

Hitz
Hitachi Zosen

Hitz
Hitachi Zosen

Technology for People, the Earth, and the Future

Integrated Report 2019

Hitachi Zosen Group



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Editorial policy

With effect from 2018 fiscal year, the Hitachi Zosen Group has begun issuing an integrated report to explain even more clearly to our shareholders, investors and other stakeholders the measures we are taking to realize value creation in line with the Group's long-term vision. In the editing of this report, we have consulted the framework promoted by the International Integrated Reporting Council (IIRC). Please refer to our Environmental Databook for detailed information, including numerical data, regarding the measures taken by the Group to prevent or minimize environmental degradation. For financial information and further details of our other corporate activities, please visit the Group's website.

➤ **Environmental Databook**
<https://www.hitachizosen.co.jp/csr/report.html>

➤ **Investor Relations**
<https://www.hitachizosen.co.jp/english/ir/>

➤ **Corporate Information**
<https://www.hitachizosen.co.jp/english/>





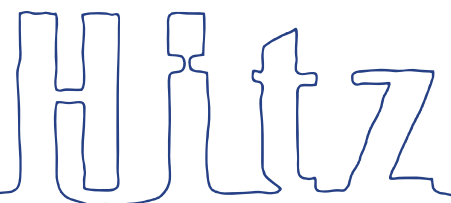
Briefing Area

The Hitz Advanced Information Technology Center (A.I/TEC) is a hub for leveraging information and communications technologies (ICT) such as the internet of things (IoT), big data, and artificial intelligence (AI) and came online in October 2018. Its mission is to maximize the value of the Hitachi Zosen Group's products and services and to create groundbreaking technologies and spawn new businesses. A.I/TEC features robust security with a dedicated local area network (LAN). It is helping our businesses move beyond their legacy engineering and manufacturing domains to upstream business planning and downstream services by exploiting the latest engineering and associated software technologies.

Remote monitoring and operational support area,
Hitachi Advanced Information Technology Center (A.I/TEC)

Management Base Supporting Sustained Value Creation

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► CSR Special Site
<https://www.hitachizosen.co.jp/english/csrsp/>



► YouTube
 Hitachi Zosen Group official channel



Forward-looking statements

This Integrated Report contains forward-looking statements that reflect judgments based on information available at the time of writing. Consequently, such statements are subject to a number of risks reflecting the uncertainties involved in the Group's business environment, and investors are warned that these statements may differ significantly from actual results. Risks and uncertainties that may affect end-of-term business performance include, but are not limited to, the economic environment surrounding the Group's operations, and fluctuations in exchange rates, among others.

Inheriting a Willingness to Take on All Challenges

Spirit of our founder



CURSUM PERFICIO —I accomplish my course—

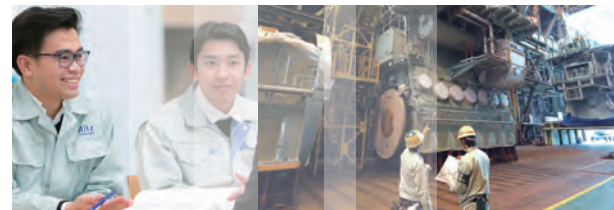
British entrepreneur Edward Hazlett Hunter founded the company. The Latin phrase is the Hunter clan motto.

On April 1, 1881, Hunter founded Osaka Iron Works and launched a shipbuilding business with an eye on the potential of Japan's maritime shipping and shipbuilding industries. So began the Group's history of nearly 140 years to date. Hitachi Zosen has since transitioned from shipbuilding to core operational areas closely linked with the natural environment, particularly energy and water. As embodied in the Hunter motto, Hitachi Zosen's willingness to take on all challenges lives on over a century after its founder's passing.

One of our standards of business behavior is to "strive boldly to achieve success." Every executive and employee is dedicated to making the Company a provider of solutions conducive to building a recycling oriented society.

Our founder, Edward Hazlett Hunter (1843-1917)

British entrepreneur; arrived in Japan in 1865; contributed to Japan's modernization through the development of industries, notably shipbuilding.



Hitz Value

In 2008, the Hitachi Zosen Group formulated Hitz Value—a framework for all our business activities—encompassing our corporate philosophy, management stance, and standards of business behavior. The ideal Hitachi Zosen employee understands the Hitz Value and its relevance to their work and reflects it in results. We are working to instill Hitz Value in all employees and put it into practice daily.

Corporate philosophy

We create value useful to society with technology and sincerity to contribute to a prosperous future.

Our management stance

Stakeholder satisfaction

- Enhancing employee satisfaction
- Enhancing customer satisfaction
- Enhancing shareholder satisfaction

Attitude towards work

- Making safety the first priority
- Thorough implementation of compliance
- Always pursuing quality

Standards of business behavior

- Strive boldly to achieve success**
- Communicate with sincerity**
- Learn widely, think deeply**

Our nickname – “Hitz”

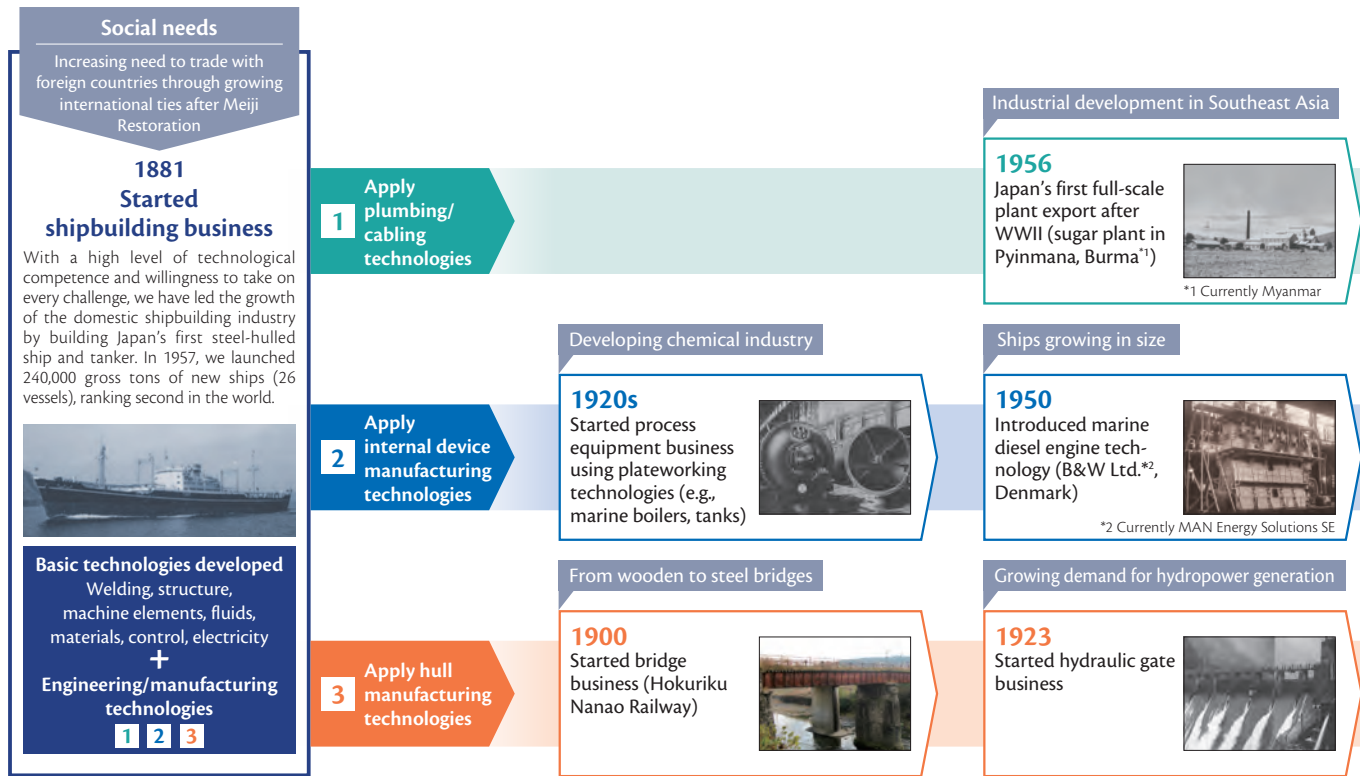
In 2002—about 120 years after the founding of our predecessor company—Hitachi Zosen divested its shipbuilding operations, finally disassociating itself from what had been its core business throughout its history. At that juncture, we decided not to change our corporate name, but we also adopted a nickname—“Hitz.” Apart from being a portmanteau word combining the first elements of both “Hitachi” and “Zosen,” the final “z” also incorporates “hit” (as in “hit products”) and “zenith,” meaning the highest point, or peak, indicating that we aim to reach the peak of quality in our product manufacturing.



A History of Creating New Value

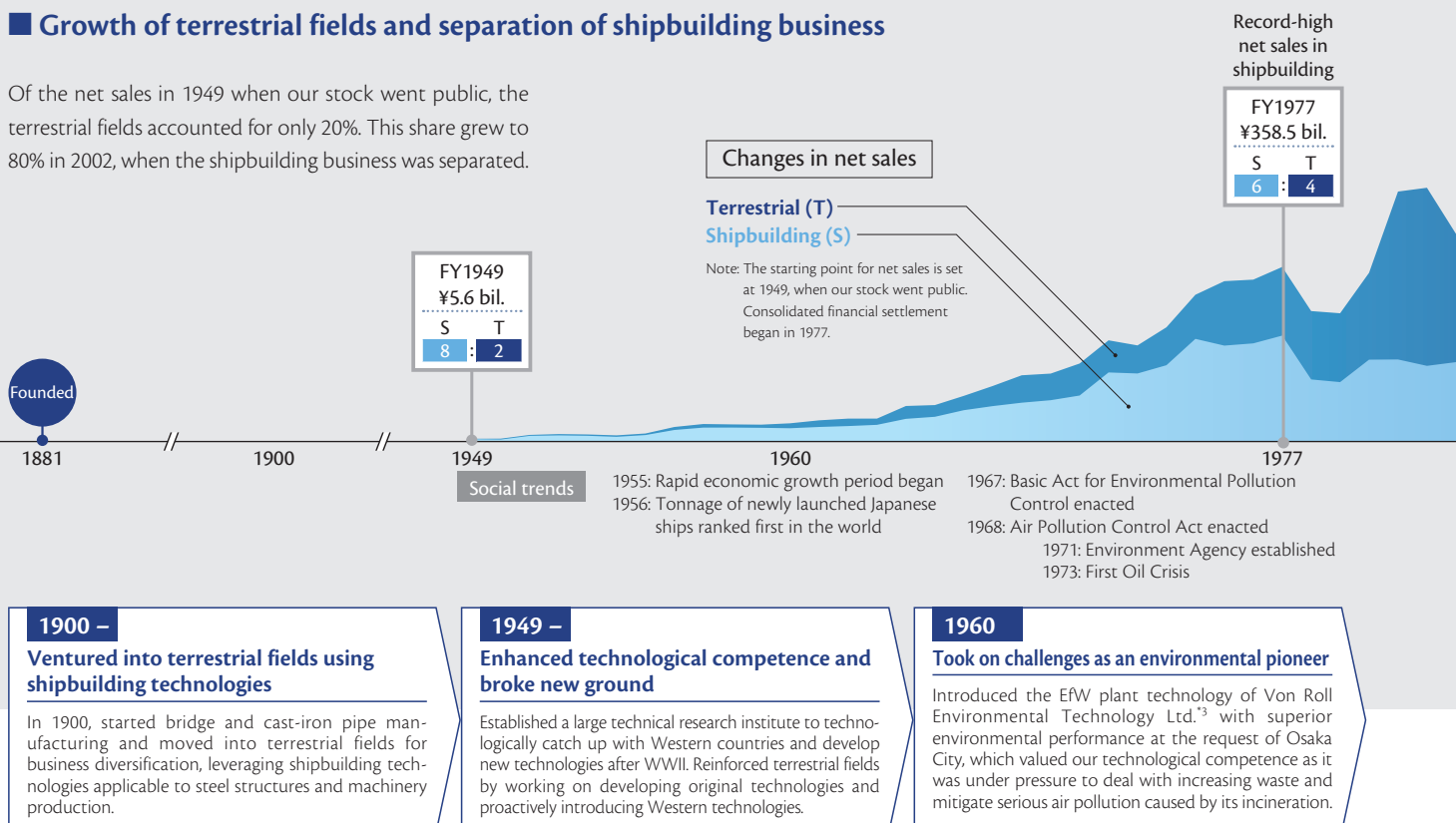
Business growth originating from shipbuilding technologies

Breaking new ground with technologies derived from shipbuilding technologies

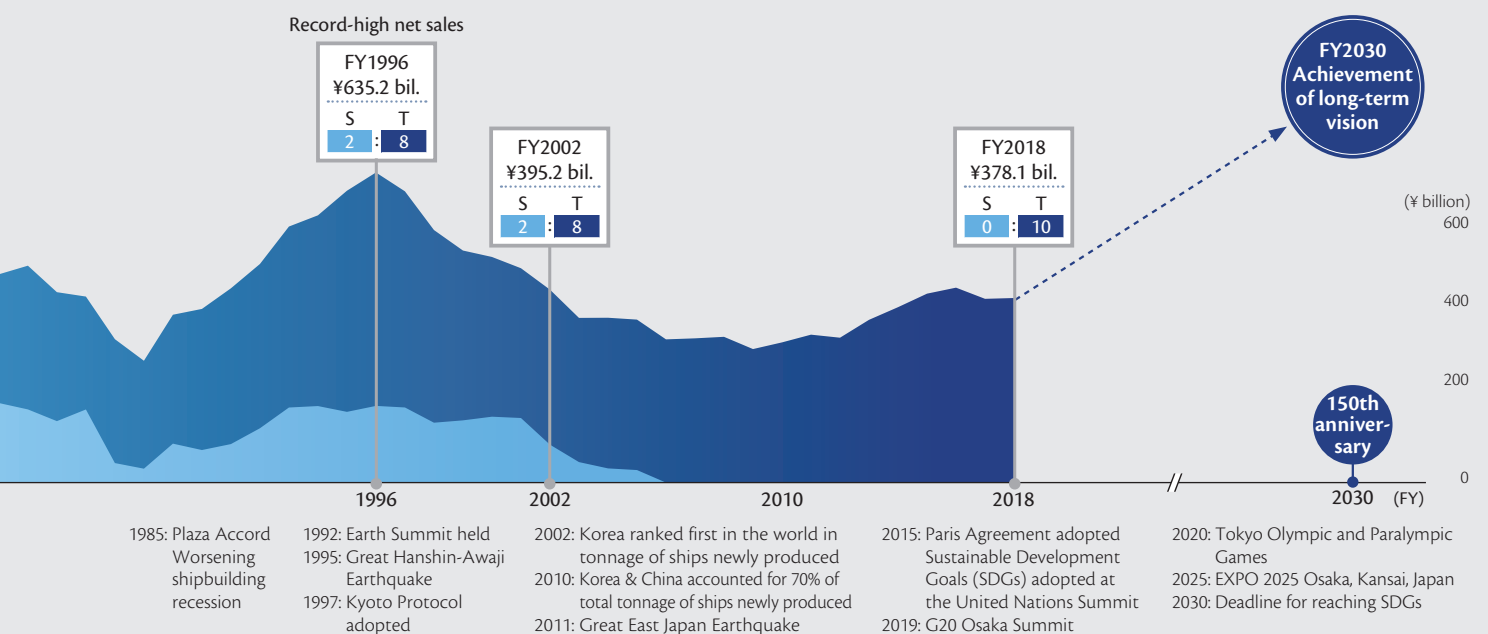
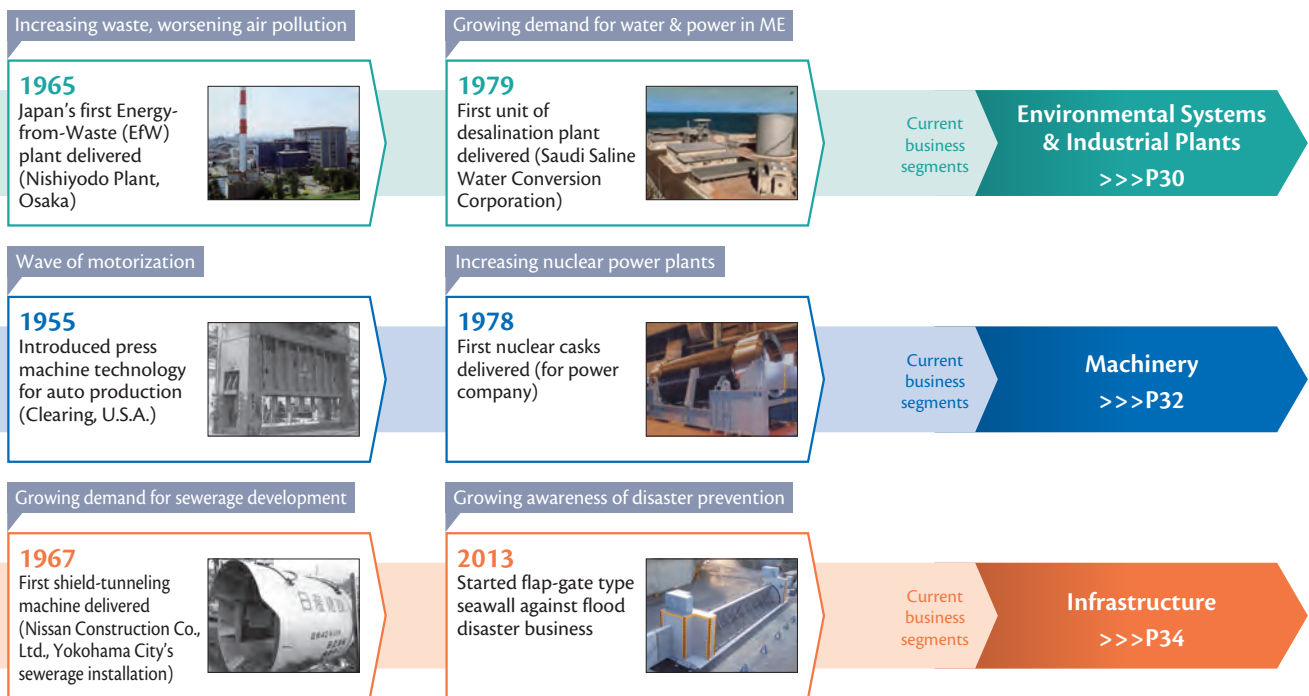


Growth of terrestrial fields and separation of shipbuilding business

Of the net sales in 1949 when our stock went public, the terrestrial fields accounted for only 20%. This share grew to 80% in 2002, when the shipbuilding business was separated.



The Hitachi Zosen Group has continuously tackled social issues, which change with the changing times, and opened new terrestrial business fields based on the shipbuilding technologies that it has developed since its foundation. With our technologies and sincerity, we will continuously create value helpful for society, and contribute to creating a prosperous future.



2002
Separated shipbuilding business

Integrated our shipbuilding business with NKK Corporation and transferred it to Universal Shipbuilding Corporation*4 in anticipation of intensifying future international competition with the rise of Korean and Chinese companies. Separated the original shipbuilding business.

2010 –
Aspired to global leadership with EFW plants

Acquired Inova³ with a good track record in building many EFW plants mainly in Europe to gain access to the global market by sharing expertise, experience, and know-how with the subsidiary.

2017 –
Tackling energy and water challenges

Started a long-term vision, Hitz 2030 Vision, to become a provider of solutions for the creation of a recycling-oriented society addressing social issues related to energy and water.

*4 Currently Japan Marine United Corporation

The Value Creation Process

Goal of long-term vision—Hitz 2030 Vision

Solution provider for creation of recycling-oriented society

Social issues

World

Worsening environmental pollution

- Increasing waste
- Water crisis
- Air pollution
- Global warming

Shortage of food, water and energy

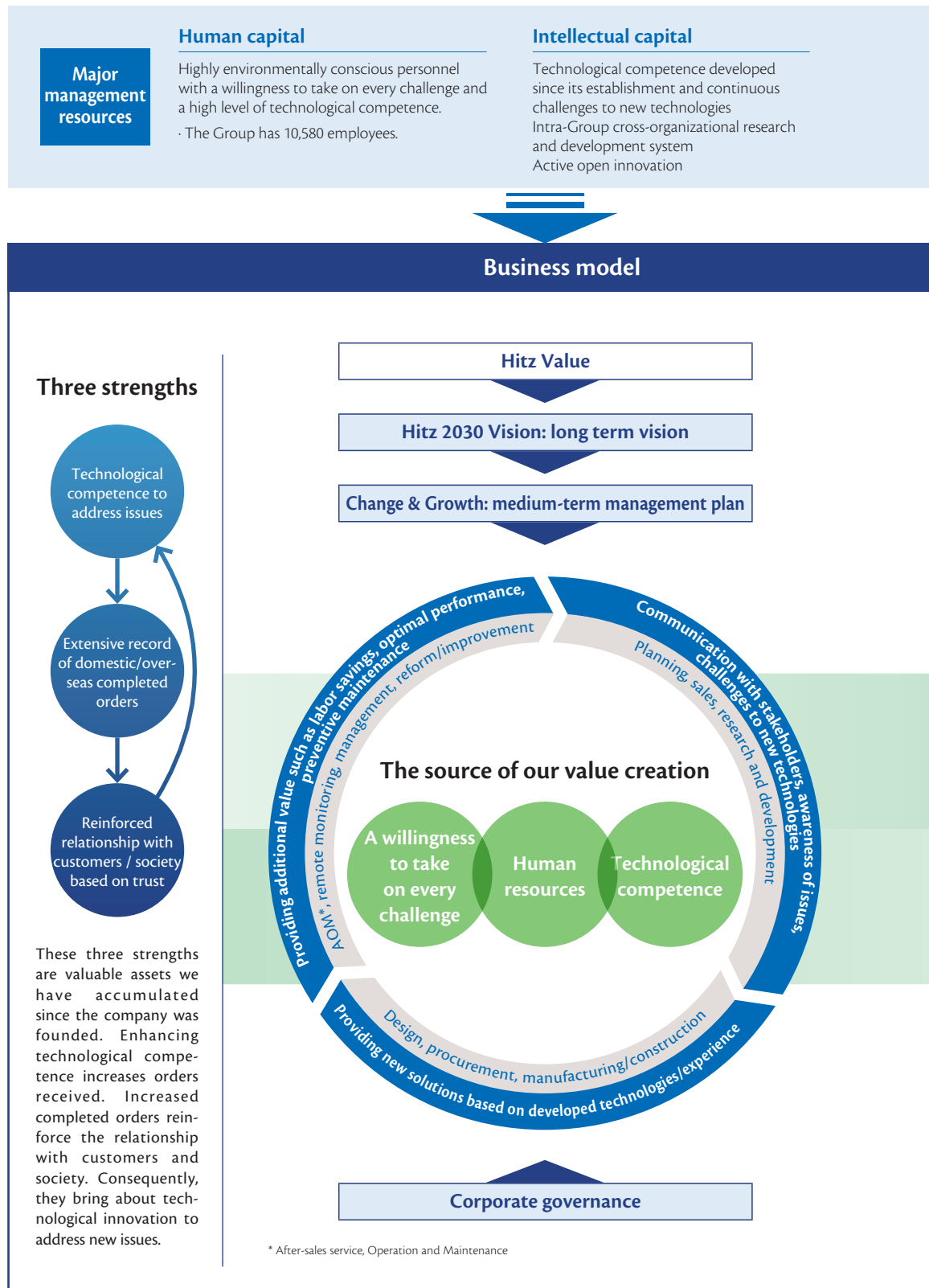
- Population growth and urbanization in emerging and developing countries
- Changing energy demand structure
- Insufficient social and industrial infrastructures

Abnormal weather, natural hazards

- Storm surges, tsunamis
- Massive earthquakes
- Typhoons, heavy rains
- Droughts, desertification

Japan

- Secure, stable supply and efficient use of energy
- Super-aging population
- Declining population, labor shortages
- Deteriorating social/ industrial infrastructures
- Preparedness for natural hazards



At the Hitachi Zosen Group, we address social issues by drawing on the sources of our value creation—willingness to take on every challenge, human resources, and technological competence—and by leveraging our management resources and our three strengths.

