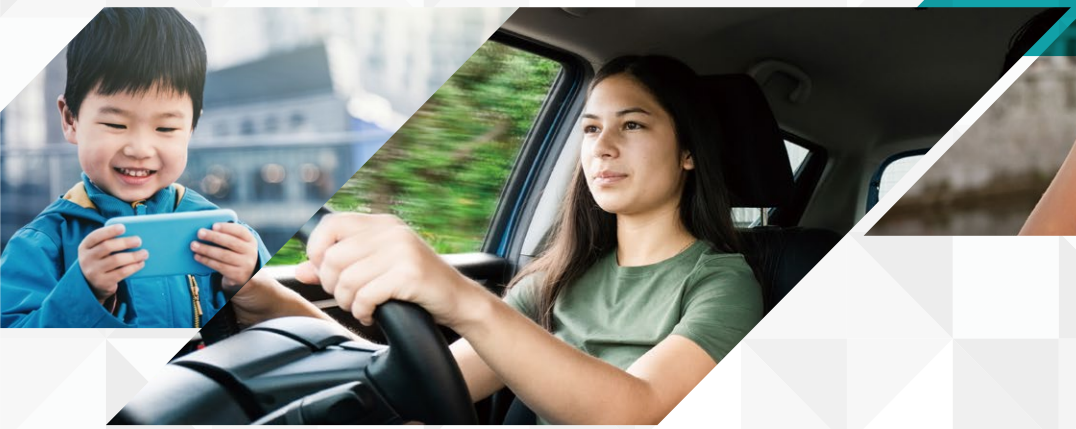








JSW

THE JAPAN STEEL WORKS, LTD.

JSW Integrated Report 2022















OUR PHILOSOPHY

The corporate philosophy of JSW Group, starting with the Purpose

PURPOSE

Material Revolution™,

(Japanese Trademark Registration Number 6650455)

making the world sustainable
and prosperous.

VISION

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

VALUE CREATION PROCESS

JSW Group will further refine its core competence, develop industrial machinery and new materials that solve social issues, and supply them to the world, thereby simultaneously creating social value and enhancing sustainable corporate value.

▶For details on the Value Creation Process, see p. 12-13

CONTENTS

How We Create Value

2 At a Glance
4 Our History of Creating Value
6 Message from the President
12 JSW Group Value Creation Process
14 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"
16 Materiality (Important issues)
18 Progress of the Medium-Term Management Plan JGP2025
20 Strategy by Business
20 Plastics Machinery Business
22 Injection Molding Machinery Business
24 Industrial Machinery Business
25 New Businesses
26 Material and Engineering Business
28 Financial and Capital Strategy: Message from the CFO

Foundations for Creating Value

30 Response to Inappropriate Conduct in Quality Inspections
34 Promotion of ESG Management
34 Sustainability Management
36 Environment
36 Response to Climate Change
38 Environmental Management
40 Reduction of Environmental Impact
41 Social
41 Talent Development Strategy
43 Human Rights
44 Occupational Health and Safety
45 Supply Chain Management
45 Local Communities
46 Governance
46 Corporate Governance
52 Management Team
54 Message from an Outside Director
55 Risk Management
56 Compliance
57 Digital Transformation Promotion
57 Information Security

Data

58 Key Data
60 Corporate Data
61 Stock Information

Editorial Policy

Since fiscal 2021, The Japan Steel Works, Ltd. has been publishing an integrated report to inform all stakeholders of its initiatives for sustainably creating social value and enhancing medium-to-long-term corporate value.
We hope that this report provides readers with deeper insight into JSW Group from both financial and non-financial perspectives.

Reporting Period

April 1, 2021–March 31, 2022 ("Fiscal 2021" or "FY2021")
Note: Certain activities and information are included from outside this reporting period.

Reporting Scope

The Japan Steel Works, Ltd. and Group companies
Note: Throughout this report, "JSW" refers to information relating to The Japan Steel Works, Ltd., and "JSW Group" refers to information relating to The Japan Steel Works, Ltd. and its consolidated subsidiaries.

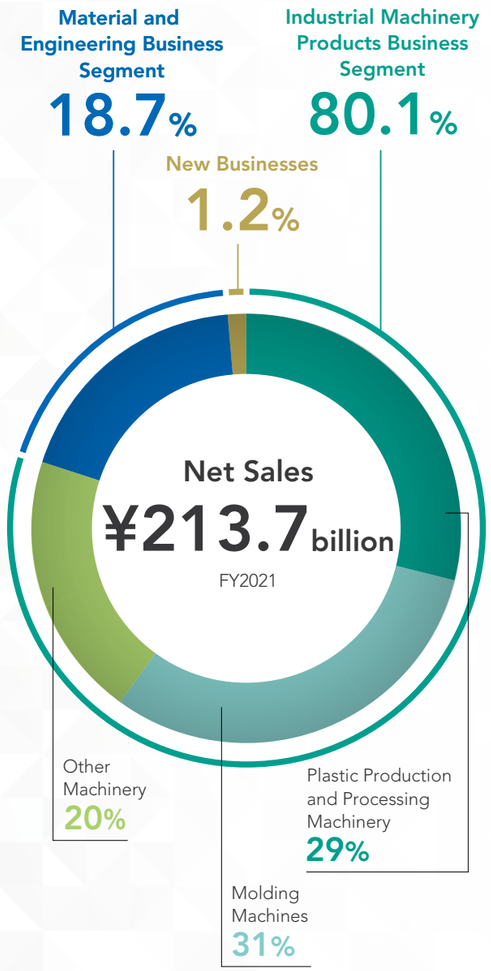
Referenced Guidelines

- International Integrated Reporting Framework, IFRS Foundation
- Guidance for Collaborative Value Creation, Japan's Ministry of Economy, Trade and Industry
- Environmental Reporting Guidelines 2018, Japan's Ministry of the Environment
- GRI Sustainability Reporting Standards, Global Reporting Initiative

Note on Forward-Looking Statements

The performance forecasts included in this report are judgments based on the information that was available to JSW at the time the report was prepared and are subject to underlying risks and uncertainties. Actual results may differ significantly from these forecasts due to a variety of factors.

At a Glance



Business Segments

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.

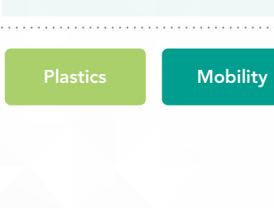
In steel castings and forgings, we are either the world's only manufacturer or have a high market share for products such as large shaft materials for power plants, pressure vessel components for nuclear power plants, and large components for pile-driving machines used in the construction of offshore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

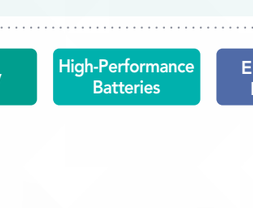
New Businesses

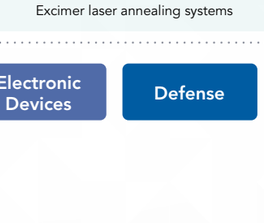
We have narrowed down our new businesses to the three fields of photonics, composite materials, and metallic materials.

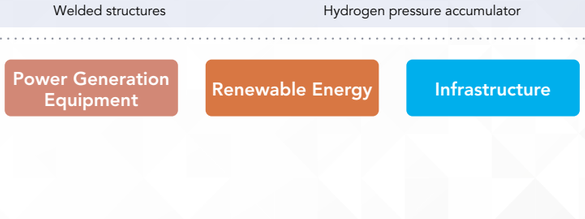
We are working to achieve profitability in each field through the supply of products: in photonics, materials for semiconductors and optical devices such as synthetic quartz and gallium nitride (GaN); in composite materials, lightweight and high-strength materials for aircraft and automobiles such as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

Production Bases


Hiroshima Plant


Yokohama Plant


Meiki Plant


Japan Steel Works M&E, Inc. (Muroran Plant)

Products

Plastic Production and Processing Machinery

- Pelletizers
- Film and sheet manufacturing equipment
- Twin-screw extruders
- After-sales services


Pelletizers


Twin-screw extruders


Vacuum laminators

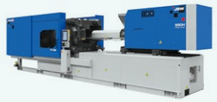

Defense equipment

Other Machinery

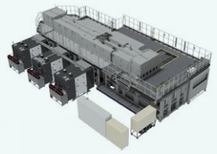
- Excimer laser annealing systems
- Defense equipment
- Railway products
- Hot press devices
- Vacuum laminators
- Deposition systems
- After-sales services

Molding Machines

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


Plastic injection molding machines


Magnesium injection molding machines

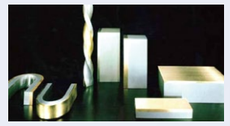

Excimer laser annealing systems

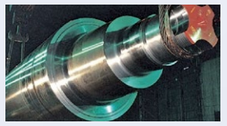
Steel Castings and Forgings

- Parts for reactors (shells, heads, etc.)
- Parts for steam generators
- Clad steel plates
- Rotor shafts
- Turbine casings
- Die steel
- Steel rolls for steel manufacturing


Shell flanges for pressure vessels

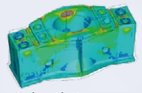

Integrated rotor shaft for power generation


Clad steel plates


Steel rolls for steel manufacturing

Engineering and Other Services

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


Design and analysis


Welded structures



Hydrogen pressure accumulator

New Businesses

- Photonics
- Composite materials
- Metallic materials











Markets

Plastics | Mobility | High-Performance Batteries | Electronic Devices | Defense | Power Generation Equipment | Renewable Energy | Infrastructure | New Businesses

Our History of Creating Value

1907	1945	1970s	2000s	2022
Founding (pre-war)	Post-war recovery	Rapid economic growth	Preparation for a new era	

Social issues and needs

- Development of defense industry
- Transition to commercial business
- Increasing energy demand
- Accelerating adoption of electronics in industry
- Decarbonization-related demand (electric vehicles, use of hydrogen energy)
- Increasing LCD demand with the growing use of smartphones
- Problem of marine plastic pollution

Phases in our history

Launch as a national project

In 1907, The Japan Steel Works was established in Muroran, Hokkaido, as a joint venture between three companies: Hokkaido Colliery Steamship Company and two U.K. firms: Sir W.G. Armstrong, Whitworth & Co., Ltd., and Vickers, Sons & Maxim, Ltd. By manufacturing armaments as a national project, the company contributed to the development of the defense industry. Purchasing Hiroshima Seisakusho Co., Ltd., in 1920, JSW established a Hiroshima factory (now known as the Hiroshima Plant) to expand the armaments business.

Growth based on a portfolio of technologies

After the Second World War, the focus of our business underwent a major shift to commercial products. Utilizing the technology cultivated through the manufacture of armaments, we began in earnest to produce large steel castings and forgings, such as rotor shafts for power generation and pressure vessels for oil refineries, and plastic processing machinery, such as injection molding machines and plastic extruders.

Becoming a comprehensive company in materials and mechatronics

We focused on creating new added value in response to market changes such as increasing energy demand and the accelerating adoption of electronics. Among the actions taken were the manufacture of ultra-large components (pressure vessels and rotor shafts) for nuclear power plants, a switch from hydraulic to electric injection molding machines, and the introduction of magnesium molding technology.

Toward establishing a new future vision for JSW

To contribute to a society that is demanding products that are friendly to the global environment, we manufacture and supply separator film manufacturing equipment for lithium-ion batteries, molding machines for large plastic parts for automobiles that excel in weight reduction, all manner of resin processing machines adapted to serving a plastic resource recycling society, and pressure vessels for hydrogen storage to support the hydrogen economy.

Lineage of technologies and their provision to customers and markets

Meiki Co., Ltd.



Plastic injection molding machines

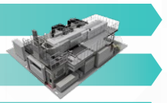
Expansion of materials

Magnesium injection molding machines



Mechatronics technology

Excimer laser annealing systems



Expansion of product range

Separator film manufacturing equipment for lithium-ion batteries



Expansion to secondary processing equipment

Film and sheet manufacturing equipment

Plastic extruders

Barrel processing technologies



Extruders for material and chemical recycling





Artillery production technologies

Material manufacturing technologies

Manufacturing technologies

Rotor shafts for power generation



High-pressure cylinders, reaction towers (e.g., for fertilizer)

Pressure vessels for oil refining

Manufacturing technologies

Pressure vessel manufacturing and high-pressure technologies

Pressure vessel technologies

Pressure vessels for use in nuclear power generation



Artificial crystals



Pressure vessel manufacturing and high-pressure technologies

Gallium nitride (GaN) single-crystal substrates



Hydrogen handling technologies

Hydrogen pressure vessels



Research on hydrogen in steel

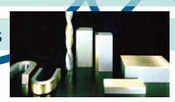
Hydrogen storage alloys

Special steel technologies

Material manufacturing technologies

Thick plate rolling

Clad steel plates and pipes



Net sales

Message from the President



“Material Revolution™,” making the world sustainable and prosperous.

Toshio Matsuo
Representative Director & President
The Japan Steel Works, Ltd.

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 state-of-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 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

Purpose

Material Revolution™
“Material Revolution™,” making the world sustainable and prosperous.

Vision

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 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_2 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 die-casting 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

Purpose

Material Revolution™

Material Revolution™,
making the world sustainable and prosperous.

Vision

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

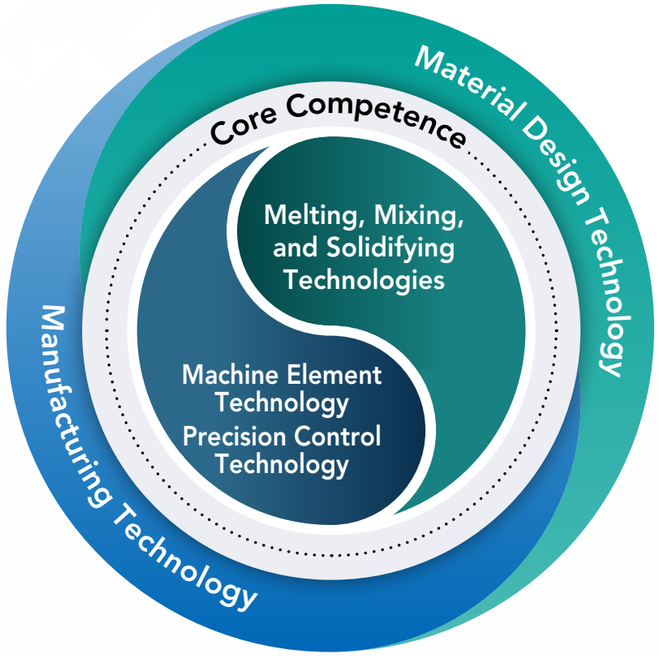
Human capital
- JSW Group employees: 5,329
- Non-consolidated JSW employees: 1,767
- Engineering career-track employees (non-consolidated): 807
- Training facilities for skills transfer: 2

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

Natural capital
- Energy consumption: 2,878 TJ
- Water intake: 16.91 million m^3

Business Model



Materiality

Creating value and solving social issues through JSW Group's businesses
- Realization of a plastic-resource-recycling society
- 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











Outcomes

Customers
- Contribute to the expansion of our customers' business opportunities
- 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_2 emissions)
- Reduction of CO_2 emissions through our products and businesses

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
- Expansion of hydrogen and ammonia businesses
- Decline of the natural gas business
- Uncertain trends in nuclear power generation

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.

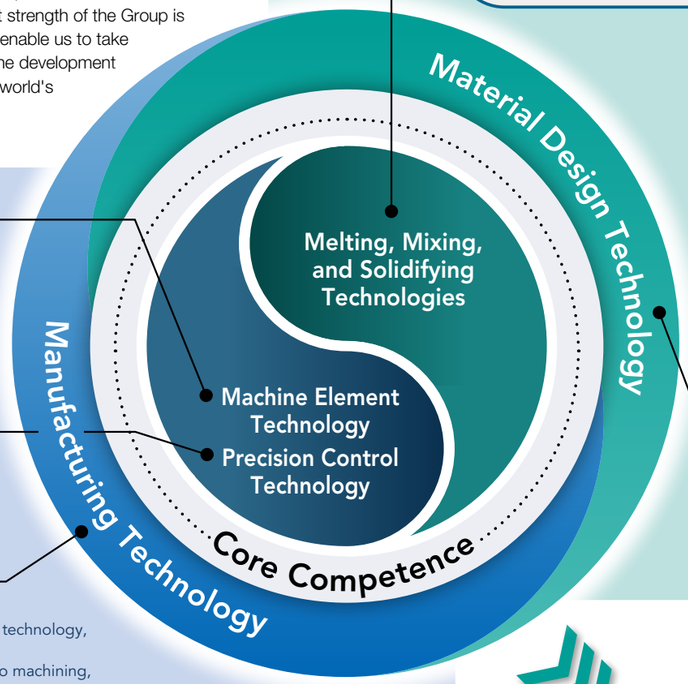
Magnesium is a material that is even lighter and stronger than aluminum. Its adaptation for in-vehicle parts makes for better fuel efficiency. It is also highly recyclable, which is why it is a material that has started to be used in earnest. Magnesium alloy is melted inside a cylinder at temperatures 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 heat-resistant 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.

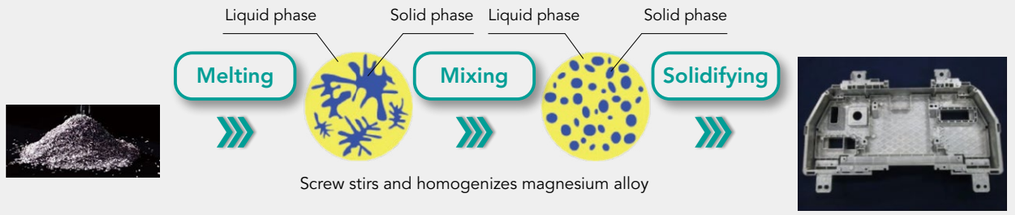
This is how we combine our core competence with our strengths in material design technology and manufacturing technology to go beyond just developing processes, designing equipment and designing control systems, to achieve the material development of core components that are manifested as end products, 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.

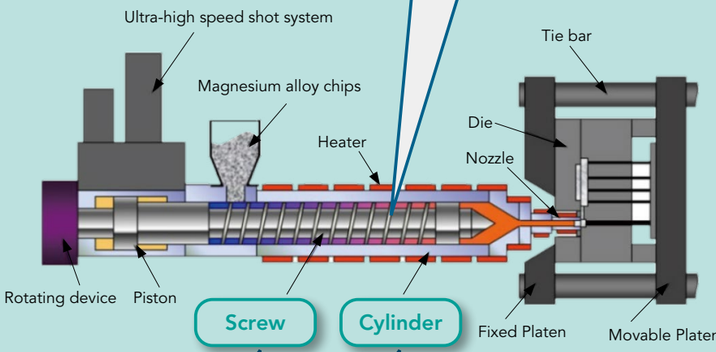


Melting, Mixing, and Solidifying Technologies

Thixomolding Process

Magnesium alloy chips are heated in a cylinder to a semi-molten state 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 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.





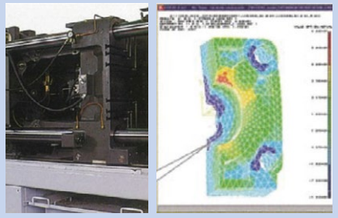
Material Design Technology

Screw and cylinder materials

(JSW-developed materials that can be used regularly at temperatures exceeding 600°C)

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



Mold clamping devices with maximized high rigidity and light weight

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 of use

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



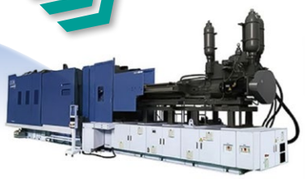


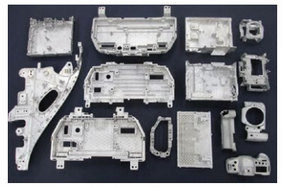
Hiroshima Plant, The Japan Steel Works





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







Automobiles

- Display meter panel
- ECU case
- Console
- Head-up display

etc.



Cameras



PCs, tablets



Smartphones

Industrial machines Magnesium injection molding machines ➡ **Materials** Magnesium alloy injection molded products ➡ **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 for sustainable growth.”

