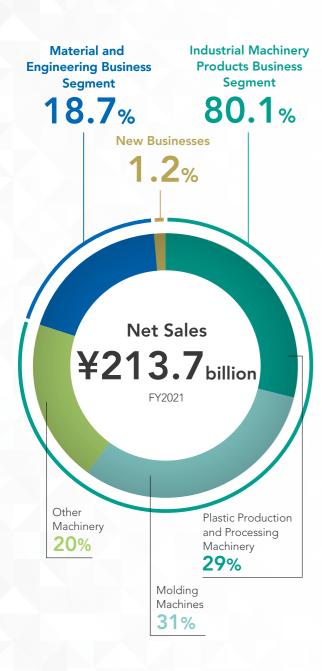
## At a Glance



2 JSW Integrated Report 2022

## **Industrial Machinery Products Business Segment**

Our Industrial Machinery Products Business Segment comprises three sub-segments: (1) Plastic Production and Processing Machinery, (2) Molding Machines, and (3) Other Machinery, and operates from three bases: the Hiroshima Plant, the Yokohama Plant, and the Meiki Plant.

With a lineup of plastic production and processing machinery and plastic injection molding machines for a variety of applications, we offer many products that command a high market share, such as our separator film manufacturing equipment for lithium-ion batteries. In this segment, which accounts for nearly 80% of JSW Group's net sales, we are working to further expand the scale of our business, especially in the mainstay plastic processing machinery market.

## **Material and Engineering Business Segment**

Our Material and Engineering Business Segment comprises two sub-segments: (1) Steel Castings and Forgings and (2) Engineering Services, and is operated by Japan Steel Works M&E, Inc. (Muroran Plant), which was established as an operating subsidiary in April 2020.

In steel castings and forgings, we are either the world's only manufacturer or have a high market share for products such as large shaft materials for power plants, pressure vessel components for nuclear power plants, and large components for pile-driving machines used in the construction of offshore wind farms. With the shift to renewable energy, we are working to strengthen our earnings base through business structure reform.



## New **Businesses**

We have narrowed down our new businesses to the three fields of photonics, composite materials, and metallic materials.

We are working to achieve profitability in each field through the supply of products: in photonics. materials for semiconductors and optical devices such as synthetic quartz and gallium nitride (GaN); in composite materials, lightweight and high-strength materials for aircraft and automobiles such as carbon fiber reinforced plastic (CFRP) products; and in metallic materials, materials for various electronic devices such as titanium copper.

**New Businesses** 

Composite materials

iconductors and Electronic Devices

Metallic materials

Photonics

# **Bases**

**Production** 

**Business** 

Segments



Pelletizers

• Twin-screw extruders

• After-sales services

**Plastic Production and Processing Machinery** 

• Film and sheet manufacturing equipment



Vacuum laminators

• Deposition systems

• After-sales services





## **Molding Machines**

- Plastic injection molding
- Magnesium injection molding machines
- Blow molding machines
- After-sales services



Plastic injection molding machines



Magnesium injection molding



Excimer laser annealing systems

## **Steel Castings and Forgings**

- Parts for reactors (shells, heads, etc.)
- Parts for steam generators
- Clad steel plates





#### **Engineering and Other Services**

- Design and analysis
- Welded structures
- Inspection and survey • Hydrogen-related products, etc.

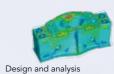


## Rotor shafts

- Turbine casings
  - Die steel













Other Machinery

• Defense equipment

• Railway products

• Hot press devices

• Excimer laser annealing systems

Mobility

Renewable Energ

Infrastructure

**New Businesse** 

Markets

**Products** 

Electronic **Devices** 

Defense

## **Our History of Creating Value**

Net sales

1907 1970s 2000s 2022 1945 Founding (pre-war) Post-war recovery Rapid economic growth Preparation for a new era Decarbonization-related demand Increasing energy demand (electric vehicles, use of hydrogen energy) Development of Transition to Social issues Accelerating adoption of Increasing LCD demand with the defense industry commercial business and needs electronics in industry growing use of smartphones Problem of marine plastic pollution Growth based on a Toward establishing a new Launch as a Becoming a comprehensive company future vision for JSW portfolio of technologies national project in materials and mechatronics To contribute to a society that is demanding products that In 1907, The Japan Steel Works was established in After the Second World War, the focus of our business We focused on creating new added value in response to Muroran, Hokkaido, as a joint venture between three underwent a major shift to commercial products. Utilizing the market changes such as increasing energy demand and the are friendly to the global environment, we manufacture Phases in technology cultivated through the manufacture of armaments. companies: Hokkaido Colliery Steamship Company and accelerating adoption of electronics. Among the actions taken and supply separator film manufacturing equipment for our history two U.K. firms: Sir W.G. Armstrong, Whitworth & Co., we began in earnest to produce large steel castings and were the manufacture of ultra-large components (pressure lithium-ion batteries, molding machines for large plastic Ltd., and Vickers, Sons & Maxim, Ltd. By manufacturing forgings, such as rotor shafts for power generation and pressure vessels and rotor shafts) for nuclear power plants, a switch parts for automobiles that excel in weight reduction, all armaments as a national project, the company from hydraulic to electric injection molding machines, and the manner of resin processing machines adapted to serving a vessels for oil refineries, and plastic processing machinery, contributed to the development of the defense industry. such as injection molding machines and plastic extruders. introduction of magnesium molding technology. plastic resource recycling society, and pressure vessels for Purchasing Hiroshima Seisakusho Co., Ltd., in 1920, hydrogen storage to support the hydrogen economy. JSW established a Hiroshima factory (now known as the Meiki Co., Ltd. Hiroshima Plant) to expand the armaments business. Plastic injection molding machines Expansion of materials Magnesium injection molding machines Mechatronics technology Excimer laser annealing systems Expansion of product range Expansion to secondary Film and sheet manufacturing equipment processing equipment Plastic extruders Barrel processing technologies Lineage of Artillery production technologies technologies and their Material manufacturing provision to Rotor shafts for power generation technologies customers and Manufacturing markets Pressure vessels for oil refining High-pressure cylinders, reaction towers technologies (e.g., for fertilizer) Manufacturing Pressure vessels for use in nuclear power generation technologies Artificial crystals Pressure vessel manufacturing and high-pressure technologies Pressure vessel manufacturing Gallium nitride (GaN) and high-pressure technologies ingle-crystal substrate Pressure vessel technologies Hydrogen handling technologies pressure vessels Hydrogen storage alloys Research on hydrogen in steel Special steel technologies Material manufacturing Thick plate rolling Clad steel plates and pipes technologies





# In Response to Inappropriate Conduct in Quality Inspections by Our Subsidiary

In May 2022, the Company made a public announcement after the discovery that inappropriate acts, including falsification, fabrication and misstatement of product inspection results, had taken place at its subsidiary, Japan Steel Works M&E, Inc. (hereinafter "M&E"). Given the high level of trust people have in our products, this betrayal of that trust leaves us with a sense of shame. We offer a wholehearted apology to our customers and other stakeholders for any possible disturbance we have caused them. It is with the utmost seriousness that we accept the findings of the report of the investigation received in November 2022 by a special investigation committee consisting of external attorneys, and the Group is united in our efforts to make reforms that regain the trust that has been lost.

Reforms will be implemented in terms of both structure and culture. Whereas products of the Industrial Machinery Products Business Segment tend to be assembled from many parts, M&E's products consistently remain a block of steel from the beginning to the end of the manufacturing process. Due to this product characteristic, the divisions involved have been limited and authority tends to be concentrated, a situation that appears to have triggered the improper conduct. The concentration of authority in a given department makes it difficult for a system of checks and balances to function, a matter that we consider to be a group-wide governance issue, rather than a problem limited to M&E. As described below (see p. 11), we will continue to strengthen governance of the Group, including the establishment of a system of mutual checks and balances, as a Materiality related to the management foundation.

Regarding this particular instance of inappropriate conduct, we will reform the system so that no single department manages everything from specifications and delivery dates to even customer relations, in order to transform the organizational structure so that it can guarantee quality from a company-wide perspective by

enabling separate functions to be performed to ensure mutual checks and balances. In terms of specific measures, in June 2022, in order to strengthen the independence of the quality assurance functions of M&E, a change was made by consolidating the quality assurance functions into a Quality Management Department and placed under the direct control of the M&E president, Furthermore, in September 2022, the Quality Management Office was established as an organization at Company headquarters, headed by the director in charge of quality management and staffed with the quality assurance managers from each plant, to consolidate information on quality throughout the company and ensure thorough management. Efforts are now underway to restructure the system so that it is essentially impossible to engage in inappropriate conduct due to safeguards such as the separation of production management functions of product departments, where authority had previously been concentrated.

Regarding the role of our own corporate culture and climate, I recognize that there are employees who feel that the act of taking on challenges is not valued and that more importance is placed on avoiding failure. I believe that it is crucial for individuals to take on challenges and take ownership of the resultant failure as an asset, and that only by overcoming aversion to it can we grow. I am committed to transformations that make for a company culture that is so open that supervisors who receive reports of failure can honestly thank their charges who made the effort to try. In addition, we will of course continue to observe a Quality

Compliance Month and strengthen education and training sessions related to quality compliance in order to foster a serious attitude toward compliance. At the same time, I believe that it is essential that this be accompanied by a climate of openness that makes it possible for individuals to call out that which they feel does not make sense. I will work to revamp the Company culture by making a point of being more involved in the workplace to use diverse opportunities to both communicate the messages from top management and listen to what employees have to say.

M&E possesses world-class technology and production facilities, including some of the world's largest production facilities, such as a 14,000-ton large press, and stateof-the-art facilities such as a 150-ton ESR (electroslag) melting furnace - in fact, M&E is the sole owner in Japan of such technology and facilities. M&E supplies a wide range of products that support social infrastructure, including large cast and forged steel components used in power generation and steelmaking, clad steel plates used in natural gas extraction, desalination and petrochemical industries. and pressure vessels used in oil refineries. As part of JSW Group, M&E will carry through its commitment of achieving reform of its quality assurance system and corporate culture to regain the trust of customers and fulfill its responsibility to society by supporting the global infrastructure industry with advanced technology.

