

02 Growth Strategy

Growth Strategy

In FY2020, Niterra formulated the 2030 Long-term Management Plan, called NITTOKU BX, deeming 2030 as a milestone year for the growth of the company over the next two decades.

The 2030 Long-term Management Plan “NITTOKU BX” consists of three Medium-term Management Plans: the 7th 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 put more specifics to this 10-year plan as we work together to achieve our 2040 Vision.

02 Growth Strategy describes each of these plans.

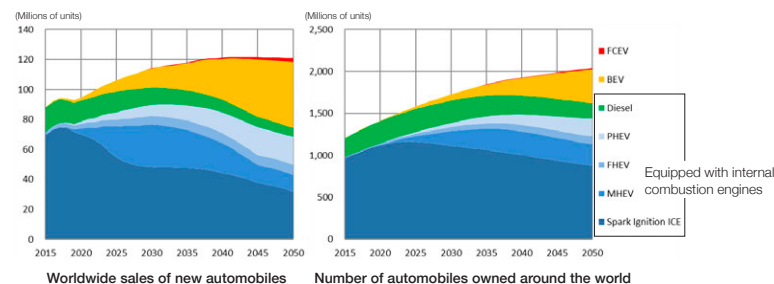
Long-term Management Plan: Course of Our Growth Strategy

2040 Vision and the 2030 Long-term Management Plan



Changes in the external business environment

According to these graphs, which forecast the sales volume of new automobiles and the numbers of vehicles in operation around the world, the number of automobiles with internal combustion engines will continue to increase until around 2030. However, in the mid-2030s, the number will begin to decline. It is, therefore, necessary to transition to a business structure that is not dependent solely on the sales of products used in internal combustion engines.

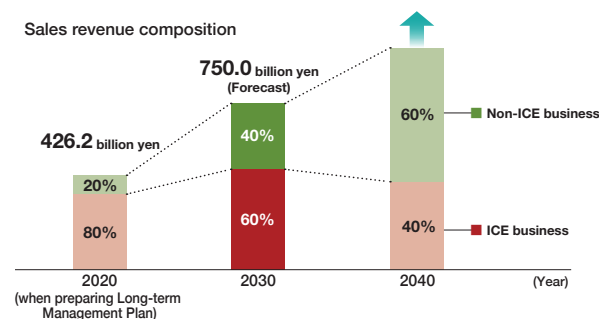


* Source: Forecasts made by Nitterra based on data provided by IHS Markit Automotive through its "Mobility and Energy Future" service

* Forecast at the time of formulation of the Long-term Management Plan (2020)

Transformation of the business portfolio

We are currently doing business with a focus on internal combustion engines (ICE), however, in the future, we need to be involved in more than the ICE business and embrace the challenge of starting new businesses to transform our business structure. Specifically, as the 2040 targets, we aim to decrease the proportion of the ICE business in our total sales revenue from the current 80% to 40% while raising that of the 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 the ICE business and non-ICE business, respectively, as milestone targets for 2030 under the 2030 Long-term Management Plan "NITTOKU BX."



Guiding principle

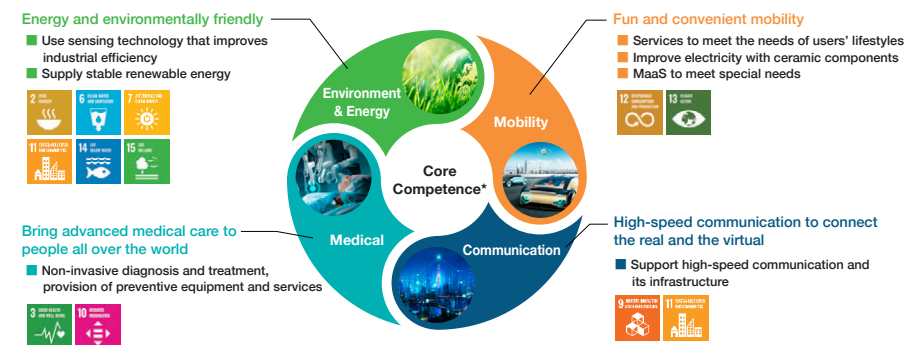
In our Long-term Management Plan, we have upheld "Change with Will !!" as the guiding principle, meaning "with a strong commitment ("Will"), we will foster "Change" for coexistence with society and people." We aim to reform our organization and business structure with speed to make our company one that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



Business fields to focus on

We focus on four areas of business: Environment & Energy, Mobility, Medical, and Communications.

Our core competencies consist of ceramics materials technology, sensing technology, global production and sales systems, and numerous other areas. Leveraging these core technologies, we seek to add value through *Something New* and the use of open innovation to grow our four areas of business.

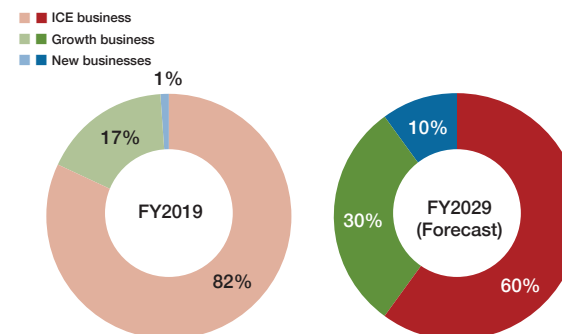


* Ceramic material technology, application technology in harsh environments, disparate material bonding technology, sensing technology, rapid high-temperature heating technology, and global production and sales system

Transformation of Our Business Portfolio for Growth

As the mainstay of the Long-term Management Plan, we will foster the transformation of our business portfolio. As for the 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 for sales and profitability. We aim to turn these businesses into our profit pillars in 2040, although their operating income margin might still be 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 these businesses. For the new businesses, we will strictly screen the 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 (digital transformation), clarification of responsibilities and authorities, and willful cultural change. We will break our dependence on the ICE-related business based on this recognition.

Sales revenue composition



Specific measures

1 Management Innovation (DX)

- >> 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 Authorities

- >> Clarification of responsibilities and authorities to promote the transformation of our business portfolio
- >> Build an optimized structure and system for each business

3 Willful Cultural Change

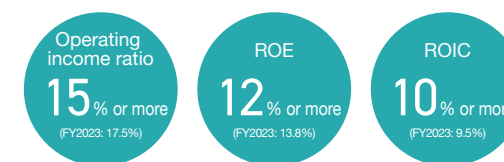
- >> Undertake culture reform and strengthen the Group's abilities

Secure profit while transforming the business portfolio

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

FY2029 management targets

The 2030 Long-term Management Plan "NITTOKU BX" indicates the midway milestone for our 2040 Vision. Under this plan, we strive for business portfolio transformation, clarification of responsibilities and authorities, 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 Nitterra 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.





Our Company has built a strong presence in the ceramics industry, with a particular focus on spark plugs. I see our activities as a contribution to solving contemporary social issues. I believe that this social role will not change and will continue into the future. Additionally, brightening the Earth with our technology and ideas will lead to an increase in our corporate value. During the current Medium-term Management Plan period, however, the internal combustion business has achieved significant results, while business transformation for the future has not progressed as planned. Although we have established four main areas, we have not yet created a pillar to focus on. This is because we have placed the highest priority on free thinking without any particular restrictions on our activities. From now on, we will redefine the technologies and ideas that are our strengths and drive the transformation of our business portfolio in a more concrete way.

To build a framework for this, we have established the Strategic Port Folio Dept. as an administrative unit to create new businesses and shape our future.

Asset-based Setting of Focus Areas and Resource Control

Business is not only a solution to social issues, but also a battle to continue to be chosen by society. It can be said that only a company chosen by society can contribute to society. We view the various assets we have

We will redefine our strengths to drive the transformation of our business portfolio

Keiji Suzuki, Executive Officer

developed as important weapons or strengths that will enable us to continue to be chosen by society. We then determined where our strengths would be best utilized and established areas of focus for success.