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 1

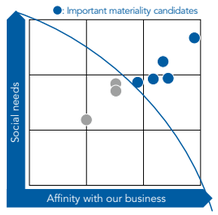
Comprehensive identification of social issues drawn from megatrends and international frameworks and guidelines

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.

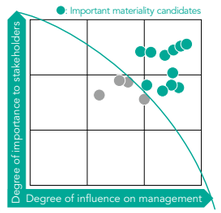
STEP 2

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 management foundation for sustainable growth

STEP 3

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

STEP 4

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

STEP 5

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	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 recycling. Since JSW Group can leverage its core competence 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 JSW Group.	Renewable ・Contribution to the greater use of non-fossil-fuel-derived 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 ・Contribution to the reduction of marine plastic waste – All manner of plastics processing machinery for biodegradable plastics Recycle ・Contribution to the spread of recycling as a practice – TEX for material and chemical recycling – Injection and blow molding machines for recycled plastics	9, 12, 14
Contribution to a Low-Carbon Society	The realization of a low-carbon society is one of the most important challenges faced worldwide. Products created by JSW Group’s industrial machinery and products equipped with its new materials have contributed to the reduction of CO_2 emissions. The demand for such products is expected to increase further in the future, which makes it a matter of high importance for the Group. In addition, responsibilities of the Group include the reduction of energy consumption of its industrial machinery products and the curbing of CO_2 emissions from the operations of its manufacturing sites.	Zero CO_2 emissions ・Contributions to the popularization of electric vehicles (EVs) – Film manufacturing equipment for use in lithium-ion battery separators – Lightweight on-vehicle parts (e.g., magnesium injection molding machines, etc.) Reduction of CO_2 emissions ・Reduction of energy consumption by industrial machinery products ・Reduction of CO_2 emissions resulting from business activities	7, 13
Contribution to a Super-Smart Society	The super-smart society is expected to resolve social issues in all fields, including medical care, food, the 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 amounts of data at high speeds and with low energy consumption. The industrial machinery and new materials of JSW Group are incorporated into the key components of the devices that make up the infrastructure, and could potentially be indispensable to the realization of a super-smart society. This is also considered to be a highly important business expansion opportunity for the Group.	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, PCs, etc. – Equipment involved in the manufacture of displays and electronic components – Substrates for SAW devices	11
Bolstering JSW Group’s Management Foundation for Sustainable Growth			
Human Capital Improvement and Diversity and Inclusion	The diversification and expansion of our human capital, including the human resources capable of driving the Group’s growth, generating innovation, and creating value, is a matter of the highest priority and importance for strengthening JSW Group’s management foundation.	・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	5, 8
Investment in the Future with Innovation Management	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.	・Strengthen core competence by boosting R&D systems ・Increase production capacity and expand business through M&A ・Completion of goals of the digital transformation promotion plan	12, 17
Governance Reinforcement of JSW Group	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 system.	・Strengthening compliance – Expansion of compliance lines in Japan and overseas ・Strengthening of Group governance – Review of reporting lines ・Promotion of stakeholder engagement ・Strengthening of quality assurance structure and systems	10, 16

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

Foster new products and businesses and make them competitive as soon as possible
- ○ 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 [×]

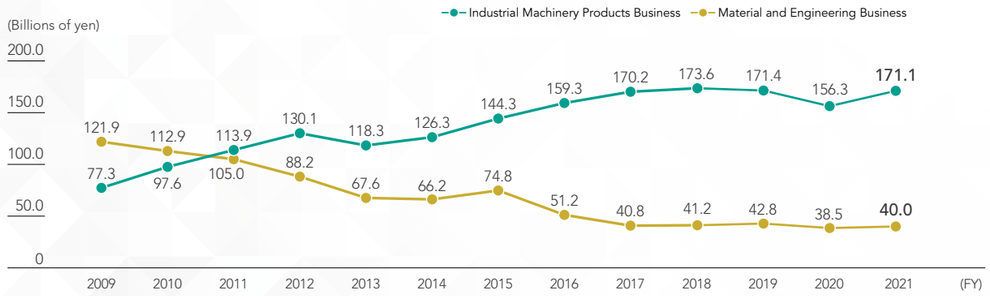
Optimization of management resources and strengthening of alliances
- ○ Expanded plastic processing machine complex (absorption type merger of Meiki Co., Ltd.; acquired GM Engineering Co., Ltd. as a subsidiary)
- ○ Establishment of Japan Steel Works M&E, Inc. (spun off the Material and Engineering Business Division)
- ○ 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)
- ○ Establishment of parts centers in Japan and Europe, construction of dedicated service center
- ○ Start operation of remote maintenance system

Acceleration in exploration and development of new businesses
- ○ Commercialized hydrogen-related business and transferred to Japan Steel M&E, Inc.
- ○ 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 complex

	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
From April 2021 to March 2026
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 large-sized 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 Purpose

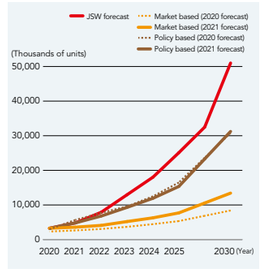
	FY2021 Results	FY2025 Plan	Change from FY2019
Net Sales (Billions of yen)	213.7	270.0	+24%
Operating income (Billions of yen)	15.4	27.0	+44%
Operating income ratio	7.2%	10.0%	+1.4PP
ROE	9.6%	10.0%	+2.8PP

New Developments

Expansion of the production network for film and sheet production equipment

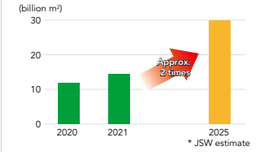
As expectations increase in the shift toward replacing conventional automobiles with EVs, demand for lithium-ion batteries is increasing significantly at a rate quicker than anticipated. This has been accompanied by demand for film and sheet manufacturing equipment for separators that is expected to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

Estimated number of EVs (PHEVs + EVs) manufactured



* JSW research

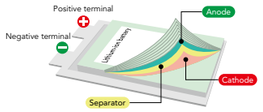
Separator film production capacity



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, establish a **50-line** system by March 2023
establish a **60-line** system by March 2024



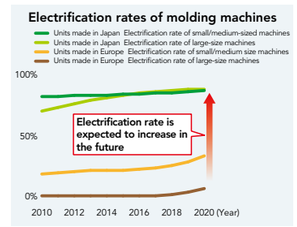
Lithium-ion battery structure

The separator is a plastic film that plays an important role in preventing contact between the cathode and anode while 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.

Electrification rates of molding machines



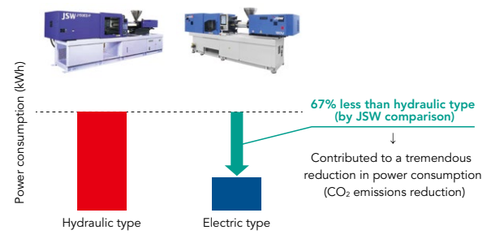
* JSW research

European market share



JSW response

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™ 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.

SWOT Analysis

S Strengths
- Cumulative original technology and knowledge
- Lineup of plastic processing machinery to meet diverse needs
- 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 equipment

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

O Opportunities
- EV market expansion (increased demand for lithium-ion batteries)
- After-sales service market based on long track record of deliveries
- Advances in waste plastic recycling, emergence of biodegradable plastics
- Increasing full-scale investment in 5G/6G infrastructure
- Expanding consumption particularly in emerging economies

T Threats
- Shrinking demand for plastic due to shift away from plastic
- Shrinking demand for separator film due to spreading use of new types of storage batteries 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 after-sales service. Extending the service life of our products as processing machines enables us to reduce the resultant 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-resource-recycling 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

S Strengths
- 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 customer

W Weaknesses
- Low share in the market for small machines (precision molding field) and ultra-large machines
- Delays in delivery times for sudden large orders

O Opportunities
- 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 electric power)

T Threats
- Shrinking demand for plastics due to the shift away from plastics
- 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.

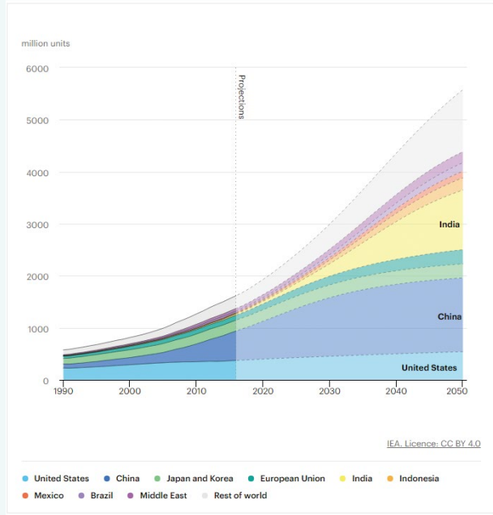
In addition, another strength of the Group is in having achieved a high in-house production rate (through the vertical integration of production processes) and enabling the supply of highly reliable injection molding machines through close coordination between our manufacturing processes.

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 large-size 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 supply chain.

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.

Topics

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

S Strengths
- High market share and extensive track record as a supplier in specific fields
- Technical capabilities (in our ability to develop and design) to realize customer needs into manufacturing equipment, especially the precision transfer technology and precision positioning control technology required for electronic device manufacturing equipment
- Wealth of experience in after-sales service

W Weaknesses
- Markets in which we have a proven track record are limited

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

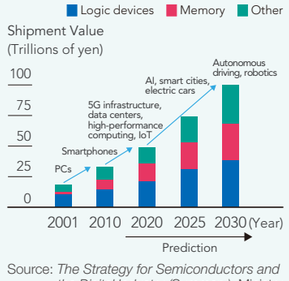
T Threats
- Exclusion from the market due to industrial promotion policies in various countries (shrinkage of target markets)
- Price competition

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.

Global Semiconductor Market



Source: *The Strategy for Semiconductors and the Digital Industry (Summary)*, Ministry of Economy, Trade and Industry (June 2021)

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 high-density 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 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 growing markets.

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 high-capacity communications, and power electronics; (2) the Composite Materials Business, which includes lightweight, high-strength 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 high-temperature, 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-energy-efficiency 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 CO_2 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 pandemic.

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 high-quality 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 on-site 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 and performance.

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

S Strengths
- Equipment and manufacturing technologies that enable the manufacture of large forgings and castings
- High quality and safety honed in electric power and nuclear power products
- Ability to provide one-stop engineering services

W Weaknesses
- Inefficient capacity use and operations due to build-to-order manufacturing system (difficult to standardize)
- Since the equipment is intended for the manufacture of large products, operations are inefficient for small products and mass-produced products

O Opportunities
- Adaptation to the hydrogen economy and natural energy sources to become carbon neutral
- Withdrawal of competitors and industry restructuring trends
- Focus on infrastructure projects such as those in Japan's National Resilience Plan

T Threats
- Decline in coal, oil and LNG power generation and oil and gas industries due to adaptation to a carbon-neutral society

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_2 emissions and improve productivity.

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 fields–basic technologies that work powerfully to separate us from the rest.

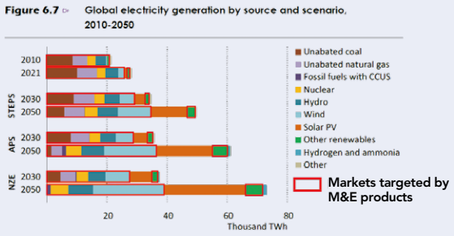
With the launch of Japan Steel Works M&E, Inc., the services previously offered by individual Group companies, such as design and analysis, welded structure fabrication, construction, inspection, and maintenance, have been centralized to enable us to provide wide ranging engineering services, a one-stop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

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.

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.

Figure 6.7 ▷ Global electricity generation by source and scenario, 2010-2050



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 product lineup.

Topics

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 medium-term 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%.

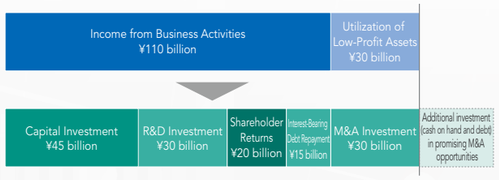
While aiming to secure the minimum 8% ROE, which is expected by institutional investors, we plan to increase the equity spread by further improving profitability, and raise the ROE to 10% by the final year of JGP2025. As our level of financial leverage poses no problem to the financial soundness of the 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.

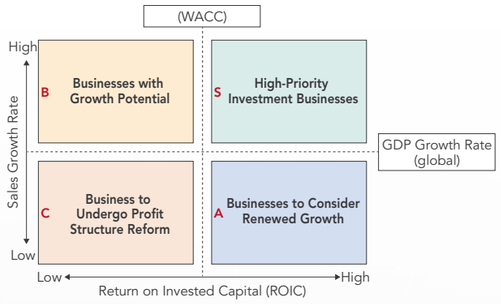
Based on the business portfolio analysis, we will further bolster our competitiveness by aggressively investing resources in plastic production and processing machinery and injection molding machinery, which are positioned in the upper-right quadrant of "high-priority investment businesses" in the four-quadrant 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.

Response to Inappropriate Conduct in Quality Inspections

Background behind the Series of Instances of Inappropriate Conduct

Having received a report from an internal whistleblower in late February 2022, about quality inspections by Japan Steel Works M&E, Inc. (hereinafter "M&E"), JSW Group conducted an unannounced internal inspection of M&E. In late March of the same year, we confirmed that M&E had committed inappropriate conduct in the inspection of some products they had manufactured.

In response, after making a public announcement about the matter on May 9, a special investigation committee consisting of outside attorneys was established to conduct an investigation. On November 14, 2022, we received the results of that investigation and made an announcement about the initiatives we would be implementing.

Results of the Special Investigation Committee's Investigation and the Inappropriate Conduct Determined

From among the facilities investigated (at M&E, Hiroshima Plant, Yokohama Plant, and Meiki Plant), inappropriate conduct was confirmed for products manufactured and shipped by M&E. No inappropriate conduct was confirmed at the Hiroshima Plant, Yokohama Plant, or Meiki Plant.

The inappropriate conduct confirmed at M&E was independently investigated and confirmed by the Special Investigation Committee. As a result of this investigation, inappropriate conduct was confirmed in the following product groups: power products, nuclear energy products, cast steel products, forged steel products, steel Plate & Pipe products, and ordnance products. A summary of the confirmed inappropriate conduct for each product group is shown in the table below. (Additional comments below the table are supplemented by the Company.)

Regarding the affected products, we are reporting to and discussing with our customers sequentially.

The occurrence of problems in the product quality or performance owing to the inappropriate conduct has not been confirmed.

We take the facts and recommendations of the Special Investigation Committee with the utmost seriousness, and we will make company-wide and group-wide efforts to reform our systems and culture to prevent any recurrence, which will enable us to regain the trust of all stakeholders.

Product groups	Products	Type of inappropriate conduct	Number of cases and times of occurrence
Power products	Rotors, ring materials	Falsification, fabrication, or misstatement of inspection results and analysis values	341 cases (1998-2021)
Nuclear energy products[1]	Disc materials, head materials	Falsification of dimensional records, falsification or fabrication of test results, false statements in inspections	20 cases (2013-2021)
Cast steel products	Valve casing materials, steam turbine casing materials	Falsification of inspection results, test results, and analysis values	12 cases (2007-2022)
Forged steel products	Rolls, forged steel pipes	Falsification or fabrication of inspection results, test results, and analysis values	68 cases (2003-2020)
Steel Plate & Pipe products	Stainless clad steel plate	Falsification of inspection results and analysis values	2 cases (2017, 2020)
Ordnance products[2]	Forged steel materials	Falsification of test results and analysis values	6 cases (2020)

1. Most of the cases were emergency measures that were triggered by sudden events that occurred in the manufacturing process, a finding that was confirmed in the investigation report by the Special Investigation Committee. There were circumstances that would not have otherwise been a problem if they had been reported to or discussed with customers, but they were covered up without reporting to or discussing about with customers, which constitutes a deviation from the procedural specifications sought by customers.
2. There was no deviation from the specifications agreed on with final customers, but instead from the internal control values of M&E, whose customer is our Company (Hiroshima Plant).

Analysis of the Causes

▶1 Inadequate organizational management system that made it difficult for a system of checks and balances to function

Authority was concentrated in the product division, which was in charge of planning and directing each process from specification coordination with customers to manufacturing and quality confirmation of products. In addition, due to the very nature of materials manufacturing, which involves only a limited number of divisions in the manufacturing process and is subject to direct or indirect involvement and guidance by the product division, it is difficult for a system of checks and balances to function between processes. This contrasts to the situation at other manufacturing plants engaged in machine manufacturing, where the series of manufacturing processes, such as design, machining, and assembly, are based on a division of labor, with process control by a production control division and at least a semblance of check-and-balance functions in place among the processes.

▶2 Lack of awareness of the importance of quality compliance

There had been a tendency toward downplaying the process of quality assurance due to there being more importance placed on the final quality of products and inadequate awareness of the fact that quality is created through the cumulative practice of adhering to each and every specification and inspection requirement in the manufacturing process that has been agreed on with the customer. In addition, it was observed that some individuals mistakenly believed that certain specification violations were acceptable as long as no quality problems were encountered while practicing individual standards. There was also a tendency to try to solve problems by independently changing the definitions and interpretations of regulations and specifications.

▶3 Overconfidence in experience and track record, and pressure to respond to customer requests and dialogue

M&E is seen as maintaining a strong commitment to perfection in terms of quality and on-time delivery. Against this background, M&E ended up engaging in inappropriate conduct due to the justification at the individual and organizational levels of taking measures without sufficient communication with customers in the event of the occurrence of quality problems.

▶4 Paper-based and manual inspection work processes and a chronic shortage of personnel

Paper-based management and manual record keeping create an environment in which there are occurrences such as the rewriting of inspection results. In addition, the considerable volume of cumbersome manual work increased the workload and put a strain on human resources, especially in responding to unexpected events, thereby triggering the omission of necessary operations in the name of efficiency.

Measures to Prevent Recurrence

Based on the analysis of the causes, and taking into consideration the recommendations from the Special Investigation Committee, the Company has formulated the following measures to prevent recurrence of this inappropriate conduct. Having granted approval of the overall approach, the Board of Directors will regularly monitor the progress and effectiveness of these measures.

Measures to Prevent Recurrence in the Company

1 Establishment of a company-wide quality assurance system (new establishment of a Quality Management Office)

▶For details, please refer to p. 32.

2 Strengthen and raise awareness of the need for quality compliance

- Proper communication from top management
  Top management indicating the serious commitment to quality compliance will be an activity for raising awareness among the employees who work under them. In addition, the president will hold lunch meetings with employees on a regular basis to promote dialogue and transition to a more open workplace culture.
- Establishment of a Quality Compliance Month
  In order to sustain an awareness of the importance of the lessons learned from the inappropriate conduct, May of each year will be observed as Quality Compliance Month, which will entail activities such as education and training sessions pertaining to quality compliance, as well as proper communication from top management.

3 Strengthen governance and internal controls

- Strengthen internal audit functions
  Strengthening the internal audit functions of the head office Internal Auditor Office, internal control will be established in the quality management process, including quality inspections by the Quality Management Office, and the status of operations will be audited as needed.
- Strengthen the internal whistleblowing system
  Further awareness of the whistleblowing system will be promoted and the system with undergo further strengthening, including the establishment of a new leniency system (punishment reduction) for internal voluntary reports.
- Review the structure of the Board of Directors
  The functions of the Board of Directors will be oriented toward monitoring. Regarding the composition of the Board of Directors, we will move forward in ensuring diversity through means such as considering a reduction in the number of internal executive directors and an increase in the percentage of outside directors.

Measures to Prevent Recurrence at M&E

▶For details, please refer to p. 33.