▶ p. 30 Response to Inappropriate Conduct in Quality Inspections



## Establishing a Purpose, Material Revolution™

When assuming the position of representative director & president in April 2022, I was given pause to think once again about The Japan Steel Works' very reason for existence. When the Company was founded in 1907, society's need for the finest state-of-the-art steel was the key to Japan's modernization, a demand the Company responded to through continuous technological development. Then, after the Second World War, the Company wasted no time in starting to focus on plastics as a lightweight material to further develop, and in 1950 developed plastic extruders of our own, which were integrated into Japan's first petrochemical complex in 1958. Since that time, the Company continued to develop technologies and equipment to meet the growing demand for plastics, supporting Japan's path from post-war reconstruction to rapid economic growth, and achieving

Purpose

Material Revolution™
"Material Revolution™," making
the world sustainable and prosperous.

significant growth.

As I looked back on the work done, I reached the conclusion that the Group's reason for existence has consistently been its commitment to continue to resolve social issues by striving for the innovation of materials and making for a more sustainable and prosperous society. This applies equally to our current work with magnesium, carbon fibers and gallium nitride (GaN) in that these too are materials that will contribute to the realization of a carbon-neutral and super-smart society in the future. So the direction of the Company remains unchanged.

After assuming the position of president, I communicated these personal views of mine to the Board of Directors, and after about six months of repeated discussions, we established the Purpose and Vision that constitute the new philosophy system for JSW Group that was announced



Benefiting all stakeholders by developing and implementing industrial machinery and new materials that solve social issues.

in November 2022. The Purpose will serve as the criterion for judgment and action for the Group to rally around as a cohesive unit in response to future changes in the existing business environment that are difficult to predict. It will also help prevent the recurrence of inappropriate conduct by ensuring that all officers and employees of the Group share the Group's reason for being and reaffirm the responsibility they bear in providing society with products that are of the highest quality.

In our march toward realizing this Purpose and Vision, we will utilize the core competency we have developed over the years to provide society with the unique value we offer. The core competencies of the Group are technologies for melting, mixing and solidifying, as well as machine element technology and precision control technology. In the

development of plastics processing machinery, we have melted materials in the equipment, mixed them uniformly, and solidified them into the desired shapes, technologies to which we have added machine element technology and precision control technology in order to respond to the diverse needs of customers in a wide range of industries. Also, we have manufactured high-quality crystals for a wide range of applications by adding precision control technology to technologies for melting and solidifying raw materials in containers. By further refining our core competence and developing and implementing industrial machinery and new materials that resolve social issues – something we call the Value Creation Process – we will continue to create social value and enhance our corporate value on a sustainable basis.



# Identifying Materiality to Promote the Creation of the Foundation for Business Expansion

The Group's results for fiscal 2021 showed an increase in both revenue and profit, with revenue of ¥213.7 billion (+8.0% year on year), operating profit of ¥15.4 billion (+51.2% year on year) and net profit attributable to shareholders of the parent company of ¥13.9 billion (+102.3% year on year). We expect sales to reach a record high in fiscal 2022, as well as the final-year sales plan envisioned in our medium-term management plan JGP2025 (hereinafter referred to as Medium-term Management Plan) in fiscal 2023. With the aim of further increasing the corporate value of our group, we have set the goal of growing into a ¥500 billion business group as the vision of what we hope to be in 10 years' time, and will continue to build our corporate foundation to achieve this goal.

In November 2022, we identified and announced six issues of Materiality (key issues) as themes that should be prioritized in order to realize our Purpose. In identifying them, sustainability of the Group has been pursued by establishing as guiding perspectives of "creating value and solving social issues through JSW Group's businesses" and "bolstering JSW Group's management foundation for sustainable growth." The issues of Materiality singled out as leading to the creation of value and the resolution of social issues through the Group's business are the realization of a plastic-resources-recycling society, contribution to a low-carbon society, and contribution to a super-smart society.



## Realization of a Plastics-Resources-Recycling Society

The first Materiality set forth is the realization of a plastic-resources-recycling society. Plastic has relatively low  ${\rm CO_2}$  emissions and is used in all types of fields, including automobiles, household appliances and medical equipment, making it a material that provides support for a more prosperous world. The amount of plastic used in the world continues to increase and is forecast to reach 800 million tons by 2040, about double the current level, and then 1.2 billion tons by 2060.

Against this backdrop, the Group aims to achieve further growth in the plastics-related business, not only through involvement in the manufacture of plastics, but also by providing machinery that facilitates the recycling of resources in the march toward a circular economy. The Group is moving forward with the development of

its own manufacturing and processing technologies for biodegradable plastics and biomass plastics, as their production methods and molding and processing conditions differ from those of conventional plastics. In November 2022, our development system was strengthened with the completion of the Technology Development Center for chemical recycling in the Hiroshima Plant. Through the development of extruders for material and chemical recycling, injection molding machines for recycled plastics and other machinery, we will continue to promote the three R's (Reduce/Reuse/Recycle) + Renewable (renewable resources) to contribute to the realization of a plastic-resources-recycling society. We believe this will help reduce CO<sub>2</sub> emissions and maintain biodiversity.



## Contribution to a Low-Carbon Society

As there is continued anticipation of long-term expansion of the electric vehicle (EV) market, demand for related industrial machinery is expected to continue to increase. Demand for separator film used in automotive lithium-ion batteries is expected to double in the industry by 2025. In light of these trends in demand, the Group is moving ahead to jump-start plans to increase the production capacity of film and sheet production equipment for lithium-ion battery separators, with the aim of establishing an annual production capacity of 50 lines by the end of March 2023 and 60 lines by the end of March 2024.

In addition, demand for highly recyclable and lightweight magnesium alloy parts is expected to increase in line with the reduction of the weight of automobiles. Whereas diecasting methods of production had been the norm, the Group was the first in the world to develop and offer the supply of magnesium injection molding machines that make precise use of the thixotropic phenomenon to mold magnesium under low-energy and low-environmental-impact conditions by means of injection molding. In November 2022, we launched large magnesium injection molding machines capable of molding larger parts. We are engaged in initiatives to increase production capacity with a view to further utilizing magnesium alloys, such as for application in large automotive parts. In addition, we will promote the development and diffusion of industrial machinery for the social implementation of lightweight materials such as cellulose nanofibers and plastics reinforced with carbon fibers, thereby contributing to the realization of a low-carbon society.

We will also continue to channel efforts into expanding sales of electrically powered injection molding machines that offer superior energy-saving and environmental performance. Currently, demand for electrically powered injection molding machines is growing rapidly in Europe as there is an increased move toward carbon neutrality as well as the onset of surging electricity prices. It is also a region where car manufacturers from various countries have established manufacturing bases and there is capital



investment in response to the shift to EVs. That accounts for the July 2022 establishment of our overseas production base for injection molding machines in Poland, following those in China and the U.S., with full-scale operations expected from 2023 onwards. At this production base, in addition to supplying small and medium-sized machines, which are in demand in a wide range of fields such as containers, medicine and electronics, we will build a system that can supply large machines to the automotive industry with quick delivery times. Though the Company already boasts the top share relative to other Japanese injection machine manufacturers in the European market, there is still room for increasing our share among the larger field that includes overseas manufacturers as well. We will further increase our sales volume in the European market by 2025 in response to the strong demand there.



## Contribution to a Super-Smart Society

As demand for electronic devices such as PCs and smartphones is expected to further expand with the acceleration in digital transformation, there will be increased demand for all-encompassing personal connectivity to networks and high-speed, high-capacity communications such as 5G/6G.

The Industrial Machinery Business of our group handles excimer laser annealing systems, vacuum laminators, hot presses, and ECR deposition systems as equipment involved in the manufacture of devices and semiconductors that make up this kind of digital infrastructure. Our strength lies in our technical capabilities to realize customers' needs into manufacturing equipment by utilizing our abundant experience and advanced technological capabilities, especially in precision control technologies such as precision transport and precision positioning.

And the Group's new businesses promote the development of energy-saving materials such as gallium nitride substrates for mass production, surface acoustic wave (SAW) devices used in smartphones and all manner of bonded substrates that are used in optical communications and optical modulators.

Gallium nitride is attracting attention as a material for laser diodes, high-frequency devices and high-voltage power semiconductors because it offers lower resistance and higher-speed operation than silicon, which is the current mainstream material, not to mention its ability to achieve

significant energy savings. Under Strategic Innovation Program for Energy Conservation Technologies, a project by the New Energy and Industrial Technology Development Organization (NEDO), the Group started demonstration experiments in 2020 to mass-produce gallium nitride crystals by applying the technology already possessed to crystallize synthetic quartz crystals under high temperatures and high pressure. Then, in May 2021, we started operations of a large-scale demonstration facility that led to the successful production of 4-inch gallium nitride substrates. Furthermore, we accelerated efforts to ship samples during fiscal 2022, and we will contribute to the realization of a super-smart society through mass production.

I tell our employees that they need the power of dreams, enthusiasm and persistence as they work toward realizing the Purpose and further business growth. While the Group's employees do indeed possess the power of dreams and enthusiasm, I feel that they lack persistence due to the inclination to rest on their laurels once a measure of growth has been achieved. Many of the Group's products take a long time from initial development till reaching the market. And many of the businesses we are currently offering have not been able to see the light of day until years of hard work were first achieved. I believe that it is important to continue our efforts with persistence to establish the new businesses that will propel the Group to its next stage of development.



# Promoting ESG Management and Strengthening Our Management Foundation in the March toward Sustainable Growth

In order to focus more on value creation through businesses and to strengthen the management foundation for sustainable growth, we are promoting ESG management, which is a basic policy in our Medium-term Management Plan. Recognizing that ESG activities are an important management issue, we are engaging in diverse initiatives in each of the areas of the environment, social and governance through means such as production activities with environmental conservation in mind, the development of environmentally friendly products, the nurturing of human resources that contribute to building a sustainable society, and the establishment of a transparent management system.