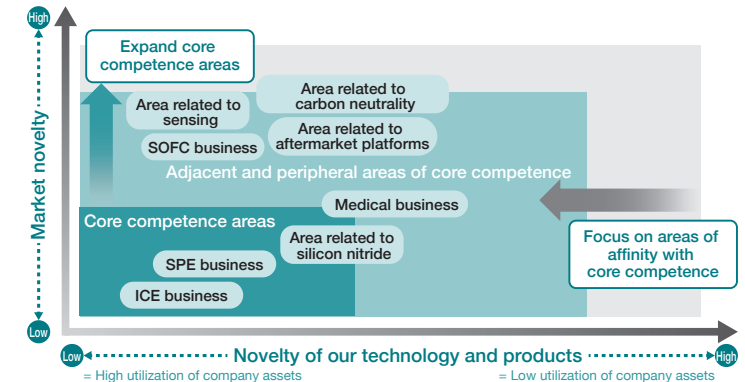
One such area is ceramics. The area that can leverage the strengths of ceramics will lead to shorter-term returns and allow for larger investments. On the other hand, in areas where our current position is less robust, we need to make small but long-term, multifaceted investments to build future strength. Therefore, I believe it is important to strategically implement resource control based on areas and the presence or absence of strengths.

Establishment of Commercialization Guidelines

Earlier, I described the assets we have built so far as our strengths. We also defined competitive advantage as the ability to use these strengths to formulate hypotheses for success. We have had some new business proposals aimed at solving social issues that did not demonstrate a strong competitive advantage. We have therefore decided to instruct each new business unit that securing competitive advantage is a condition for continuing to seek new business.

In order to maintain this competitive advantage, it was also necessary to clarify the direction of research and development for the future. Accordingly, in collaboration with young members of our scientific research, who are in charge of our R&D, we have also outlined our vision and a roadmap for the development of core technologies over the next 100 years.

For example, one of our SPE businesses, electrostatic chucks, is already a successful business. This is an example of successfully overcoming a challenge by securing a competitive advantage through the use of a number of strengths, including ceramic firing technology, sheet lamination technology, and technology that brings out the functions of ceramics in combination with metals. Another new challenge is the

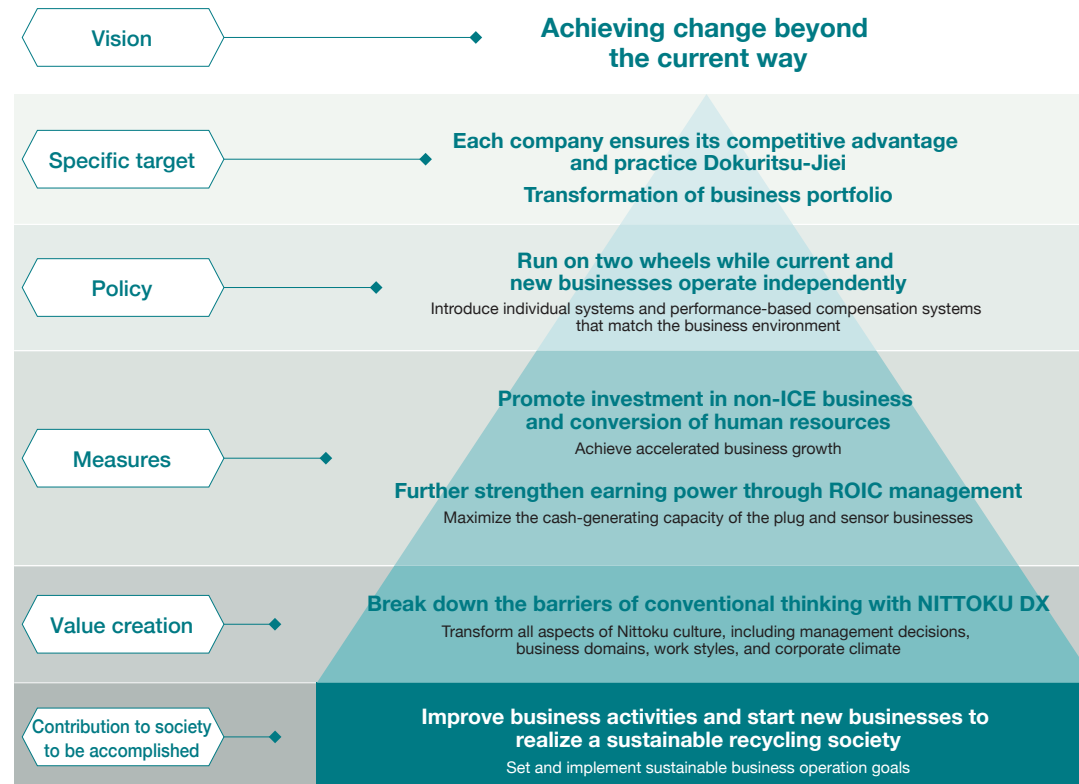


maintenance platform business. This business is designed to create a competitive advantage, as we believe that the relationships we have built with repair shops and parts suppliers in the plug aftermarket business represents our strength in solving complicated procedures related to car maintenance by connecting them through a software platform.

To Our Stakeholders

We very much regret that the creation of new businesses under the current Medium-term Management Plan has not yet yielded significant results. However, as a result of the lessons we have learned over the past few years, we now believe we can be more strategic and effective in creating new business. We are determined to move forward with our efforts with unwavering resolve.

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.



Key Initiatives

To transform of our business portfolio, we will maximize cash generation in current businesses and proactively allocate management resources optimally to growth and new businesses.

Business strategy

ICE business

Determine an appropriate business scale and maximize cash generation through ultra-efficiency

Growth business

Achieve business growth that exceeds the market growth rate

New businesses

Realize new businesses pillars and shorten the business creation cycle

Cross-company operations

- >> Invest in non-ICE business
- >> Promote transformation of human resources portfolio
- >> Strengthen earning power through ROIC management

Performance Goals

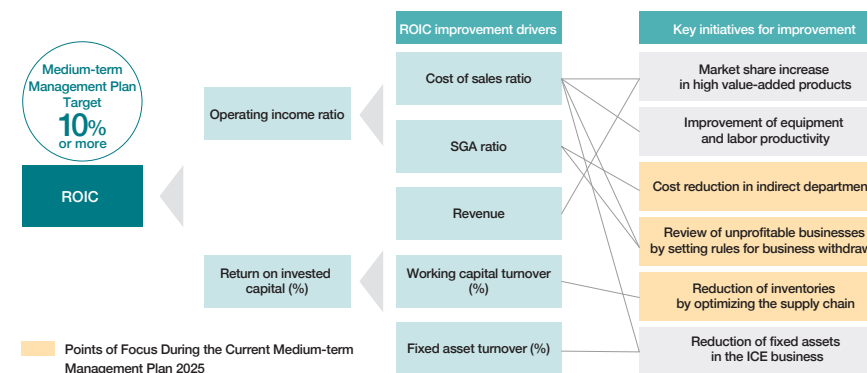
We aim to achieve revenue of 600 billion yen and an operating income of 100 billion yen in fiscal year 2024, the final year of our 2025 Medium-term Management Plan.

Due in part to the depreciation of the yen, we in general achieved our Medium-term Management Plan target of 600 billion yen in revenue and other indicators in FY2023, one year earlier than the final year of our plan. At the same time, we encountered delays in creating new businesses, but results have begun to emerge in FY2022. We will move forward with our plan under a greater sense of urgency to recoup progress over the remaining year of our Medium-term Management Plan.

| | FY2020 Previous Medium-term Management Plan Final-Year Results | FY2021 Medium-term Management Plan First-Year Results | FY2022 Medium-term Management Plan Second-Year Results | FY2023 Medium-term Management Plan Third-Year Results | FY2024 Medium-term Management Plan Final-Year Forecast | FY2029 targets |
|---|---|--|---|--|---|----------------|
| Revenue (billions of yen) | 427.5 | 491.7 | 562.6 | 614.5 | 600.0 | 750.0 |
| Operating income (billions of yen) | 47.4 | 75.5 | 89.2 | 107.6 | 100.0 | - |
| Operating income ratio | 11% | 15% | 16% | 18% | 17% or more | 15% or more |
| Non-internal combustion revenue (billions of yen) | 88.9 | 104.0 | 118.6 | 109.1 | 150.0 | 300.0 |
| ROIC | 6% | 8% | 9% | 10% | 10% | 10% or more |
| ROE | 9% | 13% | 12% | 14% | 13% | 12% or more |

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 investment efficiency. We will achieve 10% or higher ROIC by subdividing the challenges and responsibilities that must be undertaken at individual businesses 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 current 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.



