

TAKUMA

CSR Report 2021

SINCE1938

Leveraging +TAKUMA value for a better future

Founder Tsunekichi Takuma established Takuma Boiler Manufacturing Co., Ltd., the forerunner of today's Takuma, more than 80 years ago.

The founding spirit of this then young company,

"Serve society through boiler manufacturing" mirrored the thinking of Tsunekichi, who poured his energy into inventing Japan's first domestically manufactured boiler, and it remains the foundation of Takuma's Management Principles today.

Takuma continues to provide new value for society through plants that leverage proprietary combustion technology, waste treatment technology, water treatment technology, and other technologies developed since its founding.



Harima Factory when it first started operations

Takuma's founder

"The King of Boilers": Tsunekichi Takuma

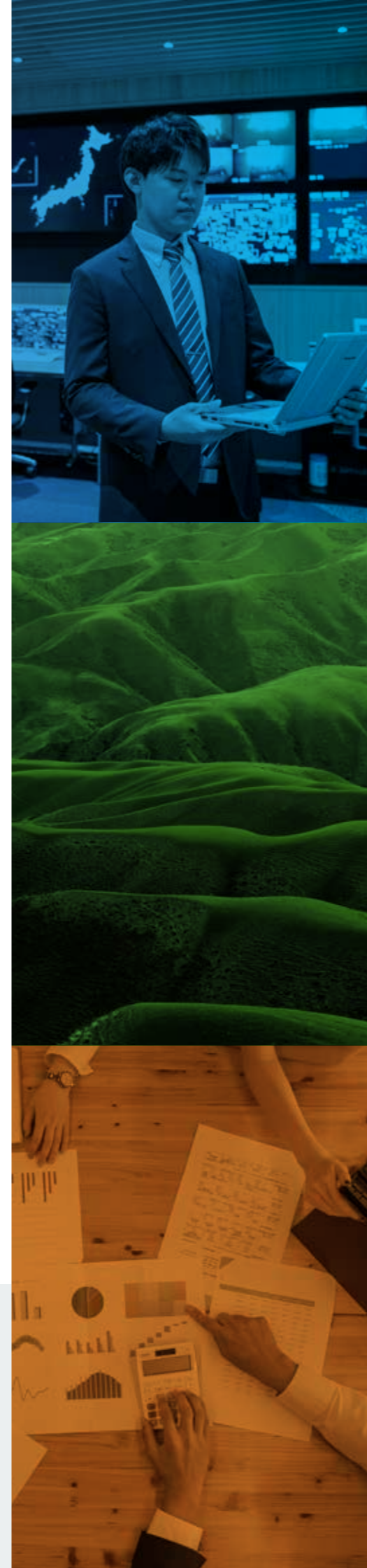
Founder Tsunekichi Takuma made a major contribution to the development of Japanese industry by inventing the first water tube type boiler to be produced entirely domestically.

He started his quest to invent the boiler around the time he turned 40. Tsunekichi, a layperson who did not even understand the technical terms used in boiler textbooks, had to rely on a long process of trial and error in order to overcome the many difficulties facing him before he could found Takuma, establish himself among Japan's 10 greatest inventors of the Meiji and Taisho periods, and earn himself the nickname, "The King of Boilers".



Company Motto

Value Technology,
Value People,
Value the Earth



Management Principles

Takuma will strive for social contribution, corporate value enhancement, long-term corporate development and the satisfaction of all stakeholders by providing goods and services that are needed and recognized as valuable in society.

The founding spirit of Takuma was "Serve society through boiler manufacturing",* which in present-day language means "to contribute to society by supplying goods and services that we provide". This spirit can also be applied to the concept of Corporate Social Responsibility (CSR) that in recent years has become a vital issue for corporate management. The management principles of the Takuma Group companies are all based on the said founding spirit.

*Serve society through boiler manufacturing: It was the Company Motto of Takuma, then Takuma Boiler Manufacturing Co., Ltd., founded by Tsunekichi Takuma, one of the ten great inventors of Japan during the Meiji and Taisho periods (1868-1926).

Takuma Group Ethics Charter

Takuma and the Takuma Group companies believe that it is essential for the sound development of the Group that all of the directors and employees remain aware of our social responsibilities and the circumstances surrounding us as well as act in response to social ethics complying with applicable related laws and ordinances. Bearing the above in mind, we have established and will promote this ethics charter as our code of conduct, aiming to realize our management principles.

1. We shall strive for a proactive social contribution while establishing a harmonious coexistence with the global environment as good corporate citizens.
2. We shall act in good faith in accordance with sound business custom, while complying with applicable laws and regulations and committing ourselves to fair, transparent and free competition, as well as conducting lawful business activities.
3. We shall never have any relationship with antisocial forces or such organizations, which may pose a threat to the social order and security of civil society.
4. We shall respect fundamental human rights and never practice discrimination.
5. We shall strive to provide high quality products and services, based on our advanced technologies, to attain high acclaim and confidence from our customers.
6. We shall strive to disclose corporate information to shareholders and investors through Investor Relations (IR) and other activities on a timely and equitable basis.
7. We shall strive to protect corporate assets as well as information, while never using either for improprieties or any unjustifiable purpose other than normal business operations.

Editorial Policy By augmenting growth strategies embodied in the Message from Top Management and the Group's business strategies with a comprehensive presentation of non-financial information like our Environment, Social, and Governance (ESG) initiatives, the CSR Report 2021 aims to communicate our integrated approach to ESG management to all stakeholders. In particular, this report describes how we are working to realize the company's sustained growth through our value creation process; Vision 2030, the long-term vision that comprises our management strategy; and the key issues (Materiality) that characterize the Takuma Group's operations. We will use this report as a communications tool to deepen dialog with stakeholders, further improve CSR activities, and increase our corporate value.

Publisher: Compliance & CSR Promotion Division, CSR Department, Takuma Co., Ltd.
Data Collection Period: From April 1, 2020, to March 31, 2021, in principle. In addition, some activities in FY2021 are included.
Coverage: This report applies to Takuma Co., Ltd., and its affiliates in principle. Time of Issue: October 2021

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We continue to help solve social problems and contribute to the sustained development of the world by creating valuable products and services.

We at Takuma offer our heartfelt condolences for all those who have lost their lives as a result of COVID-19, and we hope that all those suffering from the disease will recover quickly and that the pandemic will be brought under control as soon as possible.

Management Principles

Inventor Tsunekichi Takuma founded Takuma in 1938 with the philosophy of "Serve society through boiler manufacturing." Since that time the Takuma Group has inherited that philosophy and used it to establish businesses involving the full array of boilers while taking advantage of technologies developed through boilers to enter the environmental sanitation field with facilities such as waste treatment plants and water treatment plants, broadening its businesses with a focus on the fields of energy use and environmental protection, and contributing to society's development and the resolution of social problems. Our Management Principles lie in this founding spirit, and a dedication to contributing to the sustained development of society over the long term through business activities remains the starting point of the Takuma Group as well as a core expression of its unchanging values.

Takuma Group Strengths

Along with the technologies and expertise that the Takuma Group has accumulated through the repeated improvement of products and services since its founding, the relationships of sincerity and trust that the Group has developed with longstanding customers by providing after-sales service and solutions have been passed down unbroken as the tangible and intangible assets that embody its greatest strengths and the source of its ability to compete successfully.

Reflections on the 12th Medium-Term Management Plan

Under the 12th Medium-Term Management Plan (FY2018 to FY2020), which represents the final stage in the Group's effort to achieve the medium- and long-term vision for FY2020 that it began in FY2012 of "being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection and of achieving ordinary profit of JPY 10.0 billion in FY2020," we have pursued the theme of increasing our corporate capabilities in order to achieve our corporate vision and subsequently realize steady growth. In addition to working to strengthen and expand our revenue foundation, for example by proposing solutions based on customer needs in our after-sales service business and launching an energy plant O&M* business for private-sector companies, we safeguarded our market position by continuing to steadily turn robust demand into orders received in our EPC business*. As a result of these initiatives, we achieved the targets set forth in the financial plan (for consolidated ordinary profit).

Vision 2030 Long-Term Vision

Global issues that merit concern include the growing seriousness of the problem of climate change; the worsening of the sanitation environment due to rapid population growth and urbanization, particularly in emerging nations; and increasing energy demand. At the same time, domestic challenges like falling internal demand caused by the shrinking and aging of Japan's population, shortages of human resources and future leaders, tight financial conditions affecting



Message from Top Management



national and local government, and aging infrastructure are triggering major concerns about how a sustainable society can be realized going forward. Based on these social conditions and issues, we formulated Vision 2030 as a long-term vision that would serve as new guidelines for the Group's medium- and long-term management.

In keeping with this vision, the Takuma Group will implement Environment, Social, and Governance (ESG) management, an approach that consists of addressing key ESG-related issues in an effort to achieve sustained growth by resolving issues faced by customers and society through business activities. In pursuing business activities built on a core of ESG management, we will strive to become a great partner for our customers by leveraging the technologies and expertise related to energy utilization and environmental protection that are the Group's strengths, along with the relationships of trust we have developed with customers over the long term. Through the useful technologies and services created through innovation by the Group, which carries on the spirit of a tenacious inventor, we will resolve challenges faced by customers and society, with a focus on the fields of renewable energy utilization and environmental protection. We at the Group will work to achieve ordinary profit of JPY 20.0 billion in FY2030 by addressing key ESG-related issues through our business activities and realizing sustained growth alongside our customers and society. [P29-30](#)

13th Medium-Term Management Plan

The Takuma Group launched its 13th Medium-Term Management Plan (FY2021 to FY2023) in April 2021 as the first step towards realizing Vision 2030, our long-term vision. The plan's theme is laying the

foundation for further growth based on the management foundation and business foundation that the Group has built to date.

The basic policy set forth in the 13th Medium-Term Management Plan is strengthening conventional businesses by reinforcing the Group's management foundation and at the same time accelerating our response to future environmental changes. We will strive to realize sustainable growth alongside customers and society by implementing ESG management through these business activities.

