the U.S. and bring in foreign

engineers to create a foundation for innovation that differs from that of the headquarters, or to enhance mutual technological capabilities through competition and other initiatives that will lead to global growth.

**Doi** I think we are still in the process of securing diversity in human resources and promoting the active participation of women. I would like to increase the ratio of female managers and produce female corporate officers and internal female directors. I also believe that we should pay close attention to employee engagement as a non-financial indicator. As we transform our business portfolio going forward, we are introducing various measures, including the introduction of the in-house company system, and the Group is undergoing a major transformation. We need to follow up on how employee engagement will change as the portfolio transformation progresses.

**Yasui** As for internal organizations, the Human Resources Strategy Dept. and the Sustainability Strategy Dept. are taking the lead in implementing human capital measures. Regarding diversity, looking at the status of female employees, foreign nationals, and mid-career hires, a certain level of diversity has been secured up to the management level, but for higher levels, there is still work to be done, and I look forward to the achievement of diversity in the future.

**Otaki** I would like to consider how to monitor employee engagement. Satisfaction surveys through questionnaires, for example, would be good feedback for employees and lead to increased engagement if the company can be improved based on the data captured from these surveys. As Ms. Doi mentioned, how employees perceive the portfolio transformation and what each one of them feels will be an important indicator, and we must respond to the thoughts of our employees.





## 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

The Company has selected a company with an Audit and Supervisory Committee for the purpose of further enhancing discussions on management policies and strategies at the Board of Directors, strengthening the supervisory function, and further speeding up management decision-making and execution of business. Each organization is set up within the framework of a company with an Audit and Supervisory Committee.

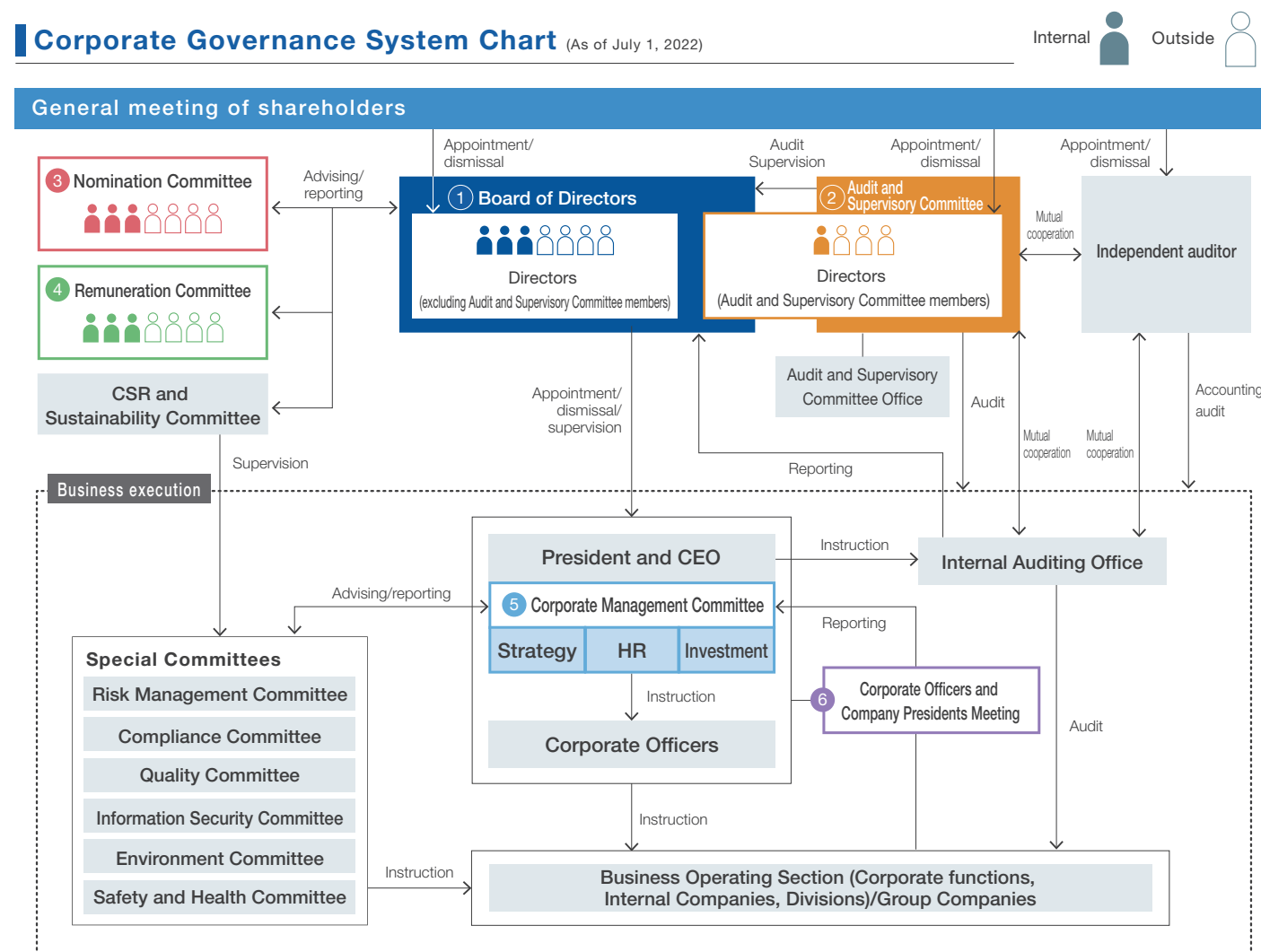
## 1 Board of Directors

The Board of Directors comprises eleven members (of which seven are outside directors), which in principle meets regularly, once every month and holds ad hoc meetings when necessary. The Board of Directors deliberates and makes decisions on matters specified in laws and regulations or articles of incorporation as well as other important management issues specified in the regulation of the Board of Directors. The Board delegates certain matters to the Representative Director President, and receives reports from the Representative Director and President or other directors and supervises the status of business execution. A majority of the Board consists of independent outside directors to enhance its supervisory function and ensure management transparency.

## 2 Audit and Supervisory Committee

The Audit and Supervisory Committee is composed of four Audit and Supervisory Committee members, three of whom are outside Audit and Supervisory Committee members. The Committee audits and supervises the directors' business execution as an independent organization on the behalf of shareholders. Full-time Audit and Supervisory Committee members are selected from the perspective of maintaining the audit environment, gathering information from within the company, and monitoring and verifying the development and operation of internal control systems on a daily basis and share such information with other members to ensure the effectiveness of organizational audits. The Audit and Supervisory Committee also confirms the appropriateness and suitability of the nominations and remuneration of directors (excluding directors who are Audit and Supervisory Committee members) by attending Nomination Committee and Remuneration Committee meetings and receiving explanations from the representative directors and forms opinions on these matters.

## Corporate Governance System Chart (As of July 1, 2022)



### 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, which will be proposed at the general meeting of shareholders, as well as on the appointment and dismissal of executive officers, the evaluation of corporate performance and the results-based evaluation of directors (excluding directors who are Audit and Supervisory Committee members) and executive officers. The deliberation results are reported to the Board of Directors. In addition, directors who are Audit and Supervisory Committee members also attend a Nomination Committee as observers.

#### 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 an advisory body to the Board of Directors. Based on the Board of Directors' request for opinions, the Remuneration Committee deliberates on matters related to remuneration of directors (excluding directors who are Audit and Supervisory Committee members) and executive officers, including the appropriateness of policies, procedures, and systems, as well as the appropriateness of the proposed remuneration of each director (excluding directors who are Audit and Supervisory Committee members) and executive officer, and delivers its opinions to the Board of Directors. In addition, directors who are Audit and Supervisory Committee members also attend a Remuneration Committee as observers.