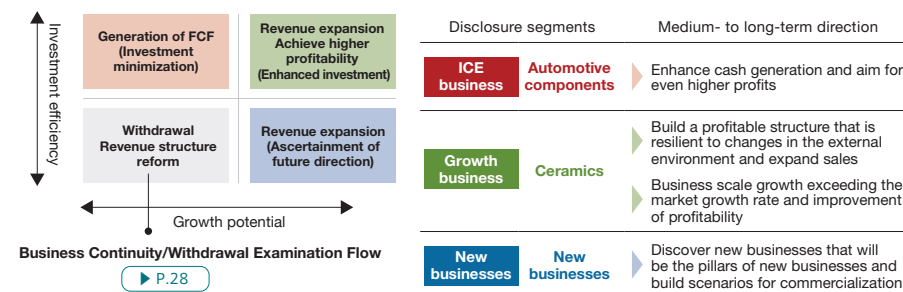
Introduction of an In-house Company System

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 corporate domain or function division has been reorganized into the Global Strategy Division and Business Partner (BP) / 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 department 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; 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 Improvement of company-wide earning capacity contributed by Business Partners (BP) / Company |
| Divisions | Business department Business company/spin-off | >> Improvement of the ability to adapt to changes by introducing systems and structures tailored to each market environment >> Achievement of KPIs and KGIs at each company |

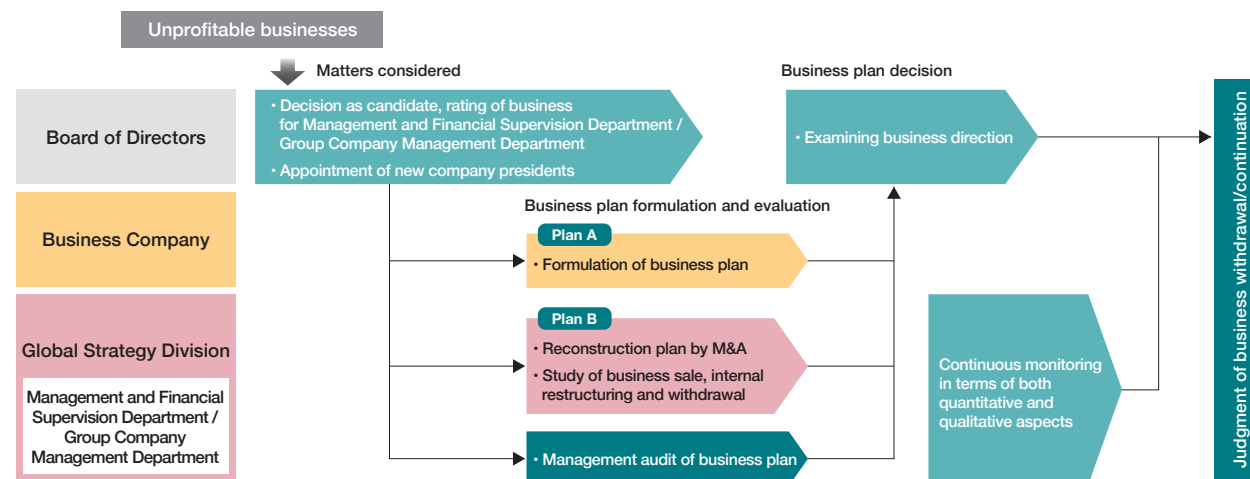
Business Portfolio Management

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. KPIs and KGIs are set for each company after defining expected roles based on ratings in accordance with each company's position in the market.



Business Continuity/ Withdrawal Examination Flow

The Management and Financial Supervision Department / Group Company Management Department formulate and execute either the Business Revitalization or the Withdrawal or Sale of Business plans to judge whether to continue or withdraw from unprofitable businesses. In the event that a company comes under the organization of the Management and Financial Supervision Department / Group Company Management Department, a revitalization plan will be formulated under the new company president. Simultaneously, the Management and Financial Supervision Department / Group Company Management Department formulates another revitalization plan from a different point of view. Finally, the Global Strategy Division assesses these plans in respect of probability, thereby enabling us to implement the best business strategy from multiple perspectives. We strengthened the organization of both the Global Strategy Division and Management and Financial Supervision Department / Group Company Management Department with outside human resources to establish a system that enables rational decision-making.



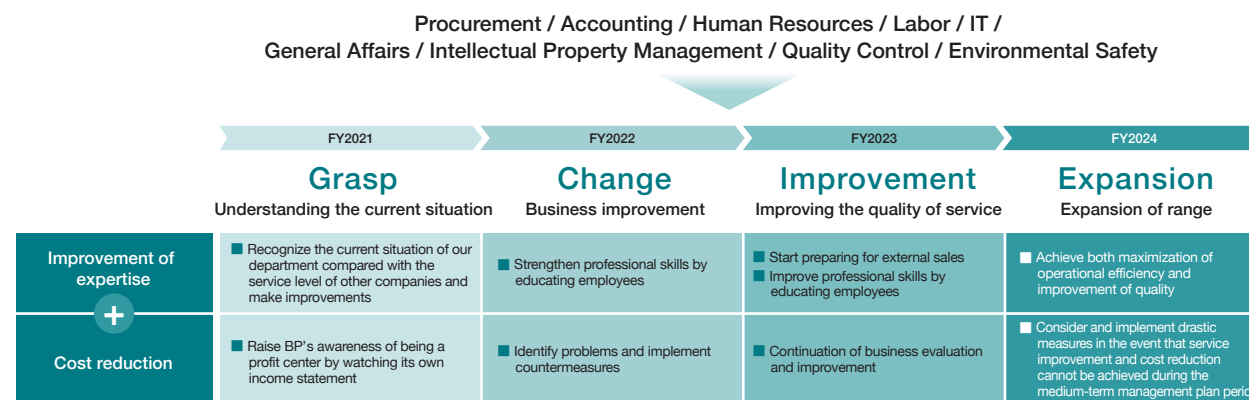
Improvement of Company-wide Profitability by Introducing the Business Partner (BP) System

The Business Partner (BP) System 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 became 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. At the same time, we will also 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



Overview of Niterra DX

We formulated Niterra DX as our vision to promote digital transformation (DX) and to achieve our vision and goals established in the Niterra Group's Medium-to Long-term Management Plan. We will establish basic strategies for each layer of this plan to transform our operations, business, and existing concepts.

① IT Infrastructure to Support Transformation

We will establish flexible, secure, and safe IT infrastructure to support the digital transformation of the Niterra Group, encourage synergies between businesses, and support new business growth.

② Human Resources to Support Transformation

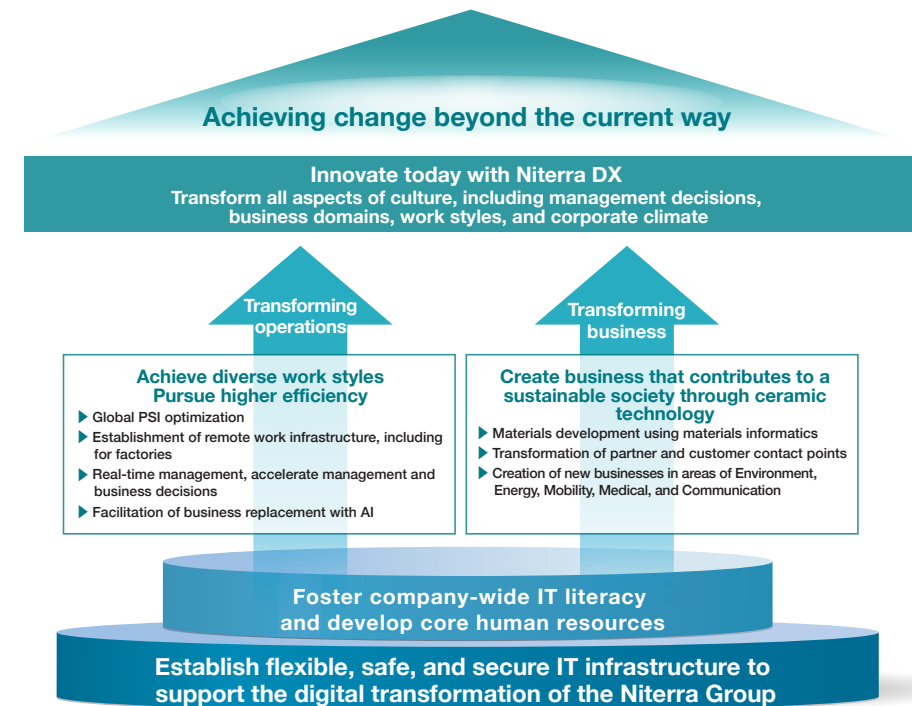
We will develop educational programs for all group companies and core human resources to foster a culture that is open to change and innovation through education and that proactively embraces and utilizes digital technology.