1) Implementing ESG Management

In order to realize sustained growth alongside our customers and society by implementing ESG management as set forth in Vision 2030, our long-term vision, the Group approached the task of formulating the 13th Medium-Term Management Plan by organizing various ESG issues from the dual standpoints of their importance for stakeholders and society on the one hand, and their importance for the Group on the other. This process led to the identification of seven key issues (Materiality) that deserve to be given priority by the Group. [P32-34](#)

Environment	Helping combat climate change Conserving resources and protecting the environment
Social	Strengthening relationships of trust with customers and communities Pursuing partnerships and innovation Promoting activities of human resources Ensuring safety and health
Governance	Strengthening corporate governance

2) Strengthening the Management Foundation

In order to anticipate change and realize additional growth as environmental change gathers pace, for example in the rapid development of digital technologies and the goal of achieving carbon

neutrality by 2050, the Group will work to strengthen its management foundation through active allocation and investment of resources in human resources, digital technologies, and other areas of our operations while accelerating efforts to strengthen conventional businesses and accommodate future environmental changes. [P39-40](#)

3) Financial Targets

In order to achieve the goal of posting ordinary profit of JPY 20.0 billion in FY2030 as set forth in Vision 2030, our long-term vision, the 13th Medium-Term Management Plan sets the achievement of steady growth and a target of cumulative consolidated ordinary profit of JPY 36.0 billion over the course of the plan (FY2021 to FY2023) as the first step in that process. We will work wholeheartedly to achieve those goals. [P37](#)

Takuma has been a signatory to the United Nations Global Compact* since 2006, and we support its 10 fundamental principles in the four areas of human rights, labor, environment, and anti-corruption. We will work to develop our business while understanding and respecting these globally shared principles. The Takuma Group has been helping resolve social issues with technologies for reducing emissions of greenhouse gases like carbon dioxide through such means as high-efficiency power generation using waste and biomass since before the phrase "renewable

energy" entered into common usage. We believe that initiatives to achieve the Sustainable Development Goals (SDGs) [P14](#) put forth by the United Nations and the COP21 Paris Agreement align extremely well with the Group's businesses.

Finally, in compiling this CSR Report we have sought not only to provide a resource by means of which a broad range of stakeholders can learn more about the Takuma Group's activities, but also to help each and every Group employee think carefully about CSR and bring that perspective to bear in his or her work. Additionally, this year's report provides more detailed coverage of topics like the value creation process and key issues. We at the Takuma Group encourage readers to offer their candid views and advice, which we will carefully review in order that we might better resolve social issues and contribute to the sustained development of society.

July 2021
Takuma Co., Ltd.
President and CEO
Hiroaki Nanjo

南條博昭

*O&M: Operation & Maintenance

*EPC business: A business in which Takuma offers a turnkey service extending from plant design to procurement and construction (Engineering, Procurement, and Construction)

*United Nations Global Compact: The Takuma Group has joined the United Nations Global Compact (UNGC), which is a voluntary effort to create a global framework for implementing sustainable growth by having companies and groups exercise responsible and creative leadership while acting as good members of society.



At a Glance

TAKUMA's strengths

●Established **1938** ●Consolidated net sales (million JPY) **146,726** ●Number of employees (consolidated) **3,925**
(Fiscal year ended March 2021)

●Our achievements (to date)

Municipal solid waste treatment **360+** facilities (Japan) **No.1 share in Japan**
 Biomass boiler **630+** units **Worldwide**
 Industrial waste treatment **120+** facilities **Worldwide**
 Boiler **3,200+** units **Worldwide** (Including biomass)
 Upflow Moving-Bed Sand Filtration System **2,700+** units **No.1 share in Japan**

●Contribution to reducing CO₂ emissions
Reduction of about 4 million tons
from Takuma products during FY2020

Industrial waste treatment plants
 Using advanced incineration technologies, we properly treat toxic substances and help the industry's environmental protection efforts.

Air-conditioning equipment and clean systems
 We provide comfortable, clean environments to customers in the semiconductor industry as well as many locations such as universities, research institutions, and hospitals.

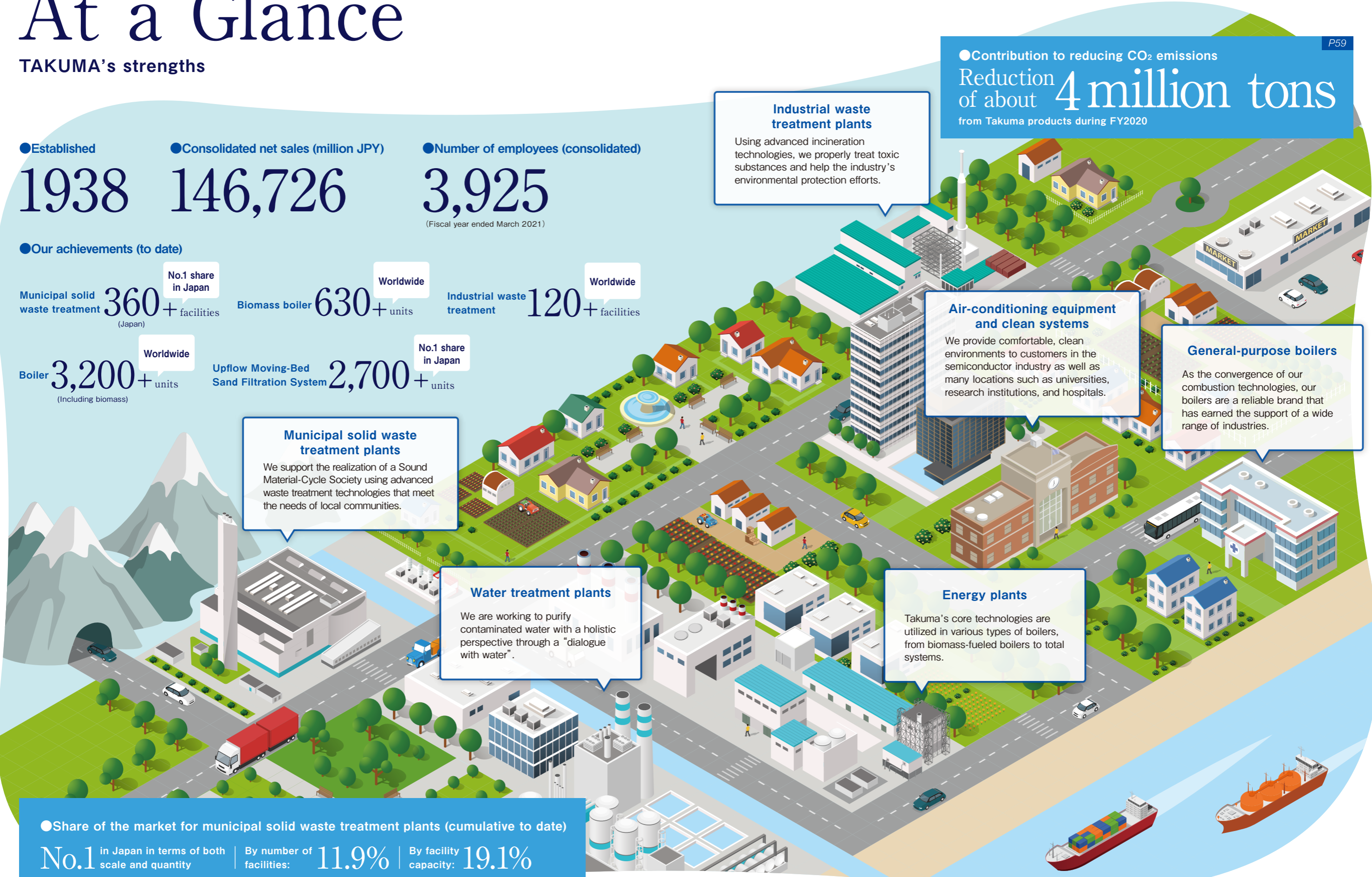
General-purpose boilers
 As the convergence of our combustion technologies, our boilers are a reliable brand that has earned the support of a wide range of industries.

Municipal solid waste treatment plants
 We support the realization of a Sound Material-Cycle Society using advanced waste treatment technologies that meet the needs of local communities.

Water treatment plants
 We are working to purify contaminated water with a holistic perspective through a "dialogue with water".

Energy plants
 Takuma's core technologies are utilized in various types of boilers, from biomass-fueled boilers to total systems.

●Share of the market for municipal solid waste treatment plants (cumulative to date)
No.1 in Japan in terms of both scale and quantity | By number of facilities: **11.9%** | By facility capacity: **19.1%**



TAKUMA's technologies support recycling worldwide.

The Takuma Group possesses advanced technologies related to waste treatment, the creation and supply of energy using under-utilized resources, and the recycling of wastewater.

In order to resolve global-scale environmental issues like climate change and realize a Sound Material-Cycle Society, we operate businesses in the environmental and energy fields, including municipal solid waste treatment plants, energy plants, and water treatment plants.



Treating waste



Creating heat and electricity



Supplying power to communities



Recycling contaminated water

TAKUMA's pride: Proven track record and accumulated trust

Since our founding, we have provided a variety of products and services to customers in Japan and around the world. The track record and trust we have accumulated to date testify to the essential role we play in the world, and we take pride in having helped resolve issues faced by customers and society throughout our history. We will continue to cultivate the ability to help realize the sustainable development of society.



What can we do on behalf of the Earth? Protecting the environment and utilizing renewable energy.

We are harnessing a variety of technologies to help resolve these critical global environmental issues, which are set forth in the Sustainable Development Goals (SDGs) adopted by the United Nations. Helping ensure that people worldwide can enjoy affluent and fulfilling lifestyles while safeguarding our planet's abundant environment... we will continue to embrace these challenges.



It all began with one man's pursuit of a challenge.

Passing on the spirit of "Serve society through boiler manufacturing" to the future

Since Tsunekichi Takuma founded our business in 1938, Takuma, whose story began with the manufacture of boilers, has marked more than 80 years of history in pursuit of its mission of contributing to society through its business.

Today, we have grown into a company that leads its industry in the fields of the environment and energy, and we continue to move forwards to create a sustainable future.

1938

Founding of Takuma Boiler Manufacturing Co., Ltd.