1. **Strengthen the independence of quality assurance functions by deconcentrating authority in the product division**
2. **Reform the workplace culture**
3. **Strengthen education pertaining to quality control**
4. **Digitalization of inspection operations**
5. **Appropriate allocation of management resources to quality control**
6. **Upgrade communication with customers**
7. **Revision of standards for the storage of quality-related documents and data**

Details of the Main Recurrence Prevention Measures

Measures to Prevent Recurrence in the Company

Establishment of a company-wide quality assurance system

In order to strengthen the corporate monitoring and supervision of the self-contained quality assurance management system in each division and plant, we established the Quality Management Office on September 16, 2022. This office is headed by the director in charge of quality management to oversee the quality assurance functions in each division and plant. The Quality Management Office is responsible for the following operations

1. **Establishment of company-wide quality policy and basic quality action guidelines (figure on right)**
2. **Guidance on consistency with the Company's management strategy pertaining to the quality activity policies at each business and plant (including M&E)**
3. **Supervision and assessment of quality assurance activities at each division and plant (including independent audits)**
4. **Guidance and recommendations for operation improvement based on the related assessments**
5. **Implementation of company-wide education and training related to quality assurance activities**
6. **Company-wide horizontal deployment of information that should be shared: information on useful quality improvement activities and problems at each division/plant**
7. **Supervision of response to serious product accidents and quality irregularities at the time of occurrence**
8. **Reports to management on important quality assurance activities of the entire company or each division/plant**

Quality Policy

JSW group is committed to contribute to make lives of people around the world more sustainable and prosperous through supplying reliable products and services respecting the importance of quality.

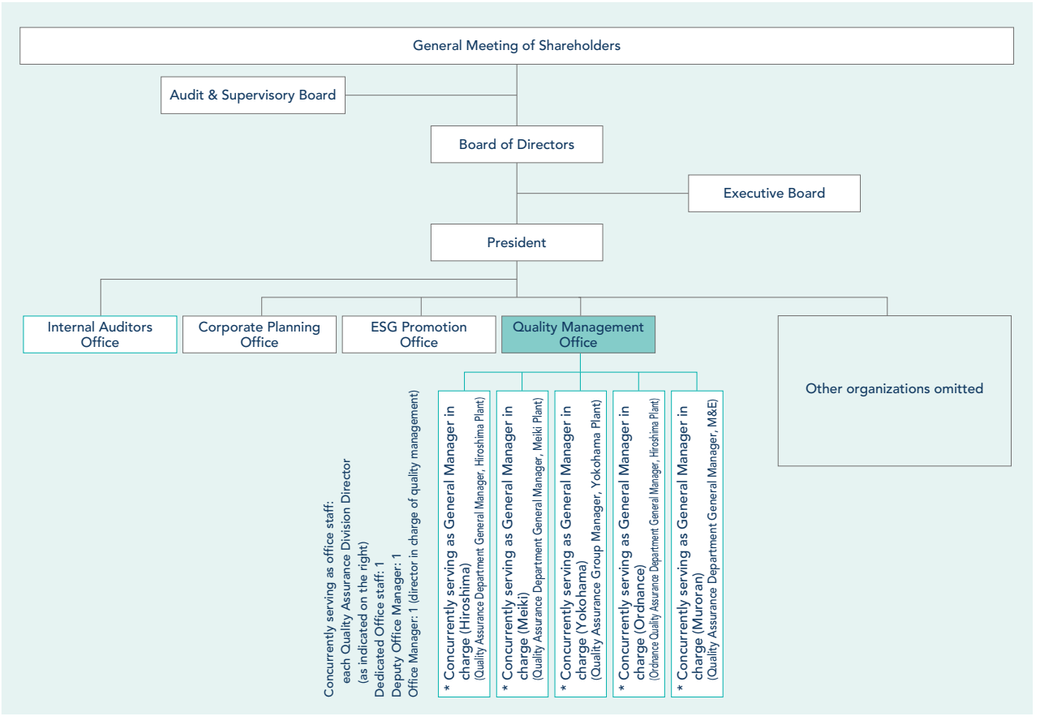
Quality Code of Conduct

1. We will thoroughly comply with laws, regulations and customer's requirements with high ethical standards.
2. We will provide our customers with reliability and satisfaction through our products and services by fulfilling our duty diligently at each role.
3. We work tirelessly to maintain and improve the quality of the products and services.
4. We will raise awareness of quality through maintaining the technology and skills by developing the education of the human resources.
5. We will elevate ourselves to contribute to society.

Toshio Matsuo
Representative Director & President

Shigeki Inoue
Director & Managing Executive Officer
CTO: In charge of Quality Management

Effective as of September 16, 2022



Measures to Prevent Recurrence at M&E

Strengthening the independence of quality assurance functions by deconcentrating the authority of the product division

In order to prevent interference with quality control operations by the product division, which is responsible for delivery dates and costs, quality assurance functions will be integrated into the Quality Control Department, which will report directly to the president of M&E. This reorganization has been implemented as of June 1, 2022. In addition, by incorporating Quality Assurance Division Directors into the parent company's Quality Management Office for concurrent duty, there will be a system in place for ensuring personnel control. Moreover, the Quality Control Department now receives quality audits from the Quality Management Office. These changes will strengthen the monitoring and supervision functions of the parent company.

For nuclear products, we will strengthen monitoring and supervision by third parties through means such as accepting witness inspections by external inspection organizations. Though we already have witness inspection by external inspection organizations for some matters, we will consider expanding this practice in the future as based on consultations with our customers.

In addition, functions related to delivery and cost management will be separated from the product division and reorganized, and a system will be established to appropriately verify and manage the personnel and facility capabilities of the plant of M&E.

Renewal of workplace culture

The report of the Special Investigation Committee suggests that the corporate culture within the Company is not conducive to bringing attention to internal problems. We will work to create an open workplace culture where individuals can point out mistakes without fear, where such feedback is accepted, and where opinions can be freely expressed.

To this end, we will move forward with activities that raise awareness for fostering a culture of quality and safety, including senior management sending the right kind of messages and gleaning feedback from employees through regular round-table talks, as well as through actions such as holding regular workshops and study sessions on quality and compliance, along with the posting of posters.

Also, since divisions where human resources remain unchanged are susceptible to the onset of peer pressure, we will also promote personnel rotation across divisional boundaries in parallel with the review of business processes. The effectiveness of these actions will be verified through means such as internal attitude surveys.





Digitization of inspection work

We will construct a digitalized inspection work system to prevent the kind of errors and omissions in inspection data that could be due to intentional or negligent errors in the process of preparing inspection reports.

The Office of Digital Transformation (established on July 1, 2022) is taking the lead in the digitization of inspection operations at plants, including those of M&E, with M&E aiming to begin partial operation during the second half of fiscal 2023.

Appropriate investment of management resources in quality control

Given that the lack of personnel and equipment necessary for quality control, including inspections, was a factor in the occurrence of inappropriate conduct, we will increase the number of personnel needed, invest in education to train inspectors, and invest in the necessary equipment and measuring instruments, including digitization.



Message from the Director in Charge of Promoting ESG

Having established JSW Group corporate Philosophy, starting with Purpose, Materiality was identified as themes that should be prioritized in order to realize our Purpose. By clarifying these, we were able to reaffirm the challenges that need to be undertaken to realize the future and mission we would like to realize, as well as the very purpose of the Group's existence.

In parallel, in June 2022, we announced our endorsement of the TCFD and then in September 2022 established a Human Rights Policy and expanded our Basic Procurement Policy. Companies are increasingly expected to manage their operations in an ever more sustainable manner, and our Group is indeed one that is progressively organizing and building a framework for sustainable management. Based on this framework, we aim to further enhance our corporate value by fulfilling the host of social responsibilities that are sought in companies and contributing to the resolution of social issues through the provision of reliable products, technologies and services that place importance on quality.

Junichiro Deguchi
Representative Director & Executive Vice President
In charge of Export Control Administration; In charge of Personnel Department; In charge of CSR & Risk Management; In charge of Promoting ESG; In charge of Health & Safety Management and Environmental Management; In charge of General Affairs Department; In charge of Material and Engineering Products Business

Environment

36 Response to Climate Change
38 Environmental Management
40 Reduction of Environmental Impact

Social

41 Talent Development Strategy
43 Human Rights
44 Occupational Health and Safety
45 Supply Chain Management
45 Local Communities

Governance

46 Corporate Governance
52 Management Team
54 Message from an Outside Director
55 Risk Management
56 Compliance
57 Digital Transformation Promotion
57 Information Security

Sustainability Policies

The Japan Steel Works has continued to consistently resolve social problems by innovating materials for more than a century since our founding in 1907, first in steel, then in the development of plastic that began after the Second World War and more recently in crystals such as gallium nitride (GaN). With the belief that this is the very purpose for the existence of the Group, we set forth as our Purpose Material Revolution™, making the world sustainable and prosperous. Furthermore, we identified as Materiality six themes that should be prioritized in order to realize our Purpose. With these as the basis for decisions made and actions taken in the Group's business activities, the Group will coalesce as one to consider which industrial machinery and new materials to provide for which social issues, and then work towards realizing them to create social value.

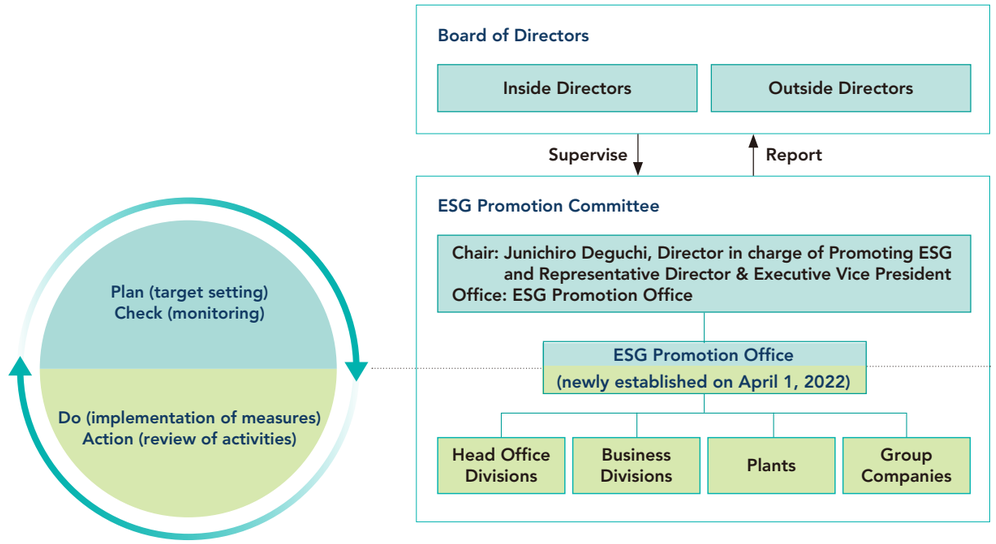
In addition, as stated in our vision, we believe that the Group's corporate value will be enhanced by benefiting all stakeholders by developing and implementing industrial machinery and new materials that solve social issues.
The simultaneous realization of this creation of social value and the sustainable enhancement of corporate value typify the concept of sustainability to JSW Group.

In taking specific actions in our quest to realize sustainability for JSW Group, we will continue to hold ourselves to high ethical standards in accordance with the Group Standards of Business Conduct.

Governance and Promotion System for Sustainability

Sustainability promotion activities are carried out by the ESG Promotion Committee, which was established in April 2021 and chaired by the Director in charge of Promoting ESG. In addition to considering strategies related to climate change, the committee also discusses all manner of ESG-related issues. The Board of Directors exercises appropriate oversight on the basis of input such as reports on the ESG Promotion Committee's activities.

In April 2022, the Company established the ESG Promotion Office as an organization dedicated to promoting ESG activities on a company-wide basis. The ESG Promotion Committee plays a central role in the Group's climate change response and ESG-related activities, which are promoted through the ESG Promotion Office in cooperation with head office divisions, business divisions, plants and Group companies.



Response to Climate Change

Support for and Information Disclosure in Line with the TCFD Recommendations

While climate change has a great impact on the global environment, society, and economy, it is a long-term and highly uncertain problem. We, Japan Steel Works Ltd., considers a climate change as one of the important management issues, and in June 2022, we have expressed our endorsement for TCFD (Task Force on Climate-related Financial Disclosures).

JSW Group analyzes and examines the impact of climate change as risks and profit opportunities on its business activities and is working for our disclosure of information in accordance with TCFD Disclosure Framework.

See website for detailed report.

Climate change response: https://www.jsw.co.jp/en/sustainability/environment/climatechange.html

* TCFD: Task Force on Climate-related Financial Disclosures established by the Financial Stability Board (FSB).

Governance

The Board of Directors recognizes that it is one of the important subjects to respond to climate change issues and supervises the Group's efforts to address climate change issues in terms of both risks and opportunities. Specifically, when the Board of Directors deliberates on management strategies and plans, its decisions are made based on risks and opportunities related to climate change issues as necessary. For more information, see the pages on Sustainability Management (p. 34-35).

Strategy

We conducted a scenario analysis to evaluate how the risks and opportunities of climate change affect our business strategy and to consider countermeasures. The assumptions used for this scenario analysis are as follows. The target of the analysis is covering all businesses based on consolidated financial statements, and the analysis time axis is fiscal 2030. As for the based scenarios, IEA's SDS scenario (Sustainable Development Scenario) and IPCC's RCP 2.6, etc., are used as "below 2°C scenario," and STEP scenario (Stated Policies Scenario) and IPCC's RCP 8.5 etc. are used as "4°C scenario."

As a scenario analysis process, we first identified the risks and opportunities that climate change would bring, and extracted items that are expected to have a relatively large impact on operating income from among various items. Next, we collected objective external data necessary for estimating the impact of these items, and estimated the impact as of fiscal 2030 based on the below 2°C scenario and the 4°C scenario. Then, we considered countermeasures for the results of our estimates with appropriate parameters. The extracted items and the estimated degree of impact, and countermeasures for them are as shown in the table on the right page.

The risks of the below 2°C scenario include, in addition to increased costs due to the introduction of carbon pricing, a decrease in sales of products for coal-fired power stations, increased costs for the non-fossilization of fuel for production facilities, and a decrease in sales due to reputation damage if the company's CO_2 emissions reduction measures prove to be insufficient.

In response, we are promoting the reduction of CO_2 emissions at major manufacturing plants and are also working on the introduction of renewable energy-derived power, research, and development for the shift to non-fossil fuels, and equipment refurbishment/renewal. Regarding the decline in reputation, ESG Promotion Committee will continue discussion with a view to accelerating the plan, as well as ensuring the execution of plans such as increasing the amount of electricity derived from renewable energy and shifting (repair and renewal of production facilities) to non-fossil fuels.

In terms of opportunities provided by the below 2°C scenario, we possess multiple product groups that could potentially provide opportunities for us as environmental regulations become stricter, such as manufacturing equipment for separator film used in EVs and electrically driven injection molding machines with superior energy efficiency. To increase sales of those products, we are working to strengthen our production system, expand product substantiality that meet market needs, and strengthen our technology. In addition, we will promote resource efficiency by taking the opportunity of introducing carbon prices, such as electrification of manufacturing facilities and promotion of the use of electricity and non-fossil fuels derived from renewable energy.

Risks posed by the 4°C scenario include physical damage to production facilities and other property caused by events such as typhoons, torrential rains, floods and storm surges, costs incurred by countermeasures, and consequences such as the impact on business performance due to the shutdown of operations.

We asked an external organization to scrutinize the location conditions of our main manufacturing bases, forecasted changes in weather, existing disaster prevention facilities in and around the manufacturing bases, and damage records in the past. As a result, it was confirmed that disaster prevention measures have been strengthened not only in the manufacturing bases but also in the surrounding area such as raising the embankment. In addition, as the estimated amount of damage is expected to be covered by insurance, the impact of physical risks (acute and chronic) on business performance is expected to be minimal by the middle of this century. We will continue to monitor climate trends, and if the tendency for intensifying disasters becomes even more pronounced, we will consider parallel production of major products at bases with stronger disaster tolerance.

Based on the above, we believe that our strategy for climate change is resilient.

Financial "Risk" Impact Assumed for FY2030

Impact on Operating Income: Minor: less than ¥100 million/year; Moderate: ¥100-1,000 million/year; Major: ¥1,000 million/year or more

Category	Type	Details	Degree of impact	
			2°C	4°C
Transition risks	Policies and regulations	Introduction of carbon pricing (imposition of a carbon tax)	Major	—
		Introduction of border adjustment tax	—	Moderate
	Technology	Cost of refurbishing/updating facilities and R&D to support a shift to the use of non-fossil fuels used in production facilities	Moderate	Moderate
	Markets	Decrease in demand for thermal power related products due to the reduction in the construction of conventional thermal power plants	Minor	—
		Increased procurement costs due to increased demand for steelmaking raw materials as a result of the shift from blast furnaces to electric furnaces in the steel industry (CO_2 reduction measures)	Moderate	Moderate
	Reputation	Damage to our ESG evaluation and reputation due to delays in CO_2 emission reduction measures at the product manufacturing stage	Moderate	Moderate
Physical risks	Acute	Increased costs incurred by the restoration of damaged production and supply chain facilities due to severe natural disasters such as typhoons and torrential rains caused by extreme weather change	Minor	Minor
	Chronic	Increased costs (capital investment) to cope with rising sea levels	Minor	Minor

Financial "Opportunity" Impact Assumed for FY2030

Impact on operating income: Minor: less than ¥100 million/year; Moderate: ¥100-1,000 million/year; Major: ¥1,000 million/year or more

Category	Type	Details	Degree of impact	
			2°C	4°C
Opportunities	Markets	Expansion of the EV market	Major	Major
		Expansion of high-efficiency, energy-efficient power electronics market and 5G infrastructure market	Moderate	Moderate
	Energy sources	Increased demand for offshore wind turbines	Moderate	Moderate
		Increase in hydrogen stations for fuel cell vehicles	Minor	Minor
	Resource efficiency	Tax relief after the introduction of carbon pricing on CO_2 emissions from production facilities	Major	—
		Reduction of CO_2 emissions due to the introduction of photovoltaic installations (Scope 1, 2)	Minor	—
	Products and services	Expansion of products and services that contribute to the demand for the reduction of CO_2 emissions	Major	Major
		Response to the demand for plastic recycling, contribution to social implementation of non-fossil fuel-derived plastics and coal alternatives	Minor	Minor
		Response to the demand for nuclear power plants that emit less CO_2 and are a stable source of electricity	Moderate	Moderate

For more information on our measures to address each of the risks and opportunities, please see our website.

Risk Management

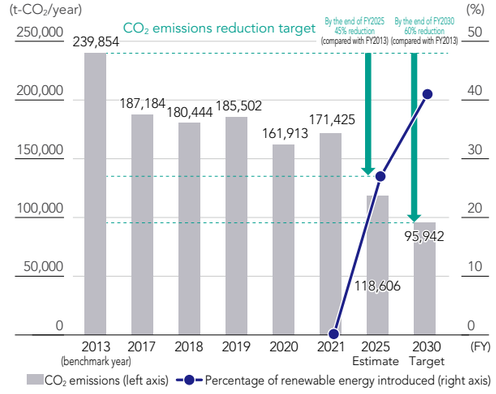
We have established rules regarding risk management and clarified the company-wide risk management system. The ESG Promotion Committee and the Environmental Management Committee conduct the identification and assessment of risks related to climate change. Important risks among those identified will be deliberated on by the Board of Directors or the Executive Board as appropriate. For more information on the environmental promotion system, please see the Environmental Management pages (p. 38-39).

Indicators and Targets

The "Indicators and Targets" that measure and manage risks and opportunities related to climate change have set the following targets for a carbon-neutral decarbonized society. We are engaged in environmentally friendly business activities that aim for improvement in terms of both "decarbonization by products" and "decarbonization of production processes." Regarding the CO_2 emission reduction target, we have initiatives underway from Scope 1 and Scope 2. As Scope 3 is being calculated, we are proceeding with efforts toward setting publication and management indicators.