Based on the aim of promoting ESG activities smoothly and effectively in a company-wide and cross-organizational manner, a ESG Promotion Committee chaired by the director in charge of promoting ESG was launched in April 2021. And in April 2022, the ESG Promotion Office was established to promote company-wide ESG activities. With the ESG Promotion Office and the ESG Promotion Committee in central roles, cooperation between Head Office divisions, business divisions, plants, and Group companies has been deepened and ESG activities are being even more actively promoted. In the area of dealing with the environment, in June 2022, we expressed our support for the TCFD (Task Force on Climate-related Financial Disclosures) recommendations. As we analyze and study the impact of climate-related risks and profit opportunities on matters such as our own business activities and earnings, we are working to expand our information disclosure in line with the TCFD disclosure framework.

The Materiality we have set forth for "bolstering JSW Group's management foundation for sustainable growth" are "human capital improvement and diversity and inclusion," "investment in the future with innovation management," and "governance reinforcement of JSW Group."

We will give top priority to "human capital improvement and diversity and inclusion" for the creation of innovations for further growth and strengthening of our management foundation as we work toward new value creation. A lack of diversity would both hinder innovation and make for an organization that runs the risk of taking on a form of homogeneity that breeds subservience and misconduct. We will accelerate our investment in people as we move toward the acquisition and development of diverse human resources. At the same time, we will build a corporate culture of openness and psychological safety so that we make the most of our human resources.

With regard to "investment in the future with innovation management" the Group will strengthen its R&D system and production capacity, leverage M&A as well to expand its business and promote digital transformation in order to further enhance its competitive advantage. The growth of the Industrial Machinery Products Business Segment, currently the very core of the Group, is the result of many years of investment. We are compelled by a strong sense of urgency to invest in the new precisely because we are now enjoying favorable performance. To do otherwise would mean missing the opportunity to both refine our core competence to further enhance our technological advantage and utilize diversity to create innovation, the very pillars we will need to develop new business for the next stage of growth.

The ability to invest in people and invest in the future is contingent on the kind of "governance reinforcement of JSW Group," which includes the quality assurance system described at the beginning of this section. We will fundamentally review conditions reflective of insufficient cooperation between divisions, overly concentrated authority in particular product divisions and inadequate of corporate control having been proven effective. In doing so, we will go beyond mere quality assurance to promote reforms that strengthen head office functions such as internal control and risk management, strengthen cooperation between divisions and establish functions for mutual monitoring.

As for the management structure, the number of inside directors has been reduced by one, and three out of eight directors have been outside directors, increasing the ratio of outside directors from 33.3% to 37.5%. In addition, to strengthen the function of management monitoring and improve the effectiveness of the Board of Directors, the practice of outside directors participating in executive-side



meeting bodies has been discontinued and their roles have been clarified. At the same time, there has been the new establishment of a Liaison Council of Outside Officers to report to and brief outside officers. Through this council, more animated discussions at Board of Directors meetings and other supervisory bodies will make it possible for deliberations in greater depth to take place.

Though the environment in which the Group operates is undergoing significant change, the direction in which we should proceed is evident. Our newly established Purpose, Vision, Value Creation Process and Materiality provide a massive compass to guide us. As we work toward "Material Revolution™," making the world sustainable and prosperous," the entire Group will coalesce as one to work together on reform initiatives that regain the trust that has been lost and prevent the recurrence of improper conduct so that we continue to fulfill our responsibility as a supplier to our customers. And we will make a point of reporting to update on the steady progress we make.

I wish to offer thanks to all of our stakeholders for the continued guidance and encouragement you provide.

## JSW Group Value Creation Process



## Material Revolution™

Material Revolution™, making the world sustainable and prosperous.



Benefiting all stakeholders by developing and implementing industrial machinery and new materials that solve social issues.

## **Capital**

As of March 31, 2022

## Financial capital

 Shareholders' equity: ¥146,765 million

· R&I rating: A (stable)

# Manufactured capital

- Capital investment: ¥4,903 million
- Plants: 3 locations
- Test centers: 3 plastic machine locations, 6 molding machine locations
- Sales locations and Group companies covering major market regions in Asia, North America and Europe

## Human capital

- · JSW Group employees: 5,329
- Non-consolidated JSW employees: 1,767
- Engineering career-track employees (non-consolidated):
- Training facilities for skills transfer: 2

## Intellectual capital

- Research and development expenses: ¥4,909 million
- Patents held: 948 in Japan, 667 overseas

# Social relationship capital

- Long-term and stable relationships with customers
- · Good relationships with local communities around plants



- Energy consumption: 2,878 TJ
- Water intake: 16.91 million m<sup>3</sup>

## **Business Model**

Machine Element
Technology
Precision Control
Technology

## **Materiality**

# Creating value and solving social issues through JSW Group's businesses

- · Realization of a plastic-resource-recycling society
- $\boldsymbol{\cdot}$  Contribution to a low-carbon society
- Contribution to a super-smart society

# Bolstering JSW Group's management foundation for sustainable growth

- · Human capital improvement and diversity and inclusion
- Investment in the future with innovation management
- · Governance reinforcement of JSW Group

## Outputs

Resolution of Social Issues Industrial Machinery New Materials











## Customers

- •Contribute to the expansion of our customers' business opportunities •Resolve issues faced by our
- ·Resolve issues faced by our customers
- ·Contribute to reducing environmental impact

## **Employees**

- ·A work environment with job satisfaction and excitement
- ·Growth as a highly skilled professional

## **Business partners**

- •Treat all business partners fairly and impartially, and always conduct transactions in good faith
- ·Build partnerships to create corporate value

# Shareholders and investors

- Medium-to-long-term enhancement of corporate value
- ·Stable shareholder returns

#### Local communities

·Contribution to the local economy through employment and procurement

#### Global environment

- Energy and resource conservation in production activities (reduction of CO<sub>2</sub> emissions)
- $\cdot$  Reduction of  $CO_2$  emissions through our products and businesses

## **Outcomes**



# Sustainable society



## **Prosperous society**

(resolution of social issues such as the health of people, medical care, food, and energy)



Mitigating climate change

# Creation of social value











Sustainable

enhancement of

corporate value





# The Environment in Which JSW Operates

## Solving the waste plastic problem (formation of a circular economy)

- Development of recycling and waste treatment businesses
- Shift away from fossil-fuel-derived plastics
- · Conversion to biodegradable plastics

## Carbon neutrality by 2050

- Advancement of lithium-ion and other storage batteries
- Expansion of nature-derived energy
- Decline of the natural gas business
- ${\boldsymbol \cdot}$  Uncertain trends in nuclear power generation

· Expansion of hydrogen and ammonia businesses

## Advancement toward digital transformation, AI, and IoT

- Transformation of our business models and work styles
- Full-scale investment in related infrastructure

# Low birthrates and aging populations in developed countries

Shrinking domestic market, shrinking workforce

## Global population growth

• Expansion and diversification of consumption, especially in emerging countries

## Special Feature: "Comprehensive capabilities that enable us to take on singlehandedly everything from the development of core materials to provision of the world's finest final products"

The industrial machines and new materials which are the final products of JSW Group are created by combining its core competence-i.e., technologies for melting, mixing, and solidifying and machine element and precision control technologies-with the material design technology and manufacturing technology that it has cultivated over many years. To explain about this, we will use a magnesium injection molding machine as an example.

Magnesium is a material that is even lighter and stronger than aluminum. Its adaptation for in-vehicle parts makes for better fuel efficiency. It is also highly recyclable, which is why it is a material that has started to be used in earnest. Magnesium alloy is melted inside a cylinder at temperatures exceeding 600°C, mixed by rotating a screw, and then poured into a mold in a manner similar to a syringe by advancing the screw at ultra-high speed and then cooled to solidify it.

The greatest feature is thixomolding, a process that was introduced from the United States. We have put this process to practical use by making full use of our core competence, the technologies of melting, mixing, and solidifying. The cylinder and screw, which are the core components, are made with heatresistant alloys we developed independently by material design technology, a strength of the Group. Our core competence of machine element technology is utilized in the equipment structure, while our precision control technology is utilized in the controller

that handles all ultra-high speed and high-precision movements of the screw, such as rotation, forward movement, and braking.

In addition to research, development, and design of magnesium injection molding machines, our production facilities, manufacturing and processing technologies, and technicians at our manufacturing sites possess the manufacturing technology to take on everything from casting, machining including welding, assembly, inspection, and test operation.

Furthermore, not only does MG Precision facilitate application development and user-oriented improvements, but also contributes to implementation in automobiles, home appliances, and other products through contract molding.

This is how we combine our core competence with our strengths in material design technology and manufacturing technology to go beyond just developing processes, designing equipment and designing control systems, to achieve the material development of core components that are manifested as end products, manufactured using the Group's own production facilities and production technology. The greatest strength of the Group is our comprehensive capabilities that enable us to take on singlehandedly everything from the development of core materials to provision of the world's finest final products.

## Magnesium alloy chips are heated in a cylinder to a semi-molten state and Melting, Mixing, and stirred and homogenized by rotating a screw. The screw then conveys forward at an ultra-high speed the magnesium alloy, which is made to flow easily by utilizing **Solidifying Technologies** the phenomenon that decreases the viscosity when shear stress is applied (thixotropy) to inject it into a mold, where it is cooled and molded into shape. Liquid phase Solid phase Liquid phase Solid phase Melting Solidifying Mixing Screw stirs and homogenizes magnesium alloy Magnesium alloy chips Magnesium in semi-molten state Magnesium injection molded Material Design Technology Ultra-high speed shot system Magnesium alloy chips Melting, Mixing, and Solidifying Manufacturing Technology **Technologies** Rotating device Piston Screw Cylinder Fixed Platen Movable Platen Machine Element Core Competence **Technology** Screw and cylinder materials **Material Design** (JSW-developed materials that can be used regularly at **Technology** temperatures exceeding 600°C)

Mold clamping devices with maximized high rigidity and light weight

## **Machine Element Technology**

- JSW's own original machine structure based on accumulated expertise in plastic injection molding machines
- · Cylinders made of heat-resistant alloys developed by JSW · Screws for dedicated use on magnesium alloys developed
- by JSW · Mold clamping device with maximized high rigidity and

weight reduction achieved through numerical analysis

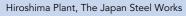
#### **Precision Control Technology**

- · JSW's own original injection control system that realizes ultra-high speed injection and rapid braking
- · High-performance dedicated controllers that maximize ease

## Manufacturing Technology

- In-house production of key components and equipment using production equipment, manufacturing/processing technology, and skilled workers at our own manufacturing sites
- · Manufacturing technology that takes on everything from conceptualization, research, development, and design to machining, assembly, inspection, and test operations
- · MG Precision Co., Ltd., provides contract molding of magnesium parts (automotive parts, etc.). Customer feedback is used to inform equipment development
- →Providing society with magnesium injection molding machines that meet the demands of the market











MG Precision Co., Ltd. (molding and machining of magnesium parts)

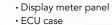




Thixomoldina Process



Automobiles



product



· Head-up display







**Industrial** 

machines

**Materials** 



Social implementation

Automobiles Home appliances, etc.