Social and relationship capital

Relationship of trust built on 138 years of experience (customers, business partners, communities)

Financial capital

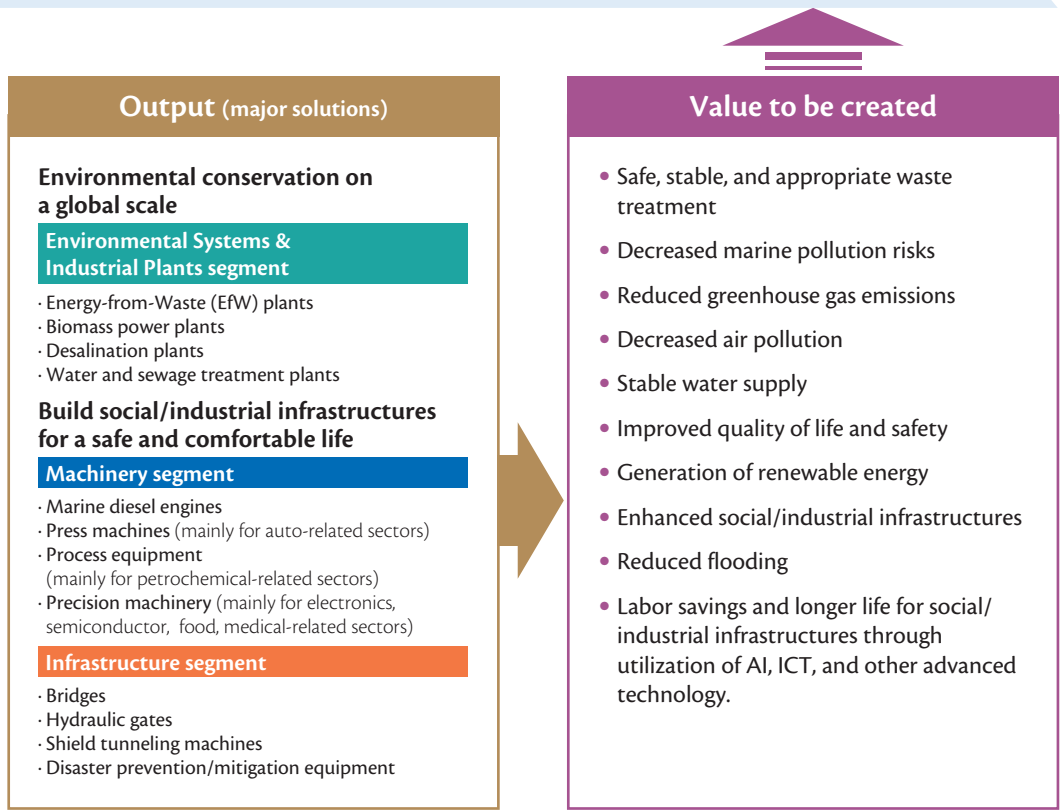
- Shareholders' equity: ¥119.5 billion
- Shareholders' equity ratio: 27.8%

Manufactured capital

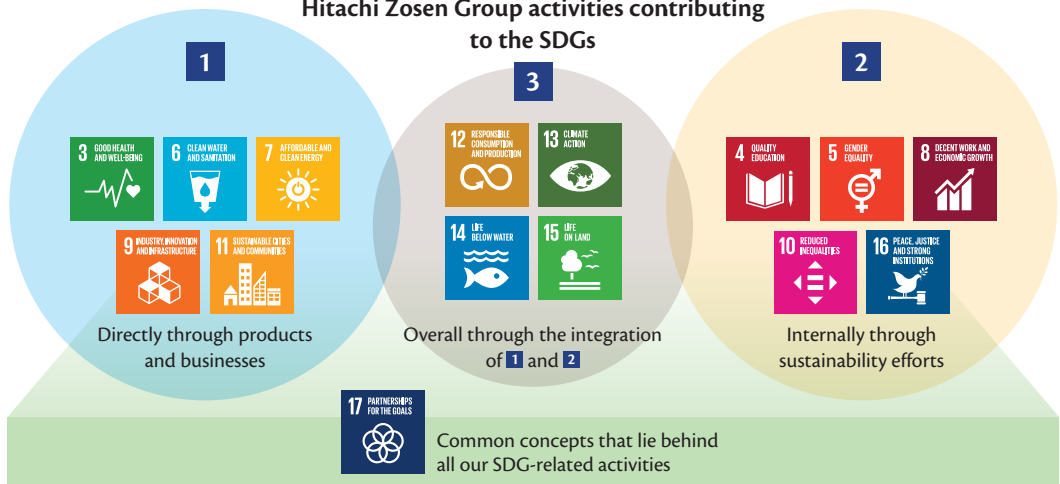
Production system focused on products individually designed and manufactured to accommodate diversified needs

Natural capital

Wind, biomass, solar power, seas, minerals, water, energy



Hitachi Zosen Group activities contributing to the SDGs



Message from the Chairman & President



Takashi Tanisho
Representative Director,
Chairman & President

Looking back on our performance in fiscal 2018, and ahead to our next medium-term management plan

The areas where the Hitachi Zosen Group's technologies help to create value are expanding, giving birth to new products and new businesses.

Evaluation of our business performance in fiscal 2018

Net sales for the 2018 business term were approximately as forecast initially, but the order intake exceeded the forecasts, and these orders are expected to contribute to earnings in fiscal 2019 and beyond. Regarding operating income and ordinary income, we revised downward our forecasts at the end of the first-half period, owing to losses recorded on construction contracts by Group member Hitachi Zosen Inova AG, and were thus unable to reach our targets. Currently, we are pursuing a reconstruction plan at Inova, the results of which are starting to become apparent at the level of business performance. We aim to post black-ink figures for fiscal 2019 and immediately subsequent business terms.

Looking at specific projects, we completed construction and handover of a desalination plant at Qatar ahead of schedule. We also completed a demonstration model of a floating offshore wind power generation system for NEDO (New Energy and Industrial Technology Development Organization), and this has drawn praise as the harbinger of a bright future. Regarding investment in equipment used in the field of ICT, the Hitz Advanced Information Technology Center (A.I/TEC) and a new enterprise resource planning (ERP) system have commenced operation. We hope to take advantage of both of these to raise productivity and also help effect work-style reform.

Meanwhile, we are still in the midst of addressing the issue of rethinking risk management and governance in relation to group companies overseas, and fiscal 2018 was a year that gave us much cause for soul-searching as regards our revenue figures.

The final year of our current medium-term management plan

Since fiscal 2017 we have been implementing our current medium-term management plan—Change & Growth. In fiscal 2018, Inova recorded a deterioration in business performance, and in the Japanese market we fell well short of our profit target, as earnings of our Machinery segment recorded a downturn. Nevertheless, we focused on three basic strategies in our medium-term plan, and there were a number of positive results.

The principal point is our first basic strategy, entitled "Restructure our business foundation and improve productivity." In our Environmental Systems & Industrial Plant segment, which forms the core of the Group's business operations, we are shifting to a model in which the focus is on continuous, post-completion businesses such as AOM (After-sales service, Operation, and Maintenance). In addition, we have been making steady progress in the field of night-soil treatment plants with our first receipt of DBO (design-build-operation) projects that are of the "public-build, private-operation" type.

We have also developed new products such as a seabed-mounted flap-gate type seawall, SCR systems for marine engines, and advanced sewage treatment equipment using a rapid filtration system. Among new businesses, we have pursued collaboration with other companies, thanks to which businesses with good future potential have emerged, such as a land-based aquaculture business developed with a marine products company, and the establishment of a jointly-owned wind-farm enterprise with a company in the energy field.

Our second basic strategy is "Maximize the Hitz Group's comprehensive strengths." Under this, business divisions of the parent company join forces with other group companies to form operational "clusters" in each field of business, to reinforce their collaboration and maximize synergy. Within each cluster, personnel would be rotated to facilitate employees' personal development, as human resources are the source of value creation. As a result, we have made a start in building an organization that will provide value to our customers through collaboration across the entire Hitachi Zosen Group.

Our third basic strategy is "Promote portfolio management." Under this, through restructuring and management of our overseas enterprises, we are working to construct a management system that enables the balanced allocation of resources. In fiscal 2018, as part of our larger process of weeding out unsuccessful businesses and concentrating resources on promising ones, we wound up some of our consolidated subsidiaries, amalgamated others, and implemented withdrawal from or sale of unprofitable businesses. This "selection and concentration" process is likely to continue, and we will press on actively with the concentration of our management resources, including offices and factories, development efforts, personnel, and funds.



A scene at the Hitachi Global Meeting

The directional focus of our next medium-term plan

Our start-of-term forecasts for fiscal 2019, which is the third and final year of our Change & Growth plan, constituted numerical revisions of our forecasts at the start of the three-year plan. On a consolidated basis, we forecast an order intake worth ¥400 billion, net sales of ¥380 billion, operating income of ¥12 billion, and ordinary income of ¥8 billion, with net income for the term of ¥5 billion. To achieve goals, we must improve the earnings of our overseas group companies by strengthening governance and management, and steadily implement restructuring measures to cut costs in underperforming businesses and raise productivity. The word “Change” in the title of our plan refers to restructuring our business foundations, while “Growth” refers to increasing revenues, and we believe that we have already made significant breakthroughs toward these goals. However, the fruits of our adoption of ICT and our development of new products will be seen during the following medium-term plan and beyond. Going forward, we will continue to invest funds and other resources in developing new products and new businesses, and in entering new markets. While so doing, we will continue aiming to realize the goals of our long-term vision, entitled “Hitachi 2030 Vision.”

Our business environment

In regions of the world where populations are forecast to continue increasing for some time to come, such as Southeast Asia, the Middle East, and Africa, urbanization and rising standards of living will lead to various social problems, including shortages of energy and water, and more serious pollution. In these areas, as well as in the provision of transportation infrastructure, demand for the Hitachi Zosen Group’s technologies is expanding. At the same time, if our business opportunities in overseas markets increase, we will need local corporate partners for collaboration in design, manufacture, construction and installation, and post-completion operation of facilities. We hope to steadily grow our operations through cooperation with such partner enterprises, and by establishing and nurturing new partners.

In Japan, we will be strengthening our operations in the fields of reinforcement of superannuated bridges and other physical infrastructure elements, as well as in equipment to prevent or mitigate the impact of flooding caused by severe rainfall or high tides.

SDGs Promotion Policy

As a contribution to the achievement of the SDGs, in 2018 we set out the Hitachi SDGs Promotion Policy. In line with our corporate mission statement—“We create value useful to society with technology and sincerity to contribute to a prosperous future”—we have hitherto contributed to the sustained development of society through our business operations. These contributions have almost all matched the SDGs. Going forward, too, we will seek to raise the awareness of all the management and employees of Hitachi Zosen Group regarding SDGs, and to continue and further strengthen business operations that help realize a sustainable society.

So that our efforts to solve social problems overseas will lead to value creation, we will not directly apply the technologies we have developed in Japan to overseas markets, but will carefully select those which meet the particular demands of each country or region. We believe that we must root our businesses deeply in the societies where we operate, to enable local production for local consumption. It will be important to work to raise awareness among local populations of sanitation issues related to everyday life, including the need for proper disposal of garbage. One example of such efforts can be seen in our environmental awareness education programs in Laos.



Repositioning existing businesses and developing new business models

Driving the progress of the EfW plant business by leveraging AI and ICT, and expanding their use each department

Recent measures

Hitachi Zosen Group has hitherto focused its business operations on the manufacture and construction of “hardware” such as EfW and other plants, as well as industrial machinery. Henceforward, however, we expect a growing need for improvements also in the “soft” elements (systems and organizations, etc.) that will enable this infrastructure to operate efficiently and safely, and for as long as possible, without excessive manpower requirements.

An excellent example of this is the use to which the staff of our Environmental & Plant division are putting artificial intelligence (AI) systems in the design of EfW plants. In 2011 we set up the Remote Monitoring and Operational Support Center to support mainly the operations of EfW plants. The center collects and analyzes data on the operation of the plants, and converts it into easily visualized formats, facilitating more efficient power generation and stable plant operation. However, the operation of an EfW plant is labor intensive, and major fluctuations can occur in the efficiency of the incineration process, depending on the season of the year, as well as on the water content of the garbage to be burned, among many other factors. The use of AI enables stable operation and reduced manpower. Additionally, in both our Machinery and Infrastructure divisions, we have begun using AI and ICT systems for remote monitoring operations, and for investigations of the composition and properties of garbage for incineration. We aim to develop still more advanced technologies for use in expanding our after-sales services and performing checking and diagnosis.

Furthermore, we hope to bring closer a truly recycling-based society through both our biogas plant business, in which energy is recovered in the form of methane produced by the fermentation of garbage, and our retail electricity business, which uses mostly renewable energy sources such as EfW and thereby helps to reduce emissions of carbon dioxide.

Our focus going forward

Going forward, we will expand our stable businesses in the field of EfW plants, and will make greater use of AI and ICT in each business division. In October 2018 we started operations at AI/TEC, which will serve as our main base for remote monitoring, IoT, and big data analysis. We have also been putting more effort into training technical staff in the field of artificial intelligence (for details, see P.55 “Intellectual Property.”) In addition, by actively leveraging such cutting-edge technologies, we aim to offer high value-added, non-hardware services in such existing product areas as water treatment, filter presses, and food defense and management recording systems for food processing plants.

Regarding the hopes we harbor for each of our business divisions, I always tell my employees that they should craft a detailed picture of what they are aiming for, so vivid that it would appear in their dreams. For example, ideas that have occurred to our staff include employing drones for maintenance checking of aging bridges and plants, and using robots to do the repair work. We have to work together with our customers to conduct trials of all such new concepts, but I hope that the staff of all our divisions hold a confident vision of the future in their hearts.

Human resources—the foundation of our growth

Encouraging the growth of the Company and its employees through a focus on the front line of work, taking on new challenges, and technological progress



A construction site overseas

Our management philosophy

The prime cornerstone of our management philosophy is a focus on the front line—the factory floor and the construction site. One can learn about all aspects of business management by observing the processes that take place on the front line. I always tell our staff—not just engineers but also our staff in sales and procurement departments—to go to the factory floor or the construction site and see things for themselves. This sort of experience is also extremely valuable when talking to customers.

The second crucial element is the concept of willingly taking on all challenges. By continually striving to develop new technologies and enter new business fields and markets, we must carry on the tradition set by our founder, exemplified by the willingness to take on all challenges. We also believe that a company should be managed by all its members, and regard it as vital for each member of management and staff to share this spirit. For these reasons, I regard our employees as the most important category of stakeholder.

The third and final major element in our philosophy is technology. Because Hitachi Zosen is a company built on a foundation of advanced technology, to be able to offer our customers truly valuable products and services, technological expertise is crucial. Technology is the source of all our business activities. This is my belief, and I acquired it by growing to maturity within this company and being educated by my many excellent senior colleagues and through my experience of our business activities.

Nurturing Management Personnel

To ensure sustained growth and enhanced corporate value over the medium-to-long term, our management staff and employees alike must also grow. We must also nurture future top management personnel—including CEOs—from among the ranks of employees who have amassed many years of career experience in our company. I position the nurturing of future top management staff as one of the Group's most vital management issues. A succession planning program is being debated and drafted by our Nomination and Remuneration Advisory Committee, and will be finalized by the end of fiscal 2019. From the perspective of corporate management and the training and nurturing of staff across the entire Group, we aim to vigorously implement a system of rotation of employees from a young age among different divisions of the Company and different companies within the Group.

Promoting Diversity Management

Hitachi Zosen Group's human resources are becoming more diverse thanks to efforts to promote the hiring of women and non-Japanese staff. We have been pursuing a diversity management program since 2015, centered on eight categories. Hitachi Zosen has been selected by the Ministry of Economy, Trade and Industry as one of the 100 top companies in Japan in terms of diversity management for fiscal 2018 (the "FY2018 New Diversity Management Selection 100"). Our current goals for female new-graduate hires are fifty percent in administrative positions and ten percent in technical

positions. Partly because there have up to now been few women among our middle management personnel, there has not yet been a single female director promoted from within the Company, but we expect one or two to emerge in the near future. A working environment that is “female-friendly” will be a workplace that male employees, too, will find attractive. Moreover, we believe that making our company a welcoming one for non-Japanese employees will also be beneficial for our Japanese employees.

To facilitate further growth of the Company, it is essential that we implement a work-style reform aimed at realizing higher productivity and a better work-life balance. Administrative operations are being reassessed from a zero-base perspective, and we began eliminating unnecessary operations from fiscal 2018. At the work-system level, we have introduced a work-from-home system and started building a network of small satellite offices. This is expected to lead to reduced work hours and an improved work-life balance.

We plan to trial a variety of different methods to effect a work-style reform that will make the Company an environment in which it is easy to work for everyone. At the same time, to make Group-member companies even better, it is important that the management and employees have the determination to push through work-style reforms on their own initiative. I constantly tell our employees that the attitude of “I don’t need to bother, somebody else will do it” is no good. In the near future, authority will be delegated to more and more young staff, and we must make sure that the Company is a place where employees can feel free to express their opinion. Right now, we are reexamining our system for encouraging staff to make proposals.

To our stakeholders

You can be confident that the Group will record steady growth over the medium-to-long term

There is no denying that Hitachi Zosen Group has been through a hard time over the past few years. Despite this, I feel that the Group is making steady progress toward becoming an even better enterprise. Our earnings are stabilizing, and we are building risk management and governance systems, as well as making effective use of AI and ICT, with the goal of restructuring our operational base. While it will take some time before we achieve further good results, we would ask you to follow our progress from a longer-term perspective. I am convinced that the expansion of our continuous, stable businesses, together with the emergence into profitability of new products and new businesses, will produce the fruits that we are all looking for.

I hope that all our stakeholders will confidently expect Hitachi Zosen Group to record steady growth over the medium-to-long term.



Takashi Tanisho
Representative Director,
Chairman & President

T. Tanisho

Putting All Our Efforts into Value Creation

We strive to create value by developing technology exploiting AI and ICT

Kazuhiro Yamamoto
General Manager, Business Planning &
Technology Development Headquarters



Hitachi Zosen Group has worked to address social issues by constantly tackling new technologies while applying and enhancing those cultivated in our shipbuilding business. Currently, we are striving to create new value exploiting AI and ICT technologies to help bring about a recycling-oriented society. We asked Hitachi Zosen Managing Director Kazuhisa Yamamoto, General Manager of the Business Planning & Technology Development Headquarters at the heart of this development, about current initiatives and prospects.

Q1. Could you tell us about Hitachi Zosen's corporate mission, including efforts to address social issues?

Under our long-term vision, our business planning and technological development are directed toward bringing about a recycling-oriented society, primarily in areas closely connected to the natural environment such as energy and water. We see this as our fundamental approach for creating value in these domains that will be distinctive to the Group.

One way we are working to make our vision happen is by expanding the value chain. Until now our mainstay activities have been manufacturing and engineering. But these are in midstream, low-margin sectors at the middle of a smile curve; so one of our business strategies is to shift focus to upstream business planning and downstream after-sales services.

In the external environment, the current level of interest in ESG (environment, social, and governance) investing and the UN's Sustainable Development Goals (SDGs) is a tailwind for us. We are developing leading-edge environmental businesses directly connected with social issues such as worsening environmental pollution and food, water, and energy shortages. Of course, in addition to our track record,

we need to highlight our initiatives intended to address emerging issues and create new business opportunities going forward.

We think our technologies will be able to play a role in helping solve problems in a growing number of areas such as climate change and plastic and microplastics pollution of the oceans. To help mitigate global warming, we supply renewable energy including biomass power and wind power, and are focusing on converting surplus power to fuel in power-to-gas applications and CO₂ recycling. We also have products to cope with abnormal weather and natural disasters; our flap-gate seawalls help protect against the impact of tsunamis and storm surges. Hitachi Zosen developed the GPS Comprehensive Oceanographic Monitoring System, which can detect tsunamis far offshore, and these are already in use. To ensure food safety and security, we are pushing ahead with further development in monitoring and management technologies as well as image-recognition technologies. And for the food industry we are developing a food defense & management recording system and a land-based aquaculture business.

Q2. Could you discuss your group's role as the R&D division and future challenges?

As the R&D hub for the Company, we coordinate development activities across and among the Groups businesses. In this function, we provide them with backup in after-sales services and in their

work to grow their stable businesses, and we help them with the transition when they reposition themselves. AI and ICT are the key elements of this cross-divisional coordination role, and we collaborate

closely with the Information and Communication Technology Promotion Headquarters and individual divisions' Business & Product Development Centers. Going forward, this work will be increasingly important to upgrading existing technologies and repositioning existing businesses.

For example, in the EfW plant business, we have made great strides in collaboration between the Business Planning & Technology Development Headquarters and the Environmental Business Headquarters. The operation of EfW plants is increasingly moving from the public to the private sector. Furthermore, concessions are likely to extend to water and sewage businesses in the future, so the Hitachi Zosen Group is proactively marketing these services. We have high hopes for the potential of the Hitz Advanced Information Technology Center (A.I./TEC)—the hub for such activities—to create new value exploiting AI and ICT (see pages 16 and 17 for details). In terms of shifting the business position, we are jointly developing a large-scale land-based aquaculture system for culturing chub mackerel with a marine products company. It uses our circulating water treatment system

technology. Artificial control of water temperature and quality enables the maintenance of an optimum environment for fish development, and trials are currently underway. The idea is to use such collaborations with outside parties to create new business models.

One challenge we face is stepping up the pace of new product and service development. We have developed original products including the flap-gate seawall and GPS Comprehensive Oceanographic Monitoring System, but these have not yet developed into new core earnings sources. Traditionally, our development tended to be overly seeds-based—i.e., have a technology-driven bias with little attention to customer needs.

We need to shift to a needs-based, market-in approach—driven by what the market is looking for. We have to develop a business model based on this kind of mindset. Our perspective needs to take into account the kind of value we are going to offer and who the customer is. Business planning and technological development collaborations with external partners will help us better understand such needs.

Q3. Could you tell us about progress in new products and services and business planning?

While we face some challenges in new development, we are seeing solid results in specific products and areas. All-solid-state lithium-ion batteries are very safe because the electrolyte is solid. Our current focus is mainly on developing specialty applications that exploit these batteries' broad operating range, from low to high temperatures. We have already shipped samples for use in satellites.

We are also making progress in functional materials. Eucommia elastomer, a new material, has some commercial applications, and we have started selling the product for use in golf balls. We are targeting

eco-friendly sectors in particular because the raw material, eucommia, is not petroleum based and is a nonedible plant. Carbon nanotubes are extremely tiny, at the nanometer (one billionth of a meter) level, and have many possible applications as nanotechnology materials. Their use in heaters is one promising potential application. Zeolite membranes can separate and cleanse target components from a variety of mixed fluids (liquid and gas) and reduce energy waste. We are working to use them to separate CO₂ from biogas and produce high-purity methane in commercial gas separation applications.

Q4. How about the future of the R&D units around the Group—the ideal configuration and direction of development themes?

Our role is as the central R&D organization, and we will continue to support the efforts of individual business divisions to develop and improve their products. We would like to clarify our respective roles, and are considering giving each individual business headquarters responsibility for its own development activities while we enhance our basic technologies. Similarly, we will work together with the ICT Promotion Headquarters to develop AI and ICT products.

We will encourage open innovation to facilitate the shift to a needs-based, market-in approach in business planning and are already interacting with a number of potential outside partners. If we can match existing technologies of these companies and those of our

Group, we will pursue joint development, using external funds and facilities. This has the added benefit of turning our gaze outward. On the research front, in collaboration with universities we have established a joint lab that is working on new technologies.

Turning to research themes, under our long-term vision, the keys are how we will uncover needs in business planning at the upstream end of the smile curve—including through collaborations with external parties—and on the downstream side, how to grow after-sales services. We realize that future growth will depend on how we make the best use of AI and ICT, so we will work to create new value by continuing to bring new products and services.