③ Transformation of Operations

We will introduce various work styles in both offices and factories, as well as pursue higher business efficiency through the use of data and AI to speed up various decisions and encourage business replacement.

④ Transformation of Business

We will create businesses that contribute to achieving a sustainable society based on Niterra Group ceramic technologies cultivated to date.



Road to Transformation

Niterra DX divides the execution steps of our basic strategy into three phases, implementing themes and KPIs for each layer. We will use this period through 2023 to build the foundation of our transformation. Currently, we are focusing on strengthening the IT infrastructure and human resources that will support our transformation. Once we establish a solid foundation, we will begin implementing operational, business, and cultural changes.

Declaration of Niterra DX Promotion

We, the Niterra Group, declare that we will promote Niterra DX as our management strategy to transform through digital technology, contribute to a sustainable society, and achieve our goals set in the Medium- to Long-term Management Plan.

Takeshi Kawai
Representative Director President, Chief Operating Officer

| | - 2023 Building a foundation for transformation | - 2024 Transformation of operations | - 2025 Transformation of business and culture |
|---|---|--|---|
| Transformation of business | | <ul style="list-style-type: none"> ▶ Transformation of partner contact points (procurement platform) | <ul style="list-style-type: none"> ▶ Partial application of material informatics ▶ Transformation of customer contact points ▶ Creation of new businesses utilizing our assets |
| Transformation of operations | <ul style="list-style-type: none"> ▶ Location-free office work (60% at home) | <ul style="list-style-type: none"> ▶ Commencement of data analysis platform ▶ Completion of Smart Factory Model Plant ▶ Partial application of remote factory work | <ul style="list-style-type: none"> ▶ PSI Optimization System (Japan)^{*1} ▶ Global PSI Optimization System |
| Human resources to support transformation | | <ul style="list-style-type: none"> ▶ Formation of COE Team ▶ Implementation of basic DX training (company-wide) ▶ Definition and education of DX human resources, creation of a framework | <ul style="list-style-type: none"> ▶ Formation of Global COE Team^{*2} ▶ Implementation of basic DX training (expert resources: 100 personnel) |
| IT infrastructure to support transformation | <ul style="list-style-type: none"> ▶ Improvement of IT investments | <ul style="list-style-type: none"> ▶ Completion of security enhancement measures ▶ Development of IT grand design | <ul style="list-style-type: none"> ▶ Core system upgrade, completion of initial model |

^{*1} PSI: Production (P), Sales (S), Inventory (I)

^{*2} COE: Refers to consolidating management resources, such as talented human resources, expertise, and facilities scattered throughout the organization (within the company) in one place as a cross-functional structure to achieve company objectives and goals



Current Market Environment and Progress in Medium-term Management Plan

We have finished the third year of our Medium-term Management Plan, which started in FY2021, and are approaching the final fiscal year. Looking back on the business environment over the past three years, the global economy and supply chain disruption triggered by the COVID-19 pandemic and the shortage of semiconductors have had an impact. In addition, the external environment continues to be challenging, such as the surge in raw material prices and worsening inflation from the second half of FY2023.

Despite these circumstances, the Group was able to achieve record highs in both revenue and operating income in FY2023, continuing from the previous fiscal year. It is true that the continued depreciation of the yen provided a tailwind, but we were able to steadily pass on price changes from inflation, and even excluding foreign exchange factors, we were able to increase profits. Thanks to this strong performance, we were able to achieve the performance targets set in the Medium-term Management Plan one year ahead of schedule without waiting for the final fiscal year of the plan. There was also an effort in the

In order to improve capital efficiency and enhance corporate value, we will focus on thorough ROIC management and strengthening business portfolio management.

Koji Suzuki, Executive Officer

field to pass on price changes. The soaring prices of raw materials such as precious metals have been noticeable since about two years ago, but we believe that the significant results have been achieved by striving for global consensus and persistently negotiating to pass on price changes. As a result, we acknowledge that there was an increase in profit of about 15 billion yen in monetary terms compared to FY2022.

Strengthening Strategic Investments and Business Portfolio Management

Our Medium-term Management Plan states the direction of determining the appropriate business scale and maximizing cash generation through ultra-efficiency improvements in the ICE business. If there are business opportunities, we will make appropriate investments to generate and expand cash. As an example of a strategy in the aftermarket plug business, we are steadily progressing with the replacement to environmentally friendly high value-added precious metal plugs, taking into account regional characteristics. In addition, in order to ensure a stable supply in the medium to long term for the ICE business, we signed a memorandum of understanding with DENSO CORPORATION in July 2023 to start discussions and considerations regarding the acquisition of the Spark Plug business and the Exhaust Gas Oxygen Sensor business. Through the realization of this initiative, further contributions to solving social issues such as reducing environmental impact across the industry in the production process can also be expected.

On the other hand, there are still challenges to launch and expand non-ICE businesses. For new businesses, we have made a wide range of investments, including those from a long-term perspective, but we regret that these investments have not led to tangible results. In light of

this situation, we are considering narrowing down the investment areas of new businesses with an eye to the next Medium-term Management Plan. Specifically, we will invest in areas that are more closely compatible with our assets, such as the core competencies of the Group, including silicon nitride-related businesses, the semiconductor manufacturing equipment business, and the ICE business, as well as areas adjacent to them. At the same time, we will increase new investments in the Group's core competence areas with the aim of further expanding the scale of operations. In particular, we intend to make generous investments in the ceramics field, which is expected to grow in the future. In addition to these business investments, we will also focus on investing in human capital to support future business growth.

To strengthen the management of our business portfolio, we have established business portfolio management based on the setting of hurdle rates for each business segment in the Medium-term Management Plan, and are operating with financial discipline. If we see a business where ROIC and growth potential are declining, we consider it as a target for our structural reform business, formulate a plan including selection and focus, form partnerships with external parties, and repeat the review. For example, in the medical business, the dissolution of the capital and business alliance with Japan Medical Dynamic Marketing, INC. and the associated share transfer conducted in January 2022, and the withdrawal from the implant (artificial bone) business, as well as the business capital alliance with IMC in the machine tool business, fall into this category.

Improved Capital Efficiency and Better Cash Allocation

In terms of improving capital efficiency, we have set a target of 13% for ROE in the Medium-term Management Plan, but in FY2023, ROE

was 13.8% due to strong performance. We recognize that our cost of shareholder equity is around 8.5% to 10%, and that ROE during the period of the Medium-term Management Plan has remained at a level of 12% or more, so we believe that we have been able to maintain a positive equity spread. In order to improve ROIC, we are working on various priority measures to improve the operating income ratio and the invested capital turnover ratio based on the ROIC tree. To improve the operating income ratio, we are working to increase our share of high-value-added products, improve equipment and labor productivity, and reduce costs in indirect departments. On the other hand, we are focusing on reducing inventories by optimizing the supply chain.

The reduction of inventories is generally progressing as planned. While we have accumulated inventories due to the emergence of global geopolitical risks, we are also advancing supply chain reforms. In order to ensure a stable supply, we are aiming to further reduce inventories by centrally managing everything from raw material procurement to sales forecasts, and working on logistics reform and supply-demand reform. Our basic approach to cash allocation is to allocate the cash generated in the ICE business to growth businesses and new businesses in order to transform our business portfolio while maintaining a certain level of financial soundness. While cash-in has progressed roughly as expected, investments have not been made sufficiently, resulting in an increase in equity ratio, and we recognize that there will continue to be issues.

On the other hand, with regard to shareholder returns, we have been working to enhance them based on dividends by considering the optimal balance between investment for future growth and financial soundness. In addition, we will consider the acquisition of treasury stock

based on the appropriate capital level in the medium term. Regarding the appropriate capital level, we are aiming to maintain our current credit rating and continuously review the appropriate capital level, considering our medium- to long-term management strategy to enhance sustainable corporate value. Since the start of our Medium-term Management Plan, equity capital has gradually increased, and while financial soundness has been secured, the appropriate capital level has been slightly exceeded. For this reason, we conducted a share buyback of 10 billion yen in FY2023, and we plan to implement another 10 billion yen buyback in FY2024 as well. In principle, we intend to amortize the acquired treasury stock. In addition, in order to realize stable shareholder returns in response to the early achievement of the targets of the Medium-term Management Plan, we have newly adopted dividend on equity (DOE) as a new indicator for the dividend policy, which is less susceptible to the effects of a single fiscal year's performance.