- · Lightest weight practical metal with excellent relative strength
- · Excellent recyclability
- · Excellent dimensional accuracy and mechanical properties relative to die-cast products

## Materiality (Important issues)

We identified six issues (i.e., Materiality) as themes that should be prioritized in order to realize our Purpose at the Board of Directors meeting in November 2022.

In order to make the world sustainable and prosperous, we evaluated Materiality from the stated viewpoints of "creating value and solving social issues through JSW Group's businesses" and "bolstering JSW Group's management foundation

Recognizing the importance of the identified Materiality, JSW Group practices effective management and business activities in order to resolve the issues.

## **Materiality Identification Process**

STEP

#### Comprehensive identification of social issues drawn from megatrends and international frameworks and guidelines

- 1) The value chain as a whole was observed to comprehensively single out the materiality candidates and create a long list of those candidates.
- Regarding Materiality from the viewpoint of investors (i.e., issues pertaining to the non-financial factors that are linked to the management foundation), a cluster of materiality candidates was extracted by crosschecking with matters such as the criteria used by ESG assessment organizations.
- Regarding Materiality from the viewpoint of multi-stakeholders, a cluster of materiality candidates was extracted from criteria deemed important to the medium-to-long-term business model of JSW Group while also taking into consideration resources such as the United Nations Environment Programme Finance Initiative's (UNEPFI) Impact Radar.
- 2) Materiality candidates were narrowed down and shortlisted based on an importance assessment.

STEP 2

## Scoring of materiality candidates to identify the more important ones

The materiality candidates which were narrowed down were broadly categorized into the areas of "creating value and solving social issues through JSW Group's businesses" and "bolstering JSW Group's management foundation for sustainable growth." The materiality candidates were scored via internal questionnaire thereby identifying the more important materiality candidates.





Creating value and solving social issues through JSW Group's businesses

Bolstering JSW Group's sustainable growth

**STEP** 

Grouping of similar and more important materiality candidates in the areas of "creating value and solving social issues" and "bolstering the management foundation"

STEP

**STEP** 

Multiple discussions about Materiality were held at the management level over a period of a half year, including participation by outside directors, as work was done to confirm the level of importance to JSW Group's business and management foundation

Finalized the Materiality and received approval from the Board of Directors

Materiality

#### Reasons why considered to be of high importance

## **Examples of initiatives**

#### **Related SDGs**

#### Creating Value and Solving Social Issues through JSW Group's Businesses

#### Realization of a Plastic-Resources-Recycling Society



Contribution to

Society

Contribution to

a Super-Smart

Society

As JSW Group aims to be an unprecedented general manufacturer of plastic processing machinery in the world, it is extremely important to supply society with all manner of plastics processing machinery that not only makes plastics but also realizes 3Rs + Renewable, a goal which is indispensable for resource

Since JSW Group can leverage its core competence • Contribution to the reduction of marine plastic waste to the maximum, it can demonstrate our strength in the development and creation of plastics processing machinery that meets the demands of society. This is also a high-priority business expansion opportunity for • Contribution to the spread of recycling as a practice JSW Group.

The realization of a low-carbon society is one of the

created by JSW Group's industrial machinery and

demand for such products is expected to increase

further in the future, which makes it a matter of high

In addition, responsibilities of the Group include

the reduction of energy consumption of its industrial

The super-smart society is expected to resolve social

issues in all fields, including medical care, food, the

amounts of data at high speeds and with low energy

The industrial machinery and new materials of JSW

Group are incorporated into the key components of

potentially be indispensable to the realization of a

super-smart society. This is also considered to be a

highly important business expansion opportunity for

environment, energy, and disaster preparedness.

In order to realize a super-smart society, it will

be essential to build a 5G/6G-compatible digital

infrastructure capable of processing massive

from the operations of its manufacturing sites.

products equipped with its new materials have contributed to the reduction of CO2 emissions. The

importance for the Group.

#### Renewable

- · Contribution to the greater use of non-fossil-fuelderived plastics
- Twin-screw extruder (TEX) Reduce
- · Reduce the amount of plastic used
- Plastics processing machinery for cellulose nanofiber reinforced plastics
- Injection molding machine for foamed plastics
- All manner of plastics processing machinery for biodegradable plastics

#### Recycle

- TEX for material and chemical recycling
- Injection and blow molding machines for recycled plastics

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

- most important challenges faced worldwide, Products · Contributions to the popularization of electric vehicles (EVs)
  - Film manufacturing equipment for use in lithiumion battery separators - Lightweight on-vehicle parts (e.g., magnesium
  - injection molding machines, etc.)

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

- Reduction of energy consumption by industrial machinery products
- Reduction of CO<sub>2</sub> emissions resulting from business machinery products and the curbing of CO<sub>2</sub> emissions activities





#### Infrastructure equipment that is higher performance and more energy saving

- · Higher performance and more energy-saving of arithmetic and memory devices
- Equipment involved in the manufacture of electronic devices
- Gallium nitride (GaN) substrates Input/output terminals that offer higher
- performance Increased performance of smartphones, tablets. the devices that make up the infrastructure, and could
  - Equipment involved in the manufacture of displays and electronic components
  - Substrates for SAW devices

## Bolstering JSW Group's Management Foundation for Sustainable Growth

#### **Human Capital** Improvement and Diversity and Inclusion



Investment

with Innovation

Management

Governance

JSW Group

The diversification and expansion of our human capital, including the human resources capable of and importance for strengthening JSW Group's management foundation.

driving the Group's growth, generating innovation, and creating value, is a matter of the highest priority

In order for JSW Group to continue contributing to society in the future, it is essential to maintain and strengthen its technological superiority by refining its core competence and expanding its business.

Innovation is another essential factor for sustainable growth. It is important to promote digital transformation which supports data-based, rapid decision-making, business model innovation, and the creation of new value.

For the sustained growth of JSW Group, it is important not only to further strengthen compliance and governance, but also to engage in dialogue with customers and investors as well as employees business partners, and other stakeholders.

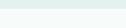
In addition, supplying society with industrial machinery and new materials of high quality and superior reliability is the very foundation of JSW Group's business and important to the further strengthening of its quality assurance structure and

- · Promotion of the acquisition and development of diverse human resources
- Acquisition: Proactive recruitment of core human resources, including executive-level personnel Improvement of compensation to acquire human resources with strong expertise

Development: Early identification and selection of young high-performers









- · Increase production capacity and expand business through M&A
- · Completion of goals of the digital transformation promotion plan

- Expansion of compliance lines in Japan and

· Strengthening of quality assurance structure and

Strengthening of Group governance

· Promotion of stakeholder engagement

· Strengthening compliance

- Review of reporting lines















## Progress of the Medium-Term Management Plan JGP2025

Based on the position of the current medium-term management plan JGP2025 as an important five-year period for laving the foundation for "growing to a business scale of 300 billion yen" from fiscal 2026 onward, we are promoting activities that move us "towards the unprecedented general manufacturer of plastic processing machinery in the world," the first of our basic policies.

Despite fears that demand for plastics processing machinery would decline due to the shift away from plastics, in fiscal 2021 the trend toward carbon neutrality, including

the accelerated shift to EVs and continued demand for more fuel-efficient automobiles (due to vehicles being made of lighter weight from the use of plastics), resulted in robust demand for plastics processing machinery. To take advantage of this opportunity, in fiscal 2021 we started work ahead of schedule to strengthen our production system for film and sheet production equipment for separators, and also opened a base in Europe to boost our injection molding machine production and service offerings.

## **JGP2017**

From April 2015 to March 2018 Advancing toward top global & niche corporate group

#### Basic Policy/Achievements [○] and Issues [×]

## Increase profitability of existing businesses

- O Improved productivity and reduced cost of film and sheet manufacturing equipment and injection molding machines through
- O Advanced the Muroran Plant restructuring project

#### Foster new products and businesses and make them competitive as soon as possible

- O Reorganized the Research and Development Headquarters
- × General delays in fostering new businesses

## Reinforce Group management and promote alliances

× Although progress made in small-scale business acquisitions, further need to strengthen alliances

	FY2015	FY2016	FY2017	JGP2017 Final year targets
Net Sales (Billions of yen)	223.3	212.4	212.9	220.0
Operating income (Billions of yen)	14.4	12.3	21.3	13.0
Operating income ratio	6.5%	5.8%	10.0%	6.0%
ROE	-13.5%	-4.6%	9.6%	8.0%

## JGP2020

From April 2018 to March 2021 Building foundations for the solid growth of JSW Group in the next ten years

#### **Basic Policy/Achievements** [○] and Issues [×]

## Optimization of management resources and strengthening of alliances

- Expanded plastic processing machine complex (absorption type merger of Meiki Co., Ltd.; acquired GM Engineering Co., Ltd. as a subsidiary)
- Establishment of Japan Steel Works M&E, Inc. (spun off the Material and Engineering Business Division)
- O Began collaboration with Tsukishima Kikai Co., Ltd. and established a joint venture with JX Nippon Mining & Metals Corporation

#### Strengthening of after-sales services (stock-based business)

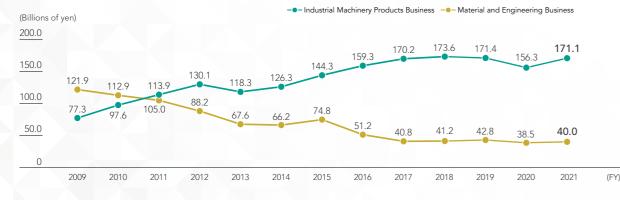
- O Establishment of parts centers in Japan and Europe, construction of dedicated service center
- O Start operation of remote maintenance system