Expectations for A.I/TEC, the hub for AI and ICT

Kazuhiya Yamamoto
General Manager, Business Planning & Technology Development Headquarters

Munenobu Hashizume
General Manager of Information and Communication Technology Promotion Headquarters, and General Manager of Advanced Information Technology Center



The Hitz Advanced Information Technology Center (A.I/TEC) is our base for remote monitoring and operations support and leveraging information and communications technologies (ICT) such as the internet of things (IoT), big data, and artificial intelligence (AI). The center came online in October 2018. Two executives, Kazuhisa Yamamoto and Munenobu Hashizume, discuss the center’s role in Hitachi Zosen Group and its potential. Yamamoto is Managing Director and General Manager, Business Planning & Technology Department Headquarters, and Hashizume serves as General Manager, Information and Communication Technology Promotion Headquarters. Following a career at NTT Data, corporate systems development specialist Hashizume was appointed head of A.I/TEC.

A.I/TEC’s role at the heart of the EfW plant business

Yamamoto: Our energy from waste (EfW) plant construction and operations business is a prime example of a business whose positioning is undergoing a shift. Until now, we have mainly been involved in contracts spanning the engineering, procurement, and construction (EPC), operations management, and after-sales services stages. We have transformed and extended our activities to include design-build-operate (DBO) arrangements (publicly built and privately operated under contract) as a long-term operating business. Concessions are moving progressively from the public sector to private sector. In the future when we own facilities as assets and enter the waste treatment business, operations will need to be more efficient and automated. We hope that the center will not just provide remote monitoring and operations support, but also make the best use of accumulated data to develop increasingly sophisticated operations with a view to full automation.

Hashizume: We are already taking the first steps toward full automation. Just one example is a joint research lab we have set up with the Clean Authority of Tokyo in a co-creation area at the center. This is researching ways to stably improve combustion efficiency by collecting data on how waste is input and mixed inside EfW facilities. We are also working with external partners to apply AI and other technologies to upgrade remote monitoring and operations support. Hitachi Zosen Group is better placed to grow this new business domain when we collaborate with partners.

Yamamoto: The open innovation approach—working with our customers, business partners, and universities to pioneer new areas—is becoming increasingly important. However, to this end we must first establish our own Group’s ICT infrastructure platform. Currently we use remote monitoring mainly for EfW plants but would like to extend its application to a variety of businesses and products. First we have to overcome the hurdle of efficient data collection.

Hashizume: That’s right. In the past each business collected its own data, but this is inefficient; so the center is in the process of developing

The status of automation

Automation level	Automation content	Practical use
Levels 1 and 2	Support for operator	Completed
Level 3	All operations are automated during normal operation. When there are fluctuations in waste conditions, operation relies on the operator’s skills.	Completed
Level 4	Automatic response even in case of fluctuations in waste conditions.	Under development
Level 5	All operations automated.	Future

Development framework





AI/TEC



Seminar space



Open innovation area

shared infrastructure. It is essential for us to centralize data collection on the many products our Group offers and facilities we operate with an information system that adds value by drawing on and collating the full variety of data they generate, including weather and location.

Yamamoto: In wind power for example, profitability depends on an accurate assessment of wind conditions. Accumulating data is critical for further development, and future winners will surely be those with the data. Expanding the center's coverage and making best use of the massive volumes of accumulated data will be a major challenge for the Group going forward. At the same time we have high hopes for the possibilities of this strategy.

Hashizume: That said, network connections increase risk and require sophisticated security. The center's network is separate from that of our head office. Making it discrete ensures a higher level of security. And to be absolutely sure, we have contracted with a third party to monitor the network. We are able to actually connect with our customers because we have a safe and secure network.

Leveraging AI to achieve full automation

Yamamoto: A critical issue in exploiting AI effectively is how to capture high-quality data. For example, at EFW facilities, combustion parameters differ when the composition of the waste being burned changes. Human brainpower alone is not sufficient to come up with the algorithms necessary for fully automated operation. We think that AI with access to a wide variety of data could create control methods that we cannot even imagine—perhaps enabling even fully automated operation. Our Group operates more facilities in Japan than anyone else and we already have a huge database.

Hashizume: We need to collect massive volumes of data from our customers, too. To do so, we have to persuade them of the benefits of letting us provide them value-added via operations support and after-sales service. We also aim to expand our network with customers and collect even more information to develop better automatic operations.

Yamamoto: There are different levels of automation. Our ultimate aim is full automation. In public sector businesses, this is not easy in terms of employment, but we think that automation would generate large profits.

Hashizume: We have reached the stage where all basic operations are automated, and an operator needs to intervene only when combustion becomes unstable. The next goal is to expand the scope of automatic operations to enable stable combustion and power generation regardless of the operator's proficiency.

Horizontal extension overseas and across Group in our sights

Hashizume: Currently, the center operates only in Japan, but we have our eye on building a network overseas, primarily in Asia. An issue for remote monitoring is how to extend it to applications beyond EFW plants. We want to share our expertise with Hitachi Zosen Group companies.

Yamamoto: In our overseas EFW plant business, we are often in charge from the initial startup stage through to operations. Because experienced operators are rare overseas, operational support using our networks and expertise is one of our key strengths. We think there are tremendous opportunities outside Japan.

Hashizume: I agree. In the future, technological advances will widen the possibilities for remote monitoring. We will be able to collect even more data and compare the performance of Japanese facilities and those overseas. Waste comes in all shapes and sizes, and we should be able to leverage expertise gained from adding and analyzing data from overseas facilities as well.

Yamamoto: Horizontal extensions to other businesses should enable the creation of more sophisticated technologies and networks and broaden the potential to develop new products and services. This would entail enhanced collaboration with three divisions, the Intelligent Machinery Research Center (see page 55 commentary on intellectual property for details), the Information and Communication Technology Promotion Headquarters, and the Electronic Control Business Unit in the Machinery Business Headquarters. That said, it is still necessary to uncover customer needs from among existing businesses and products and to add value.

Hashizume: This highlights the need for open innovation. Our center serves as an innovation hub and is making advances in design concepts by collecting and discussing wisdom from all over. AI/TEC is a gathering place for IT companies who can reap the advantages of collaboration. It has already been able to apply remote monitoring to products for wind power businesses and food defense & management recording systems. We are rolling out this expertise to other fields and are starting to see results in a number of products.

Yamamoto: The center is gathering and storing data using our AI-based image recognition technology, drone controls, and GPS technology. We use data analysis and visualization to create new products and services. At the moment the EFW facilities are at the forefront, but we are confident that development will be progressively applied to other businesses and products.

Long-Term Vision Hitz 2030 Vision

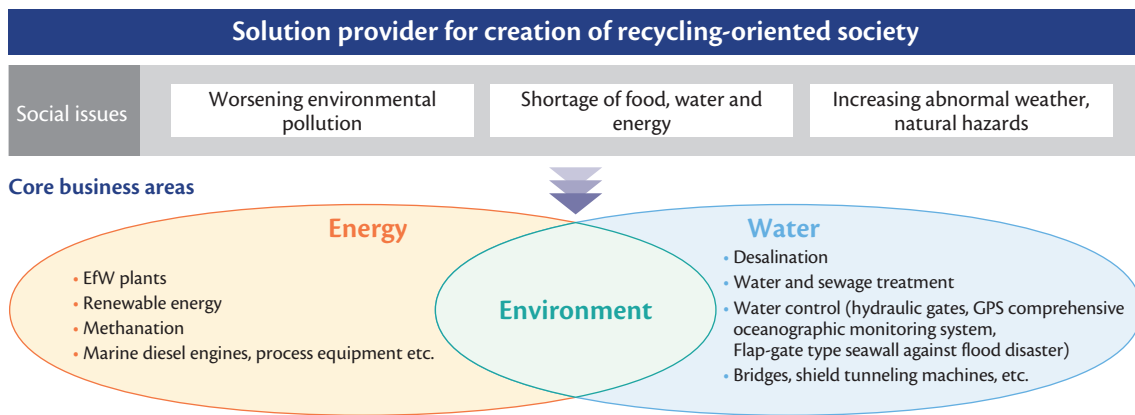
In 2017 the Hitachi Zosen Group established the Hitz 2030 Vision as its long-term vision for its future image in the year 2030. The Vision outlines a path toward the future in our business and sets specific goals for expanding our operations and enhancing profitability. Efforts to achieve these goals have already begun. We should anticipate major changes in our business environment before 2030 and may

need to review our goals, strategies, etc. at certain intervals. Our aim is to become a profitable and sound company with public recognition, in addition to pursuing greater business scope. We will seek to share our image of the future through our long-term vision and improve communication with our stakeholders.

Goals and core business areas

The Hitachi Zosen Group aims to become a provider of solutions for the creation of a recycling-oriented society by the year 2030. Certain global social issues, environmental pollution, shortages of food, water, and energy, and abnormal weather and natural hazards are anticipated to become increasingly worse, and will strongly require the creation

of a recycling-oriented society in the future. In this context, we set energy and water as our core business areas in the environmental field, and will work on enhancing profitability and expanding businesses by leveraging our developed technological competence, record of order deliveries, and relationship with customers and society.

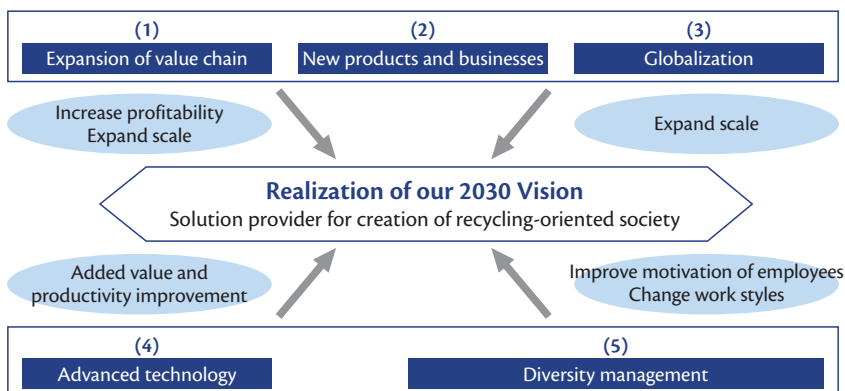


Efforts to realize the vision and numerical targets

The following five measures numbered (1) to (5) are being implemented to achieve our vision. We will strive to expand business areas through the expansion of our value chain and the development of new products and businesses by focusing on energy and water in the environmental field. We will work on enhancing the sophistication of existing businesses by using advanced technology, offering new additional value, and increasing product efficiency.

Regarding our numerical targets, we plan to pursue a greater business scope after first establishing strong earnings and financial foundations by increasing the profitability of each business to generate an appropriate level of profits. Under these assumptions, our targets for sales and operating income margin are ¥1 trillion and 10% or more, respectively. Of this net sales target of ¥1 trillion, we expect to generate 60 to 70% by growing existing business and 30 to 40% from new business and M&A. We will seek to achieve an overseas sales ratio of 50% or more by promoting globalization.

To realize our 2030 Vision



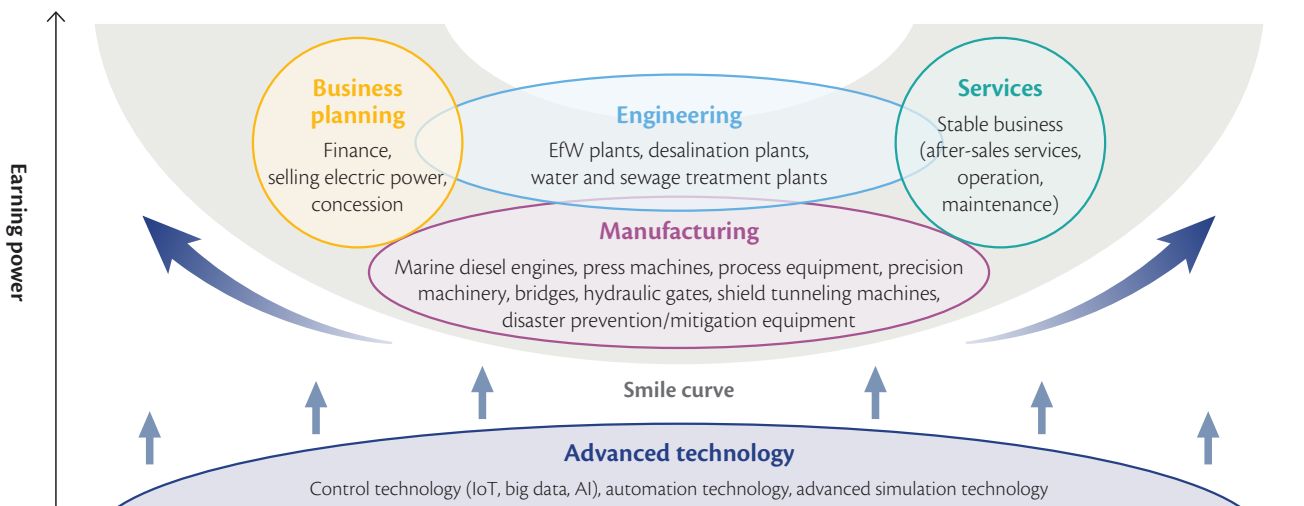
Numerical targets for FY2030

Net sales	¥1 trillion
Operating income margin	10% or more
Overseas sales ratio	50% or more
Shareholders' equity ratio	40% or more

Expansion of the Value Chain

In the Group, we will expand the value chain to enhance our profitability. Our current main businesses—engineering and manufacturing—are positioned in midstream, positioned as low-profit businesses, in the smiling curve. In the future, we will seek to expand our value chain upstream toward business planning and downstream toward

services—which are positioned as profitable businesses—as well as to raise the level of profitability of the entire Group by utilizing advanced technologies including big data and AI, on which the Group has proactively worked.



Market launch of new products, and creation of new businesses

New product launches and new business creation are divided into three categories: energy business, water business, and new business. R&D efforts are being conducted mainly for the products and businesses indicated below. In fiscal 2018 we embarked on the manufacture of floating structures, specifically, barge-type floating structures for offshore wind power generations systems to be operated by

NEDO. Trial operations were commenced from the spring of 2019 off the coast of Kitakyushu. Steady progress is also being seen in development of methanation technology. As for our approach to securing funding sources, improvement in operating cash flows will be given top priority, but external financing will be carried out as well.



Left: barge-type floating body of an offshore windfarm system (June 2018, Sakai Works)

Right: demonstrator of an offshore windfarm system with a barge-type floating body (August 2018, Kitakyushu, Fukuoka Prefecture)



Methanation test facility

Medium-Term Management Plan Change & Growth

Positioning of medium-term management plan

Change & Growth, a three-year medium-term plan starting from fiscal 2017, is positioned as the first step toward the realization of the long-term Hitz 2030 Vision. Measures are formulated by first setting goals for 2030 and then going back in time. This period will be our three years of laying a foundation for the future toward the year 2030,

restructuring the business foundation and improving productivity, maximizing Group comprehensive strengths through the reinforcement of the consolidated management system, and promoting portfolio management.



Outline of the medium-term management plan

The “growth” part of Change & Growth signifies the Group’s determination to restructure and enhance the productivity of its business foundation by executing various strategies and initiatives, including focusing resources on carefully selected businesses, developing a global platform, and maximizing the Group’s comprehensive strengths, in tandem with steadily improving profitability and expanding the scale of business over the three-year period from fiscal 2017. This will mark the beginning of the Group’s efforts to become a highly profitable company with public recognition by fiscal 2030.

“Change” embodies our strong aspiration to change our corporate

culture in order to achieve growth. Changing our corporate culture is vital to ensuring that we continue to ambitiously expand our reach to new products and markets by honing our unique technological competence to meet customer needs.

In terms of management initiatives, in light of our reflections on our previous medium-term management plan, Hitz Vision II, we will focus on three basic strategies: (1) Restructure the business foundation and improve productivity, (2) Maximize Group comprehensive strengths, and (3) Promote portfolio management.

Basic strategies

Basic strategies (1)	Restructure business foundation and improve productivity	<ol style="list-style-type: none"> 1 Business area expansion 2 Use ICT 3 Reinforce the structure of risk management 4 Take specific measures to increase profitability 5 Strengthen financial condition and increase investment capacity for growth
Basic strategies (2)	Maximize Hitz Group comprehensive strengths	<ol style="list-style-type: none"> 1 Form business clusters and maximize synergy 2 Promote consolidated basis profit monitoring 3 HRD by job rotation
Basic strategies (3)	Promote portfolio management	<ol style="list-style-type: none"> 1 Clarify position of each business by portfolio 2 Priority given to growing business and new business in resource allocation 3 Consider possibilities of revitalizing low-profit products

Numerical targets

Our numerical targets for fiscal 2019, which is the last year of the medium-term management plan, included an order intake of ¥460.0 billion, net sales of ¥430.0 billion, operating income of ¥20.5 billion, ordinary income of ¥18.0 billion and net income of ¥10.0 billion. However, our fiscal 2019 business performance forecasts, issued in May 2019, showed a major shortfall. This is due to a deterioration in the earnings of Inova and of our manufacturing businesses. In order to reach our targets for fiscal 2019, Inova has been pursuing a revival plan, and the effects of this are now emerging. With regard to our manufacturing businesses, we are pursuing a restructuring process aimed at revitalizing low-profit products.

(¥ billion)	FY2017 Plan	FY2017 Result	FY2018 Plan	FY2018 Result	FY2019 Initial plan	FY2019 Forecast*
Order intake	400.0	400.4	430.0	455.0	460.0	400.0
Net sales	360.0	376.4	400.0	378.1	430.0	380.0
Operating income	12.5	5.9	16.5	7.3	20.5	12.0
Operating income margin	3.5	1.6	4.1	1.9	4.8	3.2

* Released in May 2019

Progress in the medium-term management plan

In the first year, we attained some progress in restructuring our business foundation and improving productivity, as shown in the table below, but found some issues in terms of governance over Inova. Countermeasures were taken, including a review of the system. In maximizing Hitz Group's comprehensive strengths, we formed 11 "clusters" comprising different business areas, and are working to evolve from displaying synergy between existing businesses to the creation of new businesses. In promoting portfolio management,

focusing management resources on growing areas is underway as we pursue new business investments, capital investments, M&A, etc. by establishing criteria for investment decisions that take the cost of financing and returns from investment into account. At the same time, within our manufacturing business, we are proceeding with structural reforms by drawing up proposals for the revitalization of low-profit products.

Basic strategy (1) Restructure business foundation and improve productivity

1 Business area expansion

In the engineering and manufacturing businesses, we have been pursuing measures to expand our value chain to include the service business and business investment, such as upstream business planning and downstream remote monitoring, operational assistance, and preventive maintenance of machinery and equipment, in addition to the usual design, manufacturing, and construction.

More P. 28 Segment Overview

2 Use ICT

Using ICT is indispensable to improving productivity in work where actual manufacturing is carried out. The entire Group, including individual manufacturing plants and research institutes, will seek to improve productivity by working on remote monitoring of production equipment, the introduction of a production management system, and a shift into smart factories. In October 2018 we commenced operations at the Hitz Advanced Information Technology Center (AI/TEC) which will function as a base for the utilization of remote monitoring, IoT operations, big data, and artificial intelligence (AI).

cf. P. 14 Putting All Our Efforts into Value Creation

3 Reinforce the structure of risk management

In Change & Growth, our focus is to reinforce the structure of risk

management in overseas businesses. To accomplish this, Group-wide efforts have been made: dispatching executive officers to overseas affiliates; identifying risks by the Risk Examination Committee before accepting project orders to take action against, and have top management deliberate the identified risks; and establishing a follow-up framework after accepting orders.

cf. P. 46 Risk Management

4 Take specific measures to increase profitability

We have been working on increasing profitability through advantageous actions (e.g., developing technological advantage, enhanced solutions, new products, standardization, cost reduction) by analyzing the external environment and strengthening internal resources in each product.

5 Strengthen financial condition and increase investment capacity for growth

We have worked to enhance our financial strength, expand investment capacity for growth, and reinforce tolerance for risks. We are taking measures to speed up the sales recovery cycle, while keeping a close eye on the balance sheet.

Basic strategy (2) Maximize Hitz Group comprehensive strengths

Hitachi Zosen and other members of its group divide up the total scope of business fields according to their respective strengths, thereby achieving optimization of efforts.

For example, with regard to our EfW business cluster and our water treatment business cluster, we divide up large-scale and small-scale EPC work, after-sales services, and operation & management businesses between the Company and the various Group companies. We are currently also setting up similar systems for other business clusters, and are

designing systems to facilitate the rotation of human resources within each cluster.

We look forward to further synergistic effects resulting from collaboration between the AI/TEC and our business clusters.

In the financial field, to improve our revenue management on the consolidated accounts level, we plan to centrally manage fund raising within the Group through the adoption of a cash management system.

Basic strategy (3) Promote portfolio management

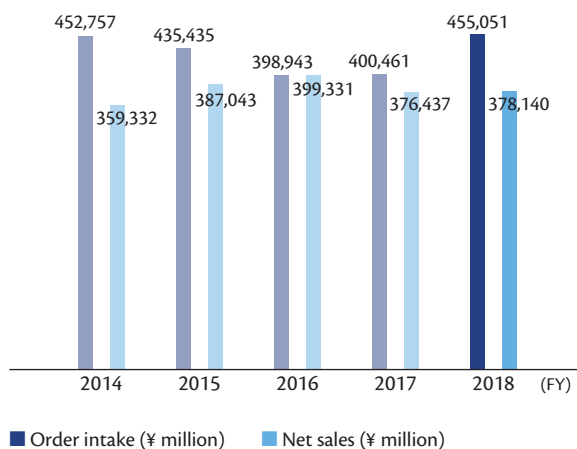
In the field of portfolio management, we divide the Group's businesses into four stages according to earnings and growth potential, and depending on the positioning of each business, we divide them once again into two categories—businesses into which we plan to allocate management resources aggressively, and those where we plan to undertake structural reform aimed at realizing an earnings recovery. While investing in those businesses that we feel have growth potential, we will consider further measures with respect to those operations that are not part of our core group of businesses or which have remained stagnant after the elapse of a predetermined span of time. In the overseas operations of our Machinery

segment in fiscal 2018 we withdrew from one business and sold another. In Japan, we have been undertaking structural reform in five business units, focusing on manufacturing businesses, and the positive effects of this have recently begun to emerge.

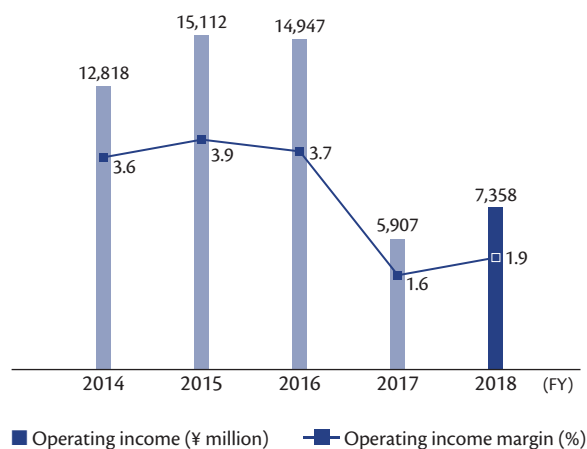
Additionally, similarly to our stance on portfolio management, we are also reorganizing our overseas bases and rethinking their functions. We are reexamining our various overseas bases with respect to location as well as scale and/or function, so as to meet our current business development needs. We are also pressing ahead with the relocation, closure, or merger of operational bases in the United States, the United Kingdom, and South Korea.