Financial Strategy to Enhance Corporate Value

Our PBR has remained below 1x since FY2019, but is currently at around 1.25x*. I myself do not think that this level is sufficient, and I will continue to make efforts to enhance corporate value continuously and strive to obtain an appropriate evaluation from the capital markets.

To improve PBR, we will focus on improving both ROE and PER. The key to improving ROE is the promotion of ROIC management, and we will accelerate the introduction of segment-specific ROIC and the strengthening of business portfolio management. To improve PER, we will strive to further grow our current businesses and improve the



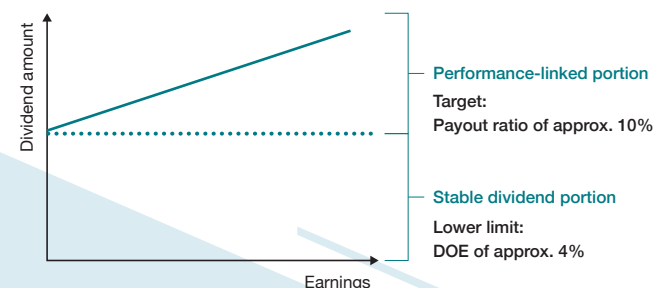
certainty of launching new businesses. We will also work to reduce capital costs by promoting dialogue with investors and strengthening governance. For example, in response to feedback that it was difficult to see the progress of business portfolio transformation, we explained the progress at last year's business briefing. In addition, this change in shareholder return policy reflects the feedback of dialogue with shareholders to management.

Furthermore, regarding tax policies, we consider it as a fundamental social responsibility that companies should fulfill, and we adhere to and properly pay taxes in accordance with the tax laws and regulations of each country and region as a basic principle, and have established a tax governance system for this purpose. We will continue to develop a system for further expansion of information disclosure.

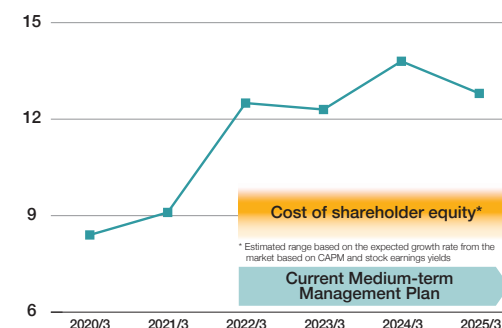
As we continue to work to deepen your understanding of Nitterra, we will strive to improve capital efficiency and corporate value while receiving advice from our stakeholders, and we hope you look forward to our Group's future efforts.

* The PBR value is as of August 26, 2024.

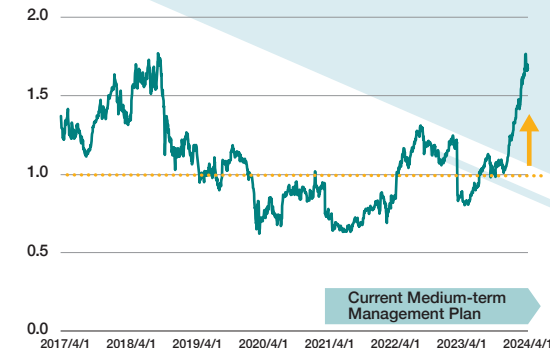
Image after revision of shareholder return policy



Change in return on equity (ROE)



Change in price-to-book ratio (PBR)





Looking Back on the Third Year of the 2025 Medium-term Management Plan

Revenue in the plug business increased 18% over the prior year due to the impact of a weaker yen against the U.S. dollar and the pass-through of inflationary costs. Information on each commercial distribution channel is as follows. Worldwide sales of products for new vehicle assembly were flat year on year, as a decrease in shipments in Europe and China was offset by an increase in Japan. However, the amount of sales increased as a result of cost pass-through. Sales of aftermarket parts recovered from the impact of the COVID-19 lockdown in China the previous year, but declined in the ASEAN region.

Sensor business revenue also increased 7% year-on-year due to an easing of the automotive semiconductor shortage, although, like the plug business, it was impacted by the economic slowdown in China.

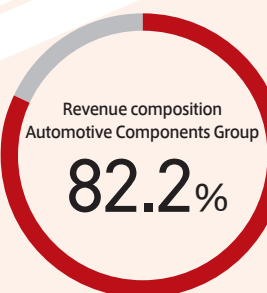
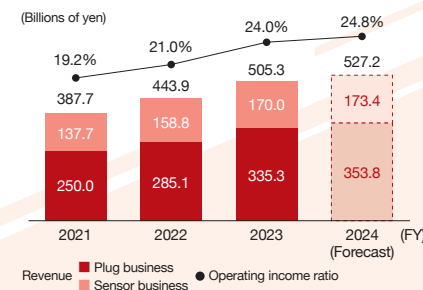
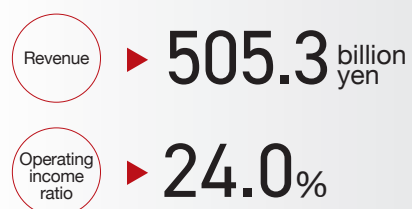
As for the market environment in FY2023, the global total production of internal combustion engine vehicles increased. In the Chinese market in particular, local automakers, which we expect to increase their market share in the future, increased their production volumes, which rose by a substantial 16.9%. Meanwhile, the production of internal combustion engine vehicles by our major customers (automakers in Japan, the U.S. and Europe) declined.

Under these market conditions, the sales volume of our plugs remained at the previous year's level. This was due to a decrease in sales of plugs used in general-purpose machines and a decrease in automobile production by our customers. On the other hand, the sales amount increased by 9.5% year-on-year, excluding the effect of exchange rates. This was due to the pass-through of inflationary costs.

We plan to improve profitability while reducing CO₂ emissions and increasing our environmental contribution through an appropriate pass-through of inflationary costs and an increase in the ratio of precious metal plugs to total plugs. We also plan to integrate part numbers and strengthen our order management system to reduce inventories in preparation for the coming off-peak demand. Furthermore, we will promote smart factories, establish an efficient production and supply system, and fulfill our responsibility to supply the market as a leading plug manufacturer.

* Production volume of internal combustion engine vehicles is our estimate.

Revenue and operating income ratio



KGI (2025 Medium-term Management Plan)

Operating income ratio ▶ Annual average growth rate: **1%**

Free cash flow ▶ **1.5 times**
(compared with the amount for FY2021/March)

Strengths

Integrated production system from materials development to manufacturing

Unique sales channels around the world

▶ P.17

External Environment

Global trend toward decarbonization

The importance of tackling climate change has increased substantially during the past few years, and governments around the world have been moving swiftly to become decarbonized societies. The automobile industry is in the midst of a once-in-a-century period of radical transformation, with automakers developing electric vehicles (EVs) as nations move with greater speed toward electrification in order to reduce CO₂ emissions. In the light of this trend, our sales value forecast through FY2040 is that even in the Chinese market, where the shift to EVs is relatively advanced, demand for precious metal plugs for the aftermarket will remain at approximately the same level as last year until around 2040, although the OEM market will reach its peak growth between 2020 and 2030. We also expect that the global market as a whole will generally move in the same direction as China, although there will be some differences between fiscal years.

Stricter environmental regulations and increasing compliance demands

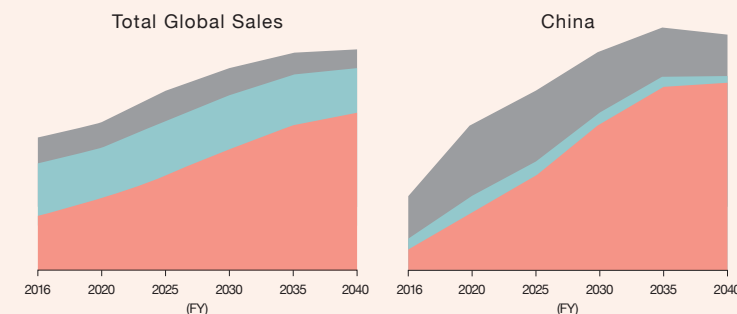
Our market share of exhaust gas oxygen sensors has been increasing thanks to the growing demand in response to stricter global environmental regulations. In particular, the expansion of these regulations to include two-wheeled vehicles has dramatically increased the demand for sensors that control fuel injection for both automobiles and two-wheeled vehicles. The need for sensors that meet regulations is also increasing, and sensors that require technical skills are in demand in addition to typical oxygen sensors that have been mainstream until now. Sensors that require technical skills are more technologically advanced such as wide-range oxygen sensors capable of measuring oxygen concentration in exhaust gas more precisely as well as NO_x sensors capable of measuring nitrogen oxide.