Founder Tsunekichi Takuma invented the first water tube type boiler to be entirely produced in Japan in 1912. The TAKUMA boiler offered performance that exceeded the imported products of the time, and its reputation spread. Takuma Boiler Manufacturing Co., Ltd., was established in 1938. The Company Motto of "Serve society through boiler manufacturing" was formulated, establishing the philosophy that went on to become the foundation of today's Management Principles.



Tsunekichi Takuma

1958

Entry into the environmental and sanitation markets

Takuma established itself as a manufacturer not only of boilers, but also environmental and sanitary equipment, for example by developing waste heat recovery boilers that use waste heat from manufacturing plants, developing modern technology for incinerating solid waste, and entering the water treatment market. In 1963, the company delivered Japan's first 24 hour operating waste incineration plant.



Japan's first 24 hour operating waste incineration plant (1963)

1972

Developing along with industrial society

Takuma worked to develop technologies to respond to various needs as Japan's economy grew rapidly, including demand for energy savings in industry, countermeasures for the growing volume and diversification of municipal waste, and improvements in water quality by water treatment systems. In 1972, Takuma Boiler Manufacturing Co., Ltd. which had grown beyond its principal business of boiler manufacturing, changed its name to today's Takuma Co., Ltd. The company transformed itself into an enterprise that operates a range of multifaceted businesses, including environmental equipment.



Name change (1972) Start of mass production of the "Vacotin Heater", the world's first vacuum-type hot water heater (1975)

1985

Building a resilient management foundation

Takuma continued to reform itself, formulating its first Medium-Term Management Plan in 1985 in order to accommodate abrupt changes in the economic environment. In 1992, the company introduced a new Company Motto of "Value Technology, Value People, Value the Earth" replacing the former motto of "Serve society through boiler manufacturing". Capping the track record and trust it had established to date, the company delivered the largest waste incineration plant in Japan in 1998. The facility continues to operate to this day.



Completion of the Amagasaki Head Office Building (1995) Delivery of the Shin-Koto Incineration Plant (1998)

2001

Embracing global challenges and building a new era

Seeking to make further progress in the fields of renewable energy and environmental protection, Takuma supplied technologies for using energy from a variety of waste types and biomass as well as technology for rendering waste harmless. We established local subsidiaries overseas and continue to bring our technologies to customers not only in Japan, but also worldwide, particularly in Asia.



Delivery of an Energy from Waste plant in Europe (2010) Construction of the Takuma Solar Power Plant (2013)

2021

Realizing a sustainable future

As contemporary society continues to change at a dizzying rate, we face complex problems such as climate change and changes in demographic structure. Takuma formulated Vision 2030, its long-term vision, as well as the 13th Medium-Term Management Plan in FY2021, identifying the implementation of ESG management as a priority. We will continue to work towards further increasing our corporate value and realizing a sustainable future through business activities that leverage the Group's strengths.



Company emblem at the time of Takuma's founding

The company emblem at the time of Takuma's founding stylized the company's name (Takuma) with a triangular shape that combined the three core areas of its operations: research, manufacturing, and installation. The design expresses the company's philosophy at the time, which focused on giving top priority to the continuous improvement of quality and on contributing to customers and society.





TAKUMA's Work

The power to change the world

As society's values and needs continue to diversify, respecting the personality and potential of each and every employee so that they can make the most of their abilities is an essential part of creating new value.

Takuma has a culture which encourages employees to embrace challenges in new fields and to work together to refine their skills, which allow us to contribute to society by resolving customers' and society's issues.





In 2020, we opened the

New TAKUMA Building

Construction of the New TAKUMA Building (Training Center) at Takuma's Head Office was completed in October 2020.

The new facility, which consists of a Solution Lab that provides remote support for operation management of facilities such as municipal solid waste treatment plants and biomass power plants, which are flagship Takuma businesses, as well as a Training Center designed to enhance employee education and skill development, makes extensive use of wood building materials like Cross-Laminated Timber (CLT) to create a relaxing workplace environment in which occupants are surrounded by the warmth of wood.

In addition to a hybrid structure that combines elements of wood and steel construction, the building has high seismic performance due to the adoption of a seismic isolation structure, and it can be used as a regional disaster prevention site in the event of an earthquake or other natural disaster.



Entrance hall The first step takes you into a wood-themed space. Not only floors and walls, but also ceilings make active use of wood materials, creating a relaxing ambiance that surrounds occupants with the warmth of wood.



Solution Lab The Solution Lab offers customers safety and a sense of assurance by providing remote support for operation management of municipal solid waste treatment plants, biomass power plants, and other facilities. We increased the reliability of our remote monitoring system by moving it from the Head Office Building to the seismically isolated new building.



New value creation initiatives start at the New TAKUMA Building

The New TAKUMA Building makes extensive use of wood materials not only in its structure, but also in its interior furnishings. Wherever people go in the building, they will find themselves in a space imbued with the warmth of wood.

The Solution Lab, which was moved from the Head Office Building following the completion of the New TAKUMA Building, provides 24-hour remote support for operation management of municipal solid waste treatment plants, biomass power plants, and other customer facilities. We increased the reliability of our remote monitoring system by moving it to this seismically isolated structure. Additionally, we have created space designed to spur free and imaginative thinking in the Solution Lab, and we are working to enhance our services and improve quality by actively utilizing that space.

Training rooms feature a creative design that allows them to be subdivided into separate spaces or opened up to create larger, integrated spaces so that they can be used not only for large-scale training, but also meetings and other functions.



The lobby makes extensive use of wood materials.



Spaces are designed to encourage free, imaginative thinking.

In addition to conference rooms and training rooms that accommodate staff from Takuma as well as multiple Group companies and to promote energetic discussions and free, imaginative thought by both employees and outside visitors, the New TAKUMA Building incorporates a space designed to trigger ideas through spontaneous conversation into each floor's foyer. Conference rooms and training rooms, which are also used by Group companies, accommodate a diverse range of workstyles with videoconferencing and other equipment.

Additionally, adoption of a seismically isolated structure gives the facility a high level of earthquake resistance, and the building provides disaster prevention functionality that will allow it to help coordinate responses to earthquakes and other natural disasters.

The recently completed New TAKUMA Building is already creating new connections between Takuma, its customers, and regional society.



Training sessions are held in training rooms and a seminar room. Training rooms can be configured in a variety of ways depending on the amount of space required.



Along with open-feeling conference rooms that offer panoramic views of the pond next to the building, each floor's foyer prompts free, unconstrained discussion.



The building's hybrid structure, which combines elements of wood and steel construction, is designed to coexist harmoniously with the environment

The starting point for the concept underlying the new building was the idea of a "building that coexists harmoniously with the environment by giving shape to Takuma's Company Motto of 'Value Technology, Value People, Value the Earth'".

In formulating the building's basic plan, personnel studied how the building could make active use of wood materials, which are intimately connected to the field of renewable energy, a core business for Takuma, particularly with regard to biomass power plants, while drawing on proposals from the construction company. The result was a hybrid structure that combines elements of wood and steel construction while incorporating seismic isolation, giving it a beautiful appearance as well as being earthquake resistant.

In addition to providing a high level of satisfaction to users, the building has earned praise for its architectural features, including by being selected during the construction process for inclusion in the Ministry of Land,



Wood-rich exterior appearance

Infrastructure, Transport and Tourism's FY2018 Sustainable Building Leading Program (Leading Wood Structures) as a next-generation wood structure and by receiving the "Prize for Timber Utilization at the Award for Innovative Timber Utilization 24th" following its completion.



New TAKUMA Building (Training Center)

Completed: October 2020
 Size: Six stories above ground
 Total floor space: 3,334m²
 Structure: Wood + steel construction with a seismically isolated foundation
 Many of the building's wooden elements were manufactured by MEIKEN LAMWOOD Corp.
 Design and construction: Takenaka Corporation

Message from the New TAKUMA Building (Training Center) Project Team Secretariat

We are making improvements on a daily basis to ensure the new building provides a pleasant experience.

As the department responsible for orchestrating a smooth construction process and managing the facility after its completion, the General Affairs Department, to which I belong, helps operate the building through small, cumulative improvements, for example in how the facility's air conditioning systems are operated and in the layout of its furnishings, in response to daily feedback from building users. I am pleased that the building, which serves as a symbol of Takuma's businesses, has been generating results as an effective promotional tool since its completion, as evidenced by growing coverage of our company by television stations, magazines, and other media. In addition to providing robust

support for customer needs through remote monitoring of customers' plants, the New TAKUMA Building is playing a key role in Takuma's employees' education and skill development. Going forward, we will continue our current approach to managing the facility while pursuing operational improvements in a way that satisfies all stakeholders.

Naoki Tsujita
 General Affairs Department, Corporate Services Division
 New TAKUMA Building (Training Center)
 Project Team Secretariat



Section 01

Growth Strategies

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Value Creation Process

We are working to create new value by strengthening initiatives that address key issues (Materiality) through businesses that tap the Group's strengths in light of medium- to long-term trends and social issues.