Financial and Non-Financial Highlights

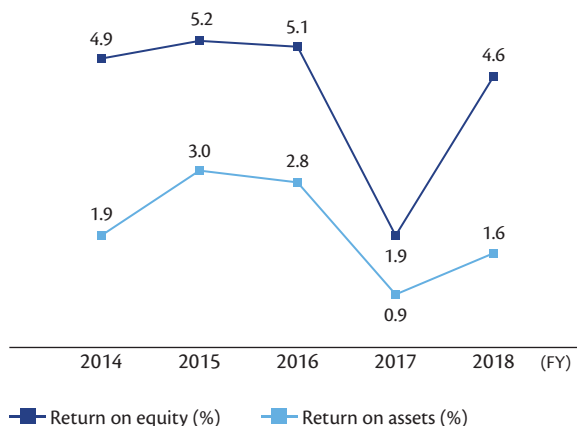
Order intake and net sales



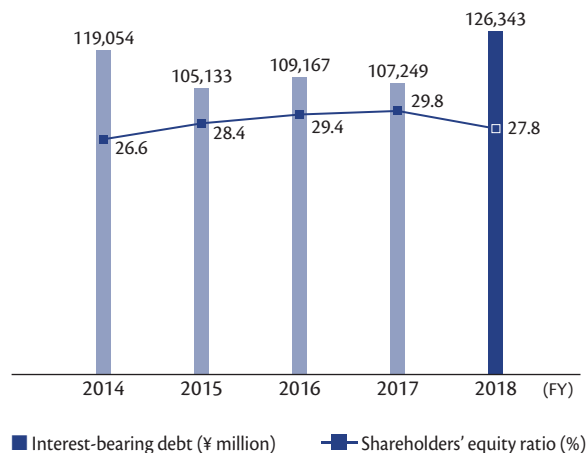
Operate income and operating income margin



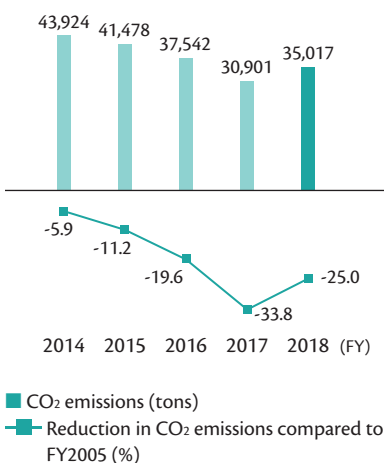
Return on equity and return on assets



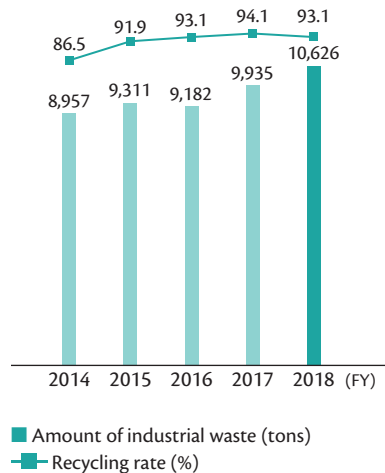
Interest-bearing debt and shareholders' equity ratio



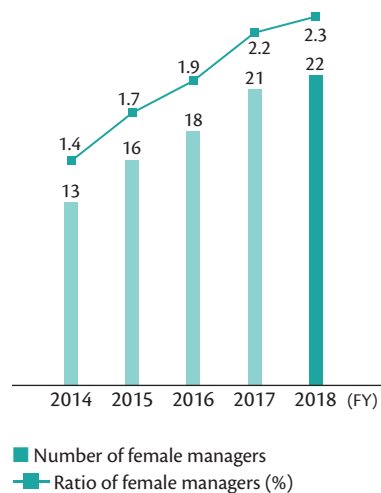
CO₂ emissions*¹ and reduction in CO₂ emissions compared to FY2005*^{1, 2}



Amount of industrial waste*³ and recycling rate*³



Number and ratio of female managers*⁴



(Fiscal Year)

Financial highlights (¥ million)	2014	2015	2016	2017	2018
Operating results					
Order intake	452,757	435,435	398,943	400,461	455,051
Net sales	359,332	387,043	399,331	376,437	378,140
Overseas sales ratio (%)	34.0	33.3	32.8	27.2	25.5
Operating income	12,818	15,112	14,947	5,907	7,358
Operating income margin (%)	3.6	3.9	3.7	1.6	1.9
Ordinary income	7,568	12,272	11,225	3,365	6,720
Profit attributable to shareholders of Hitachi Zosen	5,100	5,848	5,864	2,171	5,445
Research and development expenses	6,181	6,526	7,089	7,411	7,162
Cash flows					
Cash flows from operating activities	9,085	8,147	17,304	-3,373	-5,428
Cash flows from investing activities	-14,680	-3,666	-6,998	-10,725	-7,574
Cash flows from financing activities	12,178	-15,948	-8,417	-4,018	14,982
Cash and cash equivalents at end of year	60,769	49,671	50,848	32,743	34,394
Financial position					
Total assets	408,803	401,648	393,587	391,860	429,040
Net assets	117,530	120,666	117,810	119,014	120,410
Interest-bearing debt	119,054	105,133	109,167	107,249	126,343
Per share data					
Net income (yen)	30.52	34.96	34.79	12.88	32.31
Net assets (yen)	651.24	677.24	685.83	693.53	708.89
Cash dividends (yen)	10.00	12.00	12.00	12.00	12.00
Dividend payout ratio (%)	32.8	34.3	34.5	93.2	37.1
Financial indicators					
Return on equity (%)	4.9	5.2	5.1	1.9	4.6
Return on assets (Ordinary income/Average total assets) (%)	1.9	3.0	2.8	0.9	1.6
Shareholders' equity ratio (%)	26.6	28.4	29.4	29.8	27.8
Debt-equity ratio (times)	1.1	0.9	0.9	0.9	1.1

(Fiscal Year)

Non-financial highlights	2014	2015	2016	2017	2018
CO ₂ emissions* ¹ (tons)	43,924	41,478	37,542	30,901	35,017
Reduction in CO ₂ emissions compared to FY2005* ^{1,2} (%)	-5.9	-11.2	-19.6	-33.8	-25.0
Amount of industrial waste reduced*³					
Waste volume (tons)	8,957	9,311	9,182	9,935	10,626
Recycling rate (%)	86.5	91.9	93.1	94.1	93.1
Number of companies (Consolidated subsidiaries and affiliated companies accounted for by the equity method)					
	101	105	122	128	133
Number of employees					
	9,581	9,825	10,131	10,377	10,580
Ratio of female employees* ⁴ (%)	7.3	7.4	7.8	7.8	7.9
Ratio of female managers* ⁴ (%)	1.4	1.7	1.9	2.2	2.3
Frequency rate of accidents causing absence from work* ⁵ (%)	1.25	0.40	0.23	0.92	0.68

*1 Hitachi Zosen non-consolidated (mandated reporting items under the Act on the Rational Use of Energy)

*2 Calculated using standards for fiscal year ended March 31, 2017

*3 Eight plants in Japan, Head Office, and Group companies that engage in business activities in conformity with the principles of consolidated financial statements

*4 Hitachi Zosen non-consolidated

*5 (Number of fatalities and injuries due to industrial accidents requiring 1 day or more absence from work+cumulative hours worked) x 1,000,000

Message from the Executive Financial Officer



Using shareholders' and investors' valued insights to accelerate pace of reform

Tatsuji Kamaya

Managing Director

General Manager of Corporate Planning Headquarters

Evaluating fiscal 2018

Progress was solid in fiscal 2018, the second year of our Change & Growth medium-term management plan, with order intake at its highest in recent years and net sales in line with our initial forecasts. Regarding to profits, although there was a downturn in Machinery segment profitability, margins on building Energy-from-Waste (EfW) plants in Japan in the Environmental Systems & Industrial Plants segment improved, and earnings at overseas subsidiaries turned up, resulting in a year-on-year growth for both. However operating profit fell short of our targets, so we are still not satisfied.

Inova previously had a significant negative impact on the Group's results. We have dispatched Hitachi Zosen staff to Inova to rectify shortcomings in governance, one of the root causes of the problems there. Our staff on the ground have gotten involved in and are operational business processes, and earnings are starting to turn around as a result. We have deepened our communication with Inova and team power is improving.

Moves to strengthen financial position

We think that answering the question "How can we increase value-added?" helps boost Hitachi Zosen Group's earning capacity. The critical elements in creating value-added are initiatives in new technologies, products, and services that set us apart from our competitors. We strive to boost our earning capacity by creating new products and services that employ AI and ICT technology.

At the same time, we are focused on the balance sheet and cash flow. We are taking steps to speed up the cycle of

returns from sales on large overseas projects in particular. In our next medium-term plan, we plan to develop follow-up arrangements including the setting of companywide performance benchmarks (details follow). We will continue to work to improve profitability and strengthen our financial position to have sufficient funds to invest for the future. On the fundraising front, conditions are amenable to use project finance in areas of the renewable energy business such as large-scale onshore/offshore wind power generation projects in Japan. We would thus like to take advantage of project finance opportunities along with traditional corporate finance. In September 2018 we were Japan's first manufacturer to raise funds through the issuance of Green Bonds. (For details please refer to commentary on environmental initiatives on page 52.)

These actions underpin our current rating of BBB+ from Japan Credit Rating Agency (JCR). We will continue to work to boost profitability and bolster our financial position to receive a higher rating.

Progress on portfolio management

One of the key strategies in the current medium-term plan is portfolio management. We assign each business into one of four categories according to profitability and growth prospects. Based on their respective positions, we classify them as needing either aggressive deployment of business resources or structural reform to improve profitability (please refer to table below).

Position	Fiscal 2018 Actions
a. Growth, b. Core	A.I/TEC completed, biogas plant business launched, investment in Osmoflo
c. Low profitability, d. Take quick action	Structural reform in Machinery segment

With an eye on the future, Hitachi Zosen Group will make selective investments in areas with prospects for earnings growth. We think a particularly notable achievement in fiscal 2018 was the completion of the Hitz Advanced Information Technology Center (A.I/TEC), and start of operations. We continue to invest proactively in renewable energy businesses. The Company launched operations at our own biogas plant businesses in California and Sweden, areas with a keen interest in renewable energy. We also made Osmoflo, an Australian desalination plant business operator, a wholly owned subsidiary following our initial acquisition in fiscal 2017. We think Osmoflo will become a key player in water, one of our Group's core operational areas.



Discussion meeting with Osmoflo staff

On the other hand, in the overseas operations of the Machinery segment, which has been in an extended slump, in fiscal 2018 we decided to exit an electrolyzer subsidiary in the Middle East, and to divest our stake in a process equipment joint venture in China. In domestic operations, we are restructuring five divisions and results are starting to flow through.

We are also restructuring and reviewing our overseas bases and are looking for the right locations and formats to suit current conditions. As an initial step, we are relocating and consolidating operations in the US, the UK, and South Korea.

Shareholder returns and dialog with shareholders and investors

Based on fiscal 2018 results, we decided to pay a dividend of ¥12 per share (unchanged from the previous fiscal year). We will keep striving to boost earning capacity so we can increase returns to our shareholders. Our Company has a long-standing practice of running investor relations (IR) activities including financial results briefings and conference calls for institutional investors. We also started wide-ranging shareholder relations (SR) activities for our existing shareholders in previous fiscal year aimed at deepening their understanding of how the Company is run. We will continue our two-pronged approach of dialog with the investment community via IR and SR activities. Hitachi Zosen regularly visits overseas institutional investors in North America and Europe, and we plan to extend these visits to investors in Asia as well, where there is considerable interest in Japanese stocks.

We will continue providing opportunities for dialog with individual investors to deepen understanding of our Group through plant tours and other events.

Our shareholders and investors tell us we need to make quicker, bolder decisions in managing our business portfolio. We will be delighted to keep talking with them going forward and use their valuable insights to accelerate the pace of reform.

■ Activities (FY2018)

Briefing of financial results (at conference venues)	Twice (November and May)
Briefing of financial results (via conference calls)	Twice (August and March)
Individual meetings with analysts/ institutional investors	As necessary/74 meetings
Visit to overseas institutional investors	North America: 10 visits, Europe: 10 visits
Shareholder relations (SR) activities	14 events
Plant tour for shareholders	1 time (October, Ariake Works)/98 participants



Briefing of financial results



Shareholders touring the Ariake Works



Final year of medium-term plan

Fiscal 2019 marks the last year of our current medium-term plan. In the past two years, there have been major problems with the management of overseas projects and governance of overseas group companies. We thus think that our most pressing task is to instill Hitachi Zosen's cost management and risk management philosophy and techniques in our group companies overseas.

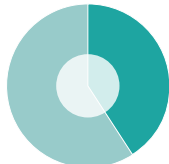
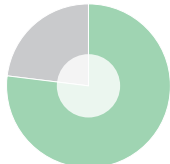

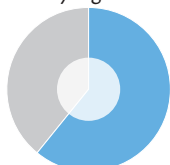
We are considering adopting a comprehensive progress management framework for business strategies in the next medium-term plan, which is currently being drafted. This would incorporate goal management methodologies—evaluation benchmarks such as key goal indicators (KGIs) and key performance indicators (KPIs). We are developing arrangements that enable speedier decision-making while maintaining a plan-do-check-act (PDCA) cycle. At the same time we will continue to actively manage our business portfolio to address the Company's challenges—improving profitability and bolstering our financial position. As with the current medium-term plan, members of each division will participate in creating the next one, from the drafting stage onward. Through such means as discussion forums, all employees will help management set targets. This should foster a mindset conducive to achieving our goals. We think that this will give birth to a process whereby each division improves by checking its own performance under the above-mentioned goal management methodologies.

Segment Overview

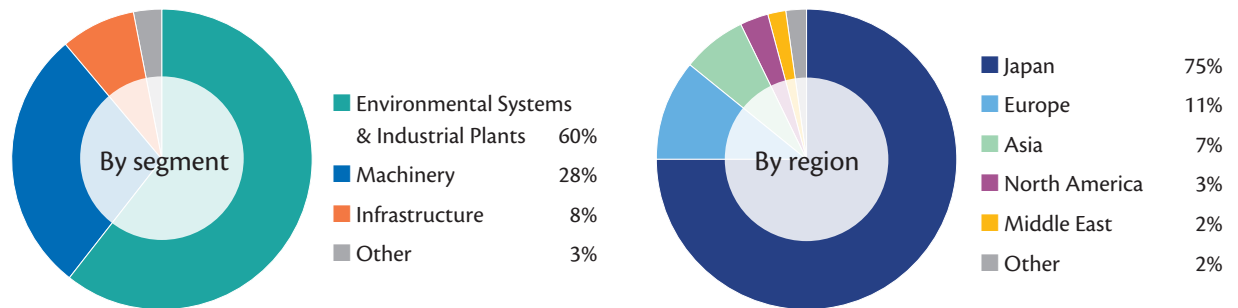
Businesses of Hitachi Zosen Group

The Hitachi Zosen Group has developed its businesses in three segments: Machinery, Infrastructure, and Environmental Systems & Industrial Plants, which is our core segment focusing on the engineering, procurement, and construction (EPC) and after-sales services, operation, and maintenance (AOM) of Energy-from-Waste (EfW) plants. We have been addressing various social issues in countries around the world through the provision of products and services.

Major lines of business

Environmental Systems & Industrial Plants			
<p>This segment focuses on the EPC of EfW plants and stable business and builds various water-related facilities, including sludge recycling centers and desalination plants, and energy-related facilities, including biomass plants in Japan and overseas. We seek to differentiate ourselves by enhancing additional value in terms of power generation efficiency, treatment capacity, and environmental performance. In the field of stable business, we are working on a 24/7 remote monitoring system as well as technology and optimal operation management for longer use or longer useful life of facilities and equipment. In EfW plants, we have won after-sales service contracts for more than 140 facilities, more than 50 contracts for operational services, and more than 30 contracts for comprehensive operational services.</p>	<p>FY2018 Net sales</p> <p>¥228.3 billion</p>	<p>Net sales composition</p>  <ul style="list-style-type: none"> ■ EPC (newly constructed plant) 41% ■ Stable business 59% 	<p>Net sales composition by region</p>  <ul style="list-style-type: none"> ■ Japan 77% ■ Overseas 23%
<h3>Machinery</h3> <p>With a wide variety of product families including marine diesel engines, press machines for automobiles, pressure vessels for petrochemical plants and other process equipment, and various types of precision machinery and hydrogen generation systems, we tackle the problems of our customers in various industries, such as mitigating environmental burdens and streamlining manufacturing processes for higher efficiency, and provide consistent support services ranging from development to servicing.</p>	<p>FY2018 Net sales</p> <p>¥106.6 billion</p>	<p>Net sales composition</p>  <ul style="list-style-type: none"> ■ Marine diesel engines 19% ■ Press machines 24% ■ Process equipment 18% ■ Precision machinery 24% ■ Other 16% 	<p>Net sales composition by region</p>  <ul style="list-style-type: none"> ■ Japan 61% ■ Overseas 39%
<h3>Infrastructure</h3> <p>We have a more than 100-year history and track record in building bridges and hydraulic gates for dams and rivers, and have worked on extending their useful life through monitoring, maintenance, repair, and seismic strengthening. A wide range of infrastructure elements have been developed with our cutting-edge technology and development capabilities, including shield tunneling machines for construction of underground motorways and subway tracks, and flap-gate type seawalls against flood disaster due to tsunamis or storm surges.</p>	<p>FY2018 Net sales</p> <p>¥31.8 billion</p>	<p>Net sales in fiscal 2018 were driven by the bridge building business. Most net sales were posted in the Japanese market, and we see the development of overseas operations as an important task going forward.</p>	

FY2018 Net sales composition



● EfW plants



● AOM



● Biomass plants



● Sludge recycling centers

- Biogas plants
- Water and sewage treatment plants
- Power generation plants
- Power producer and supplier (PPS)
- Long-term operation business (Private Finance Initiative [PFI] and Public Private Partnerships [PPP]), etc.
- Desalination plants
- Recycling facilities
- Independent power producers (IPPs)
- Remote monitoring, operation support



● Marine diesel engines



● Press machines



● Pressure vessels



● Vacuum equipment

- SCR systems for marine engines
- Deck machinery for ships
- Nuclear fuel cycling related equipment (casks and canisters)
- Various types of precision machinery
- Filter presses
- Boilers
- Various types of industrial equipment, etc.



● Bridges



● Hydraulic gates



● Large marine structures



● Shield tunneling machines

- Steel stacks
- Marine civil engineering
- GPS comprehensive oceanographic monitoring system
- Maintenance technology, earthquake-resistant technologies, etc.
- Flap-gate type seawall against flood disaster
- GPS remote monitoring system
- Electric discharge impulse crushing system

Environmental Systems & Industrial Plants



We will contribute to the creation of a recycling-oriented society on a global basis through our EfW plant development business, which has the best track record in the world, and our water and energy businesses.

Toshiyuki Shiraki

Managing Director
General Manager,
Environment Business Headquarters

Social issues and needs, and our value proposition

Social issues and needs

- Increasing waste, increasing water demand, deteriorating water environment associated with growing global population
- Global warming associated with CO₂ increase

Value provided through major products and services

- Safe, stable, and sanitary waste treatment, water supply
- Provide renewable energy, reduce CO₂ emissions through energy recovery

Performance overview

Order intake amounted to ¥314.7 billion, an increase of ¥57.5 billion from the previous business year. Orders received included an order from Tokushima Tsuda Biomass Power Plant GK for the construction, operation, and maintenance of a biomass power plant; an order from the Aizuwakamatsu Wide-area Municipal Services Association (Fukushima Pref.); and an order from the Kuji Wide Area Association (Iwate Pref.) for the construction and operation of a sludge recycling center. In the Energy-from-Waste (EfW) plant construction and operation business, in the Japanese market we received a large number of orders for key facility upgrades and for contracts in our long-term operation business, while on overseas markets we received orders for Phase 2 construction on the EfW plant in the city of Changsha in China and for an EfW plant in Bedfordshire, England.

Net sales decreased by ¥3.5 billion from the previous business year to ¥228.3 billion despite the completion of construction of EfW plants for Yatsushiro City and the Nagano Regional Association in Japan, as well as the completion of Phase 1 of an EfW plant in Changsha, due to overall lower sales recorded from the construction of plants overseas.

Operating income increased by ¥4.3 billion to ¥5.6 billion from the previous business year thanks to improved profitability on the construction of EfW plants in the Japanese market, in addition to a smaller red-ink figure posted by our subsidiaries overseas.

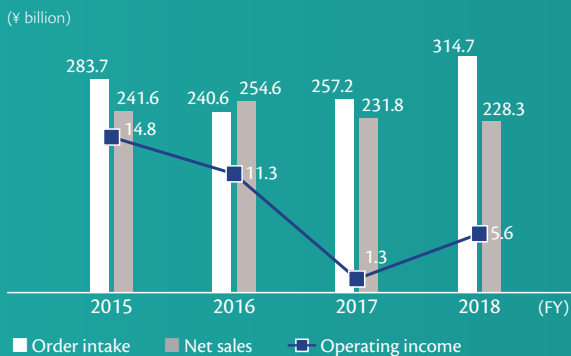
Goals for Hitz 2030 Vision

In the EfW plant construction and operation business, the domestic EPC (newly constructed plant) market is expected to reach a saturation point while overseas markets are anticipated to grow, especially in Southeast Asia, due to population growth and economic development. We will aim to grow the business by maintaining our current business model in Japan, clearly separating overseas market territories between the Company and Inova, and developing integrated global business strategies. Our overseas presence will be pursued in the AOM business as well. In Japan, we will seek to expand our business into waste collection and transportation services and develop preventive maintenance technology by ICT.

In the water treatment business, the domestic market will plateau. We will aim to win more orders by differentiating ourselves through value-added technology, such as generating renewable energy and phosphorus recovery from sludge and human waste. Meanwhile, the clean water and desalination business is expected to grow due to the scarcity of water resources in overseas markets. We will expand the water supply business in China and Southeast Asia by combining the reverse osmosis desalination technology and leasing business expertise owned by Osmoflo, which was acquired in February 2017, with the Company's fiber filtration and water intake technologies.

In the energy business, renewable energy is expected to account for a greater share of the energy mix over the long term, offering strong prospects for growth in the biomass power generation market. We will focus on winning orders for projects eligible for the feed-in tariff (FIT) system, as we work to develop private power generation projects centered on biomass energy.

Changes in financial results



Nagano Environmental Energy Center



Energy-from-Waste (EfW) Plant in Changsha Phase 1

Progress and issues of the medium-term management plan

In the EfW plant construction and operation business, we aim to boost our share by meeting the increasing demand for design-build-operation (public-build and private-operation) projects in Japan. Differentiation from our competitors is ongoing as we contribute to the creation of a recycling-oriented society through high-efficiency energy recovery systems, and provide stable and safe facility operation using optimal operation management systems.

In overseas markets, our position as the global leader in the EfW plant development market will be solidified as we steadily carry out the management reorganization at Inova. Regarding the technical aspect, we will further reinforce the partnership between the two companies in standardizing combustion equipment and jointly developing new technologies. Inova has invested in businesses in the United States and Sweden and started operating a biogas power plant on its own to diversify its revenue streams.

In the water treatment business, during fiscal 2018 we received orders for a number of DBO projects, including as a representative company for a consortium to construct sludge recycling centers in Fukushima and Iwate prefectures. In our overseas markets, Osmoflo serves as the hub for our global operational presence. Measures for

business expansion are under discussion, including selling equipment to China, Southeast Asia, and elsewhere as well as participating in public-private partnership (PPP) projects. In Japan, the groundwork for our entry into the water and sewage system operation business is being laid.

In the energy business, we are studying plans for the creation of new businesses for FIT-based power sources centered on biomass, following our successful startups of the Miyanosato Woody Biomass Power Generation Plant in 2015 and the Akita Biogas Power Station in 2017.

In the power producer and supplier (PPS) business, we made “local production for local consumption” power generation proposals using newly built EfW plants. As a result, we signed a contract with Nagano City (Mayor Hisao Kato) to supply electricity as a model project. Under this project, power generated at an EfW plant will be supplied to eighty schools (elementary, junior high, and high schools) in the city. In fiscal 2019, moreover, we signed a contract with the Tokyo Metropolitan Government to supply electricity from 100 percent renewable energy sources. Going forward, we will seek to secure distributed generation while at the same time growing our PPS business by highlighting our track record in reducing CO₂ emissions through power procurement from renewable energy.