Sales forecast through FY2040

Assumptions for sales amount

- Estimated based on the average unit price in FY2022
- Estimated assuming that the current market share remains constant

- Plugs for new car assembly
- Nickel plugs for aftermarket parts
- Precious metal plugs for aftermarket parts



Vision

Market share expansion in high-value-added products and environmental contributions

In the rapidly advancing movement toward decarbonization, the need for fuel-efficient electric vehicles such as HEVs^{*1} and PHEVs^{*2} has been increasing. Our range of spark plugs includes the regular nickel type as well as precious metal types, which are highly fuel efficient. The precious-metal spark plugs are said to offer fuel efficiency that is around 2% higher than the regular types. Precious-metal spark plugs already account for around 40% of sales, and by replacing regular nickel spark plugs with them, it would be possible to achieve a significant improvement in fuel efficiency. By selling precious-metal spark plugs, which help boost fuel efficiency, we will meet the needs of the market.

Like spark plugs, exhaust gas oxygen sensors now need to be high-value added products with a stronger environmental contribution. Compared with regular oxygen sensors, our next-generation oxygen sensors and wide-range oxygen sensors can contribute to reduced CO₂ emissions through more precise

measurement of oxygen concentrations, and they therefore allow compliance with strict environmental regulations. Although HEVs and ZEVs^{*3} are expected to increase over the medium to long term, this does not mean that internal combustion engine vehicles will disappear immediately. Because it is important to reduce CO₂ emissions during the transitional period of electrification, we will continue to provide high-value-added products to the market and contribute to the environment.

We aim to maximize investment effectiveness by concentrating investments on high-value-added products like these spark plugs and exhaust gas oxygen sensors. We will also maximize cash generation through the expansion of our share of the market for high-profit-margin products. Finally, we will curb increases in inventory by enhancing productivity as well as identify supply chain issues such as procurement, manufacturing, logistics, and sales on a cross-organizational basis. Through these efforts, we will clarify our responsibilities and make efforts to reduce inventory.

*1 Hybrid Electric Vehicle (HEV) *2 Plug-in Hybrid Vehicle (PHEV) *3 Zero Emission Vehicle (ZEV): Electric vehicles or fuel-cell vehicles that have zero emissions

Outlook for FY2024

Revenue from the plug business is expected to increase compared to FY2023. With the ongoing shift from ICE (internal combustion engine) vehicles to EV vehicles, spark plugs for new vehicle assembly are expected to decrease in volume, but increase in value as raw material price increases are passed through to selling prices. On the other hand, sales of spark plugs for aftermarket parts are projected to grow year-on-year due to increased volume in nearly all regions, expansion of high-value-added products with high unit prices, and the pass-through of raw material price increases and inflation, similar to the trends observed in the sales of spark plugs for new vehicle assembly.

Revenue from the sensor business is expected to increase slightly from FY2023. The sensor business is susceptible to the impact of the shift to EVs, as most sensors are used for new vehicle assembly, and its sales increase is smaller than that of the plug business. However, the decrease in sales of automotive oxygen sensors and other sensors is expected to be offset by an increase in sales of motorcycle sensors due to the stricter regulations in India and NO_x sensors for which customers adjusted their inventories in the previous year.

Consideration of Growth Investments in the Automotive Sector

In FY2023, we concluded a memorandum of understanding with DENSO CORPORATION (hereinafter referred to as DENSO) to begin discussions and considerations regarding the acquisition of its spark plug business and business related to exhaust gas oxygen sensors.

We have responded to customer needs by developing technologies that support stable supply and improved energy efficiency in our core business of internal combustion engine products. Against this backdrop, the automotive industry is undergoing a period of transformation, with electrification and fuel diversification on the path to carbon neutrality. During this process, various power sources and related technologies are sought in accordance with the energy situation and the existing vehicles in each region and country. Therefore, we foresee a continued demand for internal combustion engines. As the industry as a whole must respond to the short-, medium-, and long-term needs, we should consider how we can fulfill our responsibility to supply the world with internal combustion engine products by leveraging our core technologies in the development and manufacturing of ceramics. That is why we have reached a basic agreement to start discussions and considerations for the acquisition.

This business acquisition will optimize the production system for our internal combustion products to ensure their stable supply and create economies of scale. We hope this will contribute to social issues such as reducing the environmental impact of the production process in the industry as a whole. In addition, we believe that achieving sustainable growth based on a stronger automotive component business and reinvigorating our efforts for the future will drive the business portfolio transformation outlined in our Long-term Management Plan.

<Long-term spark plug sales volume forecast>

According to our long-term forecast for spark plug sales volume, our Group's own sales volume, excluding DENSO, will peak around 2035-2036, followed by a gradual decline.

In contrast, if we acquire some of DENSO's businesses, we believe that we will be able to maintain to some extent the volume indicated by the dark red bars in the upper right graph. However, the exact figures are not yet clear as we are still in the process of conducting due diligence.

<Long-term exhaust gas oxygen sensor sales volume forecast>

According to our long-term forecast for the sales volume of exhaust gas oxygen sensors, our Group's own sales volume, excluding DENSO, will peak in a few years and then gradually decline as the main market is new vehicle assembly.

In contrast, we believe that acquiring a portion of DENSO's business will allow us to transfer its strength in new car assembly to our declining business. This will help us maintain a relatively stable sales volume.

Image of long-term spark plug sales volume forecast (our estimate)

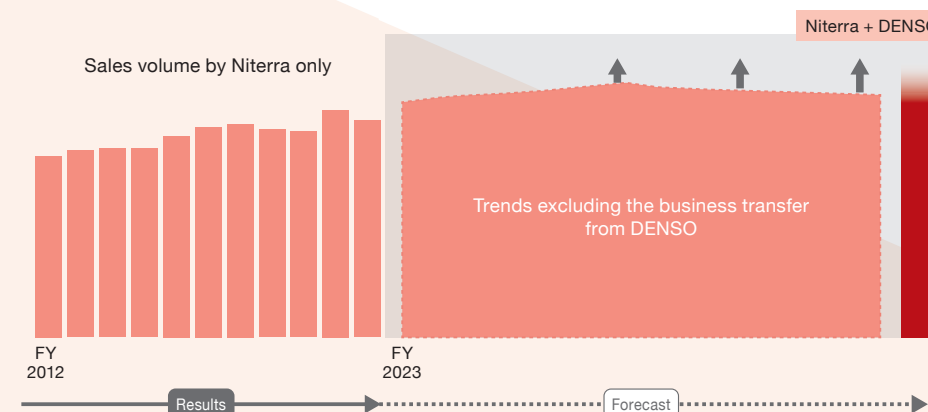
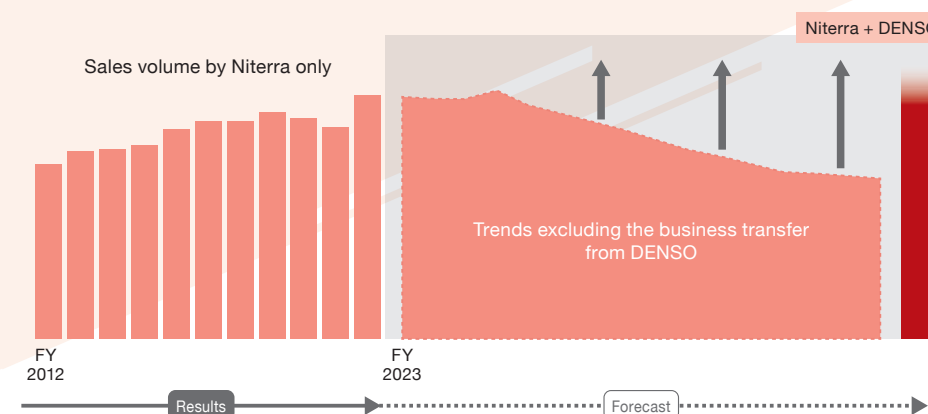
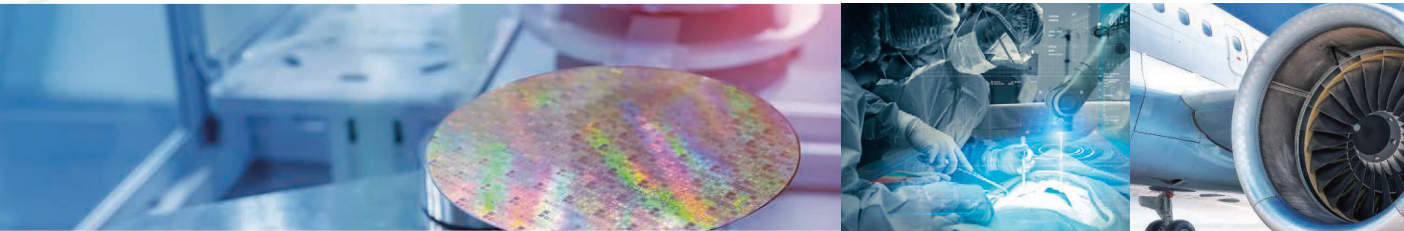