Classification	Management Indicator	Target (by end of year)	
		2025	2030
Reduction of CO_2 emissions in production activities (Scope 1, 2)	CO_2 emissions reduction target (compared with fiscal 2013)	45% reduction	60% reduction
Promotion of the introduction of renewable energy	Percentage of renewable energy among all energy used (Scope 1, 2)	25% or more	40% or more

CO_2 Emission (Scope 1, 2) Reduction Plan and Renewable Energy Introduction Plan



* In terms of the scope covered, the CO_2 emissions calculation includes the total of the head office and the Group's main manufacturing sites (Hiroshima Plant, Yokohama Plant, Meiki Plant, Japan Steel Works M&E, JSW Aktina System).

Environmental Management

Environmental Policy

JSW Group is committed to being an environmentally responsible corporate citizen. We emphasize environmentally responsible production and technology as means to support sustainable social development in harmony with ecosystems.

Action Plan

1. Systematically implement environmental initiatives and continuously promote environmental conservation.
2. Set appropriate objectives and targets to reduce environmental impact, including on biodiversity.
3. Provide society with products and services that contribute to environmental conservation.
   - (1) Improve the social value of our products in terms of the environment, health and safety.
   - (2) Provide products and services that reduce environmental impact by understanding environmental needs and developing technologies.

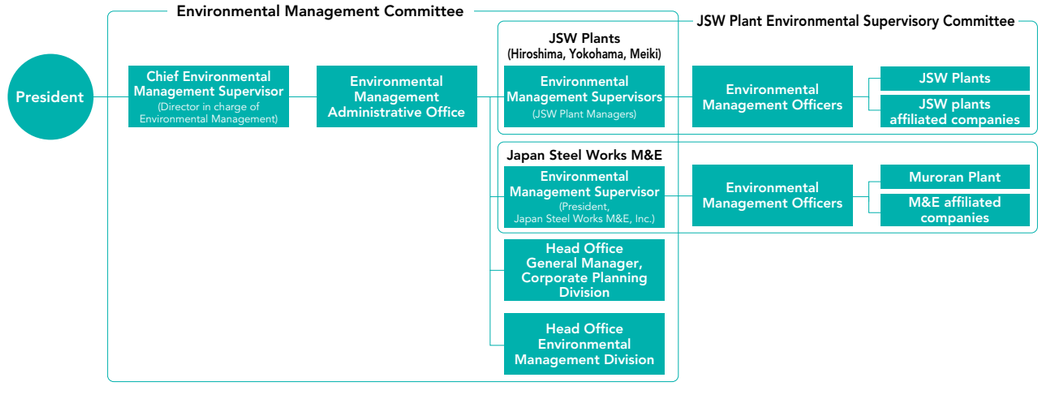
Shared Business Site Policies

Business sites set environmental policies, objectives and goals in accordance with international standards with due consideration of their operations and nearby communities.

- (1) Comply with laws, regulations and JSW Group agreements with external entities.
- (2) Prevent pollution and reduce and properly process waste with due consideration for impact on ecosystems.
- (3) Use resources more productively by saving energy and by saving and recycling resources.
- (4) Require employees and on-site companies to understand and abide by business site policies.

Environmental Management Structure

Recognizing the importance of conducting its business activities in harmony with both the international and local communities, JSW Group has been promoting environmental management activities throughout the Group since 1997. The Environmental Management Committee, headed by the director in charge of environmental management, formulates group-wide annual environmental management policies and action plans, and monitors and evaluates the progress of environmental management activities. Each plant has its own environmental supervisory committee and works to promote environmental management activities, as part of JSW Group's unified approach to reducing its environmental impact.



JSW's Hiroshima, Yokohama and Meiki plants and Group companies Japan Steel Works M&E, Inc. and Nikko-YPK Shoji Co., Ltd. have obtained ISO 14001 certification, an international standard for environmental management systems.

Business Site ISO 14001 Certification

Business Site	Original Certification Date	Current Certification Body
Hiroshima Plant	December 18, 1998	JQA
Yokohama Plant	September 4, 2006	JQA
Meiki Plant	March 4, 2005	JQA
Japan Steel Works M&E	December 18, 1998	LRQA
Nikko-YPK Shoji	February 7, 2005	JQA

* Certification bodies: LRQA (Lloyd's Register Quality Assurance Limited), JQA (Japan Quality Assurance Organization)

Targets and Progress of the Medium-Term Environmental Plan

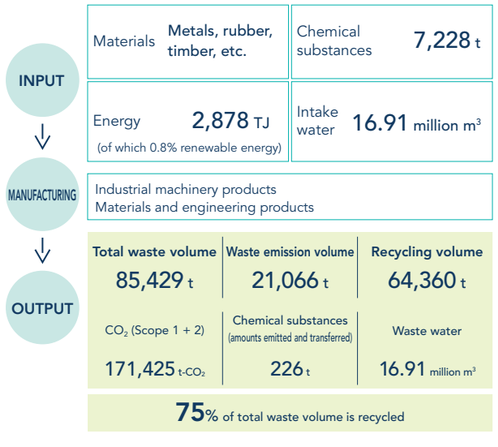
Achievement Level: ◎ Fully achieved ○ 80% or more achieved △ Less than 80% achieved

Priority Issues	Fiscal 2021 Targets	Fiscal 2021 Actual Results	Achievement Level	Medium-Term Environmental Plan (under JGP2025) Fiscal 2025 Targets
Environmental Management	Maintain ISO 14001 certification of plants and Nikko-YPK Shoji	Maintained ISO 14001 certification of plants and Nikko-YPK Shoji	◎	Maintain existing ISO 14001 certifications Obtain new ISO 14001 certification of domestic manufacturing Group companies
Climate Change Measures	30% reduction in CO_2 emissions (compared with fiscal 2013)	29% reduction in CO_2 emissions (compared with fiscal 2013)	○	60% reduction in CO_2 emissions by the end of fiscal 2030 (compared with fiscal 2013) 45% reduction in CO_2 emissions by the end of fiscal 2025 (compared with fiscal 2013)
	Improvement of 1% or more in energy usage intensity (year-on-year and average change in intensity over 5 fiscal years)	0.1% worse than the previous year 0.8% improvement over average change in intensity over 5 fiscal years	△	Improvement of 1% or more in energy usage intensity (year-on-year and average change in intensity over 5 fiscal years)
Promotion of Resource Conservation and Recycling	Recycling rate of 95% or higher (excluding slag and refractories)	Recycling rate of 96% (excluding slag and refractories)	◎	Recycling rate of 95% or higher (excluding slag and refractories)
Management of Chemical Substances	Improvement of 1% or more emissions and transfers intensity of chemical substances subject to the PRTR* law (year-on-year and average change in intensity over 5 fiscal years)	3.1% worse than the previous year 0.1% worse than the average change in intensity over 5 fiscal years	△	Improvement of 1% or more emissions and transfers intensity of chemical substances subject to the PRTR law (year-on-year and average change in intensity over 5 fiscal years)
Compliance	Legal or regulatory violations: 0	Legal or regulatory violations: 0	◎	Legal or regulatory violations: 0
	Treat low-concentration PCB waste by the legal deadline (March 2027)	Progressing appropriately	◎	Treat low-concentration PCB waste by the legal deadline (March 2027)
Raising Environmental Awareness	Issuance of integrated report	Issuance of integrated report	◎	Disclose environmental management activities in an integrated report Conduct training for employees

* PRTR: Pollutant Release and Transfer Register

Business Activities and Environmental Impact

The fiscal 2021 environmental impact of the manufacturing processes of the Industrial Machinery Products Business and the Material and Engineering Business is as indicated below. JSW Group carries out quantitative assessments of inputs, such as energy and intake water, and outputs, such as waste generated in manufacturing processes, carbon dioxide and waste water, and applies those in its environmental improvement activities.



Renewable Energy Use Initiatives

In terms of the percentage of renewable energy sources in all energy used, the Group has set the target at 25% or more by the end of fiscal 2025 and 40% or more by the end of fiscal 2030.

In April 2021, a solar power generation equipment was installed at our Hiroshima Plant, and, in addition, from October 2021 electricity derived from renewable energy sources was introduced as part of the purchased electricity at that plant. The combined result of these two developments is that renewable energy sources accounted for 0.8% of the Group's energy consumption in fiscal 2021.

In fiscal 2022, the Hiroshima Plant increased the percentage of electricity derived from renewable energy sources in its purchased electricity, and newly introduced renewable energy-derived electricity for part of the electricity purchased at the Yokohama Plant and Meiki Plant.

In addition, there is active rebuilding and expanding of buildings at the Hiroshima Plant with an aim to achieve JGP2025, and plans are in place to install solar power generation equipment in all new buildings.

We will continue initiatives that work toward increasing the use of renewable energy sources.

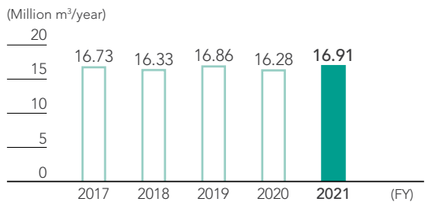
Reduction of Environmental Impact

Policy and Initiatives for Water Resources

Japan Steel Works M&E, Inc. accounts for over 99% of the intake water used by JSW Group. Although the Company uses industrial water and sea water in cooling, as it not only operates in a region with low water stress but is also engaged in initiatives such as practicing water source management for the industrial water it uses and recycling the cooling water, we believe there is little impact on stakeholders.

In terms of waste water quality, we will continue to conduct strict water quality management based on government ordinances.

Intake Water Consumption



Proper Management of Chemical Substances

At JSW Group, we manage chemical substances and other substances with environmental impact and are working to reduce emissions of hazardous substances. Based on the PRTR Law, we report to local governments annually about our release and transfer of the substances that are subject to that law. Substances that are subject to the PRTR law are used primarily in manufacturing processes, such as steel manufacturing, welding, galvanization, cleaning and coating.

Release and Transfer of PRTR Substances

	FY2020	FY2021
Amount released (t)	50.1	65.1
Amount transferred (t)	153.1	161.0
Total (t)	203.2	226.1

Our Approach to Resource Recycling (Reduction of Waste Emission Volume)

The Group has set forth “Material Revolution™, making the world sustainable and prosperous.” as the Purpose. In order to achieve a world that is both sustainable and prosperous, products that contribute to the reduction of environmental impact and resource recycling are indispensable, and the Group will continue to engage in the development and supply of such products. As we aim to be a comprehensive plastics processing machinery manufacturer unparalleled across the world, the realization of a plastic-resources-recycling society in support of a prosperous society is an extremely important issue for us, and we have duly placed it at the forefront of the Group’s Materiality.

In addition, the Group will continue to work on reducing our direct waste emissions by applying reduce, reuse and recycle (the three R’s) as a basic principle.

Plastic Resource Recycling Initiatives

・Chemical recycling response

Already in use in a host of recycling fields, usage of our twin-screw extruders (TEX) is expected to expand, particularly in the field of chemical recycling for waste plastics. As a typical example of chemical recycling with the use of TEX, it is possible to decompose used acrylic resin and recover monomer, the raw material for new acrylic resin. Having opened the Recycling Technical Center (RTC) at the Hiroshima Plant in November 2022, we are stepping up our efforts toward the spread of chemical recycling.

・Non-fossil fuel-derived plastics and biodegradable plastics response

Though plastics such as non-fossil fuel-derived plastics that are not reliant on fossil fuels and biodegradable plastics that prevent the problem of marine plastic litter differ in terms of their respective raw materials, have their fundamental manufacturing process of melting, mixing and solidifying raw materials is the same as that of general-use plastics. Utilizing the core competence we have developed as a comprehensive plastics processing machinery manufacturer, we are developing and supplying all manner of plastics processing machinery for the production of these environmentally friendly plastics, and supporting their social implementation.

Initiatives to Reduce Waste Emissions

Our Industrial Machinery Products Business is maintaining a high recycling rate through thorough implementation of the three R’s of waste. Our Material and Engineering Business is contributing to the realization of a recycling-oriented society by utilizing internal and external steel scrap as raw materials. Though waste emissions in fiscal 2021 ended up at almost the same level as in the previous year partly due to increased operations, efforts are being made to reduce waste generation by improving manufacturing processes and developing new recycling methods.

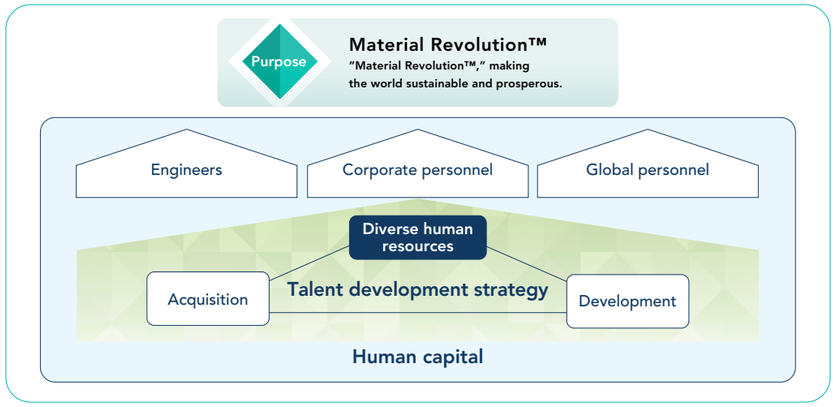
		FY2020	FY2021
Industrial Machinery Products Business	Waste emission volume (t)	213	124
	Recycling rate (%)	98.0	98.7
Material and Engineering Business	Waste emission volume (t)	20,669	20,943
	Recycling rate (%)	72.3	72.2

Talent Development Strategy

In order for our Group to simultaneously realize sustainable enhancement of corporate value and creation of social value, it is first and foremost important for us to acquire and develop the right human resources for realizing the Purpose of Material Revolution™, making the world sustainable and prosperous. This comprises engineers, including those in our current business divisions, who will contribute to strengthening our core competence, as well as corporate personnel who will support our management strategy to spread far and wide the value we provide to the world. In addition, it is necessary for us to also go beyond these human resources to enhance educational opportunities so that our employees are capable of success on a global scale.

This is why we will implement measures to acquire and develop diverse human resources that will contribute to the achievement of the vision sought by the Group, based on our medium-term personnel plan and taking into consideration the composition of our human resources and our organizational nature ascertained through engagement surveys.

Overview of Talent Development Strategy



Acquiring and Developing Human Resources

Our Ideal Candidate Profile and Recruitment Activities

Setting forth the following profile of our ideal candidates to illustrate the requirements that will contribute to the implementation of our management strategy and take on the challenge of resolving social issues, we are focusing on the recruitment of new graduates and experienced personnel that meet these requirements. In order to acquire human resources from a wide range of sources, we are currently engaged in a host of hiring activities, including referral recruiting through referrals from employees and direct recruiting that entails the proactive scouting of talented individuals.

Recruitment interviews in the selection process are conducted using a combination of face-to-face and online methods to ensure that we have the opportunity to match the Company with fine and motivated individuals across the nation.

Ideal Candidate Profile

1. Is eager to take on challenges
2. Has strong problem-solving capabilities
3. Has firm independent views and standards
4. Is able to think logically
5. Is able to act with persistence

We also channel efforts toward offering internships to prospective new graduates, providing many opportunities for them to gain a deeper understanding of our workplace environment and culture. In recruiting engineers, on-the-site tours and interviews are conducted, while for those who come from the liberal arts we take steps such as providing the opportunity to participate in group discussions with younger employees who are principally in sales positions. This is how we are endeavoring to give prospective employees a concrete image of how we work and where they might perform best within the Company, as well as to prevent the risk of perceived incompatibility between new employees and the organization after the former have been employed.

Based on an analysis of the composition of our current crop of human resources, we know that we now need to continue to secure more diverse employees than ever before in order to realize sustainable growth. To hire and secure highly skilled and experienced personnel, we are taking steps such as establishing a new compensation system.

Going forward, we will continue to focus efforts on an activity structure that facilitates the recruiting of the core personnel and corporate personnel with high expertise who will drive our business.

Training and Development

To develop human resources capable of generating innovation and creating value at our company, we not only train by job level, from newly hired employees to management, but also offer selective training for younger employees with a view toward developing human resources capable of success in the global market. In addition to improving business skills such as negotiating and presenting in English, this training also gives participants the opportunity to learn styles of thinking that have global resonance. We also strive to create an environment in which employees can learn the skills they personally want to acquire by providing a variety of learning opportunities, including basic and specialized education required for work, language education that includes overseas study, and self-development support through an online learning platform.

Regarding the transfer to employees of the technical skills that are the foundation of our core competence, we have established in-house training programs such as the Ginou-Dojo (Technical Skills Dojo) (Hiroshima Plant) and the Hagane-Juku (Steel Academy) (Japan Steel Works M&E, Inc. (Muroran Plant)), where the various know-how cultivated by skilled engineers over many years of manufacturing is passed on to younger employees. In addition, we have introduced a system to encourage and reward the acquisition of official qualifications, as well as a system to certify technical skills.

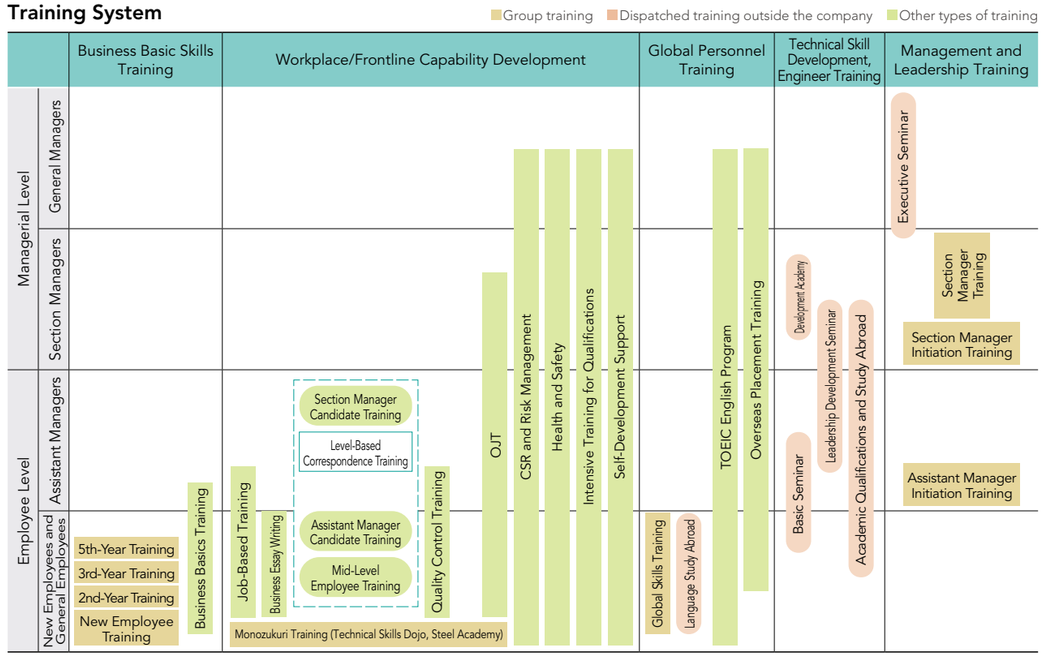
In human resource development during JGP2025, we are promoting solutions to management issues and linking them to our growth in a process where the starting point is support for the growth of the mid-level employees who drive the workplace and take the lead in deploying business strategies. The results of engagement surveys have shown that an initial focus on improving the leadership and development skills of mid-level employees leads to improved performance among all employees. In addition, by promoting the development of human resources who can take the lead in achieving strategies without being constrained by precedent, we will increase selective training with a view toward tailoring employees for future promotion to senior management. To this end, in addition to giving high performers fast-track promotion to managerial positions and assigning them important missions even if they are new, we actively provide opportunities such as training and career programs that leverage job rotation.

In digital transformation training, we will categorize employees according to their responsibilities and IT skills, and formulate a training system based on this categorization in order to ensure that the reskilling of employees is promoted and our digital transformation activities assuredly lead to innovation. We will then implement educational programs for each category, from improving basic literacy to training specialists, in order to maximize the effectiveness of the programs.

We will focus on the development of corporate human resources who will lead the planning and execution of growth strategies on a global scale and the establishment of management systems necessary to achieve these strategies, and begin work on formulating an education system for this purpose.