Solution for creation of recycling-oriented society

Initiatives in the land-based aquaculture business

In February 2019 we reached an agreement with Nippon Suisan Kaisha, Ltd. (commonly known as Nissui) and a subsidiary of Nissui, to jointly develop a large-scale land-based recirculating aquaculture system for chub mackerel. We are constructing a facility in Yonago, Tottori Prefecture, where the new system will be implemented, employing our water-treatment technology in combination with Nissui's expertise in the cultivation of fish. Operations at the facility will start in April 2020. We will conduct a demonstration test for three years, with commercialization to follow if results are successful. Additionally, in January 2019 we participated in a land-based seafood-farming demonstration project being promoted by municipalities in Hokkaido involving the cultivation of sea urchins (known as uni in Japan), and received orders for a test plant.

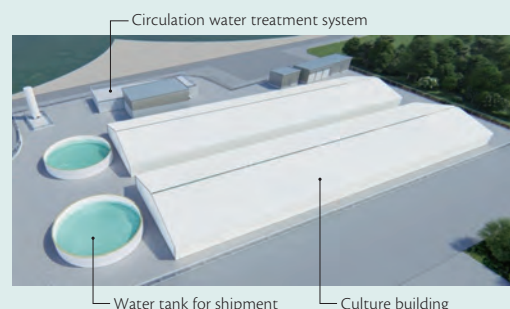


Image of demonstration plants

Machinery



Based on the manufacturing experience we have accumulated over the years, we aim to become the world's leading manufacturer contributing the environment and safety in the marine diesel engine, press machine, process equipment, and precision machinery fields.

Tadashi Shibayama

Managing Director
General Manager,
Machinery Business Headquarters

Social issues and needs, and our value proposition

Social issues and needs

- Reduction of NOx, SOx and CO₂ emitted from ships
- Food shortages
- Environmental pollution (disposal of liquid waste such as sterilants)
- Food safety and security

Value provided through major products and services

- Conservation of the global environment (SCR systems for marine engines, two-stroke dual fuel engines for marine application)
- Contribution to alleviating food shortages by supporting the production of fertilizers to grow food (pressure vessels for fertilizer plants)
- Reduction of environmental impacts (electron beam sterilization system)
- Food safety and security, such as supporting food factories in quality control (e.g., food defense & management recording system)

Performance overview

Total order intake increased by ¥2.3 billion from the previous fiscal year, to ¥100.7 billion, despite a decline in orders for process equipment and precision machinery, as a result of increased orders for marine diesel engines amid a market recovery.

Net sales rose by ¥6.0 billion from the previous fiscal year, to ¥106.6 billion, thanks to increased sales of process equipment such as towers, vessels, and heat exchangers in Japan and overseas.

Operating income declined by ¥2.8 billion from the previous fiscal year, to negative ¥0.3 billion, due to a deterioration in the profitability of marine diesel engines, press machines, and process equipment.

Goals for Hitz 2030 Vision

We aim to become the world's leading manufacturer contributing to the environment and to safety in each product of the Machinery segment, based on the manufacturing experience we have accumulated over the years. More specifically, we will seek to grow solution-based services, including after-sales services, by harnessing ICT, and to create and grow new businesses including methanation.

Targeted Directions

1. ICT-oriented leading manufacturer in terms of productivity, quality, and delivery

We aim to become an ICT-oriented leading manufacturer and to pursue further automation in each market in the automobile, shipbuilding, semiconductor, and electronic control industries. We also seek to become a leading manufacturer in terms of productivity, quality, and delivery in the individual manufacturing fields.

2. Global enterprise contributing to environmental improvement and providing safety and security

We aim to become a global enterprise that helps to improve the global environment (for example, by reducing NOx, SOx, and CO₂ emissions) and that provides safety and security in the food and pharmaceutical sectors.

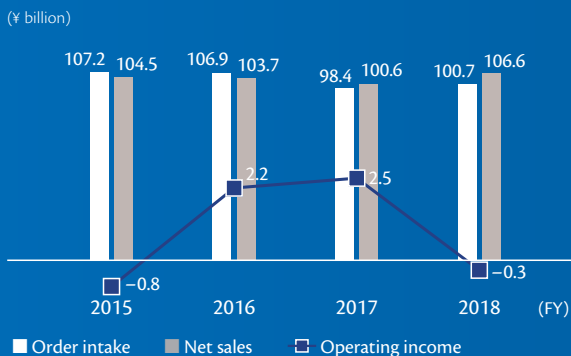
3. Expansion of ICT-driven solution-based services including after-sales services

We will expand solution-based services while growing after-sales services for stable profits by harnessing ICT, rather than just manufacturing.

4. Creation and growth of new businesses

We will expand the scale of business operations by creating and growing new businesses including methanation.

Changes in financial results



Press machine for automotive industry (servo press line)



Process equipment for integrated coal gasification combined cycle power plant

Progress and issues of the medium-term management plan

We will further focus on expanding the domestic and overseas after-sales service businesses by leveraging our extensive track record in order deliveries. To enhance and expand our business operations and increase our profitability, we are making efforts in the following areas.

1. Marine diesel engines

Shipments of SCR systems for marine engines increased, and full-scale shipments also commenced of the marine engines on which the systems are mounted. Sales of urea dilution systems also commenced. We have been developing new types of marine-use SCR systems, and have been working on building a production structure for dual fuel engines, establishing diagnostic and evaluation technologies, and increasing after-sales service sites. In terms of earnings, we have not reached profitability, but will continuously pursue improvement by eliminating problems and reducing costs.

2. Press machines

Our technological and development competence has been enhanced to respond to changes in the industry, such as new materials to reduce vehicle weight. Productivity has improved as capital spending furthered automation and unmanned operation.

3. Process equipment

Improvement in productivity has been pursued through the introduction and development of automated facilities. In terms of sales, we seek to: enhance our marketing capacity through building overseas sales networks; launch newly designed metal casks and concrete casks on the domestic market; and grow the overseas cask and canister business.

4. Precision machinery

Our vacuum equipment, handling machines, and polishing machines have been directed to the organic electro-luminescence (OEL), semiconductor, flat-panel display (FPD), and future flexible printed circuit (FPC) markets. We also developed a new type of roll-to-roll deposition machine to take advantage of the expected expansion in application of high-function coatings, particularly for mobile devices.

Our aim is to win more orders for filling and packaging systems and plastic extrusion system for the food and pharmaceutical industries by applying, refining, and combining proprietary technologies. We have been reinforcing after-sales services by leveraging our extensive track record in order deliveries.

As for electronic boards and units, we seek to win more long-term and steady repeat orders for electronic boards and units to meet customer needs by enhancing sophistication and adding high value to Group products, as well as by participating in internal development and basic plans. In the inspection and measurement systems field, businesses driven by software and services are developing.

5. Other

In anticipation of the spread of renewable energy, we are working on expanding our sales of megawatt-scale systems for on-site hydrogen generation by water electrolysis, and on developing methanators.

Regarding our filter presses, which account for the largest share in Japan, we have developed smaller models for the wastewater treatment field to expand the market, and have been leveraging our extensive track record in order deliveries to reinforce after-sales services using IoT and big data.

Solution for creation of recycling-oriented society

Development of Japan's largest megawatt-scale solid polymer hydrogen generation system

We have developed a solid polymer hydrogen generation system with a capacity of 200 normal cubic meters per hour—the largest in Japan—to enable the storage of surplus power at megawatt-scale power generation facilities. Following trials conducted during fiscal 2018, we commenced the sale of this system in fiscal 2019, and we recently received an order from the Yamanashi Prefecture Enterprise Bureau for a solid polymer hydrogen generation system for large cell stack evaluation with a capacity of 400 normal cubic meters per hour.



Large-scale solid polymer hydrogen generation system

Infrastructure



We will contribute to building a sustainable disaster-prevention and disaster-mitigation society by addressing the development of infrastructure elements through our steel structure and disaster prevention businesses and our shield tunneling machine business.

Munekazu Shima
 Managing Executive Officer
 General Manager,
 Infrastructure Business Headquarters

Social issues and needs, and our value proposition

Social issues and needs

- Domestic infrastructure improvement and measures against aging
- Prevention of inundation damage due to tsunamis, storm surges, or floods
- Traffic congestion alleviation, urban traffic improvement, urban development, rainwater measures

Value provided through major products and services

- Build and improve infrastructure using state-of-the-art technology, such as new construction and upgrading of bridges, dams, and hydraulic gates for rivers, seismic strengthening, and maintenance and repair
- Reduce both the risk of operators' damage from disasters and damage from inundation by using non-powered (i.e. do not require human operation) self-closing flap-gate type seawalls against flood disaster.
- Contribute to building road/railroad tunnels and improving utility tunnels and underground flows by manufacturing shield tunneling machines

Performance overview

Order intake decreased by ¥6.7 billion from the previous fiscal year, to ¥27.6 billion. This was despite the receipt of a large number of orders for new bridge construction projects from the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and local governments (including an order from the Shikoku Regional Development Bureau for work on the superstructure of the Tsuda Viaduct) as well as orders for large shield tunneling machines and for steel segments of the Tokyo Outer Ring Road Tunnel. The principal cause of the decline was an overall decrease in orders for large-scale bridge construction work.

Sales decreased by ¥1.6 billion from the previous fiscal year, to ¥31.8 billion, due to a decrease in large-scale marine construction work, which more than offset large-scale bridge construction projects (including the Tobase Ohashi Bridge for Uki City, Kumamoto Prefecture) as well as steady progress made in the manufacturing of shield tunneling machines for use in construction of the Oizumi-Minami section of the Tokyo Outer Ring Road.

Operating income increased from the previous fiscal year by ¥0.2 billion to ¥1.3 billion, due to improved profits on bridge construction work.

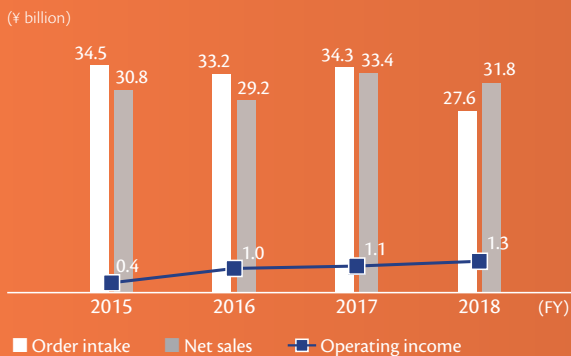
Goals for Hitz 2030 Vision

In our steel structure and disaster prevention businesses, we will seek to win more orders for EPC projects by expanding our project scope and service areas through accumulating experience in official development assistance (ODA) projects in addition to the stable domestic demand; and upgrading the foundation for overseas operations. In maintenance and repair operations, we will reinforce intra-group cooperation and pursue partnerships, mergers and acquisitions, and development of new technologies with players in other sectors to secure more orders. The expansion of domestic and overseas operations will be pursued for seabed-mounted flap-gate type seawalls as our proprietary technology.

In the shield tunneling machine business, we will seek to expand overseas operations by: leveraging our high level of technological competence and quality to become a leading supplier in Asia; and seeking to deliver orders not only in the United States, where we have an established track record, but also in Europe, the Middle East, and South America. Another future goal is to exponentially expand our business scale as we consider mergers with and acquisitions of industry peers, manufacturers of back-end or peripheral equipment, and tunnel construction companies in Japan and overseas.

In wind power generation business, we are capable of providing a whole set of services including feasibility studies on the creation of wind power generation businesses, EPC, manufacture of floating structures, and operation and maintenance of power plants. Our aim is to expand the onshore and offshore wind power generation business.

Changes in financial results



Tobase Ohashi Bridge (Kumamoto Prefecture)



A dia. 4.48m earth pressure balance shield tunneling machine

Progress and issues of the medium-term management plan

In the steel structure and disaster prevention businesses, we will seek to enhance the overseas operations and maintenance fields as growth drivers for the business as a whole. In overseas operations, our track record is being developed with orders first for hydraulic gates and then for bridges as we improve our overseas foundation. In maintenance operations, our efforts have been reinforced through intra-group cooperation. In the field of bridges, since the start of fiscal 2019 we have been receiving orders for large-scale seismic reinforcement work. As for new products, we expect to deliver a seabed-mounted flap-gate type seawall to the Iwate prefectural government within fiscal 2019.

In the shield tunneling machine business, special procurements for the Tokyo Olympic and Paralympic Games have slowed down. However, large-scale projects are expected, including widening of on-ramps for the Tokyo Outer Ring Road, the Linear Chuo Shinkansen, and road tunnels in the Kansai District, and in fiscal 2019 we received an order for a large shield tunneling machine for the Hokkaido Shinkansen Sapporo Tunnel. In overseas operations, we will

proactively seek out projects in the Philippines and Taiwan. Projects with challenging construction conditions are anticipated to increase in the future. We will facilitate the development of technologies to accommodate customer needs, such as those for longer distances, deeper tunnels, cutting through obstacles, forward probing, and feedback on operations using log data. In terms of large or special machines as our area of specialty, we will continue seeking to win orders.

In the wind power generation business, in fiscal 2018 we had one of the best manufacturing track records in Japan with the completion of our third structure for floating offshore power generation. Starting this year (fiscal 2019), under the leadership of NEDO we have been conducting trials of a floating power generation system off the coast of Kitakyushu, utilizing wind turbines mounted on a floating structure designed and manufactured by Hitachi Zosen.

Solution for creation of recycling-oriented society

Received order for bridge seismic retrofit work for Hanshin Expressway No. 3 Kobe Line

We have received an order from Hanshin Expressway Company Limited for seismic retrofitting of the superstructure of the Hanshin Expressway No. 3 Kobe Line. The work will involve the reinforcing of seismic resistance along an approximately 4 km section of the Hanshin Expressway No.3 Kobe Line, from Itachibori 4-chome, Nishi-ku, Osaka to Tsukuda 6-chome, Nishiyodogawa-ku, also in Osaka. We will be responsible for connecting bridge girders with rubber-covered chains and PC cables, installing bearing reinforcements (horizontal load-bearing structures), widening piers and beams, and so on.

Boasting 120 years of history as a bridge-builder, We aim to actively contribute to the development of a sustainable, robust nation with high quality infrastructure, and to achieve continued business growth by delivering maintenance services that fully leverage our extensive experience in completed work.



Picture shows reinforcement work being performed on a different bridge in the past.

Overseas Operations

In 1951, when shipbuilding was its main business, the Group won an order from the United States for a tanker, which was the first ship for use in exporting by the private sector since the end of World War II, and developed overseas markets as a “pioneer of ship exports.” In 1956, we completed a sugar plant in Burma (currently Myanmar) as the first plant export.

In order to address environmental concerns such as water shortages, and other problems that global society encounters, our current overseas operations are geared toward energy, focusing on the Energy-from-Waste (EfW) plant construction and operating business, and water, centering on the desalination plant business.

Some major overseas group companies play key roles in growing our overseas operations. Inova strives to expand its business into new markets with EfW and biogas plants. Osmoflo works jointly with the Company on a desalination plant project using the reverse osmosis method.

We seek to expand our geographical coverage and business lines in order to achieve an overseas sales ratio of at least 50% in 2030 while using our technological competence and extensive experience to maintain a sustainable global environment.

Principal overseas bases



Hitachi Zosen Inova AG

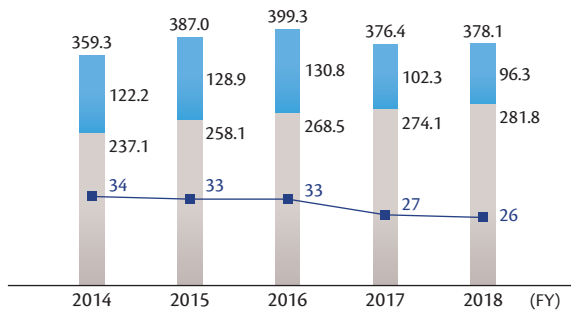
Overview

Headquartered in: Zurich, Switzerland
 Chief Executive Officer: Bruno-Frédéric Baudouin
 Number of employees: 748
 (consolidated, as of March 31, 2019)
 Major business: EfW plant construction

Main recent topics

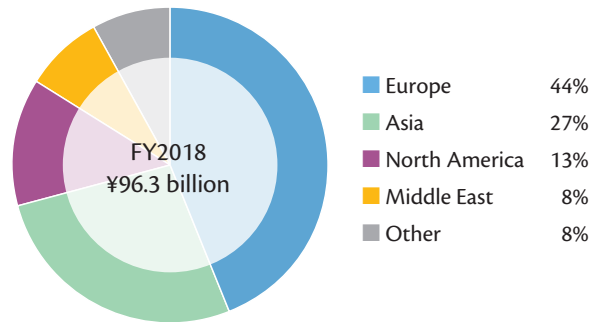
- Apr. 2018 Entered Swedish market as methane fermentation operator
- Oct. 2018 Received order for equipment for biogas plant in Anröchte, Germany
- Nov. 2018 Started operation of first Kompogas® plant in US
- Mar. 2019 Started construction of Kompogas® plant in Jönköping, Sweden; Inova will also own and operate the facility
- Mar. 2019 Completed Scandinavia’s first Kompogas® project
- Mar. 2019 Received order for construction of EfW plant in Bedfordshire, England
- May 2019 Completed construction of large-scale EfW plant in Edinburgh, Scotland
- May 2019 Received order for delivery of equipment for EfW plants in Moscow

Net sales (domestic/overseas) and overseas sales ratio



■ Domestic (¥ billion) ■ Overseas (¥ billion)
■ Overseas sales ratio (%)

Overseas sales composition by region



Kent Cole
President and Chief Executive Officer

NAC International Inc.

Overview

Headquartered in: Georgia, U.S.A.
 President and Chief Executive Officer: Kent Cole
 Number of employees: 69 (as of March 31, 2019)
 Major business: Spent nuclear fuel storage, transportation

Main recent topics

Apr. 2019 Received NRC approval for design of MAGNATRAN® transportation package, a large-volume concrete cask

Osmoflo Holdings Pty Ltd

Overview

Headquartered in: Adelaide, Australia
 Chief Executive Officer: Takayuki Inoue
 Number of employees: 283 (consolidated, as of March 31, 2019)
 Major business: Desalination and industrial water treatment



Takayuki Inoue
Chief Executive Officer

Main recent topics

May 2018 Received order for mine waste water treatment plant in Australia
 Aug. 2018 Became wholly owned subsidiary of Hitachi Zosen Corporation

Corporate Governance

Guided by our corporate philosophy outlined in our Hitz Value, and recognizing that it is imperative for sustainable growth and for an increase in the corporate value of the Company over the medium-to-long term to conscientiously meet the expectations of all stakeholders—including shareholders, customers, suppliers, local communities, and our employees—and to ensure the soundness, transparency, and efficiency of management, we have adopted the basic approach of focusing on enhancement of corporate governance as our priority management issue.

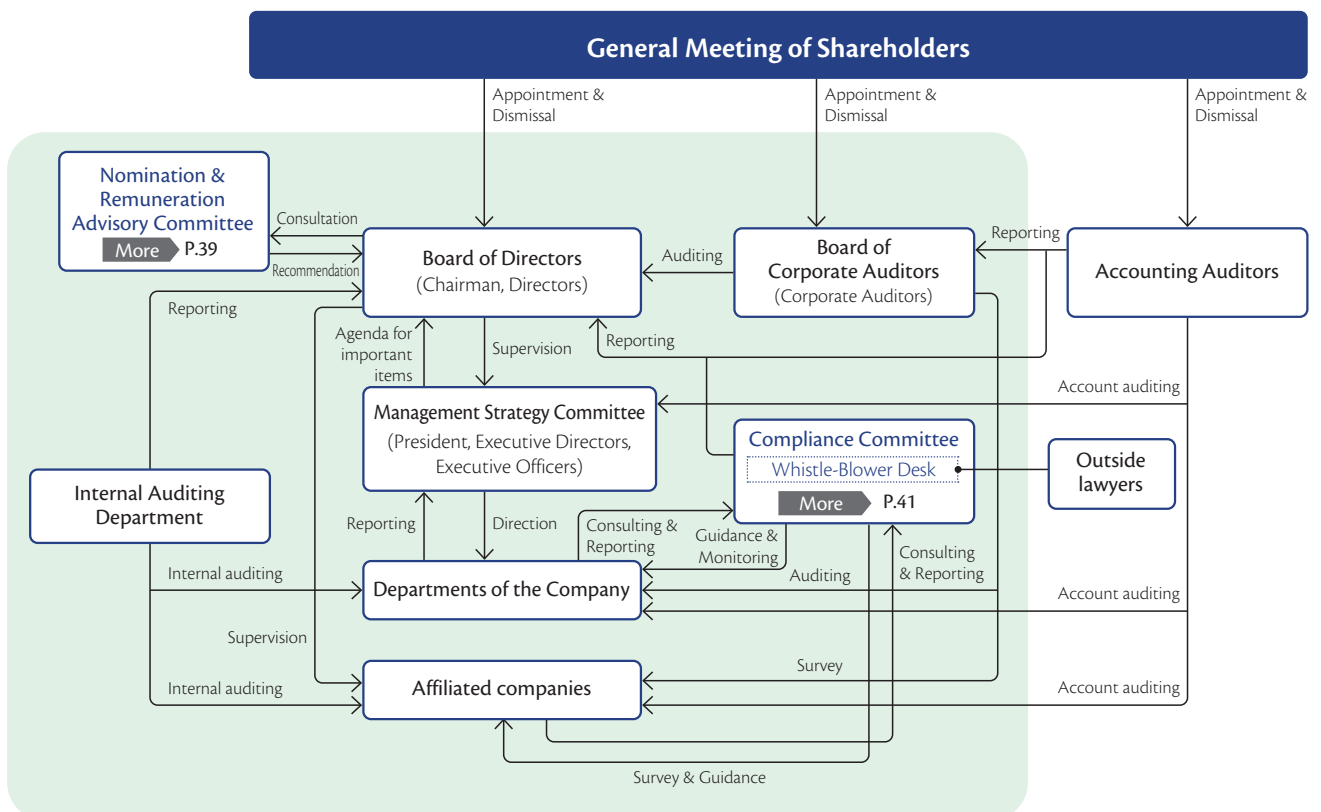
Key changes to corporate governance

- 1999 Adopted system of executive officers
- 2014 Appointed an outside director
- 2015 Appointed first woman as outside director (one of two outside directors)
- 2016 Started evaluating the effectiveness of the Board of Directors and improving issues
Appointed first non-Japanese outside director (one of three outside directors)
- 2018 Established Nomination & Remuneration Advisory Committee
- 2019 Will consider stock-based remuneration linked to medium- and long-term earnings as a performance-linked bonus

Corporate governance framework

Hitachi Zosen Corporation employs an audit and supervisory system under which corporate auditors attend meetings of the Board of Directors, which comprises directors with executive and supervisory responsibilities and outside directors. The involvement of corporate auditors facilitates discussion by the Board of Directors and encourages greater prudence and appropriate decision-making regarding important policy matters. In addition to meetings of the Board of Directors, corporate auditors attend important internal meetings including the Management Strategy Committee, which comprises the president, executive directors, and executive officers. In attending these meetings, corporate auditors give their input from a neutral perspective and supervise the business execution by directors and executive officers. Corporate auditors also convene meetings of the Board of Corporate Auditors to gather input on audits. In addition, corporate auditors monitor and verify the internal control system and its operating status, and where necessary, give advice, make

Corporate governance organization



recommendations to directors and executive officers, and take other required measures.

The Board of Directors, comprising ten directors, meets on a monthly basis and convenes for extraordinary meetings when necessary. In addition to supervising matters that are prescribed by law, the Board of Directors decides on important matters including basic management policies and strategies, and supervises business execution. Meanwhile, the Management Strategy Committee meets twice a month to discuss basic policies and important measures concerning business management and business operations, and it is positioned to make timely and precise management decisions. Matters of particular importance are first discussed by the Management Strategy Committee and then thoroughly discussed by the Board of Directors before reaching a decision. Directors can also delegate some of their business execution functions to executive officers, to enhance the supervisory functions of directors and secure rapid business execution.