## 5 Corporate Management Committee





The Corporate Management Committee, comprising representative directors and some executive officers, was established to make decisions on and supervise important matters relating to business execution in accordance with the basic management policies determined by the Board of Directors, to discuss and understand in advance business challenges to be addressed and risks that the Group is facing, and to promptly respond to changes in the management environment. The Corporate Management Committee addresses management strategy and other important matters relating to overall management and also focuses its deliberations on important human resource strategies and measures relating to the assignment and development of human resources as well as significant investments including capital expenditures, equity contributions, acquisitions, and capital tie-ups.

## 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		FY2022	
Name		Nomination Committee	Remuneration Committee
Shinichi Odo		<input type="radio"/>	<input type="radio"/>
Takeshi Kawai		<input type="radio"/>	<input type="radio"/>
Toru Matsui		<input type="radio"/>	<input type="radio"/>
Morihiko Otaki		<input type="radio"/>	<input type="radio"/>
Mackenzie Donald Clugston		<input type="radio"/>	<input type="radio"/>
Miwako Doi		<input type="radio"/>	<input type="radio"/>
Chiharu Takakura		<input type="radio"/>	<input type="radio"/>

Directors who are Audit and Supervisory Committee members		FY2022
Name	Nomination Committee	Remuneration Committee
Mikihiko Kato	 Attends the meeting	Attends the meeting
Kanemaru Yasui	 Attends the meeting	Attends the meeting
Fumiko Nagatomi	 Attends the meeting	Attends the meeting
Christina L. Ahmadijan	 Attends the meeting	Attends the meeting

### Basic information

As of July 1, 2022

<b>Organizational design</b>	Company with an Audit and Supervisory Committee
<b>No. of directors</b>	11 (7 independent outside directors)
<b>No. of directors who are Audit and Supervisory Committee members among total no. of directors</b>	4 (3 independent outside directors)
<b>Independent auditor</b>	KPMG AZSA LLC

## Corporate Governance

## Directors (as of July 1, 2022)

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)

Representative Director, President, Chief Operating Officer  
All Businesses, Global Strategy Div., and Global Group  
Governance Div.

**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)

Representative Director, Member of the Board,  
Executive Vice President, Assistant to President,  
Assistant to President, Mirai Creation M&A Dept., R&D Div.,  
and 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 (Outside Director)

**Morihiro 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)

**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:** Specially Appointed 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 (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 (Outside Director)

**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.  
**June 2021:** Outside Audit & Supervisory Board Member, NGK SPARK PLUG CO., LTD.  
**April 2022:** Director, Chief Human Resource Officer, ROHTO Pharmaceutical Co., Ltd. (up to today)  
**June 2022:** Member of the Board (Outside Director), NGK SPARK PLUG CO., LTD. (up to today)

Member of the Board,  
Full-time Audit and Supervisory Committee Member

**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  
**April 2022:** Member of the Board  
**June 2022:** Member of the Board, Full-time Audit and Supervisory Committee Member (up to today)

Member of the Board (Outside Director),  
Audit and Supervisory Committee Member

**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.  
**June 2022:** Member of the Board (Outside Director), Audit and Supervisory Committee Member (up to today)

Member of the Board (Outside Director),  
Audit and Supervisory Committee 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.  
**June 2022:** Member of the Board (Outside Director), Audit and Supervisory Committee Member (up to today)

Member of the Board (Outside Director),  
Audit and Supervisory Committee Member

**Christina L. Ahmadjian**



**January 1995:** Assistant Professor, Columbia Business School  
**October 2001:** Associate Professor, Graduate School of International Corporate Strategy, Hitotsubashi University  
**January 2004:** Professor, Graduate School of International Corporate Strategy, Hitotsubashi University  
**June 2009:** Outside Director, Eisai Co., Ltd.  
**April 2010:** Dean, Graduate School of International Corporate Strategy, Hitotsubashi University  
**April 2012:** Professor, Graduate School of Commerce and Management, Hitotsubashi University  
**June 2012:** Outside Director, Mitsubishi Heavy Industries Ltd.  
**June 2014:** Outside Director, Japan Exchange Group, Inc.  
**April 2018:** Professor, School of Business Administration, Hitotsubashi University Business School  
**June 2018:** Outside Director, Sumitomo Electric Industries, Ltd. (up to today)  
**March 2019:** Outside Director, Asahi Group Holdings, Ltd. (up to today)  
**June 2021:** Outside Director, NEC Corporation (up to today)  
**April 2022:** Emeritus Professor, Hitotsubashi University (up to today)  
Specially Appointed Professor, Rikkyo University (up to today)  
**June 2022:** Member of the Board (Outside Director), Audit and Supervisory Committee Member, NGK SPARK PLUG (up to today)



## Skill Matrix of Directors

Considering the business and management system of the Group, the Board of Directors identified the knowledge and experience which it should possess from “Basic areas from the perspective of important management decision-making and business execution supervision” and “Areas that need to be particularly promoted and supervised to realize the medium-term management plan.” According to this, Directors are assigned in well-balanced manner with consideration for diversity.

Skill Matrix of Directors\*1

Name	Position	Independence	Management	Finance/Accounting	Governance/ Legal/Risk management	Experience overseas	Technology/R&D	Sales/Marketing	New Business/M&A	HRD/HR	IT/DX	SCM
			*2					*3				
Shinichi Odo	Representative Director and Chairman of the Board		○		○	○		○			○	
Takeshi Kawai	Representative Director and President, Chief Operating Officer		○		○		○		○		○	○
Toru Matsui	Representative Director, Executive Vice President		○		○	○		○	○			
Morihiko Otaki	Outside Director	●	○			○		○				
Mackenzie Donald Clugston	Outside Director	●				○				○		
Miwako Doi	Outside Director	●					○		○		○	
Chiharu Takakura	Outside Director	●			○	○				○		
Mikihiko Kato	Director Full-time Audit and Supervisory Committee Member		○	○		○				○		
Kanemaru Yasui	Outside Director Audit and Supervisory Committee Member	●		○	○							
Fumiko Nagatomi	Outside Director Audit and Supervisory Committee Member	●			○							
Christina L. Ahmadjian	Outside Director Audit and Supervisory Committee Member	●	○		○	○				○		

\*1: The above matrix represents the areas of expertise that we expect from each director and does not represent all of the knowledge and experience that they possess.  
\*2: Areas fundamental for critical decision-making in the management and supervision of business operations  
\*3: Areas that require active promotion and supervision to realize the Medium-term Management Plan