Indicators	FY2019	FY2020	FY2021
Training cost per employee (thousands of yen)	37.9	29.8	28.5
Number of participants in job level-specific training	234	285	277
Completion rate of job level-specific training (%)	93.2	98.6	98.9
Number of employees newly certified under The National Trade Skill Test & Certification (NTSTC)	79	47	111

Training System



Workplace Success for Diverse Human Resources

The Group recognizes that the execution of its management strategy hinges on the active participation of diverse human resources that can bring about new added value through a variety of thinking styles and ideas.

Regarding the percentage of female employees among managers, a major indicator of corporate diversity, currently the female career-track employees, who are the main candidates for promotion to management positions, are disproportionately numerous among the younger to mid-career employees. The task of increasing this percentage is expected to take some time. First, we will increase the percentage of female employees by boosting the recruitment of new graduates and experienced workers and implementing retention measures. This will be followed by an increase in the percentage of women in leadership positions of at least assistant-manager level, which will lead to a steady increase in the number of female managers.

In addition, we are developing each of our human resource systems to make for a work-life balance and employee-friendly workplace that enables one and all to be able to work with full assurance. Specifically, having established the legally mandated childcare leave and nursing care leave system, which is reviewed in accordance with each revision to the law, we have introduced telecommuting, staggered work hours, and an hourly paid leave system to help employees balance work with childcare and nursing care. We are also moving ahead in preparing a training program that supports self-development so that employees can improve their own skills according to their ambitions. And regarding benefits offered, the program is being upgraded in ways such as offering a cafeteria plan that enables employees to choose the benefit options they find necessary to meet their own various values and needs.

In order to create added value through the diverse human resources in our group, we will continue to conduct a wide range of educational activities that encourage positive changes in employee awareness with the goal of promoting D&I. Furthermore, we will work to build a corporate culture of openness that provides psychological safety.

Indicators	FY2019	FY2020	FY2021
Percentage of Female New Graduate Hires for Career-track Positions (%)	8.5	10.0	15.0
Percentage of Women among Section Managers (%)	7.8	7.8	8.7
Number of Employees Who Took Childcare Leave	10	11	16
Percentage of Employees with Disabilities (%)	1.90	2.21	2.46

Human Rights

Respect for Human Rights

JSW Group respects internationally recognized codes such as the International Bill of Human Rights and the ILO Declaration on Fundamental Principles and Rights at Work. We also promote efforts to respect human rights based on international guidelines such as the United Nations' Guiding Principles on Business and Human Rights.

In accordance with these, we have established The Japan Steel Works Group Human Rights Policy, which clearly prohibits discrimination, harassment, child labor, and forced labor; indicates our respect for basic labor rights; and expresses our commitment to respecting all human rights in all aspects of our business activities.

In this context, JSW Group has focused on health and safety activities and harassment prevention, with the primary aim of ensuring that each and every employee can perform their work in a healthy and pleasant environment where they are respected as individuals and their human rights are not violated. We have established internal and external consultation hotlines and a resolution process through the Harassment Countermeasures Committee. We conduct fair hiring practices that respect the human rights of all individuals, and have also established systems that support a favorable work-life balance, foster a workplace environment that is inclusive of diverse personnel, and strive to provide equal opportunities so that individuals can excel.

In the creation of our supply chain, we require that suppliers share an understanding of human rights and legal compliance, as appropriate, and continue to do due diligence in the construction of a framework conducive to human rights.

Recognizing that its business activities are extremely vast in terms of the fields covered, involving a wide variety of individuals, JSW Group will engage in dialogue with labor unions and all other stakeholders, set priorities and address them appropriately, and step up the monitoring of human-rights-related risks to prevent any direct or indirect negative impacts on human rights.

For details on JSW Group's respect for human rights and Human Rights Policy, please refer to the website.
Respect for human rights: https://www.jsw.co.jp/en/sustainability/social/diversity.html

Occupational Health and Safety

Policy for Health and Safety Activities

In JSW Group, which operates primarily in manufacturing, ensuring the health and safety of employees has always been a top priority. We consider our health and safety initiatives to be part of a corporate foundation and corporate culture rooted in an emphasis on human capital and respect for human rights.

We are carrying out these activities in accordance with the policy below, with the aim of maintaining and improving the health of employees and preventing occupational accidents.

1 Basic Philosophy

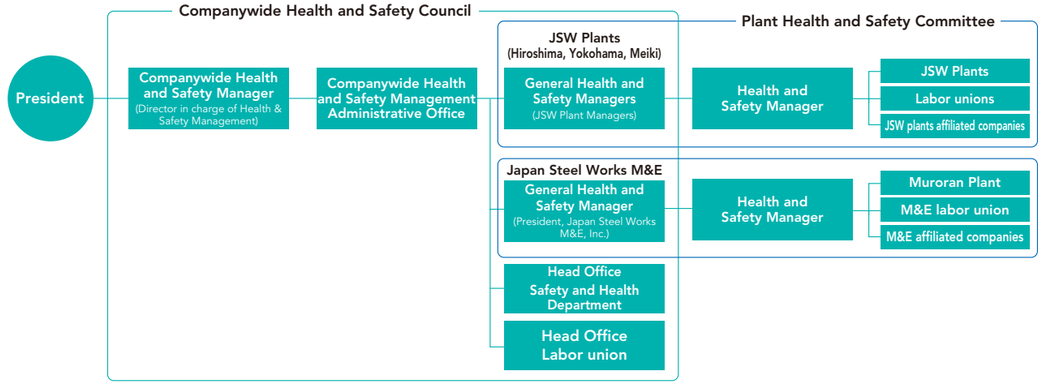
- To fulfill our social responsibility, we have positioned health and safety as a vital part of our management policy, and work to ensure the health and safety of everyone involved in our business.
- We have established and operate an occupational health and safety management system, and prioritize health and safety in all of our business activities to foster workplaces where employees can work safely and with peace of mind.

2 Basic Policy

(1) We will comply with health- and safety-related laws and regulations, as well as internal standards.
(2) We will establish a safety management system based on strong leadership from top management, the participation of all employees, and the cooperation of the labor union as well as that of Group companies and partner companies, and thereby prevent occupational accidents and health problems.
(3) We will invest the resources necessary for effective workplace improvements.

Health and Safety Promotion Structure

The promotion structure for health and safety activities in JSW Group is as follows.



Health and Safety Initiatives and Results

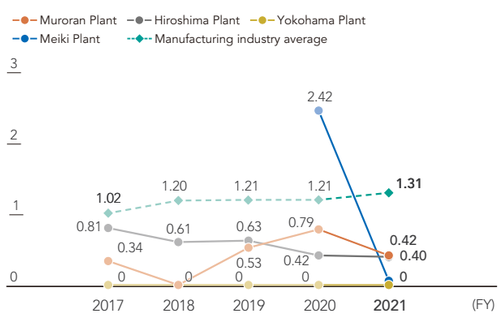
In JSW Group, we specify priority items for health and safety activities each fiscal year, and the Group (as well as the labor union) and suppliers of each plant work together on activities aimed at achieving zero occupational accidents.

Our major sites have acquired certification for their occupational health and safety management systems, and are enhancing the effectiveness of their activities.

We plan to step up our initiatives and activities for improving the physical and mental health of employees, and are currently establishing the necessary framework and systems.

Site	Certification	Date Acquired/Renewed
Hiroshima Plant	ISO 45001	August 12, 2022
Japan Steel Works M&E	OSHMS	June 5, 2021

Frequency Rate of Accidents per Million Workhours



Note: Frequency rate of accidents calculated from lost-worktime, serious and fatal accidents during the fiscal year.
* Meiki Plant merged into The Japan Steel Works, Ltd. in fiscal 2020 Frequency rate of accidents at the Meiki Plant in fiscal 2020 due to the occurrence of multiple lost-worktime accidents
* Manufacturing industry averages are from the survey of occupational accident trends (Ministry of Health, Labour and Welfare).

Supply Chain Management

Approach to Supply Chain Management

JSW Group has established The Japan Steel Works Group Standards of Business Conduct, which states, among other things, that the Group will respect the human rights of all people, conduct business transactions properly as based on fair and free competition, and engage in responsible procurement. In September 2022, The Japan Steel Works Group Human Rights Policy was established to promote respect for human rights in accordance with international norms. Furthermore, in September 2022, we revised the existing The Japan Steel Works Group Basic Procurement Policy to have our suppliers achieve an understanding of and cooperate with the above standards and policies, and to facilitate product procurement that takes into consideration matters such as human rights, labor, health and safety, the environment, and information management in a manner consistent with the move toward a sustainable society. We also formulated our Request to Suppliers, a document that outlines the specifics regarding our vision of how we hope suppliers conduct business.

In moving forward, we will try to ensure thorough awareness by our suppliers of this Code of Conduct, policies, and requests, and promote activities so that we can keep track of the status of sustainability initiatives of our major suppliers and, if necessary, engage in dialogue with them to deepen their understanding of the Group's Basic Procurement Policy and improve their initiatives. If necessary, we will continue to strengthen our supply chain risk management and sustainability. To ensure that all suppliers in our supply chain can continue to play indispensable roles within society, we will share with them the Group's policies and work together to promote sustainable procurement practices that sustain sound growth together through our business dealings.

The Japan Steel Works Group Basic Procurement Policy

The Japan Steel Works Group promotes procurement activities as follows based on The Japan Steel Works Group Standards of Business Conduct and The Japan Steel Works Group Human Rights Policy.

1 Fair and impartial procurement

The Japan Steel Works Group complies with laws and international norms, treats all suppliers fairly and impartially, and always conducts transactions in good faith.

2 Relationship with suppliers based on trust

The Japan Steel Works Group aims to build partnerships to create corporate value by deepening mutual understanding with all suppliers and realizing optimal quality, prices, and delivery through stable procurements with the following activities.
(1) Regular briefings on our procurement policy
(2) Quality management checkups and guidance to eliminate defects
(3) Recognition of outstanding suppliers
(4) Confidential management of sales and technology information
(5) Establishment of whistleblowing systems for suppliers

3 Supplier Selection Policy

The Japan Steel Works Group places particular importance on the following conditions in selecting suppliers toward building stronger and more sustainable partnerships.
(1) Achieve legal compliance and fulfill social responsibility.
(2) Respect human rights and prohibit discrimination. Do not be complicit in human rights violations.
(3) Apply fair working conditions and maintain a safe and healthy working environment.
(4) Prohibit forced labor, child labor and discrimination in employment.
(5) Recognize environmental problems and strive to solve and respond to them.
(6) Conduct fair corporate activities under sound management.
(7) Have an appropriate level of quality, price, delivery time, etc., and make efforts to maintain and improve them

Request to Suppliers

We ask that our suppliers achieve an understanding of the following six items, cooperate with our own proactive efforts, and disclose information as necessary. Please refer to our website for details.

1. Compliance with laws and social norms; 2. Consideration for human rights and occupational safety; 3. Consideration for the environment; 4. Ensuring quality, price and delivery; 5. Efforts on conflict minerals; 6. Information security

Supply Chain: https://www.jsw.co.jp/en/sustainability/social/supplychain.html

Local Communities

The Group recognizes that companies are also members of society and that they are expected to participate in various community activities, including local communities, and contribute to local development. In addition to contributing to society through its business, JSW Group also engages in socially responsible activities with the aim of realizing a better society and becoming a company that is rooted in the local community. Please refer to our website for details regarding the activities we engage in, such as cleanups, education, and community exchange.
Social Contribution Activities: https://www.jsw.co.jp/en/sustainability/social/socialcontribution.html

Corporate Governance

Corporate Governance Policies

Based on our Philosophy and the Standards of Business Conduct, the Group recognizes that it is essential to earn the trust of all stakeholders, including shareholders, customers, business partners and employees, in order to simultaneously create social value and enhance sustainable corporate value. We therefore continue to strengthen corporate governance to ensure the transparency, soundness and effectiveness of management.

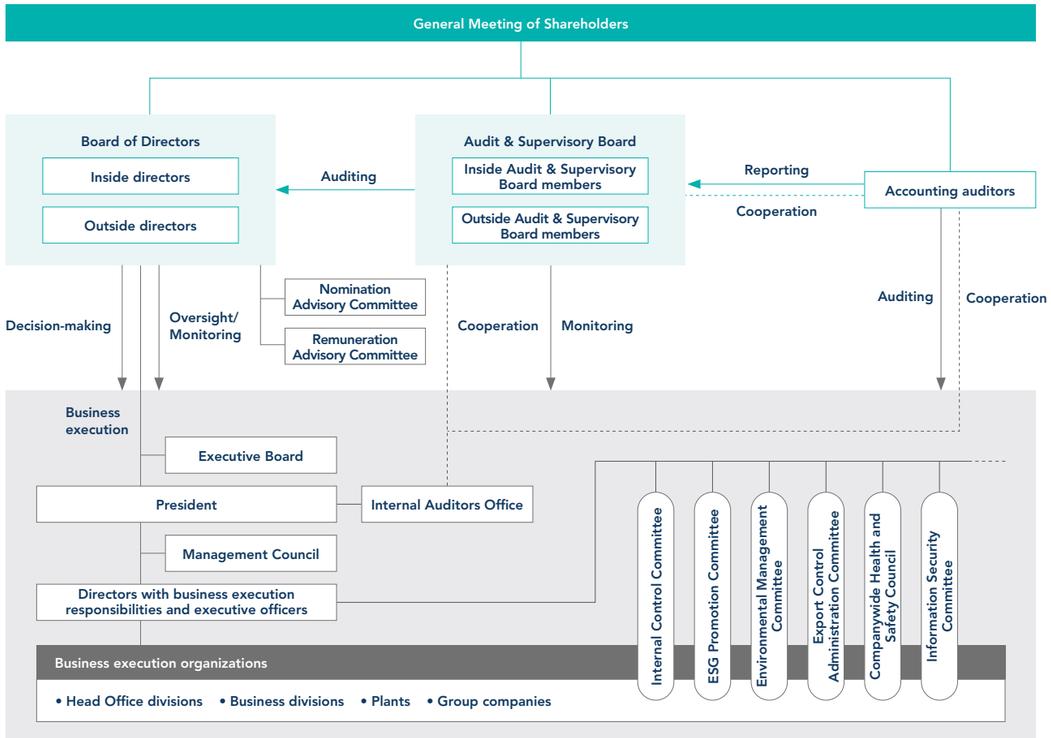
Overview of Corporate Governance Structure

The Japan Steel Works, Ltd. ("the Company") has adopted the structure of a company with an audit and supervisory board. The Board of Directors consists of eight directors (three of whom are outside directors) and the Audit & Supervisory Board consists of four Audit & Supervisory Board members (two of whom are outside Audit & Supervisory Board members).

The term of office for directors is set at one year. The Company has also introduced an executive officer system that separates management decision-making and supervisory functions from business execution functions conducted by executive officers, thereby speeding up decision-making, strengthening supervision and improving business execution.

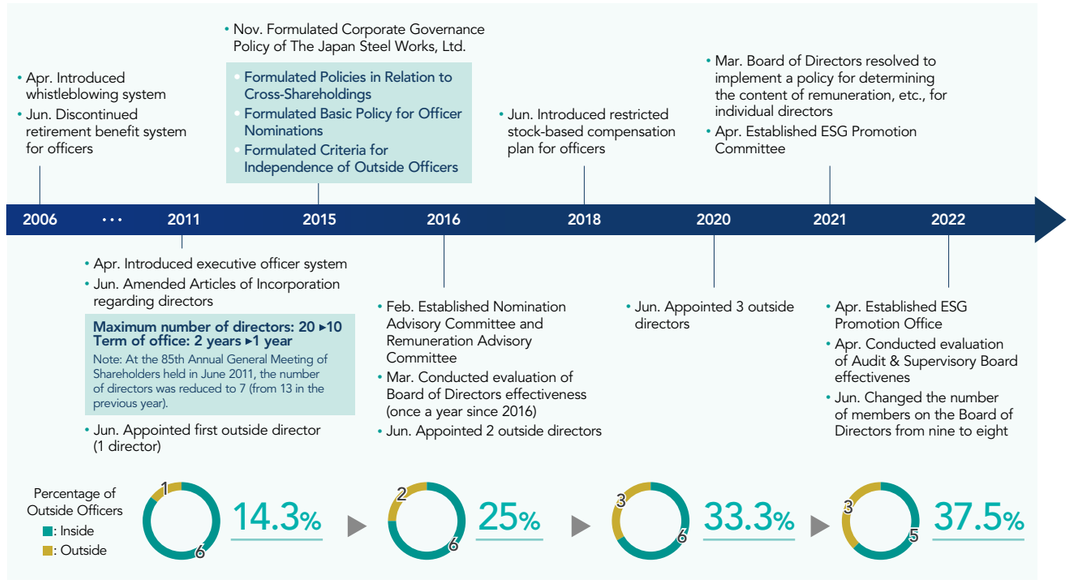
Audit & Supervisory Board members attend important meetings including those of the Board of Directors, the Executive Board and the Management Council. Once every fiscal half in principle they visit plants, sales locations and Group companies, and receive reports on necessary information from each division. They also exchange opinions with directors, executive officers and other keypersons, and based on these exchanges, advise management from an objective and impartial standpoint, while strictly monitoring the execution of duties by directors.

Corporate Governance Structure



* The Liaison Council of Outside Officers was established as a venue to provide outside officers with advance explanations about the agenda for Board of Directors meetings, and as a forum for outside directors and executive officers to verify, report on, and exchange opinions about business execution.

Building a Stronger Governance System



Role and Composition of Governance Bodies

		Board of Directors	Executive Board	Remuneration Advisory Committee	Nomination Advisory Committee
Composition	Attendees (with voting rights)	Directors (5 inside, 3 outside)	Inside directors (5) Non-director executive officers (5)	President (1) Director in charge of Personnel Department and Secretary Office (1) Outside directors (3)	
	Observers/ Advisors (no voting rights)	Audit & Supervisory Board members (2 inside, 2 outside)	Inside Audit & Supervisory Board member (1)	Outside Audit & Supervisory Board member (1)	
	Chairperson/ Committee Chair	President	President	Outside director	
Objectives and Areas of Authority		Decides and reports on basic management policies, matters stipulated by laws and regulations, and other important management matters, and monitors the execution of duties by directors and executive officers	• Deliberates and decides on important management matters and matters that have a significant impact on the Company's profit and loss • Discusses and reports on basic management policies and matters relating to overall management	As an advisory body to the Board of Directors, deliberates on matters relating to the remuneration of directors and executive officers, and reports the results to the Board of Directors	• As an advisory body to the Board of Directors, deliberates on matters relating to the nomination and dismissal of directors, Audit & Supervisory Board members and executive officers, and reports the results to the Board of Directors • Consult on the succession planning for the president, and report the results to the Board of Directors
Meetings in FY2021		18	46	5	5

		Management Council	Audit & Supervisory Board	Liaison Council of Outside Officers
Composition	Attendees	Inside directors (5) Inside Audit & Supervisory Board member (2) Non-director executive officers (7) Business division directors and business division deputy directors, general plant managers, Head Office division managers	Audit & Supervisory Board members (2 inside, 2 outside)	Directors (3 inside, 3 outside) Audit & Supervisory Board members (2 inside, 2 outside)
	Chairperson	President	Inside Audit & Supervisory Board member	President
Objectives and Areas of Authority		Coordinates and reports on the following important management matters and shares management information 1. Analysis of business environment, progress of business plans 2. Important matters relating to research and development 3. Matters relating to Group companies 4. Matters that have a significant impact on management including those relating to sales, production, funding, profit and loss 5. Other important management matters	Reports, discusses and makes resolutions on important matters relating to auditing; this does not preclude the exercise of individual Audit & Supervisory Board members' authority	Advance explanation of the resolution matters and deliberation matters of the Board of Directors, and report on the status of operations and important management matters of the Company and the Group
Meetings in FY2021		12	13	Newly established from FY2022

Major Matters Discussed at the Board of Directors Meetings in FY2021

- Medium-term management plan JGP2025
- Environmental activity initiatives
- Review of the rationality of cross-shareholdings
- Executive structure
- Market restructuring of the Tokyo Stock Exchange
- Feedback on IR/SR activities
- Evaluation of the effectiveness of the Board of Directors
- Business portfolio
- Reorganization of Yokohama Plant
- Talent development strategy
- Review of dividend policy
- Report on the status of compliance line operations
- Status of operations of internal control systems
- Officers' renumeration

Skill Matrix

JSW Group's long-term vision is to be a company with job satisfaction and excitement for employees and growing to a business scale of 300 billion yen. In line with the medium-term management plan JGP2025, formulated in May 2021 and covering the five-year period beginning fiscal 2021, we will promote business activities based on the following four basic policies: 1) Towards the unprecedented general manufacturer of plastic processing machinery in the world, 2) Make constant profit in the Material and Engineering Business, 3) Create new core businesses, and 4) Implementation of ESG management.