External environment

World

- Rising energy demand and waste issues, particularly in emerging nations
- Increasingly serious problem of climate change
- Progress of the Fourth Industrial Revolution

Japan

- Shrinking population
- Aging population
- Increasingly large-scale natural disasters
- Tight financial conditions
- Aging infrastructure

Risks and opportunities

- Rising expectations towards renewable energy
- Initiatives to realize carbon neutrality by 2050

Key Issues (Materiality) P32

- 1 Helping combat climate change
- 2 Conserving resources and protecting the environment
- 3 Strengthening relationships of trust with customers and communities
- 4 Pursuing partnerships and innovation
- 5 Promoting activities of human resources
- 6 Ensuring safety and health
- 7 Strengthening corporate governance

Management Resources and Strengths



Relationships of trust with customers

Relationships of trust with customers built up over the 83 years since our founding



Technology and expertise

Engineering throughout the plant life cycle, from planning to construction and operation

Our achievements (to date)

Boilers	3,200+ units*
Municipal solid waste treatment plants	360+ facilities
Industrial waste treatment plants	120+ facilities
*Of which, biomass boilers: 630+ units	



Human resources

Tenacious, dedicated human resources who will carry on Takuma's founding spirit and work closely with customers in the spirit of good faith

Consolidated employees 3,925



Financial base

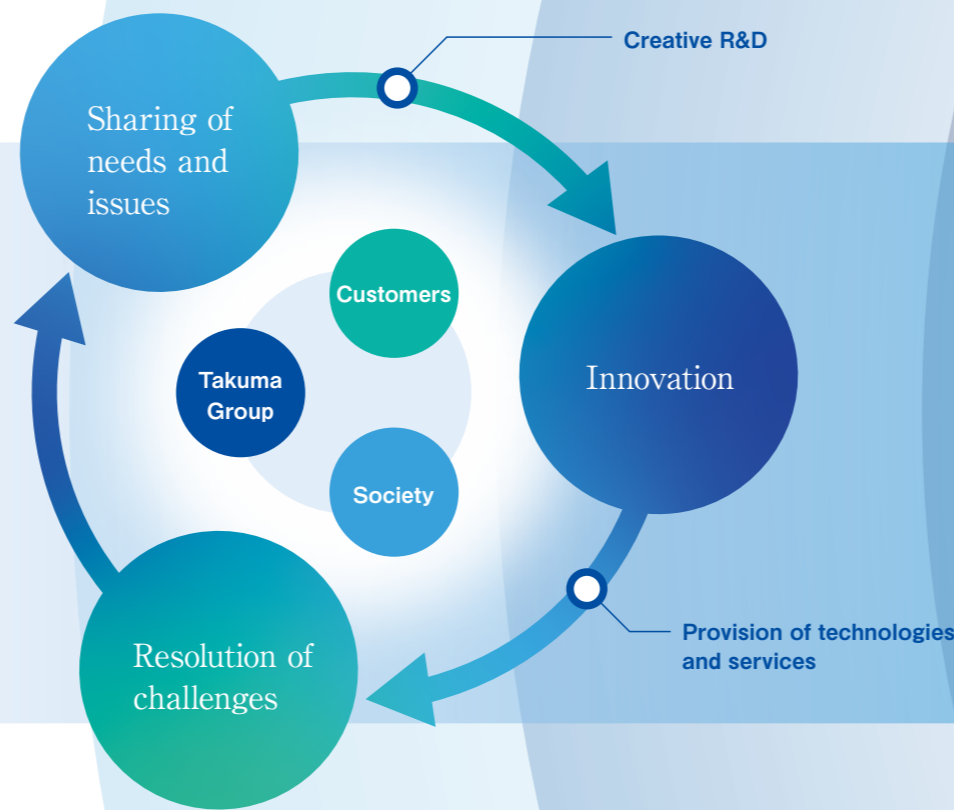
A robust base to ensure customers can readily depend on us over the long term for 20 to 30 years

Net assets	JPY 90.5 billion
Capital adequacy ratio	50.7%
Rating (R&I)	A-

(As of March 31, 2021)

Business Strategies

The Takuma Group will strive to become a great partner for its customers while resolving challenges faced by customers and society through useful technologies and services that are founded on innovation. We will seek to realize sustained growth alongside our customers and society through the ongoing repetition of this approach.



Medium-Term Management Plan P35

Business activities P41

The Takuma Group operates the following business segments:

- Domestic Environment and Energy Business
- Overseas Environment and Energy Business
- Package Boiler Business
- Equipment and Systems Business

Strengthening the management foundation P39

- Human resources
- Digital technologies
- Partnerships
- R&D (Manufacturing and engineering capabilities)
- Capital investment
- Compliance

Created Value

The environment

- Creating clean energy
- Reducing greenhouse gas emissions
- Reducing environmental impacts

Customers and regional society

- Protecting the environment in which we live through the construction and operation of safe, secure municipal solid waste treatment plants
- Maintaining regional and industrial infrastructure through the highly efficient and stable supply of energy
- Revitalizing the regional economy and strengthening resilience through the construction and operation of facilities

Shareholders

- Increasing corporate value

Business partners

- Building stable relationships of trust through fair and safe business transactions

Employees

- Realizing a workplace environment characterized by health, safety, high productivity, and high motivation

Takuma Group Vision

Realizing Takuma's Management Principles and Vision 2030 P29

Products / Services

- Engineering, procurement, construction, and commissioning of municipal solid waste treatment plants, water treatment plants and energy plants
- After-sales service for plants (operation management, maintenance)
- Power Retail Business
- General-purpose boilers such as compact once-through boilers and vacuum-type hot water heaters
- Air-conditioning, water, and wastewater equipment installation services
- Equipment for use in the semiconductor manufacturing industry such as clean devices and cleaning systems

FY2020 results

Net sales: JPY 146,726 million
 Ordinary profit: JPY 11,028 million
 Profit attributable to owners of parent: JPY 7,529 million
 ROE: 8.6% Dividends: JPY 36 per share P85
 (As of March 31, 2021)

Value Creation Process

The source of value creation

The Takuma Group's strengths include relationships of trust with customers as well as technology and expertise. These strengths are the source on which we draw to create value in society, and we leverage them throughout the value chain, starting with R&D and extending to sales activities, design, procurement and manufacturing, construction management, commissioning and after-sales service, and the Head Office functions that underpin those processes.

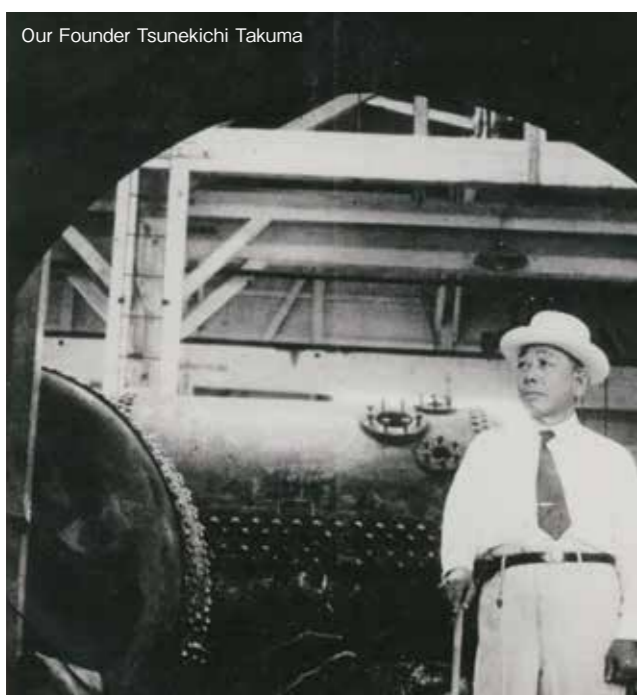
Motivated by a desire to solve issues facing customers, our founder Tsunekichi Takuma invented the TAKUMA boiler based on a unique design following a period of painstaking research, making a significant contribution to the development of Japanese industry through its performance that overwhelmed the foreign technologies that dominated the field at the time.

Over more than 80 years from its founding in 1938 until today, the Takuma Group has carried on its founding spirit of "Serve society through boiler manufacturing" by creating products that support society, including not only boilers, but also products such as waste incineration plants and water treatment plants that apply boiler combustion technology and water treatment technology, in response to the issues faced by customers and the needs exhibited by society over time, including the rebuilding of Japan's economy following World War II, the subsequent period of high economic growth, and efforts to deal with the pollution that accompanied those phases of the nation's history.

Through these products and the after-sales service offered for them, we have accumulated a variety of technology and expertise related to after-sales service and plant engineering around core combustion technologies developed through our boiler business while contributing to the development of society and helping solve issues faced by customers, including by working to increase the production capacity of customers' facilities, enhance society's environmental sanitation, and prevent pollution.

Today, we continue to provide optimal products and services that meet customers' needs by drawing on our philosophy of working closely with customers, and on these technologies to design and build plants that operate stably over the long term by burning a variety of fuels and waste types in a stable manner, and by offering after-sales service for those facilities.

Our Founder Tsunekichi Takuma



Relationships of trust with customers

Relationships of trust with customers built up over the 83 years since our founding

Technology and expertise

The technology and expertise that comprise Takuma's high-performance plant design and construction capabilities

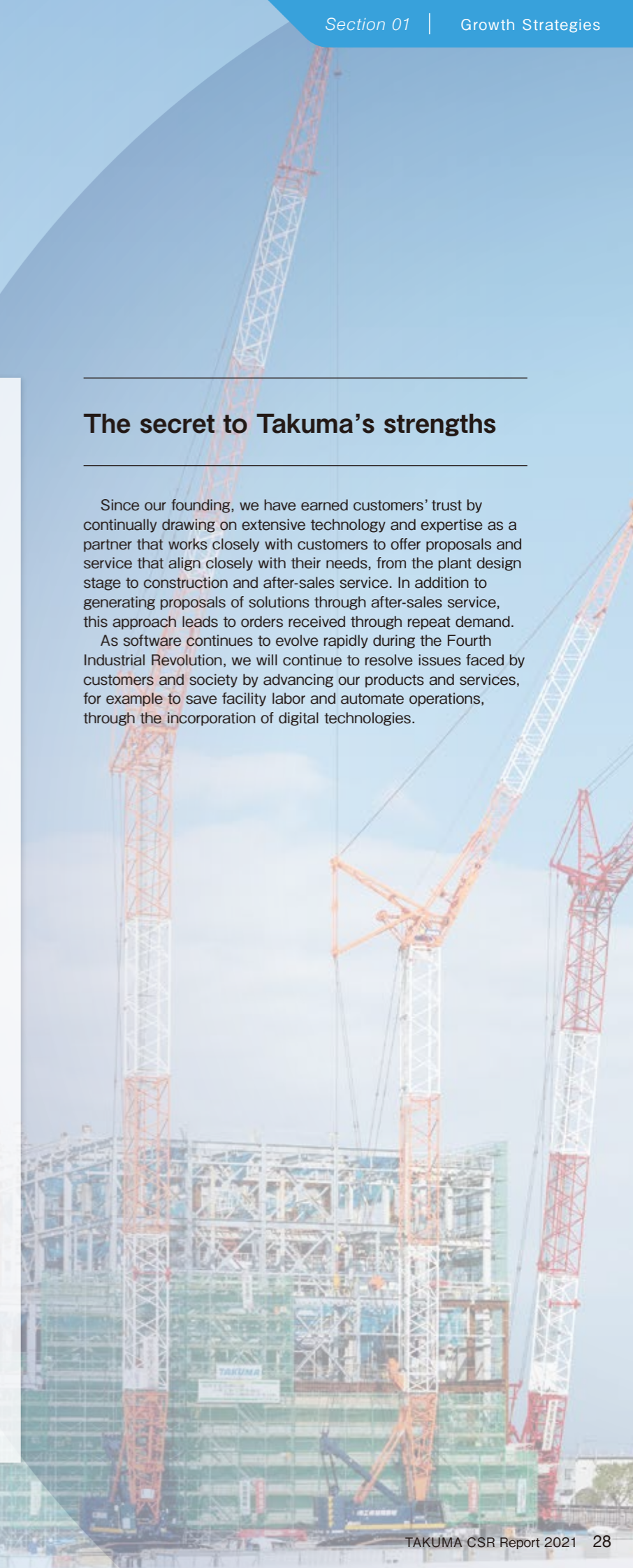
- **Proposals crafted from the customer's perspective**
 - **Engineering capabilities developed through many years of experience**
 - **Custom-made designs based on manufacturing technologies and capabilities**
 - **Fast, precisely-targeted after-sales service**
 - **Use of these to supply plants that operate stably over the long term**