Nomination & Remuneration Advisory Committee

The Nomination & Remuneration Advisory Committee is an optional advisory body designed to secure procedural objectivity, transparency, and accountability in nominating candidates for directors and corporate auditors, appointing and removing the president and representative director, and discussing important matters concerning remuneration for directors. After discussing these matters, the Nomination & Remuneration Advisory Committee reports its findings to the Board of Directors, which further discusses the matter and makes a decision. The six-person Nomination & Remuneration Advisory Committee is headed by the chair of the Board of Directors and additionally comprises three outside directors and two outside corporate auditors. Outside officers provide input and advice that helps to secure transparency, suitability, and objectivity with respect to personnel decisions for directors and remuneration. The Nomination & Remuneration Advisory Committee met twice between the December 2018 meeting of the Board of Directors, which passed a resolution to establish the committee, and April 2019.

Compensation for officers

Compensation for directors comprises fixed remuneration and performance-linked bonuses, and is decided for individual directors within the total amount of remuneration approved by a resolution of the General Meeting of Shareholders. Fixed remuneration is based on each officer's position. Performance-linked bonuses are based on corporate earnings each fiscal year, using the profit attributable to shareholders of Hitachi Zosen in each fiscal year as an indicator of performance, in order to further motivate directors to improve earnings. Compensation for outside directors consists only of fixed remuneration, so as to secure their independence.

In determining the compensation for the senior management team and directors, the Nomination & Remuneration Advisory Committee reports to the Board of Directors regarding the remuneration provisions and compensation levels, which are discussed by the Board before making a decision. The Nomination & Remuneration

Advisory Committee regularly reviews the remuneration provisions and compensation levels to ensure that the compensation provides a healthy incentive for directors. The compensation amounts for directors of the Company in fiscal 2018 were decided through a process that began with the Nomination & Remuneration Advisory Committee meeting in February 2019 to discuss the maximum individual compensation amount, total collective compensation amount, and compensation calculation method for directors. In March of 2019, the committee submitted its recommendations to the Board of Directors, which asked the president (also serving as chairperson) to decide upon the compensation, giving full consideration to the input from outside directors concerning the appropriateness of the compensation.

Moving forward, the Company will study stock-based compensation linked to medium- and long-term performance.

Total amount of compensation, etc. by officer position, total amount by type of compensation, etc., and number of officers concerned (FY2018)

Officer position (No. of persons)	Total amount of compensation, etc.	Total amount by type of compensation, etc.	
		Fixed remuneration	Performance- linked bonuses
Directors (7 persons*)	269	250	18
Corporate auditors (3 persons*)	61	61	—
Outside officers (5 persons)	51	51	—

* Excluding outside directors and outside corporate auditors

Outside directors and outside corporate auditors

The Company has appointed three outside directors who bring extensive corporate management experience and broad knowledge to the Company, from the perspectives of enhancing corporate governance, business globalization, and diversity-focused management. Additionally, the Company has appointed two outside corporate auditors who bring extensive knowledge regarding corporate management and specialized expertise, in order to enhance the monitoring and supervision of management. The Board of Directors gives due respect to the input and advice it receives from outside directors and outside corporate auditors reflecting their independent and neutral stance, and actively discusses matters before making a decision. This system is designed to ensure the monitoring and supervision of management.

The secretariat of the Board of Directors supports the outside directors by providing them with important management information in a timely manner, as well as keeping the outside directors briefed on agenda matters and supplying other information ahead of each Board of Directors meeting. Outside corporate officers are fully supported by a dedicated department that assists the work of corporate auditors, by briefing them on agenda matters and supplying other information before each meeting of the Board of Corporate Auditors. The support frameworks enable outside directors and outside corporate auditors to fulfil their respective roles.

Information on outside directors and outside corporate auditors

Position	Name	Specialized field/ knowledge	Reasons for appointment	Years of service	Independent officer submission
Outside Director	Chiaki Ito	Corporate management, ICT, global management	Mr. Ito has extensive experience and wide-ranging insight into corporate management based on his long service as an executive manager in the information and communication equipment industry, including engaging in overseas business. The appointment seeks to leverage his experience and insight to strengthen corporate governance, the globalization of business, the development of new businesses and new products, and utilization of ICT, which the Company is now pursuing.	6	○
Outside Director	Kazuko Takamatsu	Corporate management, diversity management	Ms. Takamatsu has extensive experience and wide-ranging insight into corporate management and diversity-focused management. Her experience encompasses working for many years at global companies, as well as service as the Representative Director of a software development company and as the Executive Director and Head of Secretariat of the Japan Institute for Women's Empowerment & Diversity Management. The appointment seeks to leverage her experience and insight to strengthen corporate governance and the globalization of business, which the Company is now pursuing.	4	○
Outside Director	Richard R. Lury	International corporate law, global management	Mr. Lury served as a partner of a major law firm in the United States for many years and has extensive experience and expertise in international corporate legal matters. The appointment seeks to leverage his experience and insight to strengthen corporate governance and the globalization of business, which the Company is now pursuing.	3	○
Outside Corporate Auditor	Yoshihiro Doi	Corporate management	Mr. Doi has an outstanding track record as an executive officer and director of a major power utility, and has served as a director, executive vice president, and executive officer since June 2016. The appointment seeks to leverage his extensive experience in and broad knowledge of corporate management acquired through corporate operations, to benefit the Company's audits.	2	○
Outside Corporate Auditor	Kenichi Takashima	Corporate management, finance, accounting	Mr. Takashima has extensive experience and broad knowledge of corporate management combined with a thorough knowledge of finance and accounting gained from his positions of responsibility for the accounting and financing departments of a major automaker, where he also served as a director and auditor. The appointment seeks to leverage his experience and knowledge to benefit the Company's audits.	5	○

Evaluation of the effectiveness of the Board of Directors

Since fiscal 2015, the Company has implemented an annual evaluation of the effectiveness of the Board of Directors. The evaluation seeks to identify and actively improve functional and operational issues with the Board of Directors, with the aim of enhancing corporate governance and increasing corporate value. The evaluation comprises self-evaluations by directors and corporate auditors, and interviews with outside directors and auditors, which are used to identify functional and operational issues with the Board of Directors. The issues are improved through a plan-do-check-act (PDCA) cycle. Of the issues that have been identified to date, the Company is prioritizing the following two initiatives to enable the Board of Directors to actively discuss and continue supervising the Company's basic policies and strategies.

1. Enhancing the supervisory functions of the Board of Directors

Each operating division including key overseas group companies reports on their business execution at the meeting of the Board of Directors meeting, ensuring that they provide adequate risk information. Based on multifaceted feedback from the Board of Directors, the operating divisions implement business improvements and address risks, and report on the improvements at later Board of Directors meetings. These initiatives serve to enhance the supervisory functions of the Board of Directors.

2. Securing sufficient time for practical discussion

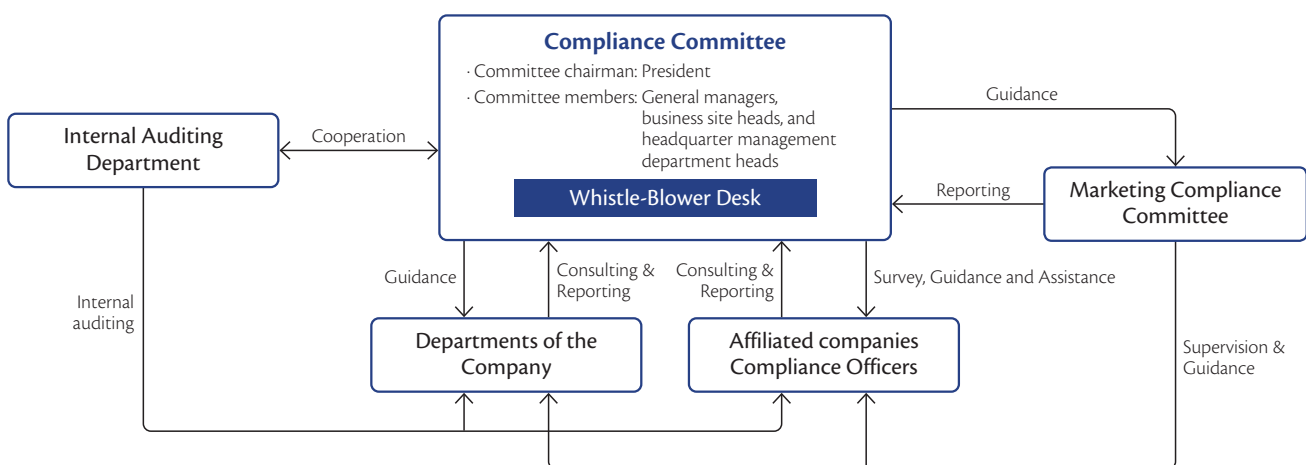
To ensure that the Board of Directors has sufficient time to discuss and prioritize important agenda items, the Management Strategy Committee is delegated with discussing routine agenda items and agenda items with limited room for discussion. For particularly important matters, outside officers receive information beforehand and a full briefing on the matter. These operational improvements are designed to ensure that the Board of Directors can secure sufficient time for practical discussion.

Compliance system

Under the direction of the Compliance Committee chaired by the President, we carry out regular surveys and verification of overall corporate activities from the perspectives of the law and corporate ethics. We also have established the Hitz Group Charter of Ethical Behavior to serve as guidelines for ethical behavior. A wallet-sized reminder card is issued annually to all officers and employees, and e-learning and other means also provide further understanding of these issues. In April 2019,

the Company issued the Hitz Compliance Guidebook, which uses a Q&A format to explain common compliance issues in business execution. The guidebook has been distributed to all officers and employees in order to raise compliance awareness and encourage strict adherence to corporate ethics. Our whistle-blowing system enables employees to consult with or report to an independent entity outside the Company in order to provide quick and effective responses to violation of the law through prevention and early detection.

Compliance organization



Hitz Compliance Guidebook



Compliance e-learning

Dialogue between Outside Directors



Chiaki Ito
Outside Director

Kazuko Takamatsu
Outside Director

Richard R. Lury
Outside Director

Hitachi Zosen used to be engaged in mainly heavy-industry businesses, but the Company is changing with the times in an ongoing search for solutions to social issues. With a firm understanding of this role, our three outside directors discuss what is needed to sustain growth and what issues need addressing.

How have initial impressions of Hitachi Zosen changed?

Chiaki Ito: I spent many years working in an IT company, where the keywords are “light and small,” in stark contrast with the heavy industry businesses Hitachi Zosen is involved in. My first impression when appointed director was that there were many gentlemen of integrity who were not obsessed with merely making money. The Company did, however, have issues. After all, with a history stretching over 130 years, things “good” and “old” had coexisted. I also got the impression that the organization was a collection of small and medium-size enterprises with an entrenched silo mentality in the wake of the corporate split during a previous shipbuilding slump and subsequent reintegration. But Hitachi Zosen is different now. The way the board of directors is run has changed significantly, in a good way, since I joined; and I feel that Hitachi Zosen has come to be more of a regular company like any other elsewhere in the world—that it now operates in closer alignment with what might be termed international norms.

Kazuko Takamatsu: My background is in a consumer-facing company. I went through a bit of culture shock at first due to Hitachi Zosen’s different business phases and long-term process management. My first impression was of a very Japanese company—quiet earnest and steeped in tradition. Four years later, my understanding of the business has improved. I think the Company is developing very interesting businesses with a great future. That said, it still gives the impression of being a “heavy industry” company dependent on public spending and having the associated corporate organization and mindset. I am used to dealing with consumers, so at times I wish

it were a bit more agile. Meanwhile, on the personnel front, there are more women in the Company’s workforce and we are seeing progress in achieving greater diversity.

Richard R. Lury: When I joined the Hitachi Zosen board three years ago, my first impression was that this was a traditional large Japanese company that took a long time to make decisions. I have come to realize that, in part, the wide range of businesses and significant scope of individual projects has contributed to this conservative approach in decision-making. In general, this is appropriate, since it reduces risk. On the other hand, I have also come to understand that unexpected developments are characteristic of a business in which each individual order or project is frequently quite substantial, with a long lead time between order and delivery, and this can often have a considerable impact.

Thoughts on Hitachi Zosen’s corporate governance

Ito: First—to address corporate governance—the oversight function is solid. The large proportion of public-sector orders means that the company is painstakingly conscientious about compliance.

Takamatsu: I see no apparent problem areas. Explanations at board meetings tend to go into almost too much detail, so are easy to understand. My impression is that the directors are honest and sincere with a good grasp of situations, and risk management is thorough.

Lury: I feel the same. The Company has a very strong compliance culture and behaves as it should, which is a very good thing. The

Company's management is very aware of the importance of maintaining a positive public image.

Support for outside directors

Ito: Hitachi Zosen is extremely generous in supporting us outside directors—for instance we can visit worksites anywhere in Japan. Seeing them in person is interesting and impressive. If I want to know something, I always get an answer.

Takamatsu: I have no complaints whatsoever. They show us everything. I struggle to understand the technical materials, but if I have any questions I always get thorough explanations.

Ito: Since Mr. Lury joined, we get board documents in English too. This is groundbreaking. Hitachi Zosen has operations around the world, and we have non-Japanese local chief executives who want to know what is being discussed at the head office. Since we started getting board papers in English, the overseas executives are able to understand our direction and I get the distinct impression that we have suddenly become more globally oriented.

Lury: I also think the support we receive is great. I personally get explanations in advance in a pre-meeting before the board meetings, which is extremely thoughtful. I would, however, like a bit more time to review materials that are the subject of upcoming board meetings, to deepen my understanding and get my opinions in order.

Board evaluation and issues: Effectiveness

Ito: In terms of effectiveness, recently the board is not just ratifying the agenda. Different opinions are starting to emerge, albeit little by little, which is a good thing. Directors in charge of a particular division will take issues we raise with them on board and consider them with their people.

Takamatsu: Certainly we have revisited matters in on many occasions. Decisions are not just a simple case of majority rules.

Ito: I concur. Sometimes it's better to thoroughly think things through rather than just put them to a vote.

Lury: That said, if I had to choose, I would say the discussions are sometimes too detailed, and considerable time is spent addressing individual problems. The primary purpose of board meetings should be to discuss overall company strategy and developments or, for example, the general direction of a business where earnings are struggling—whether to turn it around, withdraw, or divest. These basic discussions should take place on an ongoing regular basis rather than just when putting together the medium-term plan. To the extent reasonably possible, more of the board's time should be spent on these important matters.

Takamatsu: I agree. The board addresses individual issues properly, one by one, but I also feel that we could use more opportunities to discuss how the Company should be down the road. I think that we could spend more time on what to do with our key sectors from a

"selection and concentration" perspective and talk about marketing.

Ito: If I may be so bold, I'd prefer the board meeting to be more than just an organization for rubber-stamping the decisions of the Management Strategy Committee. I think this would enable Hitachi Zosen to make great strides forward.

Lury: I think it is improving little by little compared with when I first joined. These days, attendees have started to ask questions. However, my background is in overseas companies, and I feel that discussion is still lacking compared to them.

Board evaluation and issues: Group governance

Ito: I feel that there are many issues here. Board members' thinking tends to be biased toward the parent company. I know we have numerous group companies in Japan and abroad and they have autonomy, but I worry about how far the concept of "consolidated" extends. Also, the directors keep a close eye on the division they are individually responsible for, but are silent on others. They need to emerge from their silos and state their opinions more. This is because the next president will come from among them. Some companies frequently transfer heads between departments, who learn a great deal from the experience. Presidents come from their ranks. We need to nurture the candidates for president on a daily basis. This is something I have been saying since I was first appointed, but I think personnel shuffles should take place between headquarters and associated companies when employees are in their middle management years. Some think that you can't put someone in charge of a division they know nothing about. But in fact, it is precisely their lack of such knowledge that enables them to spot problems. In my opinion, we need to think more about group governance and a global company structure.

Lury: I think that is exactly right. However, I feel that the lessons learned from the major problems at INOVA in the past one or two years are gradually being incorporated into group governance arrangements. The response when a problem arises and the ability to assess risks before one occurs are important. Board members must be on top of these at an early stage. Unfortunately, there are still problems with overseas subsidiaries today. We need more debate on companies that have been struggling for a number of years—how to deal with them, and turn them around.

Takamatsu: Responding to problems only after they're occurred, is too late. Consolidated subsidiaries deliver quarterly earnings reports but these are just outcomes—difficult to analyze in trend terms. I'd like us to think more about whether the management side is aware of the need to examine trends.

Ito: Scale-wise, INOVA's plant business is much bigger than Hitachi Zosen's. Losses emerged when costs and schedules management went awry. The Hitachi Zosen management team replaced the CEO. I am hopeful for INOVA's prospects going forward. It is thus important to get the views of a lot of people and understand whether there's anything we can do to support them in management. But we have



to remember to respect their autonomy with the delegation of authority and incentives. Another matter is domestic subsidiaries. There are many outstanding companies in sectors other than our own, employing different operating and management strategies, and we need to contemplate carefully whether we're capable of running them properly. We need to have this debate because sometimes it is better to give them authority to decide what to do and let them go for growth themselves. We need to run things with a view to enhancing corporate value for the group overall, because over-diversification of businesses can lead to a conglomerate discount.

Lury: Only four or five subsidiaries are on the agenda at board meetings. It's not wrong to leave operations up to subsidiaries. But is it a good idea to dispatch the CEO to a subsidiary? Promoting subsidiaries' employees from within would help motivate them. This sort of discussion is also necessary.

Evaluation and issues with medium-term plan: "Selection and concentration" and initiatives to improve profits

Ito: One of the main thrusts in the Company's long-term vision is a net sales target of ¥1 trillion in fiscal 2030. I don't think this is bad, but we should prioritize margins. M&A is also a major element, and I think normally M&A should be seen as a combination of acquisitions and sales—M&A strategies should consider both angles, sales and acquisitions. Funds from a sale can be allocated toward the next acquisition. Because we have this ¥1 trillion target, though, I think we might be overlooking the disposals side of the equation. This direction is not apparent in "selection and concentration." Even now, the number of sectors our businesses cover is too broad and it may not be possible for us to manage them all effectively.

Lury: Conversely, we could take the plunge and sell businesses that are performing well. We need to better identify our strategic goals and objectives, make sure that our investment priorities are structured accordingly, and seek to minimize the chances for unexpected

problems to arise, particularly from businesses that are not a priority.

Ito: Common wisdom is that new businesses go well only in rare cases. A successful new business comes from taking an existing one and spending time to transform it. In many cases things go badly when companies get into areas where they don't understand the market or much else. Hitachi Zosen has many outstanding businesses. Refining them should yield steady results.

Takamatsu: When I look at technology expos, I get the sense that welding technology is the basis for Hitachi Zosen's *monozukuri* (artisan-like dedication in manufacturing). Using this technology to transition from shipbuilding to an environmental business is a great success story, in my view. In other areas, the Company has committed wholeheartedly to individual businesses and aims to meet its performance targets, but there are still issues to be addressed. I hope we'll be able to develop sound business plans that take these issues into account. As part of this process, we'll of course have to tidy up the business portfolio a bit.

Ito: The appeal of Hitachi Zosen is that in a world where other companies are developing upstream businesses, Hitachi Zosen is building downstream businesses—in terms of human organs, the waste treatment functions of the liver and kidneys. For example our waste and sewage treatment businesses recycle waste and effluent into energy and drinking water. This is a niche in a sense, but a global niche. Due to a lack of competition, it is possible to obtain a good position even from a global perspective. Wonderful future developments are in prospect if we concentrate here and raise our market share. Signs of such are visible now. This aligns with our theme of solving social issues.

Lury: These businesses help achieve the targets in the Sustainable Development Goals (SDGs) set out by the United Nations. They also align with our Company's vision. However from an investor perspective, profits are still too low. We need to focus on lifting these.

Takamatsu: At one time Hitachi Zosen built ships, which have to carry out the gamut of functions at sea. Power is generated and consumed on board, and the resulting waste heat is recovered for reuse and exhausts are treated on board. In other words ships have on board everything that's needed for the earth to stay healthy. I believe that the concept behind Hitachi Zosen is to establish businesses that capitalize on all these aspects of shipbuilding. These businesses support ongoing, happy life on earth.



Ito: This is self-containment. These businesses don't waste resources, do they?

Takamatsu: Operating these at a global scale would make for wonderful businesses.

Lury: Turning to structural reform, we have faced a number of issues since I was first appointed. Costs have been rising as well. While these cannot all be solved within the current medium-term plan period, the Company is totally committed to making progress with these initiatives as we move ahead. If we make the appropriate cost estimates and are careful to avoid risks in light of our past experience, profits will grow, making for an even better company.

Takamatsu: When it comes to "selection and concentration," our businesses span an extremely wide range, so I understand that the timing of decisions is very difficult. There are also problems with the business cycle. For better or worse, there are many nice people at Hitachi Zosen, which I think may be hindering progress in structural reform, but some issues require firm decision making.

Message toward building the future

Ito: In fact, president Takashi Tanisho has considerable experience in ICT and software, sectors much different from heavy industry. I think that people with a wide variety of experience should form the core of Hitachi Zosen going forward. This is because such people will be able to see problems with the Company or its businesses. Software is now and will in the future be the key to growth in Japan. Because our president has been involved in this leading-edge field, I think he will be able to engineer dramatic reforms. Pointing Hitachi Zosen's employees in the right direction will enable the Company to grow further as they are earned by nature.

Lury: There are also problems with compensation arrangements. Currently, the performance of the business they are in charge of has no impact on compensation for general managers or section managers. I think this should be reviewed soon. It is better to have incentives from a long-term perspective. I would like the Company to consider incorporating performance-based compensation into plans. This would surely alter the mindset of young employees.

Ito: Virtually all of Japan's companies are the same. Engagement indicators (that show how keen people are on their work) in Japan are among the lowest in the world. Even if they work hard, they get the same pay, so they don't bother. It would therefore be good to have at least some link between performance and compensation. The status quo rather encumbers our ability to manage overseas staff. Incentives are necessary.

Takamatsu: In this regard, I would like Hitachi Zosen to be a standard bearer for other Japanese companies. We have been recognized for our diversity initiatives, but the corporate atmosphere still makes it difficult for employees to express their opinions. I want everybody to be able to discuss things more openly.

Lury: This does not go just for women. The long-term vision aims at

generating at least 50% of net sales overseas in fiscal 2030. If that is the case, the Company should consider promoting talented non-Japanese leaders to the head office.

Takamatsu: Certainly, we need various types of people in management. To be blunt, we need "eccentric" people in the Company. Someone who can say something out of left field knows how to express themselves. We need lots of people like this. I believe that having 30% of the board consist of outside directors aligns with this intent.

Lury: Back in 2000, there was a bestseller in the US and Japan called *Who Moved My Cheese?* It said that a company that does not adjust will not do well. If there is a problem or the surrounding environment changes, it has to adapt or it will get left behind. We need people who can deliver this kind of message within the Company.



Ito: All the Hitachi Zosen businesses contribute to the UN's SDGs. The talent of our people and our basic technologies are imbued with massive potential. However, I think it is wrong to be contented with our profitability and share price as they stand. I want higher earnings, higher salaries, and everyone to be happy. There are no tricks to management success. It depends on doing the obvious properly. But if you shut yourself up in an enclosed space, you lose sight of changes in the outside world. And sometimes we think we've changed when in fact we've hardly changed at all. Indeed there are even cases where the amateurs are the one who have universal commonsense. That's why it is good to have outside board members who are not experts in the company's businesses. In that context I intend to tell people painful truths and continue to make a nuisance of myself as an outside director.

Risk Management

In the Hitachi Zosen Group, risks related to compliance, the environment, safety, disasters, and information security, as well as other potential operational risks, are continually assessed and monitored by Company divisions responsible for each type of risk. These divisions also carry out related training and guidance programs. Risks with the potential to materially affect the financial standing of the Company or any member company of the Hitachi Zosen Group are reported to the Company's Board of Directors.