From this perspective, we believe it is important to ensure that the Board of Directors has the diverse experience and capabilities necessary for promoting JGP2025's four basic policies. To that end, we have prepared a skills matrix as one selection criterion for director and Audit & Supervisory Board member candidates.

For information on the skill matrix, please refer to p. 52-53.

Reasons for Appointment of Outside Directors

JSW believes that the function and role of outside directors in corporate governance is to strictly supervise the execution of duties by directors and to make management judgments and decision-making from a neutral and objective standpoint with no conflict of interest with the Company, and from an independent standpoint with no risk of conflict of interest with general shareholders. To that end, the Company has appointed three outside directors.

The roles expected of outside directors are stipulated in the Corporate Governance Policy.

▶For information on the Corporate Governance Policy of The Japan Steel Works, Ltd., please refer to the following.
https://www.jsw.co.jp/pdf/sustainability/governance/governance/GovernancePolicy_en.pdf

Succession Planning for the President and Procedures for Appointment and Dismissal

1 Formulation and Implementation of Succession Plan for the President

With respect to the formulation and implementation of the succession plan for the president, the Nomination Advisory Committee holds appropriate discussions, considering the qualities of the candidate, such as experience, ability and character, based on the corporate philosophy of JSW Group and management strategies, and reports to the Board of Directors as necessary.

2 Appointment Criteria and Procedures

The appointment of the president is decided by the Board of Directors after receiving a report from the Nomination Advisory Committee based on the succession plan.

3 Dismissal Criteria and Procedures

Dismissal of the president is decided by the Board of Directors if circumstances make it difficult for the president to carry out his or her duties.

Support for Outside Directors and Officer Training

1 Support for Outside Directors

For the purpose of deepening their understanding of JSW Group, outside directors are provided with information on the Group's business, finances, organization and other topics at appropriate times after assuming office. In addition, the General Affairs Division at the head office serves as the secretariat for the monthly meeting of the Liaison Council of Outside Officers, which provides outside officers including Outside Audit & Supervisory Board members, with advance briefings on matters to be resolved or deliberated at meetings of the Board of Directors, reports on the state of operations and important management matters of the Company and its Group, and provides opportunities for question-and-answer sessions. They also attend the president's report meetings at each plant twice a year where they are given the opportunity to observe work on-site and meet with plant management. Moreover, outside officers also receive materials at least three days prior to Board of Directors meetings, separate to the aforementioned advance briefings provided at meetings of the Liaison Council of Outside Officers.

2 Officer Training

In order to deepen the understanding of the roles and responsibilities required of directors and Audit & Supervisory Board members, the Company invites outside experts to lead study sessions as needed. The subjects covered in the fiscal 2021 study sessions were as follows.

・May 21 ESG & SDGs Trends & Sustainable Management
・Aug. 2 Recent Trends in SR/IR Activities and Issues to be Addressed by the Company
・Nov. 4 Response to TCFD and Information Disclosure

In addition to the above, opportunities for inside officers to participate in external training, workshops, and programs are provided as-needed on an ad hoc basis.

Evaluation of Board of Directors' Effectiveness

The Board of Directors continues to enhance its functions by conducting an annual questionnaire-based analysis and evaluation. The following is a summary of the analysis and evaluation for fiscal 2021.

1 Analysis and Evaluation Methodology

(1) During March 2022, an anonymous questionnaire was administered to all directors and Audit & Supervisory Board members. In light of the June 2021 revision of the Corporate Governance Code, the survey questions were revised to focus on evaluations of the monitoring functions of the Board of Directors. The planning of the subjects covered and the collection and tabulation of the survey results were outsourced to a third-party organization.
(2) The Board of Directors Secretariat recompiled and analyzed the results of the questionnaire, comparing them with the previous evaluations, identifying subjects given low evaluations, confirming differences in evaluation by officer type (i.e., inside directors, outside directors, inside Audit & Supervisory Board members, outside Audit & Supervisory Board members) and by individual, and extracting important comments from the open-ended responses.
(3) At the May and June 2022 Board of Directors meetings, the board discussed its effectiveness from the perspective of improving the medium-to-long-term corporate value of the entire Group, based on the re-tabulation and analysis of the results of the questionnaire by the Board of Directors Secretariat and advice from a third-party organization.

Questionnaire content
I. Composition, discussion, and monitoring functions of the Board of Directors
II. Performance of inside and outside directors
III. Support system for directors and Audit & Supervisory Board members
IV. Training
V. Dialogue with shareholders (investors)
VI. Self-evaluation by each director and Audit & Supervisory Board member
VII. Management of the Nomination Advisory Committee and Remuneration Advisory Committee
VIII. Miscellaneous (pertaining to the Board of Directors in general)

2 Results of the FY2020 Analysis and Evaluation Results and an Overview of the Resultant FY2021 Initiatives

In response to the three issues identified in the fiscal 2020 effectiveness evaluation, the Board of Directors proceeded forward with the following actions in fiscal 2021. As a result, the effectiveness evaluation for fiscal 2021 confirmed that improvements have been steadily made for each of the issues and that effectiveness has been generally ensured.

(1) Sufficiently discussing management strategies for sustainable growth and enhancement of corporate value over the medium to long term
Subjects that merit discussion from a medium-to-long-term perspective were incorporated into the Board of Directors meeting schedules as appropriate for the timing of broaching each subject. In addition to the types of resolutions and reports normally included in the agenda, a venue for deliberation was established to provide a forum for free discussion of medium-to-long-term strategies, and sufficient time was reserved for discussion of the formulation of medium-term management plans and business portfolio management.
(2) Addressing ESG issues and reflecting them in management strategies
In the process of drafting the integrated report, ESG issues were identified and deliberated on, and progress was observed in terms of success in considering our basic sustainability policy and talent development strategy.
(3) Providing the necessary training opportunities for officers
Inviting outside lecturers, study sessions were held as a venue for the acquisition of the knowledge that officers need to fulfill their roles and responsibilities. In fiscal 2021, a total of three sessions were held featuring subjects such as sustainability management and TCFD disclosure.

3 Future Initiatives Based on the FY2021 Analysis and Evaluation Results

Based on the results of the effectiveness evaluation in fiscal 2021, the following have been identified as the major issues to be addressed in fiscal 2022.

(1) Deeper discussions at the Board of Directors meetings to work toward sustainable growth for the Group
Since evaluation revealed the need for more extensive discussions on important management issues such as formulating the Purpose, the promotion of sustainability, and assuring diversity, we will delve deeper into discussion by systematically providing multiple venues for dialogue on high-priority subjects.
(2) Close scrutiny of the progress being made by the medium-term management plan JGP2025 amid changes in the business environment
Since evaluations identified that the medium-term management plan should be aligned in a timely fashion to deal with a rapidly changing business environment, the degree of progress made by business-specific strategies will be closely scrutinized and the plan will be revised as necessary.
(3) Upgrading of risk management that includes a review of the quality control system
Since evaluations identified that it would behoove the Company to further enhance its awareness of and sensitivity to risks and opportunities, the Company will first work on the review of the quality control system, which is a top priority, and then establish a group-wide risk management system.

Officers' Remuneration

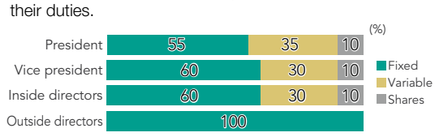
The Company's policy for determining the directors' remuneration (the "policy for determining") was resolved at the Board of Directors meeting held on March 16, 2021, and was partially revised at the Board of Directors meeting held on March 23, 2022, with the aim of improving incentives for achieving the medium-term management plan JGP2025. In accordance with the revision, the Company revised a part of the officers' remuneration system, focusing on the evaluation method related to variable remuneration.

(Outline of the revision of the policy for determining and review of the officers' remuneration system)
As a result of the revision of the policy for determining and the review of the officers' remuneration system, the variable remuneration portion of annual remuneration, which previously consisted solely of remuneration linked to divisional performance and results, was partially changed to be linked to company-wide performance. In addition, the percentage of fixed remuneration was reduced for the representative director & president, and a portion of the bonus evaluation was changed from being linked to dividends to incorporating individual performance results. These changes were designed to increase short-term incentives.

1 Basic Policy for Directors' Remuneration
The maximum amount of directors' remuneration is decided by resolution of the General Meeting of Shareholders. The basic policy is to set remuneration that provides sound incentives for sustainably enhancing corporate value, at a level corresponding to respective roles and responsibilities, and that ensures fairness and transparency in remuneration-related decision processes.

2 Procedures for Determining Directors' Remuneration
The directors' remuneration is determined by the Board of Directors after receiving a report from the Remuneration Advisory Committee. However, the allocation of annual remuneration by position and by individual and the allocation of bonuses by individual may be delegated to the president by resolution of the Board of Directors. In this case, the president makes decisions in accordance with the content of the report.

3 Composition of Directors' Remuneration
The composition and percentage breakdown of directors' remuneration are as follows
(1) Representative director & president and representative director & executive vice president
The composition shall be annual remuneration ((1) base portion, (2) company-wide performance-linked portion) and stock-based remuneration.
The president's remuneration comprises an approximate 55:35:10 ratio of fixed remuneration ((1) base portion) : variable remuneration ((2) company-wide performance-linked portion) : stock-based remuneration. For the vice president, the approximate ratio is 60:30:10 of fixed remuneration ((1) base portion) : variable remuneration ((2) company-wide performance-linked portion) : stock-based remuneration.
(2) Inside directors
The composition shall be annual remuneration ((1) base portion, (2) company-wide performance-linked portion, (3) divisional performance/results-linked portion), bonuses, and stock-based remuneration. The approximate ratio of fixed remuneration ((1) base portion) to variable remuneration ((2) company-wide performance-linked portion, (3) divisional performance/results-linked portion, and bonus) to stock-based remuneration is 60:30:10.
(3) Outside directors
Outside directors, who are responsible for supervisory functions, shall be paid only fixed remuneration (base portion of annual remuneration) in consideration of their duties.



4 Matters Relating to the Method of Calculation of Directors' Remuneration, Etc.
The summary of each type of remuneration is as follows. Variable remuneration is calculated by comparing actual performance against the consolidated operating income, net income attributable to shareholders of the parent company, and other indicators set forth in JGP2025 as targets for fiscal 2021, and multiplying the percentage of achievement by the base amount of remuneration for each position.
(1) Annual remuneration
1) Base portion
The base portion is fixed remuneration determined on the basis of the particular position and the number of years the position has been held by the individual.
2) Company-wide performance-linked portion
The company-wide performance-linked portion is variable remuneration that is determined on the basis of consolidated performance during each fiscal year. It consists of a net income attributable to shareholders of the parent company and a consolidated operating income portion. This indicator was selected because of its importance in terms of indicating how performance directly links to the company-wide performance targets in the medium-term management plan.
3) Divisional performance- and results-linked portion
The portion linked to divisional performance and results is determined as variable remuneration based on the performance evaluation of the division for which the director is in charge.
(2) Bonuses
Bonuses are variable remuneration determined on the basis of the performance evaluation of the division for which the director is in charge and the performance results of each individual.
The ratio of the performance evaluation portion for each division and the performance evaluation portion for each individual is 50:50. However, directors in charge of head office divisions receive only the individual performance portion.
(3) Stock-based remuneration
Stock-based remuneration is granted in the form of restricted transferable shares as remuneration for the purpose of providing medium-to-long-term incentives to increase corporate value and to further the sharing of value with shareholders. The number of shares to be allocated shall be the number of shares obtained by dividing the standard amount by position according to the director's position by the closing price of the Company's shares on the Tokyo Stock Exchange on the day before the date of resolution by the Board of Directors regarding the execution of the restricted stock remuneration allocation agreement.
In consideration of the period of time it takes management measures to contribute to business performance, the restricted transfer period that had previously been set at three years in line with the medium-term management plan term was changed to five years in accordance with the five-year length of the medium-term management plan JGP2025.

5 Remuneration for Audit & Supervisory Board Members, Etc.
The remuneration of each Audit & Supervisory Board member shall consist only of fixed remuneration (base portion of annual remuneration) from the viewpoint of emphasizing independence and objectivity with respect to management.

Group Governance

JSW Group consists of The Japan Steel Works, Ltd. and 46 subsidiaries (33 consolidated, 13 non-consolidated). The Group operates the Industrial Machinery Products Business, Material and Engineering Business, and other businesses in Japan and around the world.

For Group companies, the JSW business division with primary responsibility leads the formulation of management policies and short- and medium-term management plans, and monitors their progress. In order to enhance the effectiveness of these efforts, we assign full-time or part-time directors or Audit & Supervisory Board members with the responsibility of supervising and auditing the execution of duties at specific Group companies, in principle, thereby ensuring that the execution of duties by directors, etc., and employees at Group companies comply with laws and regulations and the Articles of Incorporation. In addition, regarding risks relating to specific functions, such as health and safety, environmental management, and export control administration, each Group company participates in the various committees formed by the relevant divisions of the Company, or follows the regulations developed by the Company, and appropriately manages these risks.

In addition, each company in the Group appoints individuals to be in charge of general affairs, accounting, and IT matters related to internal control. The appointed individuals receive guidance and training from the Internal Control Committee Office and conduct self-assessment of implementation and operation of internal control in step with risk assessment. The status and results of the self-assessment of internal control operations are reported to the Office and each company. In response, the Internal Audit Division of the Company, which also serves as the Office of the Internal Control Committee, monitors the governance and risk management status of each company by directly or indirectly auditing the status of each company and the methods and results of self-assessments.

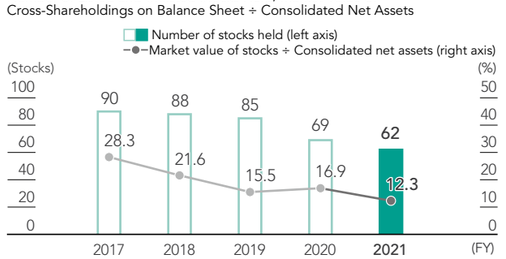
With regard to internal control over quality assurance processes at Japan Steel Works M&E, Inc., the Company is promptly implementing its reorganization, including organizational reforms to strengthen mutual checks and balances among divisions and eliminate the concentration of authority, moving ahead with operations and assessments under the guidance and management of the Company.

Cross-Shareholdings

1 Policy on Cross-Shareholdings	The Company holds shares that it judges, through regular confirmation and review, to be necessary for policy purposes, and that contribute to the Company's businesses over the medium to long term in ways such as maintaining and strengthening sound, ongoing relationships with business partners, forming business alliances, and supporting the sound development of investee companies.
2 Regular Confirmation and Review of Shareholdings	Each year, the Company confirms the purpose of individual cross-shareholdings and current transaction status, etc., and the Board of Directors verifies whether shareholdings are appropriate by comprehensively considering the significance and purpose of the Company's acquisition and holding of the shares, as well as the safety, profitability, economic viability, risks and other factors associated with the shareholdings.
3 Policy on Exercise of Voting Rights	The Company makes decisions on the exercise of voting rights based on factors including the business conditions of the investee company and its business relationship with the Company, having confirmed the details of each proposal from the standpoint of increasing the investee company's corporate value over the medium to long term and fulfilling that company's social responsibilities.

Status of Holdings

Number of Listed and Unlisted Stocks Held; Market Value of Cross-Shareholdings on Balance Sheet ÷ Consolidated Net Assets



Based on the Corporate Governance Policy of The Japan Steel Works, Ltd., we regularly confirm and review the significance of our policy cross-shareholdings, and we are gradually selling shares whose significance has diminished.

In addition, setting forth in our medium-term management plan JGP2025 the financial strategy of ensuring an appropriate balance between investment in growth and shareholder returns in order to sustainably increase corporate value, the Company plans to reduce its cross-shareholdings to less than 10% of net assets, and to allocate the funds obtained from the sale of cross-shareholdings into areas such as investment growth and shareholder returns.

Management Team (As of June 30, 2022)

Directors / Audit & Supervisory Board Members



Toshio Matsuo
Representative Director & President

Career
- Apr. 1984 Joined the Company
- Apr. 2013 Deputy General Plant Manager, Hiroshima Plant
- Apr. 2015 General Plant Manager, Hiroshima Plant
- Apr. 2016 Executive Officer
- Apr. 2017 Managing Executive Officer; Director of Injection Molding Machinery Business Division; In charge of Hiroshima Plant
- Jun. 2017 Director & Managing Executive Officer
- Apr. 2020 Representative Director & Executive Vice President; In charge of Export Control Administration; In charge of Plastics Machinery Business Division, Injection Molding Machinery Business Division, Industrial Machinery Business Division; In charge of Meiki Plant
- Apr. 2021 In charge of Ordnance Business Headquarters; In charge of Business Development Office; In charge of Hiroshima Plant and Yokohama Plant
- Apr. 2022 Representative Director & President (current position)



Junichiro Deguchi
Representative Director & Executive Vice President

Career
- Apr. 1981 Joined the Company
- Apr. 2013 Deputy General Plant Manager, Muroran Plant
- Apr. 2015 Executive Officer; Deputy Director of Steel Business Division
- Oct. 2017 General Manager, Personnel Department
- Apr. 2018 In charge of CSR & Risk Management (current position); In charge of Export Control Administration; In charge of Health & Safety Management and Environmental Management (current position); In charge of Secretary Office and General Affairs Department
- Jun. 2018 Director & Executive Officer
- Jul. 2018 In charge of General Affairs Department (current position); General Manager, Secretary Office
- Apr. 2019 Director & Managing Executive Officer
- Apr. 2020 Chief Information Security Officer; In charge of Office of Information Technology; In charge of Personnel Department
- Apr. 2021 In charge of Promoting ESG (current position)
- Apr. 2022 Representative Director & Executive Vice President (current position); In charge of Export Control Administration (current position); In charge of Personnel Department (current position)
- Jun. 2022 In charge of Material and Engineering Products Business (current position)



Hiroki Kikuchi
Director & Managing Executive Officer

Career
- Apr. 1985 Joined Mitsui Bank (currently Sumitomo Mitsui Banking Corporation)
- Apr. 2012 General Manager, Nihonbashi-higashi Corporate Business Office, Sumitomo Mitsui Banking Corporation
- Apr. 2015 Joined the Company
- Jul. 2015 General Manager, General Affairs Department
- Apr. 2016 General Manager, Secretary Office
- Apr. 2018 Executive Officer
- Jul. 2018 General Manager, Corporate Planning Office (current position)
- Apr. 2020 Chief Financial Officer (current position), In charge of Finance & Accounting Department (current position); General Manager, Business Development Office
- Jun. 2020 Director & Executive Officer
- Apr. 2021 Director & Managing Executive Officer (current position)
- Apr. 2022 In charge of Plastics Machinery Business Division, Injection Molding Machinery Business Division, Ordnance Business Headquarters (current position); In charge of Industrial Machinery Business Division; In charge of Business Development Office



Shingo Mito
Director & Managing Executive Officer

Career
- Apr. 1984 Joined the Company
- Jul. 2006 General Manager, Personnel Department
- Jul. 2011 Deputy General Plant Manager, Hiroshima Plant
- Apr. 2014 Deputy Director of Machinery Business Division
- Apr. 2016 Deputy Director of Research and Development Headquarters
- Apr. 2017 Executive Officer
- Oct. 2017 Deputy Director of New Business Promotion Headquarters
- Apr. 2021 Director of New Business Promotion Headquarters (current position)
- Jun. 2021 Director & Executive Officer
- Apr. 2022 Director & Managing Executive Officer (current position)