#### Acceleration in exploration and development of new businesses

- O Commercialized hydrogen-related business and transferred to
- O Promoted early commercialization of profitable businesses by focusing on photonics, composite materials, and metal materials
- × Yet to create new core businesses •
- × Insufficient for further expansion of plastic processing machinery

	FY2018	FY2019	FY2020	JGP2020 Final year targets
Net Sales (Billions of yen)	220.1	217.5	198.0	260.0
Operating income (Billions of yen)	24.2	18.7	10.2	30.0
Operating income ratio	11.0%	8.6%	5.2%	11.5%
ROE	16.3%	7.2%	5.1%	14.0%

#### **Business Weighting (Net Sales by Segment)**



## **JGP2025**

Towards the unprecedented general manufacturer of plastic processing machinery in the world

#### **Basic Policy**

## Towards the unprecedented general manufacturer of plastic

## processing machinery in the world

- · Continuing to expand production capacity (60 lines/year) of film and sheet production equipment for manufacturing separators for automotive batteries, for which demand for use in electric vehicles (EVs) is expected to increase significantly
- · Expand the target market for film and sheet production equipment for capacitors (electronic components) and other applications
- Opened Recycling Technical Center (RTC) at Hiroshima Plant to work on chemical recycling (November 2022)
- Developed a world-standard twin-screw extruder that is currently being made available in Chinese and Southeast Asian markets
- · Completed development of and launched in November 2022 largesized magnesium injection molding machines (clamping force of 3,000 tons), for which demand is expected to increase as there is increased demand for lighter weight automobiles
- · Established a production and service base for injection molding machines in Europe, expecting full-scale operation from 2023

## Make constant profit in the Material and Engineering Business

· Promote review of product portfolio for high profitability in cast and forged steel products

#### Create new core businesses

- Further enhance the product lineup in the electronic device-related equipment business by developing and launching products such as next-generation semiconductor-related equipment
- · Began operation of large-scale demonstration equipment for the mass production of gallium nitride (GaN) substrates, and continued efforts to ship samples throughout fiscal 2022
- · Completed and started operation of one of the world's most advanced copper alloy material production facilities

#### Implementation of ESG management

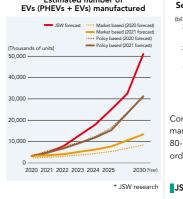
- Established a new ESG Promotion Office to strengthen initiatives
- · Announced endorsement of the TCFD (Task Force on Climate-related Financial Disclosures)
- Established JSW Group corporate Philosophy, starting with Purpose
- · Identified Materiality as priority issues to be addressed to realize the

	FY2021 Results	FY2025 Plan	Change from FY2019
Net Sales (Billions of yen)	213.7	270.0	+ 24%
Operating income (Billions of yen)	15.4	27.0	+ 44%
Operating income ratio	7.2%	10.0%	+1.4PP
ROE	9.6%	10.0%	+ 2.8PP

## **New Developments**

#### Expansion of the production network for film and sheet production equipment

As expectations increase in the shift toward replacing conventional automobiles with EVs, demand for lithium-ion batteries is increasing significantly at a rate quicker than anticipated. This has been accompanied by demand for film and sheet manufacturing equipment for separators that is expected to double by 2025 from its 2021 level. For this reason, we have started to boost the manufacturing capacity





Considering lead time, by 2025 market demand is expected to be 80-100 lines/year and orders received 50-60 lines/year.

## JSW response Working ahead of the original schedule,

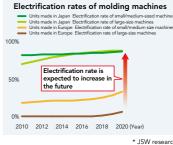


Lithium-ion battery structure

The separator is a plastic film that plays an important role in preventing contact allowing lithium ions in the electrolyte to pass through

#### Established a production and service base for injection molding machines in Europe

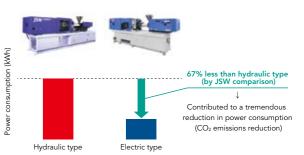
Electric injection molding machines consume 67% less power than hydraulic injection molding machines (by JSW comparison). Since the electrification rate of injection molding machines in Europe is less than half that of Japan, this percentage is expected to increase in the future. This is why we opened a base in Europe to boost our production and services there. We aim to expand our market share, focusing on large-size machines, a particular strength of ours.





\* JSW research

Production and service base established near Warsaw, Poland (total area: 3,350 m²)



# **Plastics Machinery Business**

## **Business Overview**

The Plastics Machinery Business Division manufactures, sells and provides maintenance services for an array of plastic production and processing machinery (pelletizers, twin-screw extruders, and film and sheet manufacturing equipment, spinning extruders, etc.) used in various upstream and downstream processes in the manufacture of plastic products. The plastic raw materials and film products manufactured using our machinery and equipment are used

in key components of a variety of products, including IT products such as 5G smartphones, personal computers, tablet devices and keyboards; electronic materials such as capacitors, condensers and semiconductor products as well as home electric appliances; lithium-ion batteries; automotive parts; food packaging film and containers; and catheters and other medical instruments.

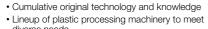
#### Top Commitment

## Message from the Head of the Division

Toward a carbon-neutral society in 2050, needs for things such as lighter, more fuel-efficient automobiles, EVs (electric vehicles) that contribute to decarbonization, and various equipment related to plastic recycling are heightening. With a strong demand for plastics processing machinery in the global market in fiscal 2021, we saw orders double year-on-year to over 100 billion yen, a record high for us. In fiscal 2022, demand for lithium-ion batteries is expected to increase significantly and ahead of original estimates due to the worldwide shift to EVs, while demand for manufacturing equipment for separator film used in batteries continues to grow, and we anticipate orders for large projects for pelletizers to exceed those received in fiscal 2021. At the same time, we recognize that there are ever growing expectations from society at large in our supply of provide plastics processing machinery that realizes 3Rs + Renewable, an indispensable practice for the recycling of plastics resources. As an industry leader, we will promote the social implementation of plastic materials through the Material Revolution<sup>™</sup> while doing our part to protect the global environment and contribute to the realization of a sustainable, prosperous, carbon-neutral society that can coexist with the use of plastics.

# Stre





 Production system that makes possible in-house integrated production of large equipment
 Technical centers in Japan and overseas equipped with a wide variety of testing



 Long delivery times due to production of small-quantity orders with a high emphasis on large machines

Weaknesses

ou on

SWOT Analysis

 EV market expansion (increased demand for lithium-ion batteries)



- of biodegradable plastics

   Increasing full-scale investment in 5G/6G
- Opportunitie
- Expanding consumption particularly in emerging economies

I

Shrinking demand for plastic due to shift away from plastic
Shrinking demand for separator film due to

Thr

#### spreading use of new types of sto such as solid-state batteries

## **Sources of Our Strength**

The equipment handled by the Plastic Machinery Business Division has been richly infused with the core competence we have accumulated over many years. On their own, each piece of equipment exhibits excellent performance, but combining the multiple machines and equipment we have commercialized into a full production line leads to even higher performance and efficiency. In addition, the connection we share with customers who are industry leaders gives us a head start in grasping the need to respond to developments

such as the emergence of alternative materials and recycling, enabling us to quickly engage in the development of such. Furthermore, with three technical centers around the world as bases, our division is staffed by highly experienced experts who respond to the various types of demand for plastics, which leads to improved equipment performance and the creation of new technologies and equipment.

## **Operating Environment**

As plastic products have many excellent properties, including formability, insulation capacity, lightness, and cost effectiveness, we recognize the indispensable role the will continue to play in the world but are also cognizant that our environment poses both opportunities and risks.

One key opportunity that can be sited is the accelerating shift to EVs as the preferred type of automobile as we march toward a carbon-neutral society. With the accompanying increase in demand for lithium-ion batteries a tailwind for us, the manufacturer with the top share in the global market for separator film production equipment, we are working to further expand our market share by increasing production capacity. In addition, we will endeavor to strengthen our aftersales service. Extending the service life of our products as processing machines enables us to reduce the resultant  $\mathrm{CO}_2$ 

emissions generated during manufacturing of the machines. We believe that these are important activities that we can offer in the march toward a carbon-neutral society.

On the other hand, a major risk to highlight here is the problem of marine plastics and waste plastics that has come into focus. And yet, we believe that this issue can also be an opportunity for us if we apply our core competence toward solutions while also fulfilling our roles and responsibilities as a comprehensive plastics processing machinery manufacturer that works to realize a plastic-resources-recycling society. Over the medium to long term, we also anticipate that demand for separator film production equipment will shrink due to the spread of solid-state batteries and other products. In response to this, we are working to transition our film production equipment into other fields.

## Strategy and Measures for Growth

In the new medium-term management plan JGP2025, the Plastics Machinery Business is positioned as a business that will create profit and drive growth as JSW's core business. Specifically, with the aim of becoming a comprehensive plastics processing machinery manufacturer, we will further strengthen the competitiveness of our equipment and expand our business through aggressive capital investment and both collaborations and alliances. At present, we are also working to optimize sales prices.

We are also engaged in the promotion of energy conservation through weight reduction by utilizing plastics, as well as in the recycling of plastics. In November 2022, on

the premises of our Hiroshima Plant we opened the Recycling Technical Center (RTC) to work on chemical recycling that employs twin-screw extruders. We will work together with our customers to expand our business value while contributing to the realization of a low-carbon society not only through the realization of a carbon-neutral and plastic-resource-recycling society, but also by reducing power consumption of equipment and waste plastics generated through the starting and stopping of equipment operations. By leveraging the comprehensive capabilities of JSW Group companies, we will respond flexibly and quickly to changes in the global market.

#### Topics

# Establishment of the Recycling Technical Center (RTC) to work on chemical recycling with twin-screw extruders

In November 2022, we opened the RTC in our Hiroshima Plant.

We established a chemical recycling technology that employs twin-screw extruders to transform waste plastics, which would have otherwise been disposed of, converted into fuel, or recycled as materials, into chemical raw materials using the kind of depolymerization technology most represented by thermal decomposition. The Recycling Technical Center is positioned as a demonstration facility for the proof of concept.

We are confident that this facility will be able to contribute to the realization of a plastic-resource-recycling society, a goal we have set forth as a Materiality.