- **Combustion technologies for burning a variety of fuels and waste types, including not only biomass but also household waste and sewage sludge, in a stable manner, as developed around core boiler combustion technologies**
 - **Heat recovery technologies for efficiently recovering heat as energy through boilers**
 - **Water treatment technologies developed from improving supply water quality and purifying waste water for boilers and waste incineration plants**
 - **Pollution-preventing technologies, for example to treat (or clean) flue gases**
 - **Technology for manufacturing boilers that efficiently convert heat into steam, electrical power, and other forms of energy**
 - **Plant and system engineering capabilities developed from boiler installation technologies and through after-sales service experience and expertise to take into account the entire life cycle, from construction to operation and maintenance**
 - **Operation management and maintenance capabilities accumulated through after-sales service provided for a large number of plants**

The secret to Takuma's strengths

Since our founding, we have earned customers' trust by continually drawing on extensive technology and expertise as a partner that works closely with customers to offer proposals and service that align closely with their needs, from the plant design stage to construction and after-sales service. In addition to generating proposals of solutions through after-sales service, this approach leads to orders received through repeat demand.

As software continues to evolve rapidly during the Fourth Industrial Revolution, we will continue to resolve issues faced by customers and society by advancing our products and services, for example to save facility labor and automate operations, through the incorporation of digital technologies.



Vision 2030 Long-Term Vision

The Takuma Group's management strategy

The Takuma Group formulated Vision 2030 as its long-term vision for 2030.

To realize this vision, we are pursuing the necessary investments and business strategies.



Long-Term Vision

Vision 2030

Aim to maintain our role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection by realizing sustained growth alongside our customers and society through implementation of ESG management.

Financial target

FY2030 ordinary profit: **JPY 20.0 billion**

External environment outlook

Global-scale concerns include a worsening of the problem of climate change; deterioration in the sanitation environment due to rapid population growth and urbanization, particularly in emerging nations; and growth in energy demand. Concerns in Japan include falling internal demand caused by the shrinking and aging of Japan's population, shortages of human resources and future leaders, tight financial conditions, and aging infrastructure.

- Global**
 - Rising demand for resources, food, water, energy, and waste treatment as the planet's population grows
 - Increasingly serious problem of climate change
 - Progress of the Fourth Industrial Revolution and the digital transformation (DX)
- Domestic (Japan)**
 - Shortages of human resources and future leaders caused by the shrinking and aging of Japan's population; depopulation around large cities and in rural areas
 - Tight financial conditions caused by declining tax revenues in the face of the shrinking population and the need to deal with natural disasters and infectious disease
 - Contraction and streamlining of public services due to tight financial conditions; increasing reliance on private-sector companies
 - Demolition, consolidation, effective use, and replacement of aging and underutilized infrastructure, houses, etc.



Vision for FY2030

Based on these external environmental factors, the Takuma Group will implement Environment, Social, and Governance (ESG) management, an approach that consists of addressing key ESG-related issues in an effort to achieve sustained growth by resolving issues faced by customers and society through business activities.

In pursuing business activities built on a core of ESG management, we will strive to become a great partner for our customers by leveraging the technologies and expertise related to energy utilization and environmental protection that are the Group's strengths, along with the relationships of trust we have developed with customers over the long term through after-sales service and other interactions. Through the useful technologies and services created through innovation by the Group, which carries on the spirit of a tenacious inventor, we will resolve challenges faced by customers and society, with a focus on the fields of renewable energy utilization and environmental protection.

Through the implementation of ESG management in this manner we will seek to achieve sustained growth alongside our customers and society and realize a sustainable society while securing ordinary profit of JPY 20.0 billion as a yardstick of profitability.

Aim to maintain our role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection.



Sustainable growth by implementing ESG management

Realizing solutions to challenges faced by customers and society, with a focus on renewable energy utilization and environmental protection

Provision of technologies and services

- Expanding clean energy
- Improving energy efficiency
- Capturing and effectively utilizing CO₂
- Reducing power and manpower requirements of plant facilities while making them more resilient
- Reducing greenhouse gas emissions
- Realizing stable treatment of waste
- Providing decarbonization technologies
- Saving energy
- Utilizing unused resources
- Realizing local production and consumption of energy

Takuma Group business activities

EPC business	Recurring revenue model businesses	Overseas businesses
Engineering, Procurement, and Construction (EPC) of a variety of plants	Maintenance, operation management, O&M, energy services, etc.	EPC and after-sales service for Energy from Waste plants and biomass power plants
Maintenance and expansion of position as a leading company	Additional expansion as a core driver of growth	Expansion with a focus on emerging nations in Asia and its development into a core business for the Group
Package boiler business	Equipment and systems business	New businesses
Expanding business domain as a manufacturer specializing in heating systems	Aiming for steady growth by strengthening corporate strength	Creating new business opportunities centered on the renewable energy and environmental fields

Implementing ESG Management

We are implementing ESG management, which seeks to satisfy all stakeholders and realize sustained growth for the Group by strengthening initiatives that address ESG issues through our business activities.

In this approach, we have identified seven key issues (Materiality) related to ESG that deserve to be given priority when being addressed through our business activities.

To realize a sustainable society, we will create positive outcomes by addressing these issues through our business activities.



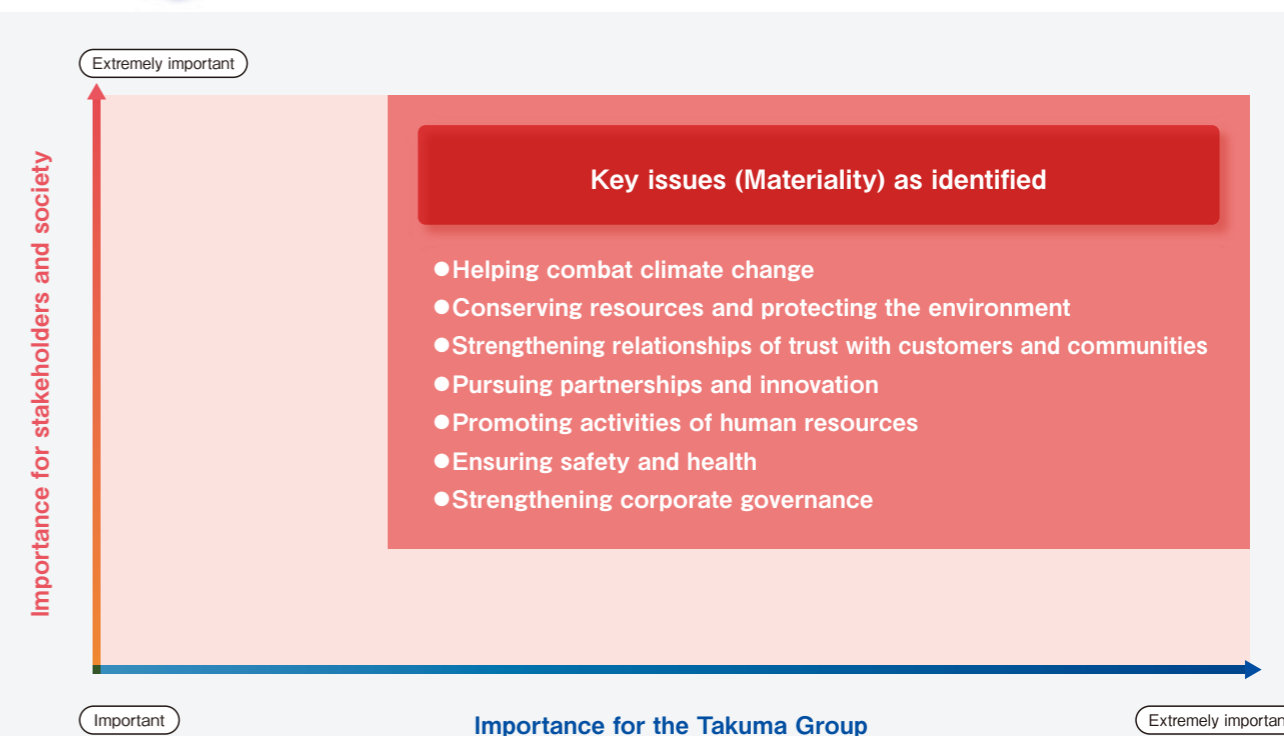
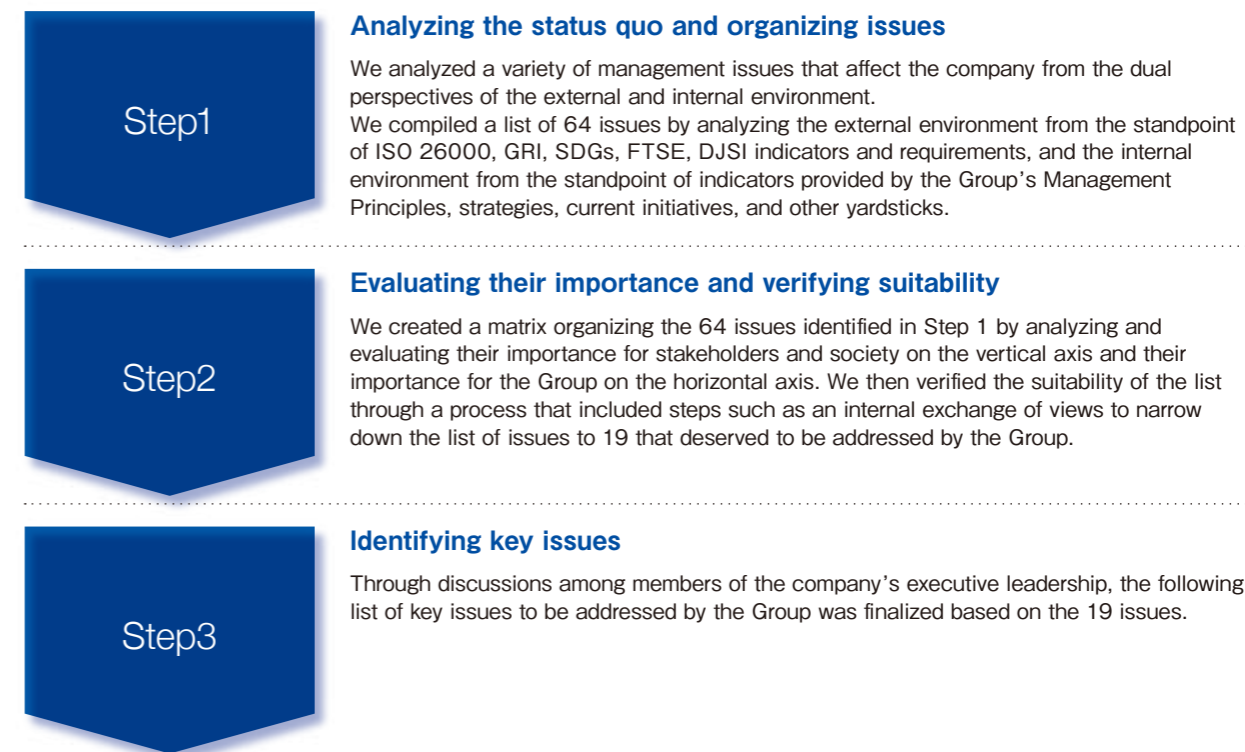
Key Issues (Materiality) for the Takuma Group