## Executive/Corporate Officers (As of July 1, 2022)

<div>Executive Officer</div> <div>Noboru Ishida</div> <div>Energy Conversion Business Development President of CECYLLS Co., Ltd.</div>	<div>Executive Officer</div> <div>Hiroyuki Tanabe</div> <div>Production Engineering Company, Global Procurement Company Plant Manager of Komaki</div>	<div>Executive Officer</div> <div>Yoshiyuki Takayanagi</div> <div>Company President, Business Support Company</div>
<div>Executive Officer</div> <div>Kenji Isobe</div> <div>Financial Strategy, Business Management, and Human Resources Strategy Depts., Global Strategy Div. FP &amp; A Company, Business Support Company, HR Communication Company Company President FP &amp; A Company, Secretarial Dept. President of NGK SPARK PLUGS (U.S.A.) HOLDING, INC.</div>	<div>Executive Officer</div> <div>Akiyoshi Kato</div> <div>IGNITE Company, Sensor Beyond Company Plant Manager of Nagoya Plant Manager of Satsuma</div>	<div>Executive Officer</div> <div>Kazunobu Hasegawa</div> <div>Regional President China President of NGK SPARK PLUG (SHANGHAI) CO., LTD. President of NGK SPARK PLUG (SHANGHAI) TRADING CO., LTD.</div>
<div>Executive Officer</div> <div>Hiroyuki Maeda</div> <div>Corporate Strategy and Sustainability Strategy Depts., Global Strategy Div. Business Transformation Div., Machining Technology Company Overall management of all businesses</div>	<div>Executive Officer</div> <div>Koji Suzuki</div> <div>Company President, Mobility Business Company</div>	<div>Executive Officer</div> <div>Keiji Suzuki</div> <div>R&amp;D Div.</div>
<div>Executive Officer</div> <div>Hiroyasu Ogura</div> <div>Digital Transformation Dept., Global Strategy Div. IT Systems Company Company President, SCM Solutions &amp; Services Company Regional President ASEAN, India President of NGK SPARK PLUGS (ASIA) CO., LTD. President of NTK CORPORATION ASIA CO., LTD.</div>	<div>Executive Officer</div> <div>Osamu Shinkai</div> <div>Company President, Advanced Ceramics Company President of NTK CERATEC CO., LTD. Plant Manager of Ise</div>	<div>Executive Officer</div> <div>Tomohiro Yamaguchi</div> <div>Company President, HR Communication Company General Manager, Tokyo Branch</div>
<div>Corporate Officer</div> <div>Michael Alan Schwab</div> <div>Regional President PAMA President of NGK SPARK PLUGS (U.S.A.), INC. President of NGK SPARK PLUGS CANADA LIMITED</div>	<div>Corporate Officer</div> <div>Shingo Arimi</div> <div>Company President, Production Engineering Company</div>	<div>Corporate Officer</div> <div>Hiroaki Masuda</div> <div>General Manager, Corporate Strategy Dept., Global Strategy Div.</div>
<div>Corporate Officer</div> <div>Damien Germès</div> <div>Regional President EMEA President of NGK SPARK PLUG EUROPE GmbH</div>	<div>Corporate Officer</div> <div>Yoshikuni Sato</div> <div>President of Morimura SOFC Technology Co., Ltd.</div>	<div>Corporate Officer</div> <div>Yuichi Yamada</div> <div>Company President, Sensor Beyond Company</div>
<div>Corporate Officer</div> <div>Shigeki Mori</div> <div>Energy Conversion Business Development Dept.</div>	<div>Corporate Officer</div> <div>Kazuyuki Kimura</div> <div>General Manager, Digital Transformation Dept., Global Strategy Div. Company President, IT Systems Company</div>	<div>Corporate Officer</div> <div>Akira Suzuki</div> <div>Company President, IGNITE Company</div>
<div>Corporate Officer</div> <div>Tsunejiro Tajima</div> <div>Vice President of NTK CERATEC CO., LTD. President of NTK Technologies, INC.</div>	<div>Corporate Officer</div> <div>Tetsuya Sugiura</div> <div>Company President, Machining Technology Company</div>	<div>Corporate Officer</div> <div>Jun Chino</div> <div>Company Vice President, Mobility Business Company General Manager, AM-GHQ</div>

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.

### Transition to a Company with an Audit and Supervisory Committee

Following the approval at the 122nd general meeting of shareholders held on June 24, 2022, the Company has transitioned to a Company with an Audit and Supervisory Committee for the purpose of further enhancing discussions on management policies and strategies at the Board of Directors, strengthening the supervisory function, and further speeding up management decision-making and execution of business.

## 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 Company's Board of Directors believes that it is important for the Board to comprise diverse human resources with different backgrounds, including specialized knowledge and experience, in order to achieve sustainable growth and increases in corporate value over the medium to long term. The Board is made up of human resources with extensive experience, high levels of knowledge, and advanced specialization, with consideration given to gender, nationality, work experience, and age, to achieve a good balance according to the business environment at a given time. In addition, by making up the majority of the Board of Directors with outside directors who have experience and specialized knowledge gained under environments that differ from the company, the Board can strengthen its supervisory function and engage in deliberations from various perspectives in an effort to ensure transparency and objectivity in decision making.

Director candidates are not excluded from consideration on the basis of their race, ethnicity, nationality, country of birth, cultural background, etc.

## 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 FY2021 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) Skills that the Board of Directors should have in light of management strategies were identified, and we confirmed that the Board of Directors comprises members who have the knowledge, skills, experience, and diversity necessary 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 has established suitable internal controls and risk management structures to ensure proper compliance and support risk taking and supervises the status of operations through the Internal Auditing Office, Compliance Committee, Risk Management Committee, and other bodies. 4) We confirmed that the Board of Directors is cognizant that responses to global environmental issues including climate change and responses regarding sustainability including respect for human rights are crucial from the perspective of increasing corporate value over the medium to long term and that the management team is actively engaged in responding to these issues. 5) To ensure that remuneration is set in a manner that provides appropriate incentives, the Remuneration Committee evaluates whether the execution of duties by management is appropriate from the perspectives of sustainable growth and enhancement of corporate value. 6) The Board of Directors implements appropriate improvement measures regarding key issues identified through evaluation of the effectiveness of the Board of Directors and strives to enhance its effectiveness.

With regard to “performance of supervisory functions in light of the introduction of a company system,” one of the issues identified through the evaluation of effectiveness in FY2020, a company system was introduced in April 2021 for the purpose of clarifying the responsibilities and authority of business execution divisions and facilitating flexible decision making, and based on the opinions of the outside directors, the Board of Directors verified whether the expected effects have been achieved and confirmed that it will continue to perform periodic verification. With regard to “reinforcement of monitoring functions for non-financial management indicators,” non-financial indicators as indicators for the performance linked stock compensation program were introduced in FY2021, and the CSR and Sustainability Committee, which is attended by all directors and Audit & Supervisory Board members, reviewed the status of responses to group priority issues (materiality) and discussed the introduction of an internal carbon tax and environmental fund.

Items for which further improvement of the effectiveness of the Board of Directors would be desirable based on the results of the current effectiveness evaluation include further enhancing deliberation within the Board of Directors regarding medium to long term management strategies and monitoring of Medium-term Management Plan as well as improvement of the prior distribution of materials and provision of explanations to outside directors. Going forward, the company will continue to maintain and enhance the effectiveness of the Board of Directors by addressing these issues.

## Roles and Independence of Outside Directors

To enhance the supervisory function of the Board of Directors and to ensure the transparency and objectivity of decision-making through discussions from multifaceted viewpoints, outside directors make up the majority of the Board of Directors, which comprises diverse talent who have abundant experience, tremendous insight and a high degree of professionalism. We appoint all the independent outside directors as independent officers and notify the Tokyo Stock Exchange and the Nagoya Stock Exchange of their appointment. 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.

Outside directors attend the Board of Directors meetings and non-statutory advisory bodies to demonstrate their supervisory function by becoming involved in the important decision-making of the company from an independent standpoint, while providing advice from an overall perspective based on their abundant experience and insight when formulating and confirming the progress of medium- to long-term management policies at the Board of Directors meetings. Outside directors who are Audit and Supervisory Committee members serve as a supervisory and auditing function based on their independence and expert knowledge.