# **Injection Molding Machinery Business**

#### **Business Overview**

At the Injection Molding Machinery Business Division, we manufacture, sell, and provide maintenance services for equipment such as plastic injection molding machines, magnesium injection molding machines, and blow molding machines by combining the three main capabilities—product (improvement), sales (proposal) and service (response) capabilities—to impress our customers.

Our plastic injection molding machines are electrically powered with excellent environmental performance and a wide range of machine sizes from 30 to 3,000 tons of clamping force. Our extensive lineup of vertical injection molding machines and special molding machines accommodate most of the injection molding processing fields and are capable of meeting a variety of customer needs, which is our strength, Just as our medium and large machines are highly acclaimed, we are channeling efforts into providing small and ultra-large injection molding machines that will also successfully win acclaim. In addition, we are also working toward meeting demand for larger parts made of magnesium alloy, which are garnering attention for their contributions to making for EVs that are lighter.

We boast the No. 1 spot in term of shipment amount of plastic injection molding machines in Japan and the third largest market share in terms of number of units. We are the top manufacturer with magnesium injection molding machines that are one of kind and blow molding machines that maintain an over 80% share of the direct blow molding machine market in Japan.

#### Top Commitment

## Message from the Head of the Division

In the march toward realizing our Purpose, we are prioritizing engagement in the Materiality of "realization of a plastic-resourcerecycling society" and "contribution to a low-carbon society." While we already provide electric injection molding machines with low power consumption and injection molding machines compatible with recycled and biodegradable plastics, we are expanding the scope of our contributions. In addition, by stepping up our global reach, we will make the world sustainable and prosperous. In fiscal 2021, we made efforts toward boosting small machine production capacity in Japan and China and expanded our inventory to shorten supply times. As for ultra-large machines, we expanded our product lineup and started sales of new products. We successively developed and launched 1,300-ton and 3,000-ton magnesium injection molding machines. In the area of technological development, we have been progressing forward by realizing Material Revolution™, our Group's Purpose, into outcomes such as a reduction in the defect rate of small optical parts through our own original process control, development of a foam injection molding process for ultra-large machines, and development of a large magnesium injection molding machine for large magnesium parts. Endeavoring to provide products in line with our Purpose, we are engaged in activities with the goals of achieving the No.1 share in domestic volume and sales of over 85 billion yen by 2025, and sales of over 100 billion yen and finding our place in the global top-five companies within the next decade.

## **SWOT Analysis**



· A full product lineup from small to ultra-large machines, blow molding machines and special molding machines

 Extensive track record and supply capacity for medium and large machines for customers in the automotive field

 Safe and reliable customizable products and ability to customize for the needs of each



 Low share in the market for small machines (precision molding field) and ultra-large machines

• Delays in delivery times for sudden large orders





- · Increase in new capital investment with the shift to electric vehicles
- Increased demand for energy conservation due to soaring global energy costs
- Expansion of needs for eco-friendly technologies (bioplastics, plastic reduction, effective use of



- Shrinking demand for plastics due to the shift
- · Performance improvements among Chinese manufacturers with large production capacity

## Sources of Our Strength

The Group is characterized by the way we continue to provide safe, reliable, and highly customizable machines by continuous improvement of the basic performance of injection molding machines through periodic model changes (i.e., improvement capability) and our flexibility in customizing to meet the individual demands of customers (i.e., proposal capability). Our basic design of injection molding machines takes into account customization as a given, which makes for a greater variety of how the injection molding machine components-such as mold clamping units. plasticizing units, and options-can be combined. Through collaboration with the Hiroshima Plant and Meiki Plant, as well as with overseas production bases, we have realized a production system that enables us to provide injection molding machines that meet the needs of our customers. An example of what this system has made possible is our extensive track record in and tremendous capacity to supply medium- and large-sized machines for customers in the automotive field, a strength for which we are unrivaled. As we provide injection molding machines through an

extensive sales network of 21 bases, 10 in Japan and 11 overseas, and provide after-sales service through our global service network (response capability), customers are able to use our machines with assurance.

We wasted no time in putting into practical use thixomolding, a magnesium alloy technology introduced from the U.S., and are ensuring safety and favorable environmental performance from it as a molding process, while also achieving molded products (magnesium parts) with stable quality. We are also proactively engaged in accommodating larger size moldings by utilizing our expertise in large plastic injection molding machines, while contributing to improved fuel efficiency by meeting the demand for larger but lighter magnesium parts for EVs and other automobiles.

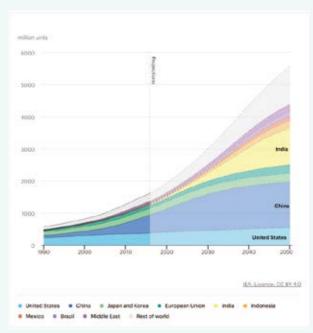
In addition, another strength of the Group is in having achieved a high in-house production rate (through the vertical integration of production processes) and enabling the supply of highly reliable injection molding machines through close coordination between our manufacturing processes.

## **Operating Environment**

Our strengths in the injection molding machine market are in the fields of home electric appliances, automobiles, and miscellaneous goods and containers.

In the field of home appliances, as recent improvements in living conditions in emerging countries have accelerated the popularization of air conditioners, demand for these products is expected to triple the current level by 2050. With air conditioner manufacturers across the board actively investing in equipment to capture this market with cutting-edge energy-saving technologies, many have adopted our injection molding machines. Their use of our injection molding machines with excellent environmental performance is contributing to the production of eco-friendly products that have less impact on the environment.

In the automotive field, due to the growing sophistication of a host of driving support systems and subsequent increase in the amount of information provided to drivers, there is a trend toward the use of multiple and larger display panels. Magnesium alloys, which are lightweight, high in specific strength and rigidity, and possess superior heat dissipation, are increasingly used more as materials for the frames and casings that hold in-vehicle panels in place. Our magnesium injection molding machines are garnering attention because they can produce thin-walled, dimensionally accurate parts with less environmental impact than those manufactured through die casting methods. And there was a tremendous response immediately following our announcement about largesize machines. Meanwhile, we are also working to optimize selling prices in response to the labor costs and commodity prices that are soaring on a global scale.



Global air conditioner stock, 1990-2050 \* Source: The Future of Cooling (IEA, May 2018)

## Strategy and Measures for Growth

Continuing forward with our industry-leading medium- and large-size machines, we are proceeding with the medium-term management plan JGP2025 and its aim of expanding the scale of our business by stepping up our small and super-large-size machine offerings. Regarding small-sized machines, in addition to the reinforcement of production in China, we have more than doubled our supply capacity by strengthening our inventory systems in Japan, North America, China, and Europe to ensure a stable supply of injection molding machines on a global basis, while partially switching to domestic production to stabilize the

As for our ultra-large machines, to expand the lineup of space-saving two-platen type machines, we have launched a 3,000-ton machine, followed by a 1,800-ton machine and a 2,500-ton machine, which have been well received. In addition, we are enhancing the options we make available by offering customization such as foam injection molding machines.

Though the impact of the pandemic continues to impair our view about what direction to take in terms of capital investment, we are going forward with the assured implementation of measures in our drive to be a top manufacturer of plastic injection molding machines.

Our magnesium injection molding machines have been steadily adopted in the automotive field, and we have been increasing the size of our machines in response to market demand with the successful release of 1,300-ton and 3,000-ton machines. Our newly developed magnesium injection molding machine has been preliminarily put to use at our group company, MG Precision Co., Ltd., as equipment for verification of the proof of concept, and we are accommodating requests for prototyping and contract molding of large magnesium automobile parts. We expect to see the practical application of multiple new magnesium automotive parts in succession.

## Ultra-large magnesium injection molding machine JLM3000-MGIIeL

We have begun sales of the JLM3000-MGIIeL (clamping force: 29,400 kN), the world's largest magnesium injection molding machine employing the thixomolding method. A revolutionary molding method developed in the U.S., the thixomolding method is capable of producing magnesium alloy parts with excellent characteristics such as specific strength, rigidity, heat dissipation, and electromagnetic shielding, as well as easy recycling and environmental performance, with low environmental impact. Actual instances of the practical application of this method are on the increase, primarily for casing components in the automotive display panels of automobiles such as EVs.



# **Industrial Machinery Business**

## **Business Overview**

With industrial machinery contributing to society as its core business, the Industry Machinery Business manufactures, sells, and provides maintenance services for equipment related to the three fields of electronic devices, economic infrastructure, and lifestyle/culture. By providing products such as excimer laser annealing (ELA) systems vacuum laminators, hot presses, ECR deposition systems and other equipment for the production of semiconductors, displays, and electronic components, in the mainstay area of electronic devices, we are contributing to the realization of a super-smart society that is expected to resolve social issues in all fields. In the economic infrastructure field, we handle railway-related products, and in the lifestyle and culture field, we handle food extruders and starting gates for horse races. Our distinctive product lines provide the modal shift that contributes to the realization of a low-carbon society and to addressing food shortages and environmental issues through meat substitutes.

#### Top Commitment

## Message from the Head of the Division

In order to make for a sustainable and prosperous society, a host of social issues need to be resolved. One of these is the realization of a super-smart society, the construction of which hinges on a digital infrastructure capable of processing large amounts of data at high speeds but with low energy consumption. As our division's industrial machinery in the field of electronic devices is involved in the manufacture of key components of the equipment that makes up infrastructure, we see this as an opportunity to make our contribution. In fiscal 2021, we introduced new models of vacuum laminators and ELA systems to the market. In fiscal 2022, we will continue to expand on our existing products and businesses, while leveraging our core competence to expand our business through new products and new businesses.