Image of long-term exhaust gas oxygen sensor sales volume forecast (our estimate)





Looking Back on the Third Year of the New Medium-term Management Plan

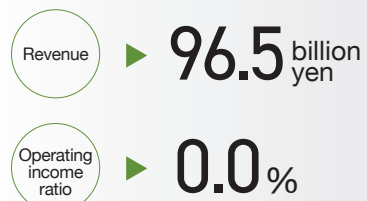
SPE

In the semiconductor production equipment market, demand for laminated electrostatic chucks remained sluggish due to memory inventory adjustments and a postponement of new capital investments. Demand for bulk ceramics and heaters increased, but sales growth was sluggish due to process conversion losses caused by changes in the product number mix and delays in production capacity expansions. Consequently, both revenue and operating income decreased from the previous fiscal year. We will strengthen promotional activities for newly developed products, which continue to be in high demand. We will also secure new demand and prepare for further business expansion.

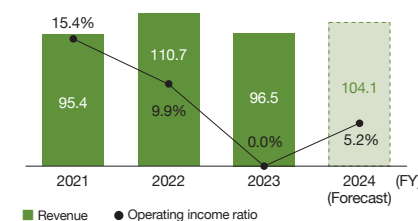
Medical

While the special demand caused by COVID-19 had subsided and customers' excess distribution inventories had not been fully cleared, direct sales of portable oxygen concentrators to patients in North America and high flow stationary oxygen concentrators to rental operators were strong. As a result, revenue from the oxygen concentrator business increased slightly compared to the previous fiscal year. In addition, MGC Diagnostics, which we acquired in December 2022, contributed to our consolidated results throughout the year. This resulted in a significant increase in overall sales revenue of the medical business from the previous year. On the other hand, operating income decreased slightly compared to the previous year due to a deteriorating cost ratio caused by higher prices for purchased parts and increased expenses.

Revenue and operating income ratio



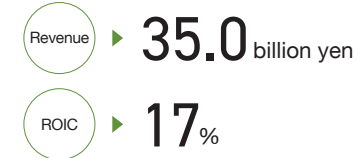
(Billions of yen)



Revenue composition
Ceramics Business
15.7%

SPE

KGI (2025 Medium-term Management Plan)



Strengths

Ceramic material technology that can withstand high-power plasma

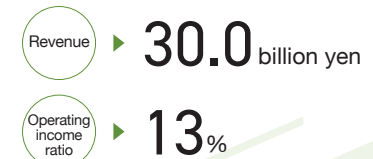
Ceramic sheet lamination technology that contributes to surface temperature homogenization, low particles, and wide-ranging surface temperatures

Group Companies

NTK CERATEC

Medical

KGI (2025 Medium-term Management Plan)



Strengths

Product lineup including portable and stationary oxygen concentrators and cardiopulmonary diagnostic equipment

Worldwide sales channels for rental operators and hospitals

Group Companies

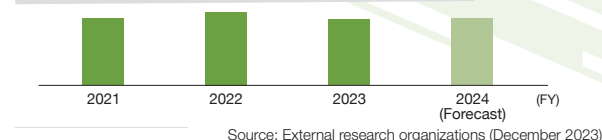
NTK Medical, CAIRE, etc.

External Environment

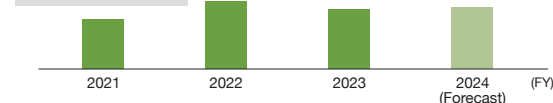
SPE

The semiconductor manufacturing equipment market continues to be sluggish due to inventory adjustments in the memory market and postponement of capital equipment investment since the second half of FY2022. Uncertainty also remains due to Russian-Ukrainian and Palestinian issues, which have caused energy prices to spike and supply chains to be disrupted. Although the impact of a sluggish semiconductor market will continue through FY2024, the market is expected to recover starting in the second half of the fiscal year. The market will continue to expand with the development of finer and higher-layer silicon wafers, driven in part by the expanded use of generative AI, progress in digital transformation, and decarbonization efforts.

Outlook for semiconductor production equipment market



Sales revenue trends



Vision

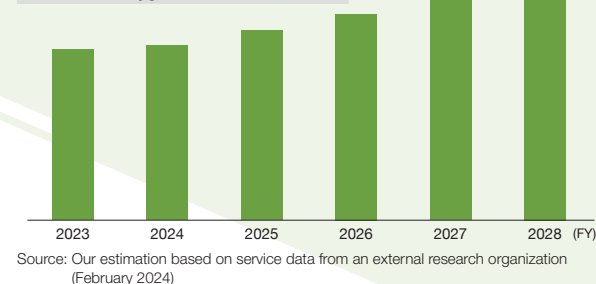
SPE

This policy will contribute to meeting the growing demand for etching devices in both the memory and logic markets by providing ceramic material technology that can withstand high-power plasma. We will additionally contribute with our technologies for surface temperatures homogenization, low particle counts, and wide-ranging surface temperatures, all of which are based on our strength technology in ceramic sheet stacking technology. In this way, we aim to achieve an annual sales growth rate of 12% by differentiating ourselves with our technologies that meet customer needs. We additionally aim to increase labor productivity by 30% compared to FY2021 by establishing a production system that is resistant to market fluctuations through optimizing inventories and improving facility operation rates.

Medical

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. Meanwhile, 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.

Outlook for oxygen concentrator market



Medical

Our respiratory equipment business has been focused on oxygen concentrators for rental operators and patients. However, the acquisition of MGC Diagnostics by our Group company CAIRE in December 2022 brought us a product line of diagnostic equipment for cardiopulmonary function and a sales channel to medical institutions. Going forward, we will aim to provide comprehensive solutions for respiratory patients, such as those with COPD and asthma. Additionally, we will aim for further growth of our business through the development of products that meet the needs of each region as well as the expansions of our product lineup.

Outlook for FY2024

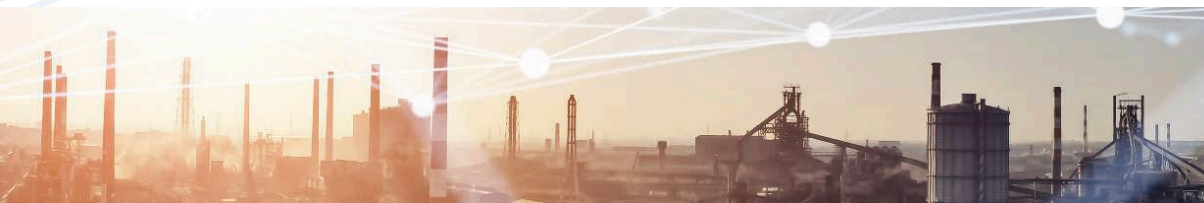
SPE

The market remains sluggish in FY2024, particularly with regard to memory semiconductor production equipment. We expect the market to fully recover in the second half of the year or later. However, we expect revenue to increase slightly as bulk ceramic products offset the negative impact of electrostatic chucks. We handle both stacked electrostatic chucks, which are our strength in technologically advanced products, and bulk ceramics, which are applied to conventional products. On the other hand, a decrease in sales of electrostatic chucks, which are high-end products, and an increase in bulk ceramic products will lead to a deterioration of the product mix. The profit contribution from increased sales will be limited. As a result, operating income is expected to remain at the previous year's level.

Medical

Revenue is expected to increase significantly in FY2024. This will be driven by expanding sales of portable oxygen concentrators to rental operators and directly to patients, as the demand is now recovering. Other factors include the expansion of sales of MGC Diagnostics' cardiopulmonary function diagnostic equipment and the launch of new products. Operating income is also expected to increase compared to the previous year due to increased sales of oxygen concentrators and cardiopulmonary diagnostic equipment, a better product mix, product cost improvements and expense reductions.