To enable a quick and appropriate response when a major risk materializes, the Company has set up systems in advance, including rules related to methods of communication and response, as well as management systems.

The Company's internal audit division audits the effectiveness and adequacy of risk management at Group companies, and regularly reports its findings to the Company's Board of Directors.

Major risks recognized and managed by the Company

Type of risk	Potential effect	Our response
Risks potentially arising during normal business activities		
① Violations of law	Risks occur from ignorance of laws, regulations, and socially-accepted norms as well as from a lack of willingness to obey them. Since public works account for a certain percentage of sales volume of the Group, members of the Group could be penalized by fines, damages, or loss of social credibility in the unlikely event of bid rigging or any other violation of the Antimonopoly Act, which could lead to losses that would materially affect their financial and operating results.	The Hitachi Zosen Group upholds compliance as its basic business policy, and considers strict compliance to be one of its critical management tasks. Accordingly, the Group continually carries out a wide range of measures relating to the promotion of compliance management. One of these measures, the prevention of Antimonopoly Act violations, is outlined in the Proposals from the Committee for Verification of the Antimonopoly Act Compliance and Proposals and the Company's approach (Corporate website: What's New, November 30, 2011), and a continuing internal education program ensures the prevention of non-compliance incidents. More P. 38 Corporate Governance
② Environmental pollution	The natural and human environments of the communities in which our business operations are located may be severely affected by the release of pollutants or noise.	Since the 1970s, the Hitachi Zosen Group has been making an effort to protect the environment in and around its business sites as well as the local communities in which they operate. The Environmental Protection Promotion Committee, established in 1992, has developed basic policies and priority action items for environmental protection at global and regional levels, and has carried out the necessary measures. Each of our plants and Group companies promotes measures to protect the local environment through its Business Site Environmental Preservation Committee, following the aforesaid basic policies. In addition, we strive to act in line with global environmental protection activities, such as protecting the ozone layer, helping prevent or mitigate global warming, and recycling and reducing waste. More P. 51 Environmental Initiatives
③ Accidents and disasters	As engineering and manufacturing are the business activities of the Hitachi Zosen Group, we face the risks of causing personal injuries to a third party as well as industrial accidents involving workers, directly or indirectly, due to a lack of safety measures, unsafe practices, incorrect operations, or equipment failures.	Under the basic policy of "Safety first and a compassionate, pleasant workplace for everyone," we continuously monitor the conditions of our workplaces in order to implement appropriate measures to ensure safety comes first in our business operations. Furthermore, we promote various events and measures to protect the mental health of our employees in order to maintain their health and prevent the occurrence of diseases. More P. 48 Utilizing Human Resources and Work-Style Reform
④ Information security incidents	Risks relating to information security include tampering with corporate websites, destroying or altering data, information leaks, denial-of-service attacks (DoS attacks) due to virus infections, unauthorized access, or account hijacking.	We have ensured that our information assets are secure through the establishment of the Hitz Information Security Policy. We carry out regular training of officers and employees in order to prevent leakage of information from within. For attacks from outside our organizations, we are making every effort to maintain the confidentiality, integrity, and availability of our information assets by implementing various preventive measures as appropriate.
⑤ Deterioration of profitability of individual business projects	Any risk to an individual project that was unforeseen at the time an order is accepted can have adverse effects on business results by severely affecting their profitability.	In accepting an order for a business project that contains more than a certain level of risk due to the contract price, the destination, or the adoption of a new technology or business model, the Risk Management Group of the Corporate Planning Department, which is a department common to all Group companies, identifies and evaluates the risks inherent in the technological and commercial conditions of the contract, and examines workaround measures in advance. A Risk Examination Committee is organized, if necessary, to measure the level of risk from various aspects. The results are reported to a decision-making committee, which will make the final decision on acceptance of the order. After an order is accepted, the Project Management Group of the Corporate Planning Department monitors the project on a monthly basis to minimize variance between targets and actual results.
Risks that cannot be managed by conventional systems		
⑥ Natural disasters and terrorism	Human casualties and property damage due to earthquakes, typhoons, or pandemics may adversely affect the business performance and financial conditions of the Hitachi Zosen Group.	In order to minimize human casualties and property damage during a disaster, we have a business continuity plan in place, and carry out inspections and training to respond to such a disaster. We also maintain emergency communication systems.

Business continuity planning

The Hitachi Zosen Group has a business continuity plan (BCP) in place for its key business operations in Japan. The BCP is designed to minimize human casualties and property damage caused by emergencies and disasters, and to secure the continuity or early recovery of core business operations. The Group reviews the BCP as needed to update and expand its content, and it conducts regular training based on disasters scenarios, in order to evaluate the effectiveness of the BCP and familiarize officers and employees.

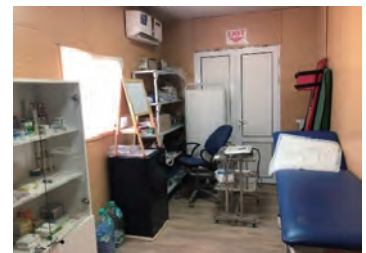
► Safety confirmation system

The Hitachi Zosen Group operates a safety confirmation system in order to rapidly confirm the safety of officers, employees, and their families in an emergency or natural disaster and conducts regular training for the system.

Medical and safety precautions for businesses outside Japan

With the globalization of its business, the Hitachi Zosen Group strives to prevent and reduce safety/medical risks, while expanding its support network for employees and their families who are stationed abroad and employees traveling abroad on business. The Group collects crisis management information for destinations and provides access to telephone consultations with physicians and emergency medical evacuations when needed while abroad.

For projects in remote areas, maximum consideration is given to securing on-site access to medical care. This includes making arrangements for shipping container clinics equipped with modern equipment and staffed with physicians trained to the level of medical care in industrialized nations.



Container clinic

Natural disaster response: 2018 Japan floods

topics

In fiscal 2018, Japan experienced a series of abnormal weather events including earthquakes, heavy rains, and typhoons. In particular, the floods that occurred in July 2018 in eastern Japan inflicted serious damage to the Mukaishima Works in Onomichi City, Hiroshima Prefecture. The vicinity of the plant was cut off from essential electricity, gas, and water services as employees and residents struggled to get back on their feet. Flooding and mudflows forced the plant to suspend operations for seven days. Then, approximately two months were required to fully restore the buildings and site, emphasizing the importance of regular preparedness and risk management.

1 Enhancing risk management for disasters

The Hitachi Zosen Group is reviewing its process for verifying damages in this disaster, and the response until operations were restored. The Group will strengthen its framework and measures to address natural disaster risks, and strengthen preparedness measures at other business locations.



Landslide near the plant

2 Cooperation with group companies during the disaster

During the 2018 Japan floods, the Hitachi Zosen Group mobilized trucks operated by its logistics subsidiary, Ohnami Corporation, to get supplies to the Mukaishima Works and Innoshima Works, as well as reach nearby residents and employees with supplies. Based on this experience, the Hitachi Zosen Group is studying measures so that Group companies can flexibly share their stockpiles in a disaster and is examining the use of the Group's distribution network to rapidly deliver supplies to disaster-stricken areas.



Flooding and mudflows within the plant grounds



Damaged wall and flooding inside the plant

Utilizing Human Resources and Work-Style Reform

We are working to foster a corporate culture in which to enhance the strength of our diverse employees and enable the creation of new value. We are continuing to build a workplace and develop human resources that make it possible for the Company and individual employees to grow together.

Human resources development

Human resources development is recognized as a key issue in the continuing development and growth of the Hitachi Zosen Group. It is positioned as one of the priority strategies in our medium-term management plan, Change & Growth, and we are working to develop human resources on a planned, continuous, and long-term basis. The Group defines the ideal employee to be a person who understands the Hitz Value, which comprises our corporate philosophy, our management stance, and our standards of business behavior, as well as its relevance to their work, and is able to reflect it in results. We have implemented the Career Planning Program, and individual departments specifically define their ideal front-line employee. All employees are given OJT training by a workplace trainer during their first two years with the Group. In the third year, with the support of their department head, they will set a career plan that will guide them toward their ideal future. They will attend the Hitz Seminar (92 classes) in which they learn the human, conceptual, and technical skills to support their career development. In addition, the Group offers opportunities for self-enlightenment through programs, such as study exchanges within Japan and accreditation incentives, as well as internal language courses (12 classes in English and Chinese). In order to create a workplace environment in which everyone is equal and respects one another, the Group provides company-wide human rights education on a regular basis.

► Development of global human resources

For the development of global business, we implemented an overseas training assignment program in fiscal 2011 under which young employees are assigned to overseas offices and affiliates with the intention of providing practical on-site training in other departments, as well as improving their language skills and expanding their international perspectives through cross-cultural experience.

We also implemented a program in fiscal 2013 that assigns young employees to various overseas representative offices on a rotational basis. To develop global personnel who will work in the areas of business expansion and new market development overseas in the future, young employees with up to ten years of service are assigned positions in charge of work in the offices of our overseas representatives or local affiliates for a term of generally three years under this program, where they gain experience in a wide scope of duties.

► Promotion of training for technical personnel

Technical personnel are people who possess specialized skills and work mainly in manufacturing functions. In order to facilitate skill transfers and increase work-site competencies for the purpose of quick training and improving the skills of young technicians, we provide Group-wide basic skill training, planned guidance for development of highly skilled technical personnel (development of skill maps), and training for

newly-appointed supervisors. The Hitz Training Center that opened at Ariake Works in March, 2011 functions as an educational center for technical personnel of the Hitachi Zosen Group by providing basic skill training camps for new technical personnel (April to June) and training programs in advanced skills, safety, and supervision for mid-level personnel.

► Fostering of the management sense

To accelerate our efforts to increase the competence and problem-solving skills of management, we conduct workshops for top-level management as well as provide administrative personnel with internal workshops, participation in workshops outside the Company, and lectures by outside instructors.

Initiative	Content	Implementation
Executive workshops	Organized for the purpose of deepening mutual understanding and building relationships that are amenable to earnest dialogues so as to unite all executive officers on the management team.	28 persons (1.5 days)
Senior management solution finding workshop (Hitz Ichinokai)	A place for senior executives to explore the future vision of the Group and discuss strategies to achieve it. Thorough discussions are held from the perspectives of the management of all Group companies.	24 persons (Held nine times)



Executive workshop

Utilizing diverse personnel

Since the inception of a group to empower women in 2008, diversity has been one of our key measures, and includes setting numerical hiring targets for women and non-Japanese employees. To this end, we established the Diversity Promotion Office in 2015, and, in response to the message from the President seeking impetus for diversity management, laid out an action plan featuring eight categories. These are

identified as organization and culture, work style, gender, nationality, age, disability, childcare, and nursing care. We strongly believe corporate activities carried out by people who respect diverse values will strengthen the unity of the Group and create new corporate value. In March 2019, Hitachi Zosen was selected by the Ministry of Economy, Trade and Industry as one of the 100 companies included in the “FY2018 New Diversity Management Selection.”



Award ceremony



► Securing and utilizing human resources

In order to maintain and enhance core technology and skills, respond to globalization, and continue to create new value, we recruit new college graduates every year. In April, 2019 we hired 139 graduates based on our mandate to recruit from diverse faculties and our hiring targets for women and non-Japanese staff, and as part of our effort to secure diverse human resources. We endeavor to assign them to appropriate positions once they start, using a comprehensive assessment of individual aspirations and aptitudes through a department rotation system, open job postings, and personal career plan consultations. We also recruit mid-career people as well as yet-to-be-employed recent graduates for various types of work who, as a work-ready force, contribute their expertise and experience. Regarding the employment of people with disabilities, from the perspective of diversity we regard it as very important to provide a welcoming work environment for everyone. The Company maintains a hiring rate for people with disabilities in excess of the legally mandated level of 2.2 percent.

■ Ratio of female and non-Japanese hires to total new hires (college graduates)

		Joined April, 2017	Joined April, 2018	Joined April, 2019
New non-Japanese hires		8%	13%	7%
New female hires	Administrative	35%	41%	39%
	Technical	7%	12%	8%

► Promoting the success of women

In recognition of our work in response to the President’s message declaring the empowerment of women in October, 2008, Hitachi Zosen has now received the Kurumin accreditation three times, in 2013, 2015, and 2019. Following the passing of the Act on Promotion

of Women’s Participation and Advancement in the Workplace, we implemented various measures to advance the participation of women, such as the development and announcement of an action plan with numerical targets, promoting diversity through the recruitment and managerial development of women, and supporting continuous career building. As a result, we received the Eruboshi (2nd level) accreditation in June, 2018. We are committed to continue with our efforts aimed at receiving the highest Eruboshi rating (3rd level).



Kurumin



Eruboshi

Work-style reform and work-life balance

Work-style reform at the Hitachi Zosen Group envisions increased productivity and better work-life balance through a reduction of long work hours. To this end, we are implementing a number of measures aimed at creating a workplace where every employee can perform at his/her best and the Group and its people can grow together.

The measures aimed at achieving flexible work styles include a variety of programs, such as the work-from-home system and satellite office system which started in April 2018, and super-flexitime systems. These are all implemented in conjunction with the introduction of no-overtime days and planned taking of annual vacation days in an effort to reduce total work hours.

In addition, we have been taking steps to reform our corporate culture and make the workplace more employee-friendly. And as part of our environmental preservation policies, since 2005 we have introduced a new dress code at our head office in Osaka and our Tokyo Office that allows staff to wear casual dress all year round. In 2018, as part of our work style reforms, we have been attempting to foster a corporate culture that encourages a more flexible mindset so as to avoid stereotypical thinking, and have been promoting a culture of openness in the workplace that leads to more effective interpersonal communications. We have also been rethinking our working practices to promote greater comfort for our staff, in the belief that this will enhance efficiency, leading to improved productivity.



Working from home



Employees in casual dress

Utilizing Human Resources and Work-Style Reform

Measures aimed at helping to accommodate both work and childcare/nursing care include the enrichment of various programs, such as the extension of childcare leave until the child is three years of age, a shorter work-hour program and hourly paid-leave system intended for employees facing childcare and nursing care responsibilities, and the reduced workdays system to accommodate employees' nursing care needs. In addition, we have opened a web portal and are distributing handbooks, among other methods of making our systems more convenient and improving employees' understanding. As a result, recent years have seen a growing number of male staff taking childcare leave.

Furthermore, we organize work-style reform promotion workshops for managerial personnel to increase awareness of the need for efficient work habits and work-life balance, and provide support for female and non-Japanese staff in pursuing their careers, including resumption of work after taking childcare leave.



The female staff career promotion program



Seminar for employees returning to work after childcare leave



The child-raising support web portal



Handbook about balancing work with nursing care

Promotion of healthcare management

The Hitachi Zosen Group pursues health management to enable all employees to maintain an excellent level of physical and mental health, so that they can show their full capabilities in the workplace.

To maintain employees' health and prevent sickness, we implement regular health examinations and stress checks, as well as a health checks by physicians for those who work excessive hours. These measures are part of our health guidance and mental health program, which includes mental health seminars and professional counseling services.



Health education lecture



Stress check report session (for managerial staff)

Preventing occupational accidents

Under the basic policy of "Safety first and a compassionate, pleasant workplace for everyone," and under the leadership of managers and supervisors, we are enhancing workplace competence built on realistic scenarios, actual goods, and realistic situations through an education scheme with experimental morning meetings and a simulation of the actual experience of feeling the presence of danger. We aim to achieve a "zero-accident workplace" through uncompromising and strict management, as well as compassionate guidance that motivates workers.

Environmental Initiatives

Medium-term targets and progress

The Hitachi Zosen Group has been working on environmental protection measures through its offices, plants, and regional communities since the 1970s. In 1992, we laid down the Basic Environmental Protection Policy and Action Guidelines. Based on the policy and guidelines, our Environmental Protection Promotion Committee

developed action guidelines into a specific action plan called the Hitachi Zosen Environmental Protection Promotion Plan. In addition to conventional efforts to protect regional environments, we have expanded our activities to include ozone layer protection, global warming prevention, and recycling and reduction of waste. We also promote our environmental activities by setting key action targets and goals and following up on the actual performance.

Achievements under the Hitachi Zosen Environmental Protection Promotion Plan

◎: Fully on target ○: Partially on target △: Short of target

Measures	Medium-term targets	Results of fiscal 2018 activities	Assessment
Environmental management	Build an environmental management system	<ul style="list-style-type: none"> · Environmental audits of plants conducted by a regional environmental protection technical committee · Internal audits conducted by internal auditors at business sites · External environmental audits conducted by a third party 	◎
	Promote "Green procurement"	<ul style="list-style-type: none"> · Promoted purchasing of products with a low environmental impact · Promoted central online purchasing of environmentally friendly products 	◎
Reduce environmental burden of business activities	Reduce use of ozone-depleting substances	Properly dispose of equipment that uses fluorocarbons and properly manage such equipment to prevent fluorocarbon leaks in line with the Act for Rationalized Use and Proper Management of Fluorocarbons	Upgraded equipment that uses fluorocarbons ◎
	Reduce CO ₂ emissions	Medium-term target: 2.8% decrease in FY2016 vs. FY2005 Long-term target: 3.8% decrease in FY2020 vs. FY2005	Cut by 25.0% vs. FY2005 ◎
	Reduce waste (excluding valuable materials)	10% decrease in FY2020 vs. FY2000	Cut by 15.1% vs. FY2000 ◎
	Curb landfill waste	70% decrease in FY2020 vs. FY2000	Cut by 68.1% vs. FY2000 ○
Contribute to protection of the regional environment	Ensure robust environmental protection at business sites	<ul style="list-style-type: none"> · Complied with environmental protection laws and regulations · Took environmental initiatives based on agreements with regional communities, and independently based on our business sites' plans 	◎
	Contribute to regional communities	Participated in environmental protection campaigns by government bodies, regional communities, etc.	◎

Environmental risk management

To reduce the environmental risks of our business activities with respect to the emission of pollutants into the environment, individual offices and plants of the Hitachi Zosen Group exercise strict waste management according to our voluntary standards and targets, which are stricter than the legally required levels. With the aim of minimizing environmental risk and preventing environmental problems from arising in our business activities we periodically inspect and maintain

our equipment, and ensure that work is performed according to work process standards. We have manuals for responding in the event of environmental accidents so as to minimize pollution, and periodically conduct emergency drills and training. Environmental risks that have the severest impact on the Group are accidental oil spills, coating operations, and noise issues. To prevent these risks from materializing, we are constantly working on improvements based on the PDCA cycle and ISO 14001.

First Japanese manufacturer to issue green bonds

On September 21, 2018, Hitachi Zosen became the first Japanese manufacturer to issue green bonds. The proceeds from the Hitachi Zosen Green Bonds will be used to purchase materials for the construction and refurbishment of energy-from-waste (EfW) plants.

As a company whose core business is in the environmental sector, Hitachi Zosen is committed to further promoting the deployment of eco-friendly plants in order to realize a recycling-based society. This commitment aligns with the need to diversify the Company's financing, so the Company decided to issue green bonds. Green bond issuers must specify the uses for the proceeds, and after reviewing the options, the Company selected the following projects: Rebuilding and construction of the Kyoto City Nambu Clean Center No. 2 Plant, and construction and operation of a new EfW plant for the Kikuchi Environmental Preservation Association in Kumamoto Prefecture. The proceeds from issuing the green bonds will be used to procure materials for these two projects.

Additionally, green bond issuers must specifically disclose the environmental benefits to be derived from green projects. As stipulated, the Company has disclosed the schedule for moving forward with the projects and the anticipated CO₂ reduction benefits. The Company worked with the managers of the projects to calculate the benefits, which can be difficult for ongoing projects. This groundwork enabled the Company to become the first Japanese manufacturer to issue green bonds. The following sections disclose the current status of the green bonds and green projects.

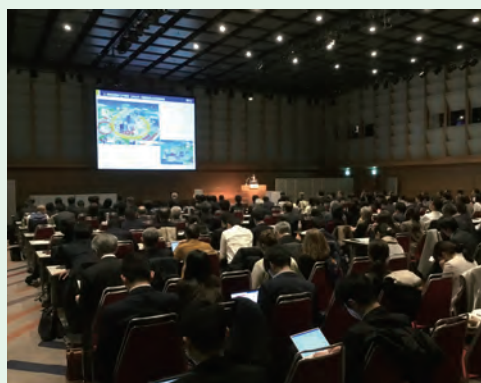
Outline of Hitachi Zosen Green Bonds

Issuer	Hitachi Zosen Corporation
Name	Hitachi Zosen Corporation 26th unsecured bonds (Hitachi Zosen Green Bond)
Date of issuance	September 21, 2018
Date of determining issuance terms	September 14, 2018
Tenor	3-year
Amount of issuance	¥ 5,000 million
Interest rate	0.24% per annum
Use of proceeds	To be allocated to operating funds, e.g., expenses required to purchase materials, for EfW plants contracted to and under construction by Hitachi Zosen
Green Project	<ul style="list-style-type: none"> • Kyoto City Nambu Clean Center No. 2 Plant • New EfW plant for Kikuchi Environmental Preservation Association
Bond rating	BBB+ (JCR)
Lead managers	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. Nomura Securities Co., Ltd.
Green Bond Structuring Agent*	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.

* A structuring agent supports Green Bond issuance such as by establishing a Green Bond framework and providing consultation on obtaining a second opinion.



Kyoto City Nambu Clean Center No. 2 Plant



Hitachi Zosen Green Bonds presented at a green bond symposium

topics

1 Overview of green projects and status

► Kyoto City Nambu Clean Center No. 2 Plant

High-efficiency EfW plant with adjacent biogas generation facility. The improvements will aim to maximize the energy recovered from waste, in order to outperform conventional EfW plants in terms of CO₂ emissions reductions.

Client	Kyoto City
Project	Rebuilding and construction of Kyoto City Nambu Clean Center No. 2 Plant
Contents	Design and construction of waste treatment facility, administration office, and environmental learning facility (including dismantling of existing facility and construction of exterior and other ancillary facilities)
Description	Processing capacity 500 t/day (250 t/day x 2 stoker-type incinerators), power output 14,000 kW Sorting and resource reuse facility: 180 t/6 hrs Biogas generation facility: 60 t/day (30 t/day x 2 systems), power output 1,000 kW
Completion	September 30, 2019 The plant started receiving power in March 2019 and commenced test operation of the incinerators, sorting and resource reuse plant, and biogas generation plant. A three-day handover performance test was conducted in late August 2019, and the rebuilding and construction project was completed in early September.

► EfW Plant for Kikuchi Environmental Preservation Association

The Kikuchi Environmental Preservation Association formulated plans to construct a new EfW plant to implement permanent and stable waste processing, based on future trends in its jurisdiction area and to realize sustainable waste processing. Hitachi Zosen Corporation was commissioned to build the plant in 2018, as a leader in the segment.

Client	Kikuchi Environmental Preservation Association
Project	Construction and operation of new EfW plant
Contents	Design, construction, and operation for 20 years after completion of EfW plant
Description	Processing capacity 170 t/day (85 t/day x 2 incinerators) Power output 2,800 kW
Completion	March 31, 2021 (planned)
Current Status	Civil engineering and construction work commenced on February 15, 2019. The key construction milestones completed in the five and one-half months through July 2019 included sinking foundation piles, excavating a 14.5-meter deep waste pit, and pouring concrete into the pit floor. As of the end of July 2019, the project was roughly 30% completed, and it is currently proceeding on schedule.

2 Allocation of proceeds

The following table shows the allocation of proceeds as of March 31, 2019.

■ Allocation of proceeds (as of March 31, 2019)

	(¥ million)
Balance at beginning of fiscal year	5,000
Kyoto City Nambu Clean Center No. 2 Plant	-2,542
EfW Plant for Kikuchi Environmental Preservation Association	-116
Balance at end of fiscal year	2,342

Unallocated funds are managed as cash or cash equivalents.