The Group has identified seven key issues (Materiality) and 19 issues that deserve to be given priority when being addressed through our business activities.

We are pursuing initiatives to strengthen our business activities and management foundation for each of these materialities and issues.

Process for identifying key issues

The following process was used to identify key issues.



Key Issues (Materiality) for the Takuma Group

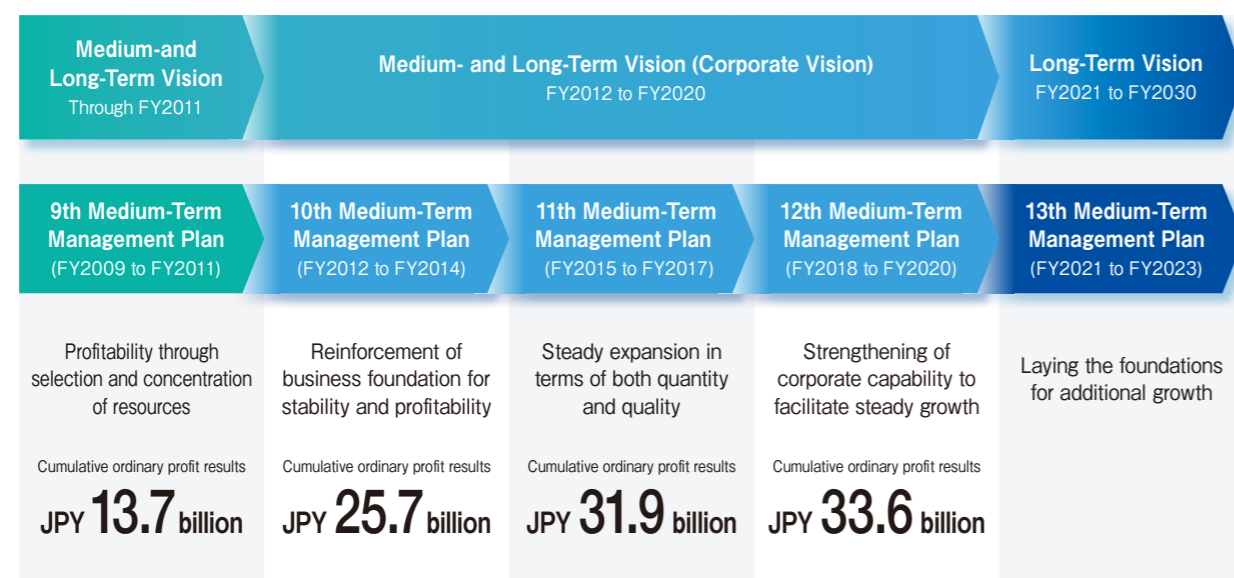
Materiality and KPI (Key Performance Indicator)

	Materiality	Detailed description	Issue	Reason for selection		Risks and opportunities	Specific initiatives	KPI
E Environmental initiatives	Helping combat climate change	P59	1. Promoting renewable energy (non-fossil energy) 2. Improving energy efficiency	We will help alleviate the global problem of climate change using the technology and expertise we have accumulated over more than 80 years.		[Risks] <ul style="list-style-type: none"> Accommodation of policies and regulations intended to realize a decarbonized society Changes in customer requirements, for example additional improvements in energy efficiency Reduction in support from policies, for example as a result of the review of the FIT program [Opportunities] <ul style="list-style-type: none"> Growth in the market for renewable energy and environmental businesses due to strengthening of environmental regulations Growth in energy usage demand for biomass (including waste, sewage sludge, and other resources) in order to alleviate climate change 	<ul style="list-style-type: none"> Supply of biomass power plants Supply of fuel conversion (biomass, RPF, etc.) boilers Supply of renewable energy and CO₂-free power Reduction in CO₂ emissions (energy consumption) by Takuma Improvement in energy efficiency at facilities Takuma operates on a contractual basis Proposal of energy efficiency improvements for customer facilities and equipment 	Magnitude of potential reduction in CO ₂ emissions due to newly delivered power plants* <ul style="list-style-type: none"> FY2023: 800,000 tons per year FY2030: 2.5 million tons per year *Biomass power plants and Energy from Waste plants delivered from FY2021 to FY2030
	Conserving resources and protecting the environment	P59	1. Conserving resources and reducing environmental impacts 2. Making effective use of unutilized resources	We will contribute to the effective use of unutilized resources and to the conservation of resources with Takuma technologies while helping make it possible to reduce environmental impacts and realize a Sound Material-Cycle Society.		[Risks] <ul style="list-style-type: none"> Reduction in domestic waste volume due to the shrinking of the population [Opportunities] <ul style="list-style-type: none"> Growth of appropriate treatment of waste and growth in demand for use of energy from waste in emerging nations Growth in expectations towards resource-saving and low-environmental-impact systems and the effective use of unutilized resources 	<ul style="list-style-type: none"> Supply of high-efficiency, low-environmental-impact Energy from Waste plants Supply of sewage sludge-fueled power plants Supply of advanced treatment sand filter systems Establishment of combustion technology for unutilized biomass Development of technology for reusing incineration ash Development of technology for recovering and using CO₂ 	
S Social initiatives	Strengthening relationships of trust with customers and communities	P65	1. Pursuing customer satisfaction 2. Ensuring the stable, continuous operation of plants and equipment 3. Recycling local resources and creating new value for communities	We will help resolve issues facing customers and communities and strengthen relationships of trust by providing safe, high-quality products and services and undertaking initiatives that address local resource recycling.		[Risks] <ul style="list-style-type: none"> Loss of trust in the event Takuma fails to provide safe, high-quality products and services Shrinking budgets of local governments [Opportunities] <ul style="list-style-type: none"> Growth in demand for biomass power generation as a type of energy that can be produced and consumed locally Growth in expectations toward the creation of new value for communities, for example through disaster prevention facilities and energy centers Additional growth in the use of private-sector entities to provide government services 	<ul style="list-style-type: none"> Supply of products and services that satisfy customers Improvements in the quality of Takuma's operation and O&M businesses Increasing sophistication of maintenance service Initiatives addressing the Regional Circular and Ecological Sphere (Regional CES), regional use, and decentralized power supplies Initiatives such as PPP that address additional use of private-sector entities 	
	Pursuing partnerships and innovation	P67	1. Utilizing digital technologies (AI, IoT, robots, etc.) 2. Developing open partnerships 3. Pursuing innovation	We will facilitate the supply of high-value-added products and services by introducing digital technologies and expanding partnerships with outside companies.		[Risks] <ul style="list-style-type: none"> Opportunity loss due to lag in accommodating new technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT) [Opportunities] <ul style="list-style-type: none"> Growth in demand for efficiency-boosting and labor-saving technologies in plant operation (remote monitoring and operation, data analysis, maximization of amount of power sold, etc.) Creation of revolutionary technologies and services as well as new business opportunities through the expansion of partnerships 	<ul style="list-style-type: none"> Increases in the added value of facilities and plants Strengthening of competitiveness in EPC operations, operation management, and maintenance service Pursuit of open innovation Pursuit of new businesses that contribute to the enhancement of existing businesses and services Development of technologies and products that are sought by society and customers 	Number of main career track and management positions filled by women: At least 35 (cumulative total for FY2021 to FY2025) Utilization of parenting support programs: At least 25% (average for FY2021 to FY2025)
	Promoting activities of human resources	P69	1. Securing, and training human resources 2. Promoting diversity 3. Improving employee satisfaction	Putting in place an environment in which all employees can make the most of their abilities is essential in order to facilitate the company's growth and strengthen its competitiveness.		[Risks] <ul style="list-style-type: none"> Reduction in competitiveness due to a shortage of employees with specialized skills Discontinuity in the passing down of skills as highly experienced employees reach retirement age and leave the workforce [Opportunities] <ul style="list-style-type: none"> Strengthening of competitiveness through human resources development and management that promotes diversity 	<ul style="list-style-type: none"> Hiring of new graduates and mid-career employees Development of optimal human resources programs in response to social changes Development of an effective training system Active hiring of diverse human resources and development of career support programs 	Number of fatal accidents: 0
	Ensuring safety and health	P71	1. Ensuring occupational safety and health 2. Managing employee health 3. Creating a comfortable working environment	Safeguarding the physical and mental health of workers and building a comfortable working environment helps create a stable foundation for Takuma's value creation activities.		[Risks] <ul style="list-style-type: none"> Reduction in productivity and social trust due to problems involving the safety and health of employees and affiliates (loss of order opportunities due to the occurrence of serious occupational accidents, etc.) [Opportunities] <ul style="list-style-type: none"> Improvement in productivity and strengthening of competitiveness through improvements in the workplace labor environment 	<ul style="list-style-type: none"> Reduction in the occurrence of occupational accidents Prevention of health problems and rectification of overwork Implementation of workstyle reforms 	
G Governance initiatives	Strengthening corporate governance	P73	1. Strengthening corporate governance 2. Strengthening risk management 3. Ensuring compliance	Strengthening corporate governance both supports companies' stable growth and helps avoid and reduce losses and other adverse events by making possible the organizational management of risk.		[Risks] <ul style="list-style-type: none"> Reduction in business sustainability due to a lack of appropriate decision-making Cessation of business due to violations of competition or environmental law or regulations on conduct such as corruption, and associated reduction in social trust [Opportunities] <ul style="list-style-type: none"> Improvement in the ability to create value along with avoidance and reduction of risk as a result of strengthened corporate governance 	<ul style="list-style-type: none"> Sustained improvement through practices such as evaluations of the effectiveness of the Board of Directors Continued conduct of appropriate internal audits Additional improvement in the effectiveness of risk management activities Even more thorough project risk management Implementation and ongoing reassessment of Business Continuity Planning (BCP) Ongoing implementation of compliance education 	Number of serious compliance violations: 0