**SWOT Analysis** 



technology and precision positioning control technology required for electronic device manufacturing equipment · Wealth of experience in after-sales service

· High market share and extensive track record as a

Technical capabilities (in our ability to develop and

design) to realize customer needs into manufacturing equipment, especially the precision transfer

supplier in specific fields



 Growth in demand for all manner of electronic devices related to the construction of digital infrastructure in realizing a super-smart society

 Increased demand for new equipment to accommodate the decentralization of manufacturing sites in line with the strengthening of the supply chain

Opportunities • Market demand for high definition and lightweight displays is expanding beyond smaller-type smartphones to medium and large displays



Markets in which we have a proven track record are

Weaknesses



Exclusion from the market due to industrial promotion policies in various countries (shrinkage of target

(Trillions of ven)

 Price competition Threats

## **Operating Environment**

Digital infrastructure development is accelerating to accommodate a super-smart society and driving the expansion of semiconductor demand. There is a demand for equipment that enable s a more advanced manufacturing process. For example, the increasing demand for higher resolution and lighter weight units is spreading to medium- and large-sized displays, which has brought about a critical need for new functions and lower manufacturing costs. In addition to these changes in the specifications desired, for electronic devices in general demand for manufacturing equipment is also likely to expand in step with the decentralization of manufacturing bases as a result of changes in social conditions such as economic security concerns.

Amid this situation, the Group sees price competition with its competitors as a risk. To avoid this, we will continue to make efforts at providing high-value-added equipment by enhancing processing capability and quality, as well as optimizing selling prices.

## Strategy and Measures for Growth

Under the JGP2025 plan, we will seek to expand our manufacturing equipment business related to electronic devices. Regarding our current products, we will introduce new models to the market that are compatible with flexible displays and highdensity packaging. As electronic devices are manufactured through numerous processes, we will go beyond the current practice of supplying individual pieces of equipment by adding to the scope of our offerings equipment that is used in upstream and downstream processes, thereby promoting expansion through systemization. In moving ahead with this strategy, in fiscal

# 2001 2010 2020 2025 2030 (Year)

**Global Semiconductor Market** 

Logic devices Memory Other

Source: The Strategy for Semiconductors and the Digital Industry (Summary), Ministry of Economy, Trade and Industry

Prediction

2021 we established JSW Aktina System Co., Ltd., in Yokohama as a measure to integrate and strengthen our manufacturing, sales, and maintenance systems in the display business, as well as a dedicated service company in China. These have strengthened our functions for quickly resolving customer issues.

In the area of new products and businesses, we will improve our competitive advantage through technological innovations that apply our core competence and promote business expansion through M&A and other means that identify promising and

#### **Strategy by Business**

## **New Businesses**

#### Top Commitment

## Message from the Head of the Division

The New Business Promotion Headquarters will contribute to the realization of a low-carbon society and a super-smart society through the speedy commercialization of three businesses: (1) the Photonics Business, whose core products are artificial crystal growth and the processing of quartz, gallium nitride, and lithium niobate for the fields of optics, 5G/6G high-speed highcapacity communications, and power electronics; (2) the Composite Materials Business, which includes lightweight, highstrength thermoplastic carbon fiber reinforced plastic (CFRP) products for the aviation, defense, and space industries; and (3) the Metallic Materials Business, which manufactures copper alloy materials to upgrade copper foil used for connector parts.

## **Photonics Business**

#### **Business Overview**

Crystals of artificial quartz and gallium nitride are manufactured with melting and solidifying technologies in a hightemperature, high-pressure environment using large autoclaves that utilize our manufacturing technology for large forgings and castings, which can only be produced at Japan Steel Works M&E. Using our strengths in manufacturing technologies for these single crystals and high-precision processing technologies such as cutting and polishing, we are engaged in the manufacture and sales of various optical application products and device materials.



## **Operating Environment**

The market for devices related to high-speed, high-capacity communications is projected to grow at a rate of more than 10% annually in response to both the growth of the 5G/6G and IoT markets and the rising demand for power saving. Applications for gallium nitride in particular are expected to be found in various fields, including high-brightness, high-power lasers for energy conservation, high-speed switching devices, and high-energyefficiency power semiconductors.

#### Strategy and Measures for Realizing Profitability

High-grade single crystals are expected to be utilized in various fields in the future in ways that leverage their optical and electrical properties. We will continue to contribute to the cutting-edge needs of our customers with the power of Material Revolution™ by not only improving the quality of the three single crystals and but also by further refining our high-precision processing technology.

## Composite Materials Business

#### **Business Overview**

The aviation and automotive fields have been adopting CFRP to reduce CO2 emissions by improving fuel efficiency. In response, the Composite Materials Business is developing molding processing technologies for CFRP products, obtaining material design technologies, and establishing a structure that includes quality assurance.



#### Operating Environment

With climate change control driving the increased need for lightweight materials, the global thermoplastic CFRP market that was 1.4 trillion yen in 2020 is expected to grow to 2.2 trillion yen in 2025 and 3.9 trillion yen\* in 2035. The aircraft sector, which currently accounts for half of the market, is also expected to grow steadily after containment of the COVID-19

Source: Carbon Fiber Composite Material (CFRP/CFRTP) Technical Application Market Outlook 2020, Fuji Keizai Co., Ltd.

## Strategy and Measures for Realizing Profitability

We will expand this business with a focus on aircraft components by applying our standard compliance and quality management capabilities cultivated in production activities that include the manufacture of production activities that include the manufacture of defense equipment, and our expertise in manufacturing large composite material products (wind turbine blades) developed in the wind power generator business. Our aim is to make commercialization profitable while realizing a sustainable society by offering composite-material products that promote weight and energy efficiency for a range of mobility categories.

## **Metallic Materials Business**

## **Business Overview**

As communication speeds and capacities increase, there is a rising demand for titanium copper foils and other copper alloys used in various electronic devices to be thinner and more functional. In order to produce copper alloy slabs of unprecedented cleanliness and quality, JX Nippon Mining & Metals Corporation and JSW have jointly established Muroran Copper Alloy, Co., Ltd., and are engaged in business.



#### Operating Environment

The expansion of IoT and 5G/6G will fuel a rapid increase in data traffic. As smartphones. tablet devices and other telecommunication devices evolve, expansion of the market is expected for high-performance and highquality metal products.

## Strategy and Measures for Realizing Profitability

Using the Group's excellent melting and solidifying technologies to manufacture high-performance metal products of the world's highest quality-products that are very clean and of high quality, with no defects even when thinned to the level of copper foil-we aim to both contribute to the realization of a super-smart society in which high-speed, high-capacity communications are indispensable, and to make this into a profitable business

# **Material and Engineering Business**

#### **Business Overview**

Japan Steel Works M&E, Inc., which conducts the Material and Engineering Business, was established as an operating subsidiary in April 2020 through the merger of JSW's Steel and Energy Products Business and wind power generator maintenance service business with four JSW Group companies. The Muroran Plant, where Japan Steel Works M&E is based, has been involved in the development and manufacture, mainly of large steel castings and forgings for power plants, making full use of our core competence accumulated over more than 100 years, and of pressure vessels, various industrial machinery, thick plates, clad steel plates and other products used in public infrastructure and various plants. And we will continue to provide a variety of

materials (M: Materials) that include not only steel but also nonferrous metals and composite materials, and possess the reliability to meet the increasingly sophisticated and diverse needs for materials.

In addition, we have established a one-stop service system through technology (E: Engineering) that meets a wide range of customer needs by providing solutions that include design and analysis, welded structure fabrication, construction and installation, inspection, and maintenance, utilizing the technology and experience the Group has accumulated in the manufacture of pressure vessels for oil refineries and their onsite installation work.

Top Commitment

#### Message from the Business Segment Head

We offer heartfelt apologies to our customers, shareholders and other stakeholders for any inconvenience and concern caused by the inappropriate conduct in quality inspections that occurred. Japan Steel Works was founded to provide society with the high-quality steel it demands. That mission remains unchanged for us. We will continue to make the world sustainable and prosperous by providing a stable supply of steel castings and forgings that offer world-class quality

In the materials business, utilizing our technological capabilities and resources to provide new materials that address increasingly complex energy issues, we will continue to contribute to the realization of a low-carbon society. Specifically, in addition to conventional large steel castings and forgings for thermal and nuclear power generation, we aim to demonstrate our advantageous position and expand orders for small and medium-sized steel castings and forgings such as invar materials for the renewable energy and IT fields, which are expected to grow in the future, by flexibly responding to high-mix low-volume production and short delivery times.

And regarding the engineering service business, we will expand the scale of our business by maximizing the synergy generated with the materials business by leveraging our manufacturing technologies cultivated in the material business and our relationships with stakeholders to respond to new social needs, such as those posed by Japan's National Resilience Plan.

**SWOT Analysis** 



• Equipment and manufacturing technologies that enable the manufacture of large forgings and

- · High quality and safety honed in electric power and nuclear power products
- · Ability to provide one-stop engineering services
- · Adaptation to the hydrogen economy and natural energy sources to become carbon neutral



 Decline in coal, oil and LNG power generation Withdrawal of competitors and industry and oil and gas industries due to adaptation to a

restructuring trends

Opportunities • Focus on infrastructure projects such as those in Japan's National Resilience Plan

## Sources of Our Strength

The Muroran Plant has the facilities and technology to manufacture 670 tons of steel ingot, among the largest capacities in the world. Steel ingots manufactured to match the size of the end product are forged and heat treated on a large 14,000-ton press, and finished into their final shape with ultra-large machine tools that have a maximum processing weight of 400 tons.

In the clad products field, we can produce not only general stainless clad steel plates but also special clad steel plates such as nonferrous metal clad steel plates and double-sided

clad steel plates, and we are one of the few companies capable of handling integrated manufacturing from the manufacture of steel plates to pipe-making. In fiscal 2020, our rolling mill for wide and thick steel plates was converted to electric power and heating furnace facilities were updated to realize a reduction in CO<sub>2</sub> emissions and improve productivity.

• Inefficient capacity use and operations due to

Since the equipment is intended for the

build-to-order manufacturing system (difficult to

manufacture of large products, operations are

inefficient for small products and mass-produced

The steel castings and forgings and clad steel products made with this equipment are used in public infrastructure and various manufacturing plants. We can single out special melting technology for extra-large castings and forgings and

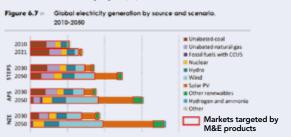
forging and heat treatment technologies as basic technologies developed over many years to meet the stringent requirements of the thermal power and nuclear power generation fieldsbasic technologies that work powerfully to separate us from

## **Operating Environment**

Global energy demand is predicted to increase in every climate change scenario considered by the International Energy Agency (IEA) (see figure on the right). At the same time, the reliance on fossil fuel (coal, oil, and LNG) power generation is projected to decrease and the reliance on renewable energy sources such as wind power is projected to increase sequentially, from the Stated Policies Scenarios (STEPS) to the Announced Pledges Scenario (APS) and Net Zero Emissions Scenario (NZE). As for the impact on the Group's business, although new orders for large coal-fired thermal power plants will decline, for the foreseeable future there will be deep-rooted growth in gas turbine combined cycle power generation and replacement demand for services. Amid the withdrawal of competitors and industry reorganization, we anticipate that we will be able to secure a steady level of operations and sales. While fossil fuel power generation will decline as we approach NZE, wind power generation and other renewables will grow significantly, so we expect to see continued growth in the target markets for the Group's products in those scenarios.