Title	Name	Reason for appointment	FY2021 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	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.	12/12	—
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.	12/12	—
Outside director	Chiharu Takakura	After obtaining her MBA at Georgetown University (U.S.A), 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. We have selected her as an outside director with the expectation that she will be able to oversee business execution by the Company's management team and provide advice to the team.	10/10*	11/11*
Outside director, Audit and Supervisory Committee member	Kanemaru Yasui	He has expert knowledge and experience accumulated over many years as a certified public accountant. We have selected him as an outside director who is an Audit and Supervisory Committee member with the expectation that he will be able to serve as a supervisory and auditing function for the company's overall management based on the knowledge and experience.	12/12	—
Outside director, Audit and Supervisory Committee member	Fumiko Nagatomi	She has expert knowledge and experience accumulated over many years as a lawyer. We have selected her as an outside director who is an Audit and Supervisory Committee member with the expectation that she will be able to serve as a supervisory and auditing function for the company's overall management based on the knowledge and experience.	11/12	14/14
Outside director, Audit and Supervisory Committee member	Christina L. Ahmadjian	She has extensive experience and deep insight as a researcher of corporate management, corporate governance, and organizational culture. She has been involved in management as an outside director in many companies. We have selected her as an outside director who is an Audit and Supervisory Committee member with the expectation that she will be able to serve as a supervisory and auditing function for the company's overall management based on the knowledge and experience.	—	—

\*After taking office as an outside Audit & Supervisory Board member on June 25, 2021.



## 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 internal 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 with sufficient assistance to fulfill their expected roles and responsibilities where applicable. For the internal directors, we encourage them to take external seminars to acquire additional knowledge to meet their obligations, while the internal 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.

Directors who are Audit and Supervisory Committee members periodically take external sessions to gain understanding of what roles the Audit and Supervisory Committee members fulfill, the audit methods, the relevant laws and regulations, and financial accounting knowledge required for the accounting audit.

## Remuneration for Officers

### Basic policy

Remuneration for directors (excluding directors who are Audit and Supervisory Committee members and outside directors) and corporate 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. Remuneration of directors who are Audit and Supervisory Committee members and outside directors comprises only fixed remuneration.

Our Remuneration Committee acts as an advisory body to the Board of Directors. It deliberates on the remuneration policies, procedures, and systems for directors (excluding directors who are Audit and Supervisory Committee members and outside directors) and corporate officers as well as the appropriateness of the amount of remuneration planned to be paid to each director (excluding directors who are Audit and Supervisory Committee members) and corporate officers, and submits the results to the Board of Directors to ensure the rationality and transparency of the decisions made concerning the remuneration of directors (excluding directors who are Audit and Supervisory Committee members and outside directors) and corporate officers. In FY2021, the committee met two 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	Single-year performance goals: Consolidated revenue, consolidated operating income Medium-term performance goals: Consolidated revenue, consolidated operating income, ROIC Non-financial measures goals: Sales from non-ICE business, rate of reduction of CO <sub>2</sub> 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, Corporate Officers	Directors (excluding directors who are Audit and Supervisory Committee members and outside directors), Corporate Officers	Directors (excluding directors who are Audit and Supervisory Committee members and outside directors), Corporate Officers (excluding employment-type corporate officers)*

\*An Employee Stock Ownership Plan (ESOP) Trust has been adopted for employment-type corporate officers.

### 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 FY2021, the numerical targets for consolidated revenue and consolidated operating income ratio were 492.0 billion yen and 10.2%, while the actual results were 491.7 billion yen and 15.4%.

### Performance-linked stock remuneration system

We introduced the performance-linked stock remuneration for directors (excluding directors who are Audit and Supervisory Committee members and 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.

Indicators against which the achievement of the performance targets is assessed are set based on single-year performance goals, medium-term performance goals, and non-financial measures goals. The single-year performance goals are based on consolidated revenue and consolidated operating income, which reflect the results of sales activities. The medium-term performance goals are based on the targets set in the Medium-term Management Plan, which are consolidated revenue, consolidated operating income, and ROIC, an indicator of whether we have efficiently earned profits relative to invested capital. For non-financial measures goals, sales from non-ICE business and rate of reduction of CO<sub>2</sub> emissions are used as indicators to reflect the results of efforts for sustainable growth and corporate value enhancement, and to facilitate the transformation of our business portfolio.

### Total amount of remuneration, etc. paid to officers, total payment amount by remuneration type, and the number of recipients (for FY2021)

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)	594	365	152	76	7
Audit & Supervisory Board members (excluding outside members)	31	31	—	—	2
Outside directors	57	57	—	—	4
Outside Audit & Supervisory Board members	39	39	—	—	3

(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.  
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 121st general meeting of shareholders (held on June 25, 2021), a performance-linked stock remuneration system is implemented separately for four fiscal years from FY2021 to FY2024, targeting the company's directors (excluding outside directors) and corporate officers (excluding employment-type corporate officers), with the upper limit on the total payment amount set at 1,000 million yen.  
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).  
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. "Bonus" falls under "performance-linked remunerations" and "performance-linked stock remuneration" falls under "performance-linked remunerations" and "non-monetary remunerations." For the bonus and performance-linked stock remuneration shown in the table, they were recorded as expenses for FY2022.  
4. Remuneration paid to one Audit & Supervisory Board member who retired at the conclusion of the 121st general meeting of shareholders is included.

## Measures to Strengthen Functions of Audit and Supervisory Committee

### Establishment of the Audit and Supervisory Committee Office

To support the execution of duties by the Audit and Supervisory Committee, the Audit and Supervisory Committee Office was established, and four employees were assigned to the office full-time. These employees receive instruction from the Audit and Supervisory Committee members, liaise and coordinate internally, and gather and provide the necessary information. The Audit and Supervisory Committee Office works under the supervision and direction of the Audit and Supervisory Committee and their independence in relation to supervision and direction from directors (excluding directors who are Audit and Supervisory Committee members), corporate officers and employees is ensured. In addition, transfers, personnel evaluations, etc. require the prior consent of the Audit and Supervisory Committee.

### Coordination with the Internal Auditing Office

The Audit and Supervisory Committee and Internal Audit Department meet regularly and as necessary to provide direct reports and exchange information on audit policies, audit plans, audit implementation status, and other matters and to work in close collaboration with one another. In addition, Audit and Supervisory Committee members attend audits conducted by the Internal Audit Department when necessary, and the Internal Audit Department conducts investigations and makes reports as requested by the Audit and Supervisory Committee.

## 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

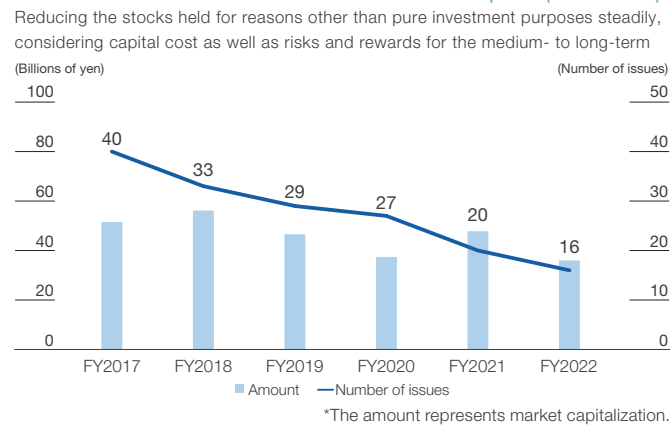
For the exercise of voting rights for the stocks owned by our company, we will decide whether to exercise the rights for each item of the agenda, considering whether it will contribute to increasing the corporate value of the investee company and of our own company. In particular for the selection of 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 Division 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.