* COPD (Chronic Obstructive Pulmonary Disease) is a disease in which the lungs lose function mainly due to smoking. Oxygen inhalation is necessary because the blood may become deficient in oxygen.



External Environment

SOFC (Initiatives of MORIMURA SOFC TECHNOLOGY)

As social demand for a decarbonized society strengthens, we expect the wide-spread use of fuel cells as highly efficient generators and cogeneration systems to significantly reduce CO₂, regulate power sources for renewable electricity, and improve resilience in the event of disasters. Expectations are growing for the introduction of fuel cell into various markets, such as factories aiming to recycle carbon, in addition to their traditional uses in business areas such as households, housing complexes, nursing homes, and commercial facilities.

Vision

SOFC (Initiatives of MORIMURA SOFC TECHNOLOGY)

We promote the development of a fuel cell stack with a flat plate structure that can recycle fuel. This flat plate structure is extremely efficient, compact, low-cost, and has superior sealing performance. As such, it is expected to be used in hydrogen production (SOEC) and other applications. We will develop competitive next-generation SOFC cell stacks, enter the fuel cell markets for household and business use, expand our business, contribute to achieving a decarbonized society, and aim to establish ourselves as a flat plate fuel cell stack manufacturer.

Silicon nitride ceramic bearing balls

To improve energy efficiency and reduce charging time for electric vehicles (EVs), the use of higher voltages (up to 800V) for electric drive systems has been considered. However, the challenge is electrical corrosion of bearings due to high voltages. Against this backdrop, silicon nitride ceramic balls are attracting attention from European and Chinese automakers as an electrical insulation material that is durable, highly reliable, and relatively easy to replace. In addition to EV applications, the material's excellent insulation, corrosion resistance, light weight, and durability make it a promising material for a wide range of applications, such as renewable energy, medical, aerospace, and industrial machinery. Its demand is growing.

Silicon nitride ceramic bearing balls

In response to the growing demand for silicon nitride ceramic balls, we aim to establish a supply chain that can consistently meet the expected quality and quantity. Our technology development and mass production of silicon nitride ceramic balls will expand the range of applications and models that use them. This will allow us to help reduce energy loss and heat generation in more situations. We also want to minimize our impact on the environment by reducing the use of lubricants. This way, we will contribute to society by providing the market with environmentally friendly products that help reduce global warming and waste.

SOFC

Strengths

Fuel diversity and high-efficiency power generation stacks that contribute to a decarbonized society

Compact design for expanded use

Affiliated Companies

**MORIMURA
SOFC**

MORIMURA SOFC TECHNOLOGY Co., Ltd., is a joint venture company consisting of Noritake Co., Limited, TOTO Ltd., NGK Insulators Ltd., Morimura Bros Inc., and Nitterra Co., Ltd.

Silicon nitride ceramic bearing ball

Strengths

Development capabilities, processing technology and mass production technology for ceramics

Production system that ensures stable supply in both quality and quantity

Affiliated Companies

NANSEI CERAMIC CO., LTD.

Outlook for FY2024

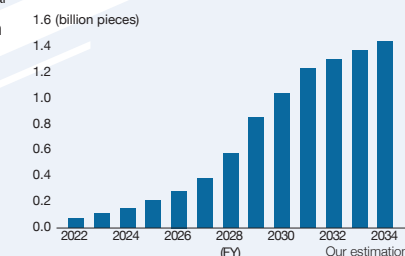
SOFC (Initiatives of MORIMURA SOFC TECHNOLOGY)

Until FY2023, we had been working to establish our position as a manufacturer of flat fuel cell stacks, by developing stacks that are smaller, lighter, and more efficient than those of our competitors. We worked to apply them to high-efficiency distributed power sources and to promote them for new decarbonization applications. In FY2024, commercial and industrial SOFC systems equipped with our stacks are expected to be launched sequentially. Hereafter, we will further improve productivity and strengthen our production system, as well as reinforce and advance collaboration with electronics manufacturers and others to win more orders.

Silicon nitride ceramic bearing balls

Demand for silicon nitride ceramic balls is expected to increase slightly in FY2024 compared to FY2023, as the outlook for the EV market has changed from rapid to moderate growth and the machine tool market is also declining. However, companies in the ceramic bearing industry, including raw material manufacturers, are working to increase production capacity in preparation for the recovery of the machine tool market and the re-expansion of the EV market. We plan to double our production capacity to keep pace with this trend. In addition to production capacity, we will build a production system that can provide products with excellent quality stability to the market in a timely manner.

Ceramic balls market size forecast



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

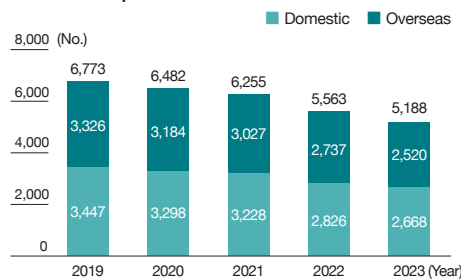
- Create intellectual property, aiming to further improve our corporate value.
- Honor intellectual property rights of third parties.
- Comply with laws and regulations regarding intellectual property in individual countries.

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.

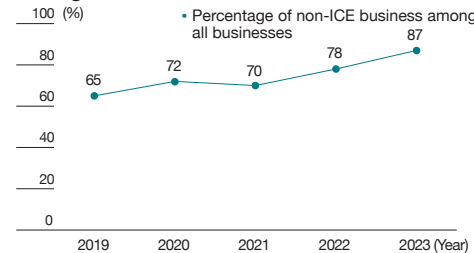
- (1) Create and maintain intellectual property to protect technologies and inventions from development to mass production.
- (2) Contribute to speeding up business creation through the provision of intellectual property information (survey and analysis results).
- (3) Implement hierarchical and purpose-based in-house educational activities regarding intellectual property.
- (4) Detect and eliminate counterfeit goods in coordination with customs offices and government agencies around the world to protect our brands.
- (5) Develop and operate intellectual property regulations and management rules which comply with laws and regulations of individual countries.
- (6) Lay the groundwork for the promotion of efficient intellectual property activities.
- (7) Hold intellectual property meetings to discuss and formulate intellectual property activities with a sense of speed tailored to the stage of achieving business strategies and development themes (twice a year).

Number of patents held



The reason for the decline over the past five years is that we carefully examined our patent rights in accordance with changes in the business environment.

Percentage of new inventors in non-ICE business among all new inventors



The proportion of new inventors in the non-ICE business is increasing year by year compared to the ICE business.

* Calculated as 100% of the total number of new inventors in the ICE business and the number of new inventors in the non-ICE business.

Intellectual Property Activities by Business Field

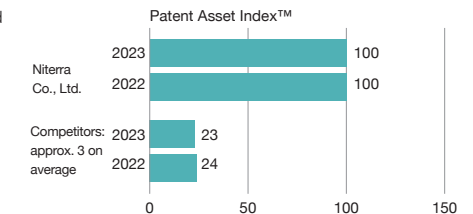
ICE business

In the ICE business, 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.

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

Patent asset index (PAI) for spark plugs (Comparison with competitors when our company is set at 100)



The PAI value related to spark plugs shows no change in trend for FY2023, and we continue to maintain our superiority.

*Prepared by our company LexisNexis PatentSight. We evaluate these figures using the Patent Asset Index of LexisNexis PatentSight.

This index 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).

Non-ICE business

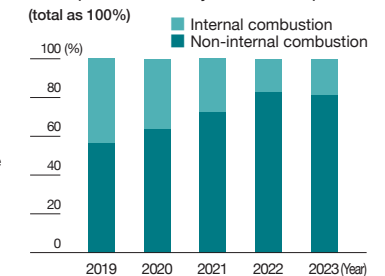
Using the results of the analysis using intellectual property information for a part of the non-ICE business, we are working together with the development department to create intellectual property that will strengthen business competitiveness.

<Example of Activities>

- Step 1:** Organize the Company's intellectual property that is the source of competitive advantage, and analyze the trends and expected competitors in related business areas using patent analysis (utilizing IP landscape).
- Step 2:** Consider what the future should look like at the time of business realization (e.g. patent portfolio).
- Step 3:** Formulate and implement an IP strategy for realizing the vision of the future (application and entitlement).
- Step 4:** Look back at implementation details.

We are repeatedly carrying out the steps above with a sense of speed, in order to increase the ratio of patent applications and obtain rights for our non-ICE business.

Patent publication rate by business in Japan



The ratio of patent publications related to the non-ICE business has been increasing year by year since 2019, and has been approximately 80% in recent years.