Shigeki Inoue
Director & Managing Executive Officer

Career
- Apr. 1986 Joined the Company
- Apr. 2015 Deputy General Plant Manager, Hiroshima Plant
- Apr. 2017 General Plant Manager, Hiroshima Plant
- Apr. 2018 Executive Officer
- Apr. 2021 Managing Executive Officer; Director of Industrial Machinery Business Division (current position), General Manager, Business Development Office (current position)
- Apr. 2022 Chief Technology Officer (current position); In charge of Quality Management (current position); In charge of Intellectual Property Department (current position); In charge of Yokohama Plant (current position)
- Jun. 2022 Director & Managing Executive Officer (current position)



Sadao Degawa
Director

Career
- Apr. 1977 Joined Ishikawajima-Harima Heavy Industries Co., Ltd. (currently IHI Corporation)
- Jun. 2009 Director and Executive Officer, IHI Corporation
- Apr. 2011 Director and Managing Executive Officer, IHI Corporation
- Apr. 2012 Executive Vice President, IHI Corporation
- Oct. 2015 Executive Vice President and Senior Executive Officer, IHI Corporation (–Mar. 2016)
- Apr. 2016 Director, IHI Corporation (–Jun. 2016)
- Jun. 2016 Advisor, IHI Corporation (–Jun. 2020)
  Outside Director, Nishishiba Electric Co., Ltd. (–Mar. 2020)
- Jun. 2018 Director, the Company (current position)



Yoshiyuki Nakanishi
Director

Career
- Apr. 1978 Joined Dainippon Ink and Chemicals, Incorporated (currently DIC Corporation)
- Apr. 2010 Executive Officer, DIC Corporation
- Jun. 2011 Director and Executive Officer, DIC Corporation
- Apr. 2012 Representative Director, President and CEO, DIC Corporation (–Dec. 2017)
- Jan. 2018 Chairman of the Board of Directors, DIC Corporation (–Jan. 2021)
- Jun. 2020 Director, the Company (current position)
  Outside Director, IHI Corporation (current position)
- Jan. 2021 Director, DIC Corporation (–Mar. 2021)
- Mar. 2021 Executive Advisor, DIC Corporation (current position)
- Jun. 2021 Outside Director, Shimadzu Corporation (current position)



Hisao Mitsui
Director

Career
- Apr. 1978 Joined Kao Soap Co., Ltd. (currently Kao Corporation)
- Jun. 2006 Executive Officer, Kao Corporation
- Jun. 2010 Director and Executive Officer, Kao Corporation
- Jun. 2012 Director and Managing Executive Officer, Kao Corporation (–Mar. 2014)
- Apr. 2015 Auditor, National Institute of Technology and Evaluation (–Jun. 2019)
- Jun. 2020 Director, the Company (current position)
  Outside Auditor, LiveDo Corporation (current position)



Toru Nishiyama
Audit & Supervisory Board Member (Full-Time)

Career
- Apr. 1982 Joined the Company
- Sep. 2011 Deputy General Manager, Corporate Planning Office
- Apr. 2015 Deputy General Plant Manager, Muroran Plant
- Apr. 2017 Executive Officer
- Oct. 2017 Deputy General Manager, Technological Strategy Office
- Apr. 2018 General Manager, Internal Auditors Office
- Jun. 2019 Audit & Supervisory Board Member (Full-Time) (current position)



Hiroyuki Shimizu
Audit & Supervisory Board Member (Full-Time)

Career
- Apr. 1984 Joined the Company
- Oct. 1998 Houston Office Manager
- Jun. 2008 Nagoya Branch Manager
- Sep. 2015 Deputy General Manager, Corporate Planning Office
- Apr. 2017 Kansai Branch Manager
- Apr. 2019 Deputy Director of Machinery Business Division (Sales Management Supervisor)
- Apr. 2020 Representative Director, President and CEO of GM Engineering Co., Ltd.
- Jun. 2022 Audit & Supervisory Board Member (Full-Time) (current position)



Fumihiko Tanizawa
Audit & Supervisory Board Member

Career
- Apr. 1976 Joined Mitsui Bank (currently Sumitomo Mitsui Banking Corporation)
- Jun. 2003 Executive Officer, Sumitomo Mitsui Banking Corporation
- Oct. 2006 Managing Executive Officer, Sumitomo Mitsui Banking Corporation (–Mar. 2009)
- Apr. 2009 Senior Managing Executive Officer, Sumitomo Mitsui Financial Group, Inc.
- Jun. 2009 Senior Managing Director, Sumitomo Mitsui Financial Group, Inc. (–Jun. 2010)
- Jun. 2010 Representative Director, Executive Officer and Executive Deputy President, SMBC Friend Securities Co., Ltd. (currently SMBC Nikko Securities Inc.) (–Mar. 2012)
- Dec. 2012 Representative Director, President and Executive Officer, Horai Co., Ltd. (–Dec. 2019)
- Jun. 2015 Outside Audit & Supervisory Board Member, Sotetsu Holdings, Inc. (–Jun. 2019)
- Jun. 2019 Audit & Supervisory Board Member, the Company (current position)



Hiroshi Misawa
Audit & Supervisory Board Member

Career
- Apr. 1981 Joined The Mitsui Trust and Banking Company, Ltd. (currently Sumitomo Mitsui Trust Bank, Limited)
- Jul. 2008 Executive Officer, Chuo Mitsui Asset Trust and Banking Company, Limited. (currently Sumitomo Mitsui Trust Bank, Limited)
- Feb. 2011 Managing Executive Officer, Chuo Mitsui Asset Trust and Banking Company, Limited.
- Apr. 2012 Managing Executive Officer, Sumitomo Mitsui Trust Bank, Limited
- Jul. 2012 Advisor, Sumitomo Mitsui Trust Bank, Limited (–Sep. 2012)
- Oct. 2012 Director and Vice President, Sumitomo Mitsui Trust Asset Management Co., Ltd. (–Mar. 2016)
- Apr. 2016 Audit & Supervisory Board Member, Sumitomo Mitsui Trust Bank, Limited (–Mar. 2017)
- Apr. 2017 Advisor, Sumitomo Mitsui Trust Bank, Limited (–Jun. 2017)
- Jun. 2017 Deputy Chairman of the Board of Directors, Director and Audit & Supervisory Committee Member, Sumitomo Mitsui Trust Holdings, Inc. (–Jun. 2019)
- Jun. 2019 Audit & Supervisory Board Member, Sumitomo Mitsui Trust Business Service Co., Ltd. (–Mar. 2021)
- Jun. 2020 Audit & Supervisory Board Member, the Company (current position)
- Apr. 2021 Advisor, Sumitomo Mitsui Trust Business Service Co., Ltd. (current position)

		Toshio Matsuo	Junichiro Deguchi	Hiroki Kikuchi	Shingo Mito	Shigeki Inoue	Sadao Degawa	Yoshiyuki Nakanishi	Hisao Mitsui	Toru Nishiyama	Hiroyuki Shimizu	Fumihiko Tanizawa	Hiroshi Misawa
Number of shares of the Company held		17,733 shares	15,612 shares	9,347 shares	13,043 shares	9,003 shares	3,946 shares	0 shares	255 shares	7,421 shares	2,426 shares	0 shares	1,077 shares
Record of attendance at Board of Directors meetings (FY2021)		18/18 (100%)	18/18 (100%)	18/18 (100%)	14/14 (100%)	—	18/18 (100%)	18/18 (100%)	18/18 (100%)	18/18 (100%)	—	18/18 (100%)	18/18 (100%)
Committee	Nomination Advisory Committee	○	○				○ (Chair)	○	○				○ (Advisor)
Committee	Remuneration Advisory Committee	○	○				○ (Chair)	○	○			○ (Advisor)	
Skill Matrix	Corporate Management	○	○				○	○	○		○	○	○
Skill Matrix	Finance and Accounting			○						○		○	○
Skill Matrix	Sales and Marketing	○			○	○		○			○		
Skill Matrix	Manufacturing, Quality Control, Technology and R&D	○			○	○	○		○				
Skill Matrix	Environment	○	○			○							
Skill Matrix	Personnel and Human Resource Development		○		○								
Skill Matrix	Legal, Compliance and Risk Management		○	○						○			
Skill Matrix	Information Systems and Digital Transformation						○						

Executive Officers

Takashi Iwamoto
Managing Executive Officer

Seiji Umamoto
Managing Executive Officer

Yoshitaka Sato
Executive Officer

Shoji Nunoshita
Executive Officer

Takeshi Shinmoto
Executive Officer

Motoyuki Shibata
Executive Officer

Masayuki Aoyama
Executive Officer

Hidenao Kudo
Executive Officer

Message from an Outside Director

Promoting Fundamental Reforms and Initiatives to Address Challenges to Realize the Purpose

Sadao Degawa, Outside Director



Rallying the Group Together as One to Enact Reforms that Prevent Recurrence

I see the inappropriate conduct in quality inspections at Japan Steel Works M&E, Inc. as an incident that should have never taken place, and as an outside director overseeing management of the Group, I take it very seriously. I offer my heartfelt apology for any inconvenience and concern this may have caused to our stakeholders. In response to the findings and recommendations of the Special Investigation Committee, we have conducted an analysis that probes into even the background of the matter. We then repeatedly discussed preventive measures to ensure compliance with all laws, contractual provisions, and internal regulations, as we maintain and improve our delivery of products of unparalleled quality, a tradition we have upheld since our founding. I too have made many proposals for reform in my capacity as an outside director. The Purpose and Materiality that were announced in November 2022 represent the very fruition of the thoughts and feelings this incident provoked in all of us.

It bears noting here that, as the Special Investigation Committee pointed out, in order to prevent a recurrence we must reform the organization so that a system of checks and balances is put in place, while also cultivating a commitment to compliance through the education and training of our employees. Nevertheless, it will take time for all employees to gain the proper understanding that enables them to thoroughly act on these measures and for an accompanying company culture conducive to such practices to take hold.

To accelerate reform, in addition to these measures, it will be necessary to incorporate the right kind of inspections into the business process so that they are mandatory rather than performed at the discretion of individuals. Specifically, it would be a more effective way forward to incorporate into the business process a system in which there is planning of product inspection schedules, inspection items to be covered, costs, and personnel assignments at the time any and all product order are received, with accompanying monitoring and follow-up. I believe that this practice should be begun as early as possible in parallel with the establishment of the system itself as well as reforms to the company culture.

Though the trust of customers and other stakeholders, not to mention the general public, can be lost in a moment, it takes a great deal of time to gain that back.

I hope that this matter has served as a wake-up call for all officers and employees of the Group, and provides an excellent opportunity for the entire Group to rally together as one and promote the proper reforms.

Taking on Challenges with an Eye toward Further Growth

With the appointment of representative director & president Toshio Matsuo in April 2022, many changes have taken place on the governance front.

In establishing the Purpose and Vision that were announced in November 2022, the Board of Directors spent over six months holding a variety of discussions about how to achieve consistency with the history of the Company and management philosophy, while maintaining a bird's-eye view of the Group as a whole and based on the perspectives required for consideration. Via the exchanges of many an opinion, I believe that we were able to arrive at a laudable Purpose that well summarized the thoughts and feelings shared by the members of the Board of Directors.

The major changes in the organizational structure were the discontinuation of participation by outside directors in the Executive Board and the Management Council, the narrowing of down the number of bodies whose meetings they attend, and further clarification of the division of roles between execution and supervision. As a result, there are now more opportunities for inside directors to speak at Executive Board of Directors meetings than before, which has made for discussions that are more animated. At the same time, the Liaison Council of Outside Officers was newly established in April 2022. By offering all outside officers not only a preliminary briefing about what is to be discussed at the Board of Directors meetings, but also reporting to them on the details of discussions by the Executive Board and Management Council, and then having them hold discussions, the aim of this council is to promote a greater understanding of the status of business execution. The outcome of this has led to the deepening of discussions at Board of Directors meetings.

Regarding the composition of the Board of Directors, the number of inside directors was reduced by one, and three of the eight directors are now outside directors, increasing the percentage of outside directors from 33.3% to 37.5%. At the same time, it will be important to further increase the depth of the Board of Directors from the perspectives of both skills and human resources. Though bolstered global expansion will be essential for the Group to achieve further growth, I feel that the organization is lacking in personnel with expertise in global marketing. Also needed is a boost in personnel with skills in legal affairs, compliance matters, and digital transformation, which seems to me to necessitate both the recruitment of candidates for executive positions from outside the company and the development of internal personnel.

Regarding management of the Board of Directors, I feel that there are two issues that need to be addressed. The first is that inside directors currently also serve as executive officers, which makes for comments that are skewed toward their respective areas of responsibility. I believe that deeper discussions can be brought about by increasing the number of directors who speak from a company-wide management perspective. Another issue to tackle is the lack of discussion about risk. The response taken for the inappropriate conduct can indeed be described as a part of risk management, but there is also a separate need to discuss in greater depth than at present the prospective risks and consideration of potential countermeasures that accompany transactions with new customers and in new countries and areas reached by business expansion.

By making all directors more strongly aware of working based on a monitoring board model, we hope to strengthen our ability to respond to all risks, not just the instance of inappropriate conduct dealt with this time.

The Group's performance is currently solid. Beyond that, I hope to see our efforts accelerate so rather than just sow the seeds of new business, we germinate and see sprouting of the seeds of businesses that will be new pillars for us over the next decade. In order to realize the Material Revolution™ that is our Purpose and create one-of-a-kind businesses unmatched by any other company, it is incumbent on us to pursue discussions that are self-directed and animated. As an outside director, I will do my utmost to provide support toward that end in ways such as offering advice and monitoring management affairs.

Risk Management

Basic Approach

The Company and its Group companies have an important responsibility to minimize risks affecting the Group, ensure the ongoing development of the Group, and thoroughly fulfill their social responsibilities by appropriately and effectively managing various risks.

Framework

The Group has established JSW Group Risk Management Regulations, which clearly stipulate that the Company and Group companies manage risks in accordance with their respective management structures and division of duties, and that all employees, from officers to general employees, are responsible for implementing appropriate and effective risk management in accordance with their respective roles. In addition, the Company has appointed a director in charge of risk management (CRO), who oversees risk management of the Company and Group companies while also assessing the internal control of each management structure. Also, to deal with risks by divisional function, divisions such as those in charge of health and safety, environmental management and export control management are each conducting appropriate operations through steps such as forming committees or putting in place regulations from a company-wide, cross-sectional perspective.

Regarding the status of company-wide risk management, the Internal Control Committee (Chairperson: Director in charge of Risk Management (CRO)) shares information on potential and emerging key issues, including the identification and evaluation of risks, and, when necessary, discusses risk responses and specific initiatives, and gives instructions or guidance to relevant departments as appropriate.

The Internal Audit Division, which also serves as the office of the Internal Control Committee, directly or indirectly monitors the management status of risks of each division (management structures) and each committee, and reports to the Board of Directors or the Executive Board. The main risks and the status of initiatives are duly disclosed in the annual financial report and on the website.

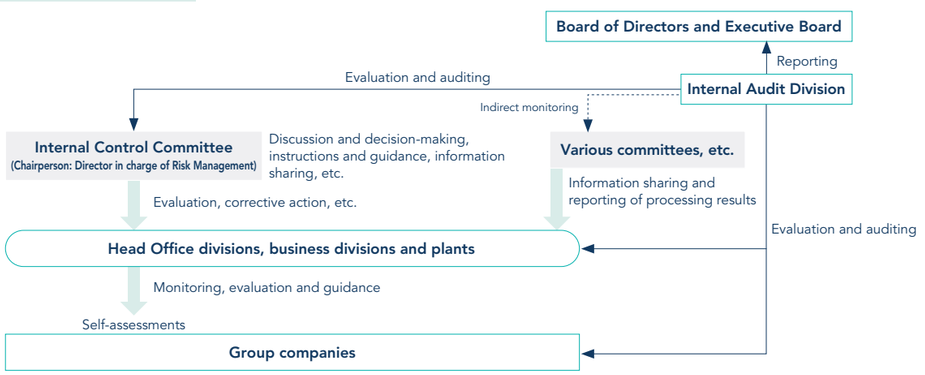
In the event of a major accident, disaster or any other risk that could cause serious damage to JSW Group, the Crisis Management Headquarters, led by the director in charge of risk management, is promptly established to offer response. As the COVID-19 virus spread during the period from fiscal 2020 to fiscal 2021, a Crisis Management Headquarters was set up to provide functions such as ascertaining the health status of employees, establishing a telecommuting system and offering response to those infected.

In fiscal 2021, it was revealed that inappropriate conduct in quality inspections by Japan Steel Works M&E, Inc. had taken place (see p. 30 of this report). As this was the case of an operational misconduct risk that manifested itself in the quality assurance process, work will be done to prevent a recurrence by strengthening operational processes and management systems to ensure that operations are conducted in a proper and efficient manner.

In addition, in November 2022, a new corporate group philosophy system was established and six key issues were identified as Materiality that should be prioritized in order to realize our Purpose. Materiality comprises the two perspectives of "creating value and solving social issues through JSW Group's businesses" and "bolstering JSW Group's management foundation for sustainable growth."

From these two perspectives, we will encourage awareness that there are both risks for the sake of sustainable growth that should be taken actively and risks that should never be taken, even if for the sake of making profits. We will work to develop an operational system and framework, as well as a culture of taking risks, that give license to actively take the former type of risks under appropriate risk management controls, while minimizing the latter kind of risk. We believe that fostering this culture of taking risks advisedly and renovating our corporate culture will also lead to the prevention of the recurrence of inappropriate conduct.

Risk Management Framework



Compliance

JSW Group has established its Standards of Business Conduct and engages in business activities in compliance with ethics, laws and regulations, and international rules in both letter and spirit. The Group will continue to conduct business activities based on the understanding that compliance is not only legal compliance, but also includes adherence to internal rules and contracts, and is an important element for building a relationship of trust with society as well as a fundamental driver for increasing employee engagement.

In addition, the Board of Directors has decided on the Basic Policy on Internal Control and is developing internal control systems. Recognizing the importance of the proper operation of these systems, the Internal Control Committee regularly reports on matters relating to internal control and its progress. The Group will also review its Basic Policy on Internal Control to ensure quality compliance and prevent the recurrence of inappropriate conduct.

Regarding compliance with codes such as laws and regulations, and internal rules, on a regular or as-needed basis, the Internal Auditors Office audits the overall operations of JSW, and reports the results to the representative director & president, as well as to the Board of Directors, the Executive Board or the Management Council, and other relevant parties, including Audit & Supervisory Board members. In fiscal 2021, there were no violations of relevant laws and regulations* that resulted in fines or penalties.

* Relevant laws and regulations: Laws and regulations regarding the environment, Industrial Safety and Health Act, Financial Instruments and Exchange Act, laws and regulations regarding export control administration, laws and regulations regarding competition, laws and regulations regarding bribery, and Whistleblower Protection Act

Promotion of Compliance Training

The Company is implementing the following measures to further enhance compliance awareness.

- Regular training sessions at plants, sales locations (branches and sales offices), and domestic JSW Group companies are held regularly by JSW's legal department.
  (In fiscal 2021, training was held at the Japan Steel Works M&E Muroran Plant and Kyushu Business Office)
- Training sessions for Head Office business divisions are conducted (as needed) by JSW's legal department.
  (In fiscal 2021, training on the theme of confidentiality agreements was conducted at the New Business Promotion Headquarters)
- E-learning for JSW employees and Group company officers and employees was offered to enhance compliance awareness and ensure thorough risk management. (In fiscal 2021, held once with a 99% participation rate)
- Harassment awareness videos, which are required viewing by managers (and can also be viewed by general employees), are streamed on the company intranet, a development prompted by a revision to the whistleblowing rules.
- Diverse information and articles on compliance awareness raising are posted on the company intranet noticeboard, in posters and in the company newsletter.
- E-learning was provided for employees of the Company and Group companies to ensure compliance with laws, regulations and internal rules on export control administration (In fiscal 2021, held once with a 100% participation rate)
- Internal mock examinations, preparatory courses for examinations and e-learning were provided to increase the number of current employees who have passed the export control administration practical skills certification examination.