### Stocks Held for Reasons Other than Pure Investment Purposes (listed stocks)



## 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

With the growing importance of information security, we have established our Information Security Committee 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 also have our Information Security Committee chaired by the Chief Administrator of DX Strategy Dept. appointed to Chief Information Security Officer and the members are the information security manager of each department. We hold the Information Security Committee meetings at least twice a year and we foster appropriate measures by checking how information security activities are conducted across the Group.

In addition, the information security managers and information security members are assigned to each department to lead information security activities in each department.

## Information security management system

In order to continuously respond to information security risks that threaten companies and organizations, we have set information security as a priority issue (materiality) and are building an information security management system.

As one of them, 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 in Germany. In FY2021, group companies in the United States and China also completed the acquisition of TISAX certification.

## Responding to information security incidents

We have established a Computer Security Incident Response Team (CSIRT).

When an incident occurs, the CSIRT promptly organizes and confirms the facts, determines the level of the incident, and then responds. We also accumulate and share knowledge as a measure to prevent recurrence.

In addition to responding after an incident occurs, we are also striving to defend in advance, and we are trying to improve the level and maturity.

In FY2021, in response to the increase in damage caused by cyber attacks around the world, we conducted a comprehensive inspection of the servers used by our company and group companies. The servers with security concerns were identified and countermeasures were taken.

## 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 protect, manage and handle the personal information of its customers and employees.

In addition, as a response to the revised Act on the Protection of Personal Information that came into effect in April 2022, we pre-assess risks based on the type and the number of personal information and take measures to reduce the risks.



# 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

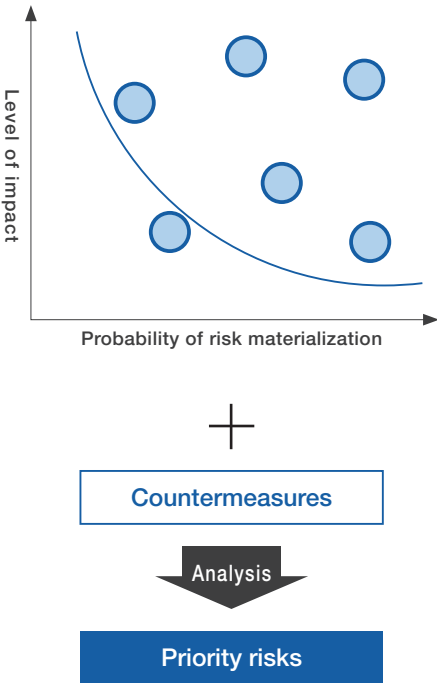
- We identify the risks that might hamper the achievement of our management targets from a global and long-term viewpoint and strive to prevent the actualization of these risks in a planned and organization-based manner.
- In the event that such a risk materializes, we strive to minimize the impact on 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 Dept. 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. Moreover, we have established the Risk Management Committee, which is chaired by the corporate officer appointed by the Chief Administrator. This committee regularly makes improvements on the risk management system and monitors its operation. The effectiveness of the system has been also regularly reviewed and reported to the CSR and Sustainability Committee for its confirmation.

### 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.



### 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 COVID-19, we expanded our work at home system and reviewed work shifts in line, thereby continuing to operate our business while preventing infection. In addition, we will revise the business continuity guidelines for infectious disease threat and establish a system to prepare for future emergencies.

#### 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. Specifically, we aim to minimize the damage by moving the system to a highly robust data center. 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, including domestic group companies. In the future, we will continue to move the system to the cloud and further strengthen our business continuity. Moreover, we are regularly providing more specific and practical education and training so that employees can make better responses in case of a disaster.

##### 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.

##### 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.

Information transmission training between sales offices and the emergency headquarters

Report session at the emergency headquarters

#### 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 will work to minimize damage by making disaster-specific timelines for each of our business locations and checking local hazard maps annually, etc.

##### 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.

Evacuation training (Komaki Plant)

Evacuation training (Nagoya Plant)

# 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

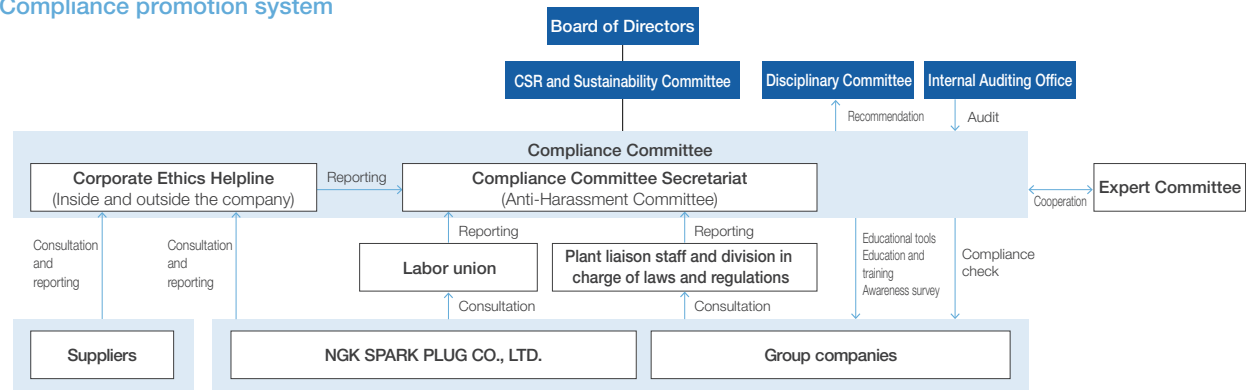
- We not only comply with laws and regulations, but also act in good faith with common sense and responsibility as a member of society.
- We regularly educate and raise the awareness of all our employees to impart a high level of ethics and correct knowledge, with which they can act voluntarily to prevent 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



### 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 FY2021, there were 41 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 work together to prevent harassment in the workplace. 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. The Anti-Harassment Committee promptly examines issues reported through the contacts and checks facts. It then takes corrective action and gives instructions as needed. The results of the action taken are reported to the Compliance Committee. Other matters related to human rights are handled by the Compliance Committee.

The effectiveness of the compliance system, including measures against harassment, is periodically reviewed and reported to the CSR and Sustainability Committee for confirmation.

### 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 also confirm that the content and use of charitable donations do not violate the law.

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 FY2021, 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

We comply with domestic laws and regulations based on the Foreign Exchange and Foreign Trade Act in accordance with the multilateral export control regime (MECR) established for international peace and safety. In addition, 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. We are working to prevent the destabilization of international affairs by focusing on preventing the outflow of sensitive technology as well as cargo that can be diverted to military use.

### 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. In FY2021, we conducted a questionnaire targeting about 8,800 employees in the domestic group companies, with a response rate of 83%. In order to promote improvement, the survey results are fed back to each workplace with the interviews to the departments having tasks.