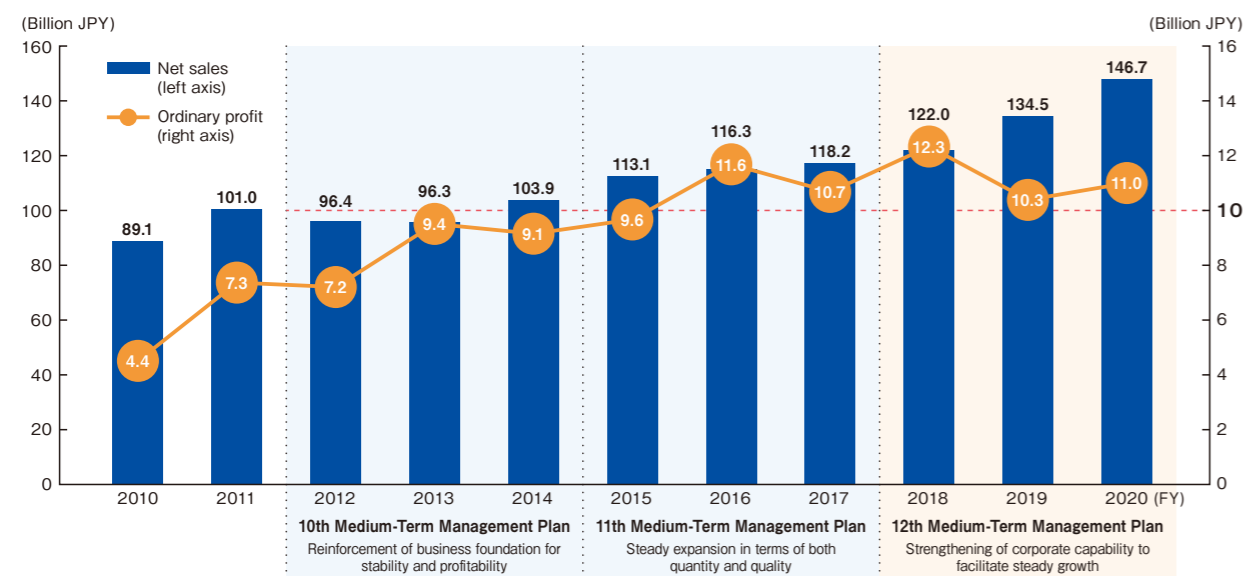
Medium-Term Management Plan

Corporate Vision (FY2012 to FY2020) and Medium-Term Management Plans to date

The Takuma Group worked to build business structures capable of consistently earning ordinary profit of at least JPY 10.0 billion even as the business environment underwent major changes under the 10th to 12th Medium-Term Management Plans in an effort to realize its Corporate Vision of "aiming to maintain our role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection" and of achieving an ordinary profit of JPY 10.0 billion in FY2020.



Building structures capable of consistently earning ordinary profit of at least JPY 10.0 billion even as the business environment undergoes major changes



Summary of the 12th Medium-Term Management Plan (FY2018 to FY2020)

As the final stage of our Corporate Vision, we implemented business strategies based on a set of basic policies and priority measures in an effort to achieve cumulative ordinary profit of JPY 33.0 billion over three years by building a resilient business and management foundation that enables Takuma to respond to future changes in the business environment. In terms of ordinary profit, we were able to achieve the targets set forth in the Corporate Vision and Medium-Term Management Plans to earn at least JPY 10.0 billion starting in FY2016, JPY 11.0 billion in FY2020, and a cumulative total of JPY 33.6 billion under the 12th Medium-Term Management Plan from FY2018 to FY2020.

Positioning of the 12th Medium-Term Management Plan

- Final stage of the Corporate Vision that was launched in FY2012
- Strive to achieve cumulative consolidated-basis ordinary profit of JPY 33.0 billion over three years by building a resilient business and management foundation that enables Takuma to respond to future changes in the business environment.

Results and issues

- Strengthening and expanding our revenue foundation**
 - Orders increased as we proposed solutions based on customers' needs through recurring revenue model businesses (equipment improvements and service life extensions).
 - Progress made in initiatives designed to reduce Life Cycle Costs (LCC), for example by using POCYSYS[®] P42.
 - Received multiple orders in our O&M business, including from the private-sector for the first time, in our Energy Plant Business; began operations and broadened the range of services we offer.
 - Firm orders secured for package boilers as well as equipment and systems helped to contribute to stable consolidated-basis profits.
- Achieving sustained growth**
 - In the EPC business, we maintained our market position thanks to steady or increasing orders for domestic waste treatment and energy facilities.
 - Initiatives to maintain our position in sludge incineration and expand the overseas business are ongoing.
 - Progress in efforts to refine core technologies and development of proprietary technologies has generally been smooth.
- Increasing productivity, for example by reforming business processes**
 - Initiatives to improve productivity, for example by utilizing Information and Communications Technologies (ICT), have delivered results but remain ongoing.
- Promoting activities of human resources**
 - The workforce situation remains tight despite significant expansion in the number of hires as we work to secure the necessary human resources.
- Continuing to pursue compliance management**
 - Awareness of the importance of compliance has permeated the Group thanks to ongoing educational activities. Developing even more effective measures remains an issue.

Financial targets and results under previous medium- and long-term vision and the 12th Medium-Term Management Plan

- Previous medium- and long-term vision:
FY2020 ordinary profit Target JPY 10.0 billion → Result **JPY 11.0 billion**
- 12th Medium-Term Management Plan:
Cumulative three-year ordinary profit Target JPY 33.0 billion → Result **JPY 33.6 billion**

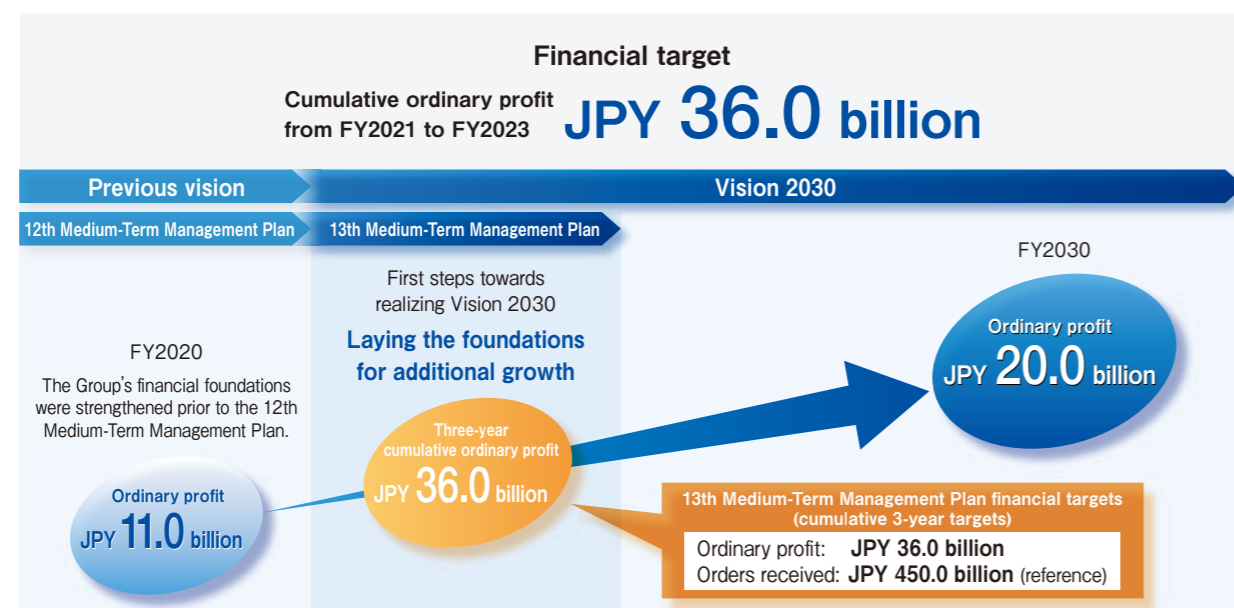
Medium-Term Management Plan

13th Medium-Term Management Plan (FY2021 to FY2023)

We will develop measures to fuel additional growth as a plan for taking the first steps towards realizing the financial target of ordinary profit of JPY 20.0 billion as set forth in Vision 2030. Specifically, we will work to earn cumulative ordinary profit of JPY 36.0 billion over three years while strengthening conventional businesses and accommodating future environmental changes in every area of our business activities by strengthening six core areas of our management, including investments in human resources and digital technology.