Whistleblowing System

JSW Group has formulated whistleblowing rules for the purpose of strengthening and promoting compliance management, and has established a system for the proper handling of reports and consultations from employees and others regarding potential organizational or individual violations of laws and regulations that may have been committed by employees or others associated with JSW or Group companies. This enables JSW Group to promptly detect potential violations of laws and regulations and take corrective action, thereby minimizing risk and damage to the Group that would otherwise arise from such a violation. The inappropriate conduct in quality inspections by Japan Steel Works M&E, Inc., announced on May 9, 2022, (see p. 30 of this document) was prompted by an internal report issued in late February 2022. The system is thus functioning effectively in accordance with its purpose.

Anonymous reports and consultations are accepted and disadvantageous treatment of persons who make reports or seek consultation is prohibited. In the event of disadvantageous treatment received, the Company will respond with appropriate measures, including disciplinary action. In October 2021, the whistleblowing rules were amended so that the contact point for whistleblowing was changed to external specialists in order to ensure greater protection for the confidentiality of whistleblowers and individuals with whom they consult, while also reducing the psychological burden of whistleblowing. Furthermore, in order to facilitate further awareness of the whistleblowing system to reach even Group subsidiaries as well, we display the manual on internal workplace bulletin boards and have distributed a pocket version of the manual that employees and others can refer to at any time.

The Whistleblowing Committee, chaired by the director in charge of risk management, investigates reported cases, and if a problem is identified, the committee will take appropriate action and implement corrective measures. During this process, the office of the Whistleblowing Committee and Audit & Supervisory Board members share information as appropriate, while the Audit & Supervisory Board members monitor the progress made in individual cases and the status of operation of this system. In principle, the Board of Directors confirms proper operations of the whistleblowing system twice a year, as based on reports from the Committee.

The number of reports made was 14 in fiscal 2020 and 31 in fiscal 2021, most of which were consultations about workplace environment, including instances of harassment. Reports were investigated by the Committee and appropriately addressed.

Digital Transformation Promotion

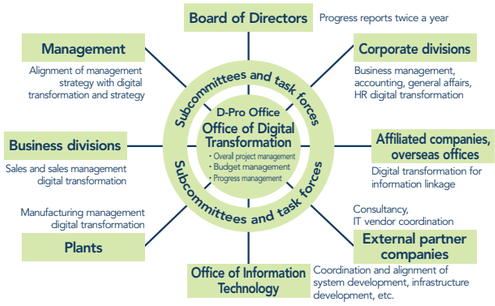
The Group recognizes the importance of updating systems that contribute to enhanced competitiveness in these rapidly changing times. This is seen in developments such as the improvement of operations through digital transformation and the construction of system environments that enable data-driven decisions that are rapid and highly accurate.

The Group is offering and promoting a Digital Transformation Promotion Project (D-Pro) in order to build toward the following vision.

1. **Reconfigure the information network into a data lake to facilitate data-driven management that shares and analyzes data.**
2. **Integrate and revamp core systems to reduce maintenance costs and promote value-enhancing investments.**
3. **Improve operational efficiency by digitizing routine tasks, transitioning to paperless operations and enabling remote work.**
4. **Facilitate digital transformation (i.e., business transformation leveraged by digital technology) to expand business through organizations for digital transformation promotion.**

As of July 1 2022, the Office of Digital Transformation (see chart below) was established to promote D-Pro. Positioning the period through fiscal 2025 as Phase 1, the office has formulated an action plan that includes the renewal of the corporate culture and is promoting activities in each subcommittee.

Digital Transformation Promotion Structure Chart



Information Security

Basic Approach

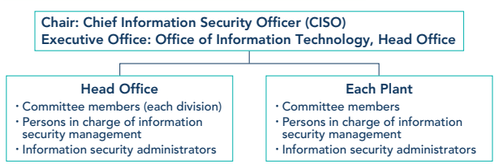
There is a continued increase in the importance of information and information systems in improving the efficiency of office work and production technology continues to increase, as well as speeding up decision-making. At the same time, threats such as information destruction, leaks, and tampering and system destruction due to cyberattacks are increasing, and the risks associated with information and information systems are on the rise. In this environment, in order to continue to maintain the satisfaction and trust of customers and to fully fulfill our role, we recognize that an important management challenge is to accurately identify information-associated risks and protect both the information entrusted to us by customers and the information and systems necessary for us to do business.

Framework

The Chief Information Security Officer (CISO), appointed by resolution of the Board of Directors, oversees information security measures at JSW. Persons in charge of information security management and information security administrators are assigned at the Head Office and each plant. The Information Security Committee, chaired by the CISO, comprehensively discusses the status of information security incidents, recent threats to information systems, the environment in which the Company operates, and opinions and requests regarding the usability of various security measures, and conducts detailed verification on a regular basis.

In addition, we are constantly working to maintain and improve security while continuously evaluating the adequacy of countermeasures against various cyber-attacks based on detailed analysis results from continuous monitoring data from one of Japan's leading security vendors.

Structure of the Information Security Committee



Training

We conduct information security training (e-learning) for JSW officers and employees to improve their security awareness and literacy.

Participation Rate in Information Security Training (E-Learning)

	FY2019	FY2020	FY2021
Participation rate	100.0%	99.3%	100.0%

Evaluation by Third-Party Organizations

Diagnostic Assessments in Fiscal 2021

Assessment*	Results of evaluation
Information security risk assessment	— (Implemented with every major system change)
Information leakage communications assessment	Information leakage communications assessment overall rating: A (no communications corresponding to information leakage)

* Assessments consist of intrusion inspections and vulnerability assessments of company network systems, based on information security benchmarks and carried out by security vendors with information security management system (ISO/IEC 27001) certification.

Key Data

11-Year Summary

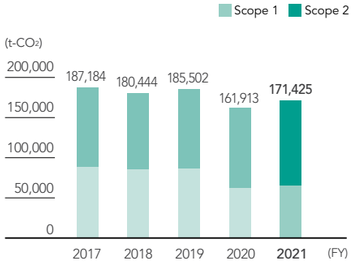
(Millions of yen)

(FY)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Net sales (consolidated)	221,368	220,653	188,719	194,674	223,301	212,469	211,700	220,153	217,527	198,041	213,790
Operating income	23,911	16,680	8,864	7,517	14,423	12,340	20,578	24,290	18,709	10,226	15,460
Profit before income taxes	20,302	14,802	9,504	(5,523)	(22,049)	(5,841)	14,892	29,317	14,154	12,960	19,736
Profit attributable to owners of parent	12,591	8,281	5,527	(5,327)	(16,600)	(4,968)	10,712	19,966	9,310	6,893	13,948
Total assets	325,653	303,970	293,139	319,667	293,138	275,315	297,365	305,471	297,173	316,249	339,729
Net assets	128,613	134,368	139,268	138,234	111,340	107,587	118,600	129,827	132,492	141,985	151,083
Net D/E ratio	0.12	0.02	0.00	(0.06)	(0.10)	(0.07)	(0.23)	(0.17)	(0.18)	(0.22)	(0.32)
Operating cash flow	32,507	23,735	11,549	11,580	19,721	12,023	26,712	1,092	18,959	14,712	22,325
Investing cash flow	(18,601)	(5,832)	(5,719)	(2,675)	(12,135)	(13,580)	(5,077)	(1,334)	(13,172)	(3,243)	(2,976)
Financing cash flow	(6,846)	(15,259)	(15,007)	(2,964)	4,788	(1,203)	(2,457)	(3,758)	(6,164)	2,767	(2,860)
Cash and cash equivalents at end of the period	48,107	50,972	42,297	49,152	61,458	58,671	77,879	73,820	74,477	88,759	105,799
R&D expenses	4,626	4,054	3,836	4,104	4,292	4,237	4,369	4,506	4,708	4,586	4,909
Capital investment	8,256	5,570	5,242	7,992	14,010	9,502	6,436	9,945	10,585	12,592	4,903
Depreciation	19,252	16,061	12,950	11,008	10,669	7,858	4,097	4,424	5,733	6,040	6,183
Earnings per share (Yen)	33.93	22.33	14.92	(14.39)	(45.32)	(67.61)[1]	145.77	271.69	126.66	93.76	189.63
Dividend per share (Yen)	10.0	10.0	5.0	4.0	5.0	15.0[2]	37.5	55.0	45.0	35.0	57.0
Consolidated dividend payout ratio (%)	29.5	44.8	33.5	—	—	—	25.7	20.2	35.5	37.3	30.1
Operating income ratio (%)	10.8	7.6	4.7	3.9	6.5	5.8	9.7	11.0	8.6	5.2	7.2
ROE (%)	10.2	6.3	4.1	(3.9)	(13.5)	(4.6)	9.6	16.3	7.2	5.1	9.6
ROA (%)	3.8	2.6	1.9	(1.7)	(5.4)	(1.7)	3.7	6.6	3.1	2.2	4.3

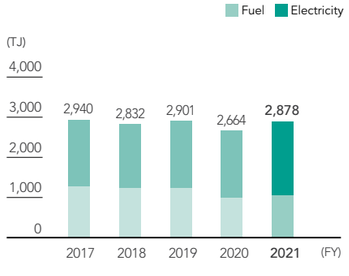
1. The Company conducted a 1-for-5 reverse common stock split effective October 1, 2016. Earnings per share for fiscal 2016 is calculated on the assumption that the reverse stock split occurred at start of the fiscal year.
2. The Company conducted a 1-for-5 reverse common stock split effective October 1, 2016. Dividend per share for fiscal 2016 in the table above is the total of the interim dividend of ¥2.5 and the year-end dividend of ¥12.5. Taking into consideration the effects of the reverse stock split, the interim dividend would have been ¥12.5, resulting in a total annual dividend per share of ¥25.

Key Non-Financial Data

CO_2 Emissions

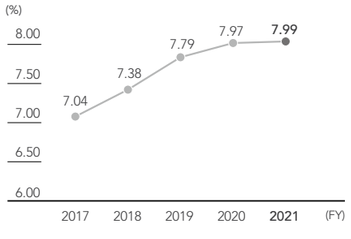


Energy Usage



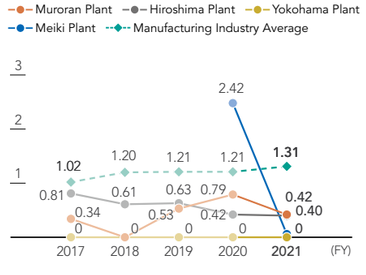
* Terajoule

Female Employee Ratio (Non-Consolidated)



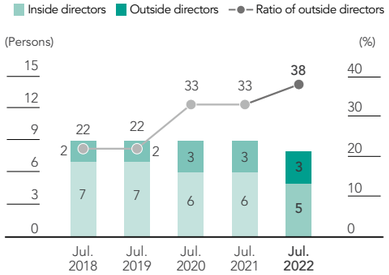
Note: Including employees seconded away from the Company; not including employees seconded to the Company.

Frequency Rate of Accidents per Million Workhours



Note: Frequency rate of accidents calculated from lost-worktime, serious and fatal accidents during the fiscal year.
* Meiki Plant merged into The Japan Steel Works, Ltd. in fiscal 2020. Frequency rate of accidents at the Meiki Plant in fiscal 2020 due to the occurrence of multiple lost-worktime accidents.
* Manufacturing industry averages are from the survey of occupational accident trends (Ministry of Health, Labour and Welfare).

Composition of the Board of Directors



Corporate Data (As of March 31, 2022)

Company Information

Company Name	The Japan Steel Works, Ltd.
Founded	November 1, 1907
Incorporated	December 11, 1950
Head Office	Gate City Ohsaki-West Tower, 11-1, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan
Share Capital	¥19,799 million (As of July 22, 2022)
Number of Employees	5,329 (consolidated) 1,767 (non-consolidated)

Main Group Companies (As of October 1, 2022)

Domestic

(Consolidated subsidiaries)

Nikko-YPK Shoji Co., Ltd.
24F, Gate City Ohsaki-West Tower, 11-1, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan
Phone: +81-3-5745-2131

Nikko Kosan Co., Ltd.
23F, Gate City Ohsaki-West Tower, 11-1, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, Japan
Phone: +81-3-5745-2130

Nippla Inc.
6-1, Funakoshi-Minami 1-chome, Aki-ku, Hiroshima-shi, Hiroshima 736-0082, Japan
Phone: +81-82-847-5510

Sun-Tectro, Ltd.
6-1, Funakoshi-Minami 1-chome, Aki-ku, Hiroshima-shi, Hiroshima 736-0082, Japan
Phone: +81-82-824-3881

Nikko Sekkei Co., Ltd.
6-1, Funakoshi-Minami 1-chome, Aki-ku, Hiroshima-shi, Hiroshima 736-0082, Japan
Phone: +81-82-822-7653

MG Precision Co., Ltd.
6-1, Funakoshi-Minami 1-chome, Aki-ku, Hiroshima-shi, Hiroshima 736-0082, Japan
Phone: +81-82-822-1305

Just Co., Ltd.
2-1, Horikoshi 3-chome, Minami-ku, Hiroshima-shi, Hiroshima 734-0052, Japan
Phone: +81-82-820-0123

Nikko Techno Co., Ltd.
6-1, Funakoshi-Minami 1-chome, Aki-ku, Hiroshima-shi, Hiroshima 736-0082, Japan
Phone: +81-82-822-3232

Japan Steel Works M&E, Inc.
4, Chatsucho, Muroran-shi, Hokkaido 051-8505, Japan
Phone: +81-143-22-0143

Nikko Unyu Co., Ltd.
4-1, Chatsucho, Muroran-shi, Hokkaido 051-8505, Japan
Phone: +81-143-22-7923

Nikko Truck Co., Ltd.
4-1, Chatsucho, Muroran-shi, Hokkaido 051-8505, Japan
Phone: +81-143-22-7923

Nikkou Muroran Service Co., Ltd.
4, Chatsucho, Muroran-shi, Hokkaido 051-8505, Japan
Phone: +81-143-24-2553

MNED Co., Ltd.
4, Chatsu-cho, Muroran-shi, Hokkaido 051-8505, Japan
Phone: +81-143-22-0620

Muroran Environmental Plant Service, Ltd.
3F, JESCO, 14-7, Nakamachi, Muroran-shi, Hokkaido 050-0087, Japan
Phone: +81-143-22-0005

Fine Crystal Co., Ltd.
9-1, Chatsucho, Muroran-shi, Hokkaido 051-8505, Japan
Phone: +81-143-22-7401

Muroran Copper Alloy, Co., Ltd.
9-1, Chatsucho, Muroran-shi, Hokkaido 051-0006, Japan
Phone: +81-143-22-0690

JSW Aktina System Co., Ltd.
2-1, Fukuura 2-chome, Kanazawa-ku, Yokohama-shi, Kanagawa 236-0004, Japan
Phone: +81-45-787-8462

Nikko Kouki Co., Ltd.
2-1, Fukuura 2-chome, Kanazawa-ku, Yokohama-shi, Kanagawa 236-0004, Japan
Phone: +81-45-701-7841

Yamato Rebuilt Co., Ltd.
4882-1, Kimagase, Noda-shi, Chiba 270-0222, Japan
Phone: +81-4-7198-4556

Nikko Tokki Co., Ltd.
2908 Shinjuku Mitsui Building, 1-1, Nishishinjuku 2-chome, Shinjuku-ku, Tokyo 163-0429, Japan
Phone: +81-3-5326-8672

Tahara Machinery Ltd.
2-1, Kaguminami, Inzai-shi, Chiba 270-1369, Japan
Phone: +81-476-21-1991

GM Engineering Co., Ltd.
Shin-Yokohama No.1 Building, 14-27, Shinyokohama 2-chome, Kohoku-ku, Yokohama-shi, Kanagawa 222-0033, Japan
Phone: +81-45-472-6819

JSW AFTY Corporation
35-2, Hyoe 2-chome, Hachioji-shi, Tokyo 192-0918, Japan
Phone: +81-42-632-8840

(Non-consolidated subsidiary)

Fine Crystal Iwaki Co., Ltd.
2-6, Chubukogyodanchi, Iwaki-shi, Fukushima 972-8338, Japan
Phone: +81-246-68-6858

Overseas

(Consolidated subsidiaries)

S M Platek Co., Ltd.
687-2, Seonggok-dong, Ansan-si, Kyeonggi-do, Korea
Phone: +82-31-488-3401

Japan Steel Works America, Inc.
1251 Avenue of the Americas, Suite 2390, New York, NY 10020, U.S.A.
Phone: +1-212-490-2630

The Japan Steel Works (Singapore) Pte. Ltd.
17 Gul Lane, Singapore 629413
Phone: +65-6861-4511

JSW Electromechanical Trading (Shanghai) Co., Ltd.
304, Metro Plaza, 555 Loushanguan Road, Changning District, Shanghai, China
Phone: +86-021-5206-7031

(Non-consolidated subsidiaries)

Japan Steel Works Europe GmbH
Friedrichstr.19,40217 Düsseldorf, Germany
Phone: +49-211-3116660

Japan Steel Works India Private Limited
611 Time Tower, MG Road, Sector 28, Gurgaon, Haryana 122002, India
Phone: +91-124-469-4444

Stock Information (As of March 31, 2022)

Stock Status

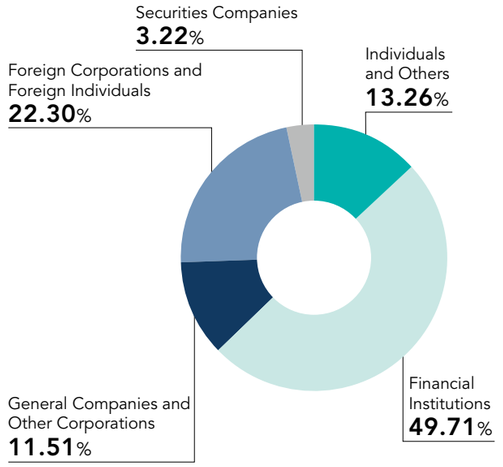
Authorized Shares	**200,000,000 shares**
Issued and Outstanding Shares	**74,373,265 shares**
Shareholders	**20,593**

Major Shareholders

	Shares Held	Shareholding Ratio
The Master Trust Bank of Japan, Ltd. (Trust Account)	14,990,700	20.38
Custody Bank of Japan, Ltd. (Trust Account)	8,184,500	11.12
TAIJU LIFE INSURANCE COMPANY	2,827,600	3.84
Sumitomo Mitsui Banking Corp.	2,200,032	2.99
BBH FOR MATTHEWS ASIA DIVIDEND FUND	1,945,200	2.64
Sumitomo Mitsui Trust Bank, Ltd.	1,630,400	2.22
Mitsui Sumitomo Insurance Co., Ltd.	1,564,800	2.13
Mitsubishi Heavy Industries, Ltd.	1,006,200	1.37
JUNIPER	930,700	1.27
Tsukishima Kikai Co., Ltd.	922,900	1.25

Note: Shareholding ratios are calculated after deducting 804,074 treasury shares from the total number of shares issued.

Classification of Shareholders by Percentage of Shares Held



Stock Price and Trading Volume



Note: The Company conducted a 1-for-5 reverse common stock split and changed the number of shares per stock unit from 1,000 shares to 100 shares, effective October 1, 2016. All stock prices and trading volumes in the graph above are shown taking into consideration the effects of the reverse stock split.

JSW

THE JAPAN STEEL WORKS, LTD.

Gate City Ohsaki-West Tower, 11-1,
Osaki 1-chome, Shinagawa-ku,
Tokyo 141-0032, Japan

https://www.jsw.co.jp/en/

Inquiries:
General Affairs Department
Phone: +81-3-5745-2011