# 4

## Financial/ Corporate Information

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Financial Results Highlights for the Past 11 Years

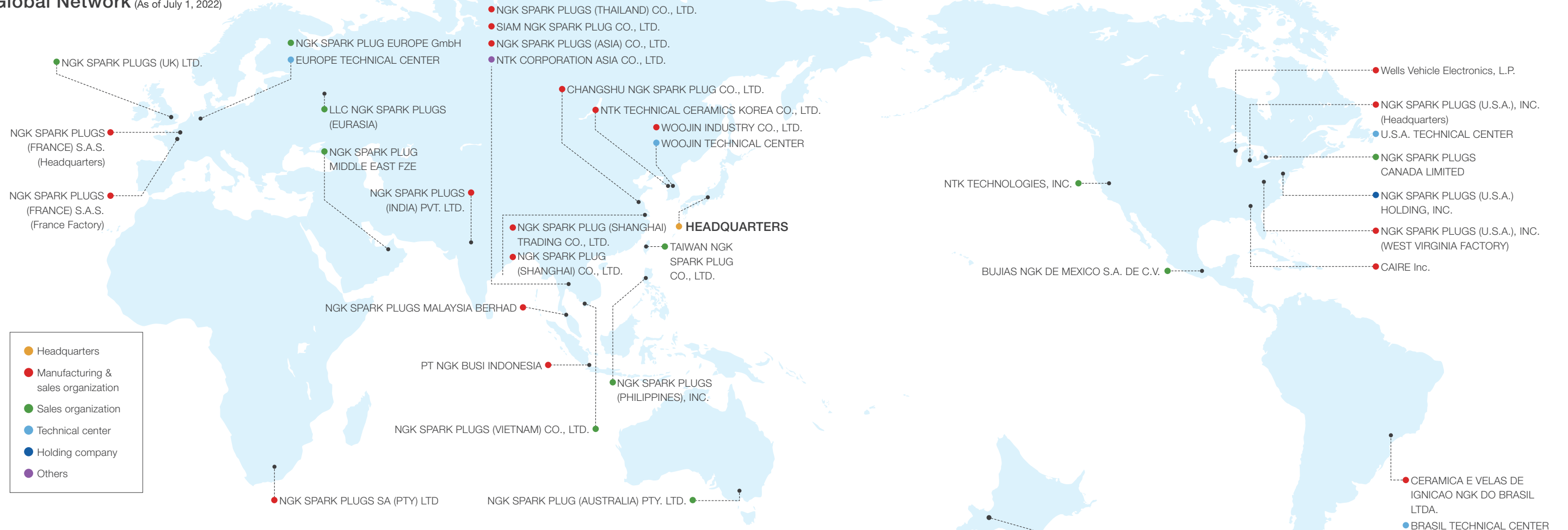
J-GAAP										IFRS		
(Millions of yen)												
(Fiscal year)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Revenue	284,746	302,798	329,758	347,636	383,272	372,919	409,912	425,013	426,073	427,546	491,733	
Operating income (loss)	24,478	23,754	51,661	62,196	66,284	53,595	67,279	58,385	48,447	47,389	75,512	
Ordinary income (loss)	23,740	27,674	54,960	67,907	64,483	55,559	69,094	59,258	—	—	—	
Profit (loss) attributable to owners of the parent	25,524	20,909	32,704	36,753	30,815	25,602	44,335	42,638	33,698	38,367	60,200	
Capital expenditures	14,004	24,012	41,034	36,372	45,339	36,328	37,591	56,587	51,004	33,444	29,589	
Depreciation	15,438	12,798	11,567	13,337	16,834	19,601	20,920	23,979	31,952	34,700	37,940	
R&D expenses	16,036	17,100	19,400	21,337	23,123	23,416	25,283	28,072	28,315	26,115	23,685	
Cash flows from operating activities	21,079	26,194	54,697	36,593	56,465	49,764	65,707	43,704	59,787	63,397	71,910	
Cash flows from investing activities	(15,850)	(15,442)	(61,148)	(12,865)	(82,331)	(53,410)	(26,422)	(48,380)	(52,926)	(42,523)	10,234	
Free cash flows	8,507	8,456	3,541	13,995	(25,866)	6,335	29,636	(21,356)	4,627	41,398	69,713	
Dividend payout	4,789	4,788	5,223	7,181	8,487	9,055	10,823	14,601	14,435	12,230	20,792	
Total equity	235,613	268,309	302,793	343,380	341,044	354,710	388,115	401,505	399,737	451,626	517,988	
Total assets	340,295	366,489	458,148	485,497	526,103	563,801	599,972	629,417	663,374	771,293	823,181	
Interest bearing debt	37,399	27,418	57,339	46,153	80,212	99,275	98,115	110,755	152,946	197,194	165,268	
									(Yen)			
Earnings (losses) per share	117.25	96.06	150.26	168.88	141.60	119.44	209.37	204.74	163.06	188.59	296.04	
Equity attributable to owners of the parent per share	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	2,530.01	
Cash dividends per share	22.00	22.00	28.00	36.00	42.00	42.00	60.00	70.00	70.00	60.00	102.00	
Operating income ratio (%)	8.6	7.8	15.7	17.9	17.3	14.4	16.4	13.7	11.4	11.1	15.4	
Return on Sales revenue (%)	9.0	6.9	9.9	10.6	8.0	6.9	10.8	10.0	7.9	9.0	12.2	
Gross profit on sales (%)	25.1	24.2	32.6	35.8	35.6	33.0	34.6	33.8	31.4	30.5	31.8	
ROE (Return on equity) (%)	11.3	8.4	11.5	11.4	9.1	7.4	12.0	10.9	8.4	9.1	12.5	
ROA (Return on assets) (%)	7.5	5.9	7.9	7.8	6.1	4.7	7.6	6.8	5.1	5.0	7.3	
ROIC (Return on invested capital) (%)	6.5	5.8	11.0	11.6	11.4	8.5	10.0	8.2	6.3	5.5	7.9	
Equity ratio (%)	68.8	72.7	65.6	70.2	64.4	62.5	64.3	63.4	59.7	58.2	62.5	
Total asset turnover (%)	0.8	0.9	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.6	0.6	
Dividend payout ratio (%)	18.8	22.9	18.6	21.3	29.7	35.2	28.7	34.2	42.9	31.8	34.5	



# Global Network

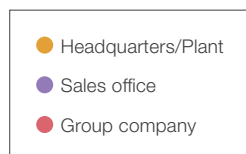
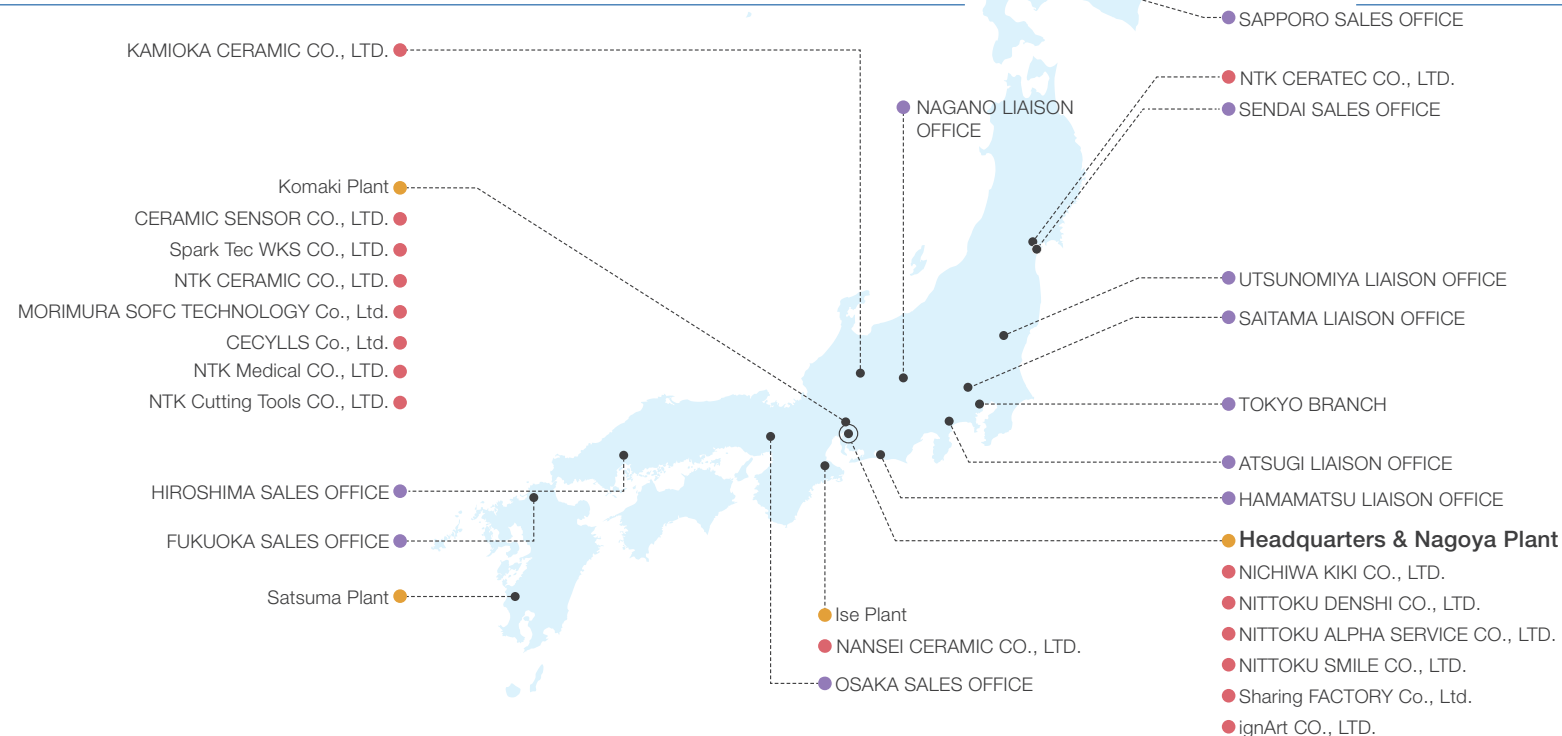
## Global Network