3 Evaluation by an outside body

In order to ensure eligibility and transparency of the Green Bonds and to enhance their appeal to investors, Hitachi Zosen received external review, in the form of a second-party opinion, from the leading international risk management firm DNV GL Business Assurance Japan K.K. A periodic green bond review was conducted in July 2019, which confirmed the continuing eligibility.

4 Impact reporting

Hitachi Zosen Corporation will continue to disclose the following indicators for each EfW plant receiving allocations of the proceeds, as long as the corresponding green bonds remain.

- Annual power output (MWh/year)
- Annual GHG emissions saved (t-CO₂/year)

Intellectual Property

Basic policy

The intellectual property strategy of the Hitachi Zosen Group supports its management and business strategies. Intellectual property rights are accumulated and maintained in accordance with a research and development strategy with the goal of strengthening our market competitiveness. This means that all directors, executives, and employees recognize the importance of intellectual property, and that we obtain intellectual property rights for the technologies we have developed and utilize them to enhance our earnings and corporate value.

For Group companies, we apply a strategic approach to supporting their management of intellectual property aimed at capturing synergies. Moreover, to keep up with the globalization of our business, we work to strengthen close collaboration with patent offices abroad to acquire the international rights for our intellectual property.

Acquiring intellectual property rights

Intellectual property rights are extremely important for implementation of the three basic strategies outlined in the medium-term management plan "Change & Growth". At the Hitachi Zosen Group, we have established a Legal & Intellectual Property Department through which we support stable business activities by striving to identify or generate inventions, using technology and patent maps to assess and analyze our patent portfolio as well as those of other companies, and ensuring optimal patent applications and acquisitions that suit our business model.

In fiscal 2018, we acquired 71 patents in Japan and a total of 76 in the United States, China, and Europe.

The Hitachi Zosen Group's basic policy is to apply the rights for the intellectual property it has acquired over an appropriate scope of business operations, and to manage intellectual property ethically to facilitate fair competition through mutual respect for property rights.

Intellectual property management

The Legal & Intellectual Property Department plays a core role in the Hitachi Zosen Group's intellectual property strategies. The department promotes a wide range of intellectual property activities, including functions such as developing intellectual property strategies in line with business and development strategies, as well as promoting the acquisition of patents in foreign countries along with the growth of our overseas business.

Each unit of our Business Planning and Technological Development Headquarters has an officer in charge of promoting intellectual property activities. These officers intensively coordinate activities such as discovering patent possibilities and facilitating patent applications in collaboration with the Legal & Intellectual Property Department.

In addition, we strive to nurture an intellectual property-oriented corporate culture by holding seminars on intellectual property for each employee level, from new hires to middle-management engineers, conducting e-learning programs tailored to different job responsibilities, and providing information on intellectual property in our internal newsletters. We also organize intellectual property workshops dedicated to AI/IoT to facilitate the use of ICT.

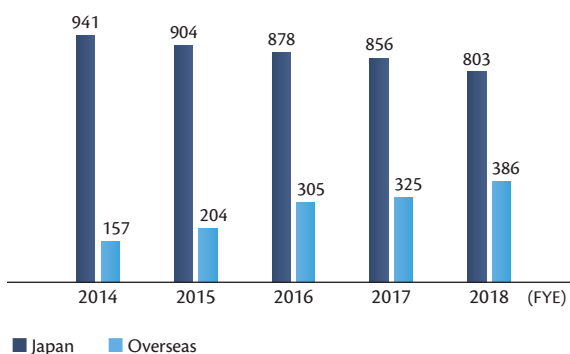
To encourage the inventive activities of employees and reward them for the value of their inventions, we have established awards for the application/registration of patents and their practical applications, which are selected in accordance with our patent regulations and the judging criteria for practical applications. Recipients of practical application awards are evaluated and rewarded fairly.

During fiscal 2018, Hitachi Zosen made 112 patent applications within Japan and 118 overseas. As of the end of that fiscal year, the Company held 803 patents in Japan and 386 overseas. The number of patents held at the end of fiscal 2014 was 941 in Japan and 157 overseas. While the number in Japan has changed little over the past five years, the more than two-fold increase in overseas patents indicates that our efforts to acquire patents overseas are beginning to bear fruit.

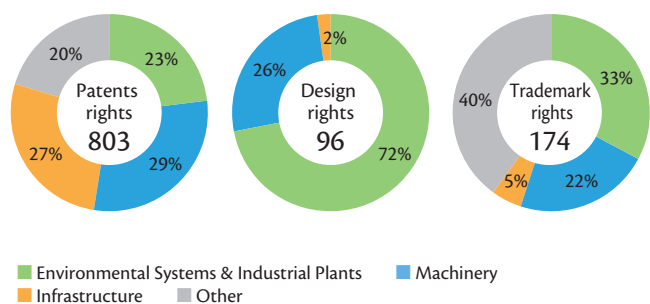
The Company also held 96 design rights in Japan and 49 overseas as well as 174 trademark rights in Japan and 47 overseas.

As of the end of fiscal 2018, neither Hitachi Zosen nor any member of the Group was involved in litigation relating to intellectual property rights.

■ Number of patents held



■ Breakdown by business segment of patent rights, design rights, and trademark rights as of the end of fiscal 2018



Creating intellectual property

topics

Advanced technologies such as the internet of things (IoT), big data, and artificial intelligence (AI) have grown exponentially, while the applications for them have increased, leading to emerging new technologies in many fields. The Hitachi Zosen Group has made it a priority to utilize advanced technology to develop new businesses and products, and it is establishing a platform for the medium- and long-term creation of intellectual equity. For example, the Company opened the Hitz Advanced Information Technology Center (A.I./TEC) in 2018, to serve as a base for the utilization of advanced technology. To enhance the investment benefits from these initiatives, the Company is developing personnel through internal education programs and will establish new organizations to strengthen the Group's R&D framework.

1 Developing personnel with AI expertise

The Technology Development Headquarters launched the Hitz AI Lab in fiscal 2017 in order to continuously train and develop in-house engineers with AI expertise by offering advanced and specialized technical courses in subjects such as AI technology and machine learning. The Company will utilize the Hitz AI Lab to raise the overall level of AI expertise within the Group and co-create intellectual property.

Course details

Technology Course

1. **AI Beginner Course**
Gives an overview of AI, for technical personnel and managers who are interested in learning about AI.
2. **Basic Technology Course**
Specialized course for personnel who are involved in development and design, to acquire basic knowledge about AI. The course consists of three chapters covering the fundamentals of neural networks, fuzzy sets and fuzzy control, and knowledge engineering.

Practical Technology Course

For personnel who have taken the technology course. Students use computers for programming and solving various exercises and learn about neural networks and deep learning.

Courses offered and enrollment

	No. of Courses Offered	No. of Persons Enrolled
FY2017 (Actual)	6	Total 200
FY2018 (Actual)	6	Total 251
FY2019 (Planned)	8	Total 300



Technology Course

2 Launch of Intelligent Machinery Research Center

The Company launched the Intelligent Machinery Research Center in April 2019, in order to accelerate the integration of AI and IoT into the Group's products. The center consists of four groups involved in controls, electrical, mechanical, and photoelectrics. It will contribute to the following initiatives: development of inspection automation and predictive maintenance technology using image recognition, robot (machine equipment and plant) intelligence technology, and R&D aimed at developing next-generation products such as edge computing. In collaboration with the operating divisions and Group companies, the center will seek to differentiate the Group's products and facilitate the Company's expansion into the maintenance and servicing businesses.

Voice

Integration of AI and IoT into the Hitachi Zosen Group's products requires software technology in AI and machine learning, but it also requires specialized technology in mechanics and physics, and electronic circuit and system design technology to implement the algorithms that are developed. Furthermore, these technologies need to be skillfully integrated into a system. The groups of the Intelligent Machinery Research Center possess these elemental technologies and collaborate to integrate software and hardware technology, while collectively pursuing R&D to constantly create new value.



Members of the Intelligent Machinery Research Center

Board of Directors and Corporate Auditors (as of June 25, 2019)

Directors



Representative Director,
Chairman and President
Takashi Tanisho

- Apr. 1973 Joined the Company
- Jun. 2010 Director, the Company
- Jun. 2010 Responsible for Precision Machinery Headquarters, General Manager of Precision Machinery Headquarters, and General Manager of Chikkou Works, the Company
- Apr. 2012 Managing Director, the Company
- Apr. 2012 Responsible for Business & Product Development Headquarters and Precision Machinery Headquarters, and General Manager of Business & Product Development Headquarters, the Company
- Apr. 2013 Representative Director, President and Chief Operating Officer, the Company
- Apr. 2016 Representative Director, President and Chief Executive Officer, the Company
- Apr. 2017 Representative Director, Chairman and President, the Company (current position)



Vice Chairman
Hidenobu Fujii

- Apr. 1979 Joined The Sanwa Bank, Limited
- Jun. 2006 Executive Officer, The Bank of Tokyo-Mitsubishi UFJ, Ltd.
- May 2009 Managing Executive Officer, The Bank of Tokyo-Mitsubishi UFJ, Ltd.
- Jun. 2010 Managing Director, The Bank of Tokyo-Mitsubishi UFJ, Ltd.
- Jun. 2013 President, Mitsubishi UFJ Research and Consulting Co., Ltd.
- Jun. 2017 Vice-Chairman, the Company (current position)



Representative Director,
Executive Vice President
Sadao Mino

- Apr. 1982 Joined the Company
- Apr. 2011 Executive Officer, the Company
- Jan. 2013 General Manager of Engineering Business Division, Environment, Energy & Plant Headquarters, the Company
- Apr. 2013 Managing Executive Officer, the Company
- Apr. 2015 General Manager of Environment Business Headquarters, and Responsible for Architect Supervision Dept. and Quality Assurance Dept., the Company
- Jun. 2015 Managing Director, the Company
- Apr. 2017 Representative Director, Executive Vice-President, the Company (current position)
- Apr. 2017 President's Assistant (Responsible for Production Engineering Dept., Wind Power Business Promotion Office and Functional Materials Business Promotion Office), the Company
- Apr. 2018 President's Assistant (Responsible for Sales and Production Engineering Dept.), the Company
- Apr. 2019 President's Assistant (Responsible for Sales and Procurement Headquarters), the Company (current position)



Managing Director
Toshiyuki Shiraki

- Apr. 1984 Joined the Company
- Apr. 2012 General Manager of Overseas Project Execution Dept., Environmental Systems EPC Business Unit, Environmental Systems & Solutions Division, Engineering Headquarters, the Company
- Apr. 2013 Executive Officer, the Company
- Apr. 2015 General Manager of Business Planning Headquarters, the Company
- Apr. 2016 Managing Executive Officer, the Company
- Apr. 2016 General Manager of Technology Development Headquarters, and General Manager of Business Planning Headquarters, the Company
- Jun. 2016 Managing Director, the Company (current position)
- Apr. 2017 General Manager of Business Planning & Technology Development Headquarters and Responsible for Information and Communication Technology Promotion Headquarters, Architect Supervision Dept. and Quality Assurance Dept., the Company
- Apr. 2019 General Manager of Environment Business Headquarters, the Company (current position)



Managing Director
Tatsuji Kamaya

- Apr. 1984 Joined the Company
- May 1990 Hitachi Zosen Singapore (Pte.) Ltd. (Secondment)
- Apr. 2012 General Manager of Corporate Planning Dept., the Company
- Apr. 2014 Executive Officer, the Company
- Apr. 2015 Deputy General Manager of Environment Business Headquarters, the Company
- Apr. 2017 Managing Executive Officer, the Company
- Apr. 2017 General Manager of Corporate Planning Headquarters, and Responsible for General Administration Headquarters and Procurement Headquarters, the Company
- Jun. 2017 Director, the Company
- Aug. 2017 General Manager of Corporate Planning Headquarters, and General Manager of SR99 Project Team, Corporate Planning Headquarters, and Responsible for General Administration Headquarters and Procurement Headquarters, the Company
- Apr. 2018 Managing Director, the Company (current position)
- Apr. 2019 General Manager of Corporate Planning Headquarters, and General Manager of General Administration Headquarters, and General Manager of SR99 Project Team, Corporate Planning Headquarters, and Responsible for Production Engineering Dept., the Company (current position)



Managing Director
Tadashi Shibayama

- Apr. 1982 Joined the Company
- Sep. 1992 Hitachi Zosen U.S.A. Ltd. (Secondment)
- Apr. 2012 Executive Officer, the Company
- Jan. 2013 General Manager of Environmental Systems & Plant Sales Division, Environment, Energy & Plant Headquarters, the Company
- Apr. 2015 Deputy General Manager of Infrastructure Business Headquarters, the Company
- Apr. 2016 General Manager of Wind Power Business Promotion Office, the Company
- Apr. 2017 Managing Executive Officer, the Company
- Apr. 2017 General Manager of Machinery Business Headquarters, the Company
- Jun. 2017 Director, the Company
- Apr. 2019 General Manager of Machinery Business Headquarters, and Responsible for Infrastructure Business Headquarters, the Company (current position)
- Jun. 2019 Managing Director, the Company (current position)



Managing Director
Kazuhisa Yamamoto

- Apr. 1982 Joined the Company
- Apr. 2012 General Manager of Domestic Project Execution Dept., Environmental Systems EPC Business Unit, Environmental Systems & Solutions Division, Engineering Headquarters, the Company
- Apr. 2014 Executive Officer, the Company
- Apr. 2015 General Manager of Environmental EPC Business Unit, the Company
- Apr. 2017 Managing Executive Officer, the Company
- Apr. 2017 General Manager of Environment Business Headquarters, the Company
- Jun. 2017 Director, the Company
- Apr. 2019 General Manager of Business Planning & Technology Development Headquarters, and Responsible for Information and Communication Technology Promotion Headquarters, Architect Supervision Dept. and Quality Assurance Dept., the Company (current position)
- Jun. 2019 Managing Director, the Company (current position)



Outside Director
Chiaki Ito

Apr. 1970 Joined Fujitsu Limited
Jun. 2006 Corporate Senior Executive Vice President and Representative Director, Fujitsu Limited
Jun. 2008 Vice Chairman and Director, Fujitsu Limited
Apr. 2010 Chairman and Representative Director, FUJITSU RESEARCH INSTITUTE
Jun. 2013 Outside Director, the Company (current position)
Jun. 2015 Outside Director, Zensho Holdings Co., Ltd. (current position)
Jun. 2015 Outside Director, OBIC Business Consultants Co., Ltd. (current position)



Outside Director
Kazuko Takamatsu

Apr. 1974 Joined Sony Corporation
Apr. 2003 Representative Director, Sony Digital Network Applications, Inc.
Oct. 2008 VP in charge of Environment, Sony Corporation
Apr. 2012 Advisor, YAMAGATA INTECH Corporation
Apr. 2013 Executive Director and Secretariat, Japan Institute for Women's Empowerment & Diversity Management (current position)
May 2015 Outside Director, Dexerials Corporation
Jun. 2015 Outside Director, the Company (current position)



Outside Director
Richard R. Lury

May 1974 Admitted to the bar of the State of New York
Sep. 1989 Partner, Kelley Drye & Warren LLP
Jun. 2003 Admitted to the bar of the State of New Jersey
Mar. 2013 Outside Director, Sanken North America, Inc. (currently, Allegro MicroSystems, Inc) (current position)
Jun. 2014 Outside Director, Sanken Electric Co., Ltd. (current position)
Jun. 2016 Outside Director, the Company (current position)

Corporate Auditors



Full-time Corporate Auditor
Koji Abo

Apr. 1973 Joined the Company
Dec. 2005 General Manager of Legal & Intellectual Property Dept., the Company
Apr. 2009 Executive Officer, the Company
Apr. 2011 Managing Executive Officer, the Company
Jun. 2012 Managing Director, the Company
Jun. 2012 Responsible for Legal & Intellectual Property Dept., General Affairs & Human Resources Dept. and Environmental Management & Safety Dept., the Company
Apr. 2015 General Manager of General Administration Headquarters, the Company
Jun. 2015 Full-time Corporate Auditor, the Company (current position)



Full-time Corporate Auditor
Masayuki Morikata

Apr. 1974 Joined the Company
Jun. 2010 Director, the Company
Apr. 2012 Managing Director, the Company
Apr. 2014 Responsible for Corporate Planning Dept., Accounting Dept., Subsidiary Administration Dept., and Overseas Business Administration Dept., the Company
Jun. 2015 General Manager of General Administration Headquarters and General Manager of Corporate Planning Headquarters, the Company
Apr. 2016 General Manager of General Administration Headquarters and General Manager of Corporate Planning Headquarters, and responsible for Procurement Headquarters, the Company
Jun. 2017 Corporate Adviser, the Company
Jun. 2018 Full-time Corporate Auditor, the Company (current position)



Outside Corporate Auditor
Yoshihiro Doi

Apr. 1979 Joined The Kansai Electric Power Co., Inc.
Jun. 2006 Executive Officer, The Kansai Electric Power Co., Inc.
Jun. 2009 Managing Director, The Kansai Electric Power Co., Inc.
Jun. 2013 Director and Managing Executive Officer, The Kansai Electric Power Co., Inc.
Jun. 2016 Director and Executive Vice President, The Kansai Electric Power Co., Inc. (current position)
Jun. 2017 Outside Corporate Auditor, the Company (current position)



Outside Corporate Auditor
Kenichi Takashima

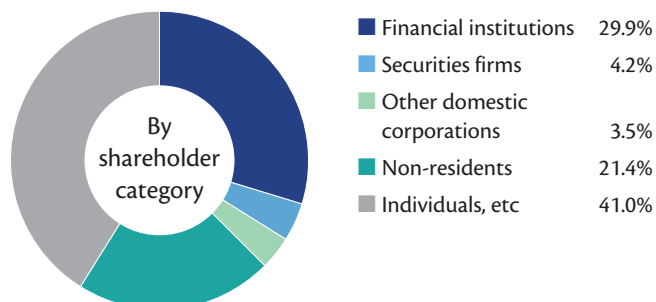
Sep. 1976 Joined Honda Motor Co., Ltd.
Sep. 1979 Vice President (CFO), Honda Deutschland GmbH
Jun. 1996 General Manager of Finance Division, Honda Motor Co., Ltd.
Jun. 1998 Director and General Manager of Accounting Division, Honda Motor Co., Ltd.
Jun. 2000 Corporate Auditor (full time), Honda Motor Co., Ltd.
Apr. 2010 Full-time Auditor, Government Pension Investment Fund, Japan
Jun. 2014 Outside Corporate Auditor, the Company (current position)
May 2015 Outside Director, MAXVALU CHUBU CO., LTD. (current position)

Investor Information (as of March 31, 2019)

Stock data

Number of shares authorized:	400,000,000
Number of shares issued:	170,214,843
Number of shareholders:	81,589

Distribution of shareholdings



Major shareholders

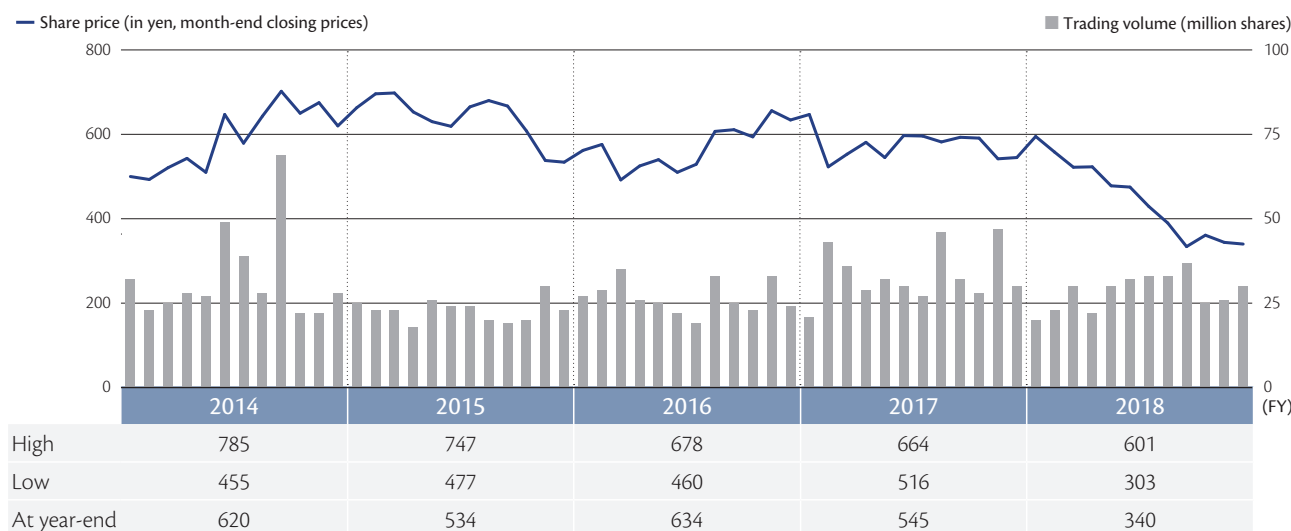
Name of shareholder	Number of shares held (Thousands of shares)	Shareholding ratio (%)
The Master Trust Bank of Japan, Ltd. (Trust Account)	10,157	6.0
Japan Trustee Services Bank, Ltd. (Trust Account)	9,313	5.5
MUFG Bank, Ltd.	5,291	3.1
STATE STREET LONDON CARE OF STATE STREET BANK AND TRUST, BOSTON SSBTC A/C UK LONDON BRANCH CLIENTS-UNITED KINGDOM	5,267	3.1
CREDIT SUISSE AG, DUBLIN BRANCH PRIME CLIENT ASSET EQUITY ACCOUNT	5,000	3.0
Japan Trustee Services Bank, Ltd. (Trust Account 9)	3,661	2.2
Japan Trustee Services Bank, Ltd. (Trust Account 5)	3,101	1.8
STATE STREET BANK AND TRUST COMPANY FOR STATE STREET BANK LUXEMBOURG SCA ON BEHALF OF ITS CLIENTS: CLIENT OMNI OM25	2,919	1.7
Sompo Japan Nipponkoa Insurance Inc.	2,358	1.4
Hitachi Zosen Employee Shareholding Association	2,208	1.3

Notes: The holdings ratio does not include treasury stock.

Shareholder information

Business year	April 1 to March 31
Annual General Meeting of Shareholders	Late June
Final date for voting right registration	March 31
Dividend record date (term-end)	March 31
Dividend record date (interim)	September 30
Public notices	Via Company's website https://www.hitachizosen.co.jp/
Share trading unit	100 shares
Shareholder registry administrator and special account custodian	Mitsubishi UFJ Trust and Banking Corporation 4-5, Marunouchi 1-chome, Chiyoda-ku, Tokyo
Stock listing	Tokyo Stock Exchange

Share price and trading volume



Corporate Information (as of March 31, 2019)

■ Corporate data

Date of founding	April 1, 1881
Date of establishment	May 29, 1934
Representative	Takashi Tanisho Representative Director, Chairman & President
Capital	45,442,365,005 yen
Number of employees	10,580 (consolidated) / 4,072 (non-consolidated)
Business	Design, construction and manufacture of Energy-from-Waste plants, desalination plants, water and sewage treatment plants, marine diesel engines, press machines, process equipment, precision machinery, bridges, hydraulic gates, shield tunneling machines, and equipment for use in disaster prevention/mitigation
Number of Group companies	133

Regarding the drafting of the 2019 Integrated Report

With its long-term vision, the Hitachi Zosen Group has laid out its aspiration to become a solution provider for the creation of a recycling-oriented society.

We will continue working to enhance our earning potential and grow our businesses by leveraging the technological capabilities we have developed and refined, our track record of deliveries, and ties with our customers and society. The target for attaining the UN's SDGs is the year 2030—also our target year for fulfilling the aspirations expressed in our long-term vision. The Hitachi Zosen Group will do its utmost to help realize the SDGs.

This report is informed by the perspective of creating value designed to address social issues in areas related to the natural environment—especially energy and water, which our Group sees as core operational domains. We hope that it will help our shareholders, investors, and numerous other stakeholders gain a deeper understanding of the Hitachi Zosen Group.



New corporate advertisement, launched in July 2019

Hitachi Zosen Corporation

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

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