With the launch of Japan Steel Works M&E, Inc., the services previously offered by individual Group companies, such as design and analysis, welded structure fabrication, construction, inspection, and maintenance, have been centralized to enable us to provide wide ranging engineering services, a one-stop system to meet customer needs.

The core businesses of the engineering service business are the installation of and repair work for manufacturing equipment and repair work for the public infrastructure facilities. Business is expected to continue and grow in both the private and public sectors due to investment in the renovation and measures to extend the life of aging equipment.



Source: Compiled by JSW using data from World Energy Outlook 2022, International Energy Agency (IEA)

## Strategy and Measures for Growth

First and foremost, by promptly acknowledging and rectifying the inappropriate conduct for which we are responsible, we will endeavor to quickly regain the trust of our customers.

On top of that, as a certain degree of demand is expected to continue, we will place large steel castings and forgings for power plants at the very center of our business, and step up efforts to improve productivity and proceed with the optimization of sales prices in order to achieve a stable turnaround to profitability.

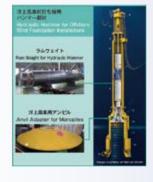
At the same time, regarding material products, we will channel efforts into high-value-added functional materials and rebuild a sound product portfolio by applying the special melting, forging, heat treatment, and other differentiating technologies that we have developed over many years.

Regarding the engineering service business, we will develop this segment into a stable core business by providing comprehensive one-stop engineering services for the entire value chain, from sales of hydrogen-related products and welded structure to plant construction and maintenance, in response to the social need for carbon neutrality and demand related to Japan's National Resilience Plan. On the other hand, though the environment for orders continues to be tough amid intense competition, for clad products we will focus on strengthening the unit's revenue foundation by shifting to a production system that is resilient to operational change, while establishing a unique position within the market with a broad

## Contributing to the spread of offshore wind power generation: Super large anvils for monopile pile driving machines

When a pile-driving machine is used to drive the columns (monopiles) that secure offshore wind turbines to the seabed, a lid-like component called an anvil is fitted over the monopile, which is then struck with a hammer (ram weight). In recent years, generators have been rapidly increasing in capacity as wind turbines accordingly become larger. The monopiles that support wind turbines are also becoming larger in diameter, and the Group's large anvils, with external diameters of 6.5 meters or more, account for 100% of the world market share. And anvils with an external diameter of 8 meters, a size not found elsewhere around the world, have already been put to practical use,

As indicated in the demand forecast above (see above chart), in all scenarios envisioned between the present and 2050, offshore wind power generation is expected to grow significantly, and we anticipate strong demand for our Group's products. We will contribute to society with the power of Material Revolution™ by creating completely new products and services through the qualities that set us apart from the rest-qualities that we have cultivated over the years.



## Financial and Capital Strategy: Message from the CFO

We will increase our corporate value by upgrading our business portfolio management and actively investing in growth while ensuring financial soundness.

#### Hiroki Kikuchi

Director & Managing Executive Officer CFO; in charge of Plastic Machinery Business Division, Injection Molding Machinery Business Division, and Ordnance Business Headquarters; in charge of Finance & Accounting Department and General Manager of Corporate Planning Office



## Perception of the Business Environment

Net sales in fiscal 2021, the first year of the JGP2025 mediumterm management plan, increased 8.0% year-on-year to ¥213.7 billion, mainly due to increased sales of injection molding machinery in the Industrial Machinery Products Business Segment and steel castings and forgings in the Material and Engineering Business Segment. Operating income increased 51.2% year-on-year to ¥15.4 billion, mainly due to a ¥7.7 billion increase in production, sales, and selling prices, and a ¥4.8 billion reversal of the operating expenses recorded in the same period of the previous year that accompanied a change in the calculation method of retirement benefit liability of Japan Steel Works M&E, Inc., and a loss on valuation of inventory assets. Variable expenses increased ¥6.8 billion due to the soaring prices of semiconductors, metal materials, transportation, energy, and other items. In order to cope with this rapidly changing business environment, we recognize that we have the urgent need to enhance profitability through the optimization of selling prices.

Orders received were ¥268.3 billion, up 48.2% from the same period last year, due to growth in separator film manufacturing equipment in the Industrial Machinery Products Business Segment driven by accelerated EV production. Another driver was robust growth in both plastic and magnesium molding machines and in steel castings and forgings in the Material and Engineering Business Segment.

We expect net sales in fiscal 2022 to reach a record high due to strong performance in orders received. And against a backdrop of steady demand for EV-related products principally, orders received in the Industrial Machinery Products Business Segment have generally increased in fiscal 2022. The measures taken under JGP2025 are progressing favorably across the board, well toward achieving the numerical targets for the final year of this medium-term management plan.

## **Basic Financial Policy and Financial KPIs**

JSW Group's basic financial policy is "based on the premise of ensuring sound finances, to proactively invest for sustainable growth to realize the enhancement of corporate value." We have positioned net sales, operating income and ROE as KPIs, and set as quantitative targets for fiscal 2025 net sales of ¥270 billion, operating income of ¥27 billion, and ROE of 10%.

While aiming to secure the minimum 8% ROE, which is expected by institutional investors, we plan to increase the equity spread by further improving profitability, and raise the ROE to 10% by the final year of JGP2025. As our level of financial leverage poses no problem to the financial soundness of the company, improvement of our net profit margin and total asset turnover ratio will be an important task that we will achieve through the managing of our business portfolio.

To ensure our financial soundness, we will set an equity ratio target of 40% or more, and thereby maintain our current creditor rating (R&I) of A or higher. Cash and deposits (¥106.2

billion as of the end of fiscal 2022) will be maintained at the optimal level of ¥55 billion, the equivalent of two months of monthly sales with funds for unexpected risks factored in, as we pursue proactive investing.

#### **Cash Flow Allocation**

The cash flow allocation set by JGP2025 includes \$105 billion for growth investment (which represents the total of capital investment, R&D investment, and M&A investment), resulting in a cash outflow of \$140 billion. At the same time, cash inflow is expected to come out to about \$30 billion due to \$110 billion in income from business activities and asset utilization that includes the sale of cross-held shares and the use of cash and cash equivalents. We also plan to reduce our cross-held shares to less than 10% of net assets.

Regarding capital investment, the plan is to make aggressive investments for sustainable growth. This could go beyond that which was initially planned due to our response to the increasing demand for separators and other plastics machinery, and our increasingly aggressive investment in digital transformation. In addition, should there be promising M&A opportunities that could create greater value for shareholders, we are ready to flexibly take action with cash on hand and debt, even if the scope exceeds the planned amount of ¥30 billion.



## Cost of Capital and Business Portfolio Management

The Board of Directors deliberated and decided on a basic policy in fiscal 2021 to upgrade our business portfolio management. Specifically, there was the creation of a four-quadrant framework based on the two axes of ROIC and sales growth rates for each business. Once analysis and business assessment were carried out to ascertain the current situation, there were discussions and deliberations about the ideal business portfolio to be achieved in 10 years' time, taking into consideration the marketability and competitive advantage of each business.

Based on the business portfolio analysis, we will further bolster our competitiveness by aggressively investing resources in plastic production and processing machinery and injection molding machinery, which are positioned in the upper-right quadrant of "high-priority investment businesses" in the four-quadrant framework. We will promote complexification (i.e., enlargement of the business domain through M&A Segment) in the Plastic Processing Machinery Business to expand our product lineup.

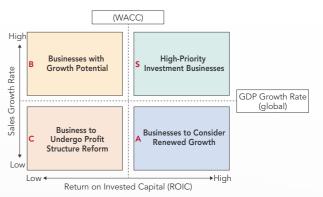
In addition, based on the forecasted expansion of each business, we will aggressively invest resources in order to

develop into core businesses industrial machinery in the field of electronic devices and the crystal business, which has launched the operation of a large-scale demonstration facility for the mass production of gallium nitride substrates. Furthermore, we will also step up research and development toward the creation of new businesses.

And based on our recognition of the importance of continuing to create shareholder value through appropriate resource allocation, we have established criteria for exiting businesses and, in April 2022, began applying investment adoption criteria for the verification of each investment project through use of the NPV method.\*

\* NPV (Net Present Value) method: An indicator for showing how much value can be derived from a given investment.

#### Four-Quadrant Framework



## Shareholder Return Policy

Our basic policy regarding the return of profits to shareholders is to pay stable and continuous dividends and to improve the dividend payout ratio. In addition, in order to increase both corporate value and shareholder value, we will continue to ensure the stable profitability of our current businesses while promoting capital investment and R&D investment for the growth of new businesses and products, while also striving to improve the financial basics of the company.

As we aim for a consolidated payout ratio of 30% or more and to pay consolidated dividends based on a dividend on equity (DOE) ratio of 2% or higher, we plan to pay total dividends of ¥20 billion during the period of the JGP2025 plan. Since DOE is derived by multiplying the dividend payout ratio by ROE, we assume that if ROE exceeds 6.7%, the dividend payout ratio of performance-linked dividends will be 30% or more. We always aim to achieve a ROE of 8% or higher and adopt a paying policy of performance-linked dividends. As we increase the transparency of dividend decisions in this manner, a review of shareholder return criteria led to a year-on-year ¥22 increase in the annual dividend per share to ¥57 in fiscal 2021, and the dividend planned for fiscal 2022 is ¥58.

Over the medium to long term, we will continue to strive for sustainable corporate value improvement by heightening asset efficiency, optimizing cash allocation, and upgrading our business portfolio, which is undergirded by a strong financial foundation.