### Global Network (As of July 1, 2022)



## Domestic Network

### Domestic Network (As of July 1, 2022)



## Corporate Profile and Stock Information

### Corporate data (As of March 31, 2022)

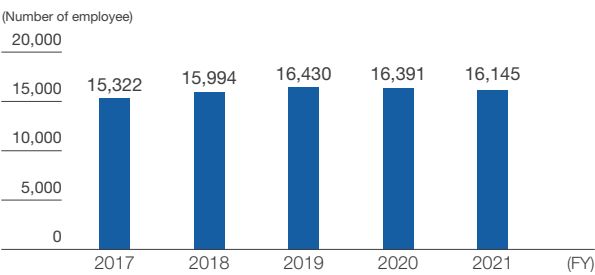
NGK SPARK PLUG CO., LTD.

**Headquarters** 1-1-1 Higashisakura, Higashi-ku, Nagoya  
461-0005, Japan  
URBANNET NAGOYA NEXTA Bldg.

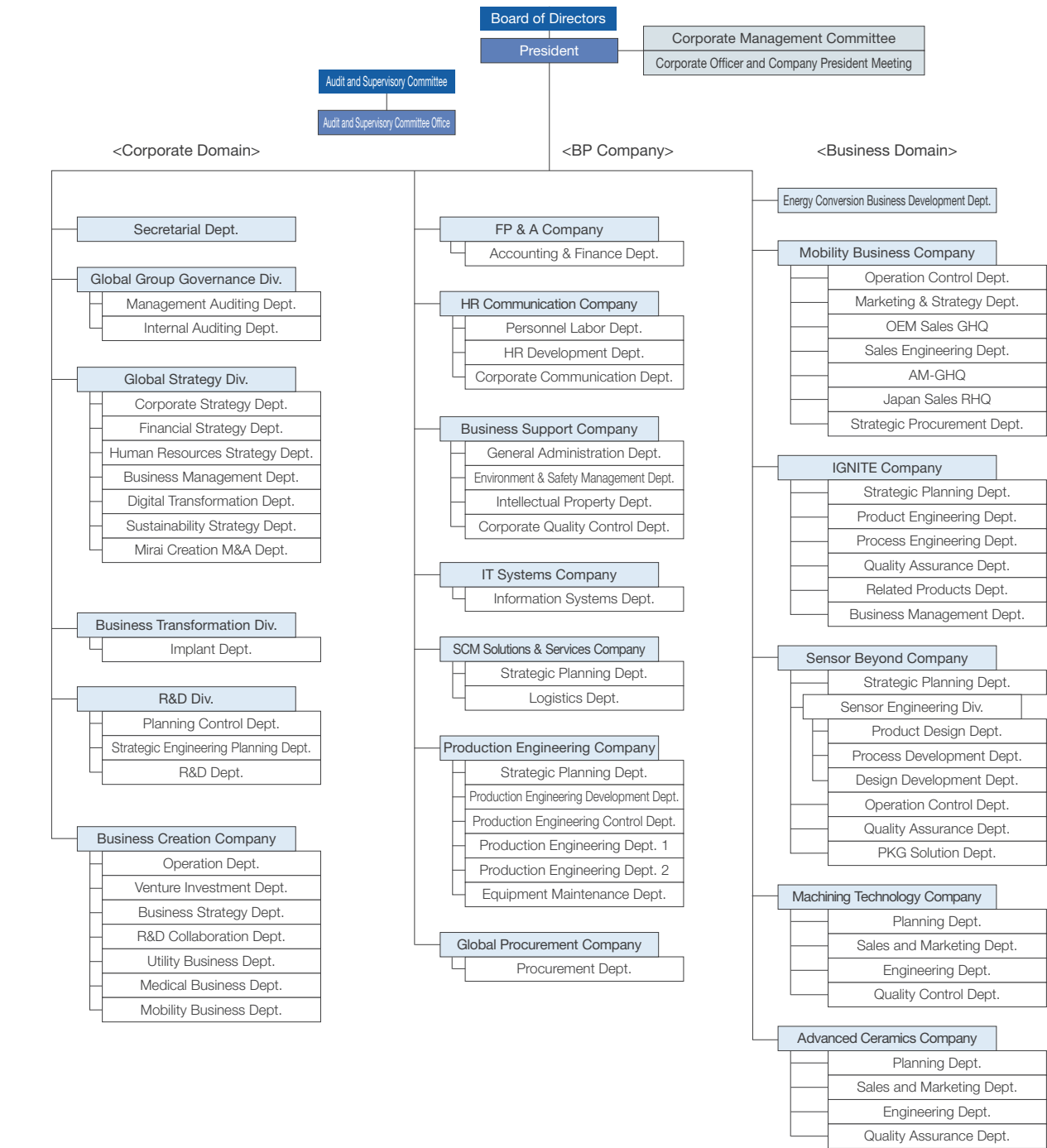
**Established** October 1936

**Number of employees** Non-consolidated: 3,668  
Consolidated: 16,145

### Number of employees at work (consolidated) (As of March 31, 2022)



### Organization chart (As of June 24, 2022)



### Number of shares and shareholders (As of March 31, 2022)

**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)  
\*Transitioned to Tokyo (Prime Market) and Nagoya (Premier Market) from April 2022.

**Shareholder registry administrator** Mitsubishi UFJ Trust and Banking Corporation

**Accounting auditor** KPMG AZSA LLC

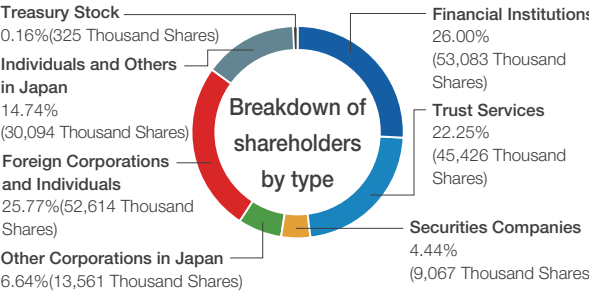
**Number of shareholders** 44,810

### Major shareholders (As of March 31, 2022)

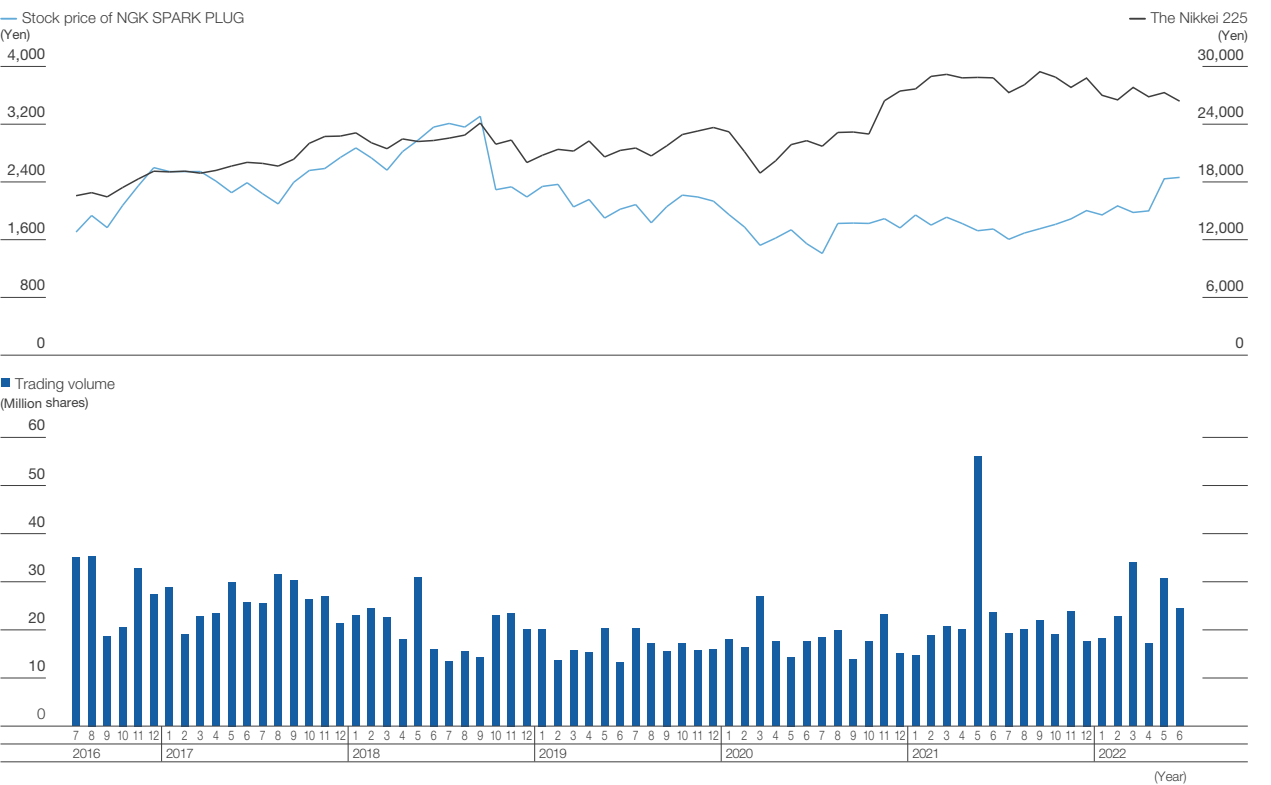
Name of shareholder	Number of shares held (thousand)	Ownership ratio (%)
The Master Trust Bank of Japan, Ltd. (trust account)	29,935	14.68
Meiji Yasuda Life Insurance Company	16,794	8.23
The Dai-ichi Life Insurance Company, Limited	16,752	8.21
Custody Bank of Japan, Ltd. (trust account)	9,098	4.46
National Mutual Insurance Federation of Agriculture Cooperatives	7,404	3.63
Nippon Life Insurance Company	3,563	1.74
TOTO Ltd.	3,433	1.68
JP MORGAN CHASE BANK 385632	3,349	1.64
JPMorgan Securities Japan Co., Ltd.	3,158	1.54
MUFG Bank, Ltd.	2,920	1.43

Note: Ownership ratio above is calculated excluding treasury stock.

### Breakdown of shareholders by type (As of March 31, 2022)



### Stock price and trading volume (As of June 30, 2022)



Note: Trading volume above does not include data for trading via the ToSTNet system.



## Initiatives

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."

Representative Director President  
Chief Operating Officer  
Takeshi Kawai



## Major awards and evaluations (FY2021)

· PRIDE Index 2021  
Silver Rating



· 2022 the Health & Productivity Stock Selection



· Nadeshiko Brand



For other awards, evaluations, and past track record, please visit our website. ▶

· Sustainable Development Goals (SDGs)



· Women's Empowerment Principles (WEPs)



· Task Force on Climate-related Financial Disclosures (TCFD)



· CDP



· Science Based Targets initiative (SBTi)



· Declaration of Partnership Building



## Corporate evaluation of ESG investment (FY2021)

· Dow Jones Sustainability Asia Pacific Index



· S&P/JPX Carbon Efficient Index



· SOMPO Sustainability Index



· FTSE4Good Index Series



· FTSE Blossom Japan Index



· FTSE Blossom Japan Sector Relative Index



· MSCI JAPAN ESG SELECT LEADERS INDEX

2022 CONSTITUENT MSCI JAPAN ESG SELECT LEADERS INDEX

· MSCI EMPOWERING WOMEN INDEX

2022 CONSTITUENT MSCI JAPAN EMPOWERING WOMEN INDEX (WIN)

(As of July 31, 2022)

\*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, do 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.

### SASB Content Index and GRI Content Index

In disclosures in the Integrated Report and on the website, we are working to enhance the content by referring to international disclosure frameworks.

We have posted on our website a table comparing our disclosure framework with the industry-specific standards provided by the U.S. Sustainability Accounting Standards Board (SASB) and the GRI standards provided by the Global Reporting Initiative (GRI). Please visit our website indicated below.  
<https://ngkntk.disclosure.site/en/>

## Editorial Note

Thank you for taking the time to read our Integrated Report 2022.

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, we are being asked to strengthen our responses to Environmental (E) and Social (S) issues due to the impact of the COVID-19 infection and Russia's military invasion of Ukraine. We have prepared this report, focusing on more clearly communicating to stakeholders how we will tackle these environmental changes through our business activities.

We are promoting sustainability activities based on the eight priority issues (materiality). In the environment field, we made efforts to launch the internal carbon pricing system and the internal environmental fund, under the SX (Sustainability Transformation) Project launched last fiscal year, as well as start the environment-friendly product certification system. Additionally, in light of the increasing importance of human capital in recent years, we are strengthening our various training seminars and programs to develop "self-disciplined creative human resources" under the new personnel system.

Also, in 2020, 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 2021, 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 and progress 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 2022

Kenji Isobe  
Executive Officer

Financial Strategy, Business Management, and Human Resources Strategy Depts., Global Strategy Div.  
FP & A Company, Business Support Company, and HR Communication Company

Administrative Office of Integrated Report 2022 Project



**NGK SPARK PLUG CO., LTD.**

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