Positioning

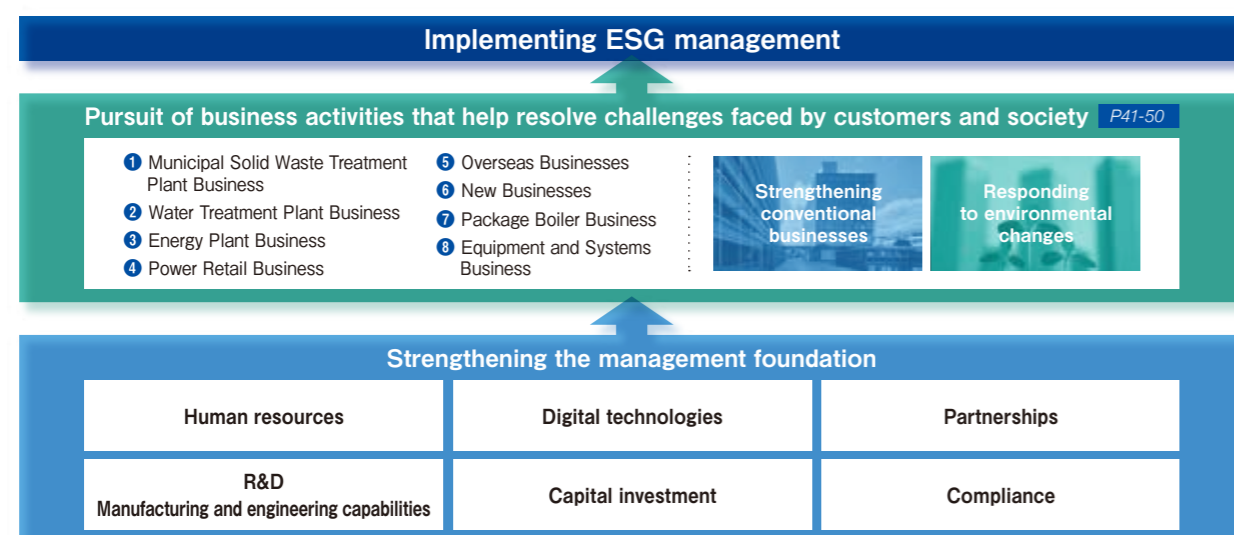
Lay the foundations for additional growth and take the first steps under the 13th Medium-Term Management Plan as we prepare to realize the Vision 2030 target of ordinary profit of JPY 20.0 billion.



Basic policy

Strengthening conventional businesses by reinforcing the Group's management foundation and at the same time accelerating its response to future environmental changes

Striving to realize sustainable growth alongside customers and society by implementing ESG management through these business activities



On implementing the 13th Medium-Term Management Plan

Hideki Takeguchi
Director & Senior Managing Executive Officer
Executive Manager of Engineering Group

Tsuyohito Nishiyama
Director & Senior Managing Executive Officer
Executive Manager of Corporate Marketing Group



Plan positioning and business strategy towards implementation

Based on the results and issues of the 12th Medium-Term Management Plan, the 13th Medium-Term Management Plan seeks to lay the foundations for additional growth while securing cumulative ordinary profit of JPY 36.0 billion over its three-year period as the first step towards realizing the target of ordinary profit of JPY 20.0 billion as set forth in Vision 2030. To achieve these targets, we will steadily earn and carry out EPC projects with a focus on our

flagship businesses, the Municipal Solid Waste Treatment Plant Business, Energy Plant Business, and Water Treatment Plant Business, while expanding after-sales service such as operation management and maintenance of facilities and equipment delivered across all of our businesses (recurring revenue model businesses). We will also work to maintain and expand the Package Boiler Business and the Equipment and Systems Business. Additionally, we will pursue initiatives with goals such as expanding the Power Retail Business, studying new businesses, and growing overseas businesses as the foundation for realizing Vision 2030, and we will strengthen our management foundation through initiatives including hiring and training the human resources who will be necessary in order to pursue the Group's business strategies, pursuing a range of partnerships as well as R&D, embracing digitalization, and updating the Harima Factory.

Implementing ESG management to ensure sustained growth

With a focus on evaluating companies from a non-financial standpoint, ESG provides a set of indicators for measuring how well a company is working to resolve social issues through its business activities. We believe that sustained growth can be realized

by actively pursuing ESG.

The Group has worked throughout its history to resolve social issues such as climate change and environmental protection through its business activities, for example by supplying municipal solid waste treatment plants and biomass power plants, and this approach aligns with the ESG management approach. The new Medium-Term Management Plan identifies the Takuma Group Materiality that deserve to be addressed on a priority basis through our business activities and establishes Key Performance Indicators (KPI) in order to clarify these initiatives. We will strive to achieve sustained growth by continuing to address materialities that help resolve social issues through business activities that resolve customers' issues and implementing ESG management.

Conclusion

In addition to further developing an approach to ESG management that has already taken root at Takuma in order to achieve the targets set forth in the 13th Medium-Term Management Plan and, on a longer-term basis, in Vision 2030, we will further enhance and expand recurring revenue model businesses by treating them as drivers of the Takuma Group's growth in order to realize stable operation of facilities over the next 20 to 30 years. At the same time, we will work to maintain and expand our position as a leading company in the Engineering, Procurement, and Construction (EPC) business.

In this way, the Group will come together to implement the 13th Medium-Term Management Plan and create a bright future by growing in a sustained manner alongside its customers and society.



Medium-Term Management Plan

Strengthening the management foundation

We will work to strengthen the following six core areas of our management by allocating and investing management resources to steadily implement our business strategies.

Human resources

In addition to systematically hiring and training the human resources who will be necessary in order to maintain and expand the Group's business activities and to accommodate the changing times, we will strive to strengthen the Group's competitiveness and realize additional growth through initiatives in areas such as promoting diverse workstyles and fostering employee health.



Digital technologies

In addition to providing continuous remote monitoring and operational support for customer plants through our Solution Lab, we are implementing initiatives to realize stable, efficient plant management by utilizing "big data" from plants through our POCSSYS® Plant Optimization Comprehensive Support System. Going forward, we will strive to realize additional growth for the Group by working to improve plant added value and strengthen competitiveness in EPC as well as after-sales service through the use of digital technologies such as Artificial Intelligence (AI) and Information and Communications Technologies (ICT).



Corresponding principal Materiality and issues

- Promoting diversity
- Managing employee health

Theme 1 Strengthening recruiting activities and reviewing employment systems

- Systematically hiring new graduates and mid-career employees
- Reviewing programs to make use of older workers and to hire specialized workers

Theme 2 Reviewing the human resources development system

- Implementing career development support measures such as job rotation programs to help train engineers and other personnel, programs to follow up on the development of young workers, etc.

Theme 3 Pursuing workstyle reforms and enhancing the workplace environment

- Examining a diverse range of workstyles that allow workers to do their jobs without regard to time or place
- Implementing health-focused management

Corresponding principal Materiality and issues

- Ensuring the stable, continuous operation of plants and equipment
- Using digital technologies

Theme 1 Bringing digital technologies to products and services

- Rolling out digital technologies to reduce manpower requirements and streamline operations at plants, improve maintainability and functionality, and realize more stable operations

Theme 2 Improving management efficiency

- Implementing paperless workflows and Robotic Process Automation (RPA)
- Sharing knowledge and expertise on a companywide basis



Partnerships

The Takuma Group is pursuing a partnership-based initiative to operate municipal solid waste treatment plants, which play a role as disaster prevention facilities. As the Regional Circular and Ecological Sphere (Regional CES)* and activities to realize carbon neutrality by 2050 gather momentum, we will continue to pursue initiatives to create new value in communities while making use of partnerships with outside companies and organizations.

*An approach that seeks to make the most of regional energy through mutual support and the supplementation of resources in line with regional characteristics while facilitating the formation of autonomous, decentralized communities and making maximum use of regional resources like beautiful natural landscapes (source: website of the Ministry of the Environment)

R&D, manufacturing, and engineering capabilities

In addition to enhancing our technologies in plant-related fields, we will strengthen our business competitiveness through further improvements to the safety and quality of products and services supplied by the Group.



Capital investment

In implementing our plan for the new Harima Factory, we will strive to realize a sustainable plant that is effectively CO₂ emission-free while further increasing productivity and quality.



(Artist's conception of new Harima Factory)
Tentative completion: December 2022
Total investment: approximately JPY 13.0 billion

Compliance

We will continue to promote compliance as a key foundation that sustains corporate activities through ongoing compliance education and other programs while working to realize further improvements in the effectiveness of our risk management activities.

Corresponding principal Materiality and issues

- Making effective use of unutilized resources
- Recycling local resources and creating new value for communities
- Developing open partnerships

Theme Creating new value through alliances

- Pursuing robust partnerships with non-group companies and other stakeholders in a variety of contexts

Corresponding principal Materiality and issues

- Pursuing innovation
- Pursuing customer satisfaction
- Ensuring occupational safety and health

Theme 1 Strengthening R&D

- Creating products and services required in this new era by utilizing open innovation

Theme 2 Strengthening manufacturing and engineering capabilities

- Refining and improving the quality of core technologies, the overall plant, and main equipment
- Increasing intrinsic safety in design and installation, and preventing occupational accidents

Corresponding principal Materiality and issues

- Improving energy efficiency
- Pursuing customer satisfaction

Theme Pursuing plans for the new Harima Factory

- Developing a sustainable plan that aims to achieve effectively zero CO₂ emissions
- Improving boiler manufacturing capabilities (quality and efficiency)
- Examining ways to utilize the Supply Chain Lab [P42](#)

Corresponding principal Materiality and issues

- Strengthening corporate governance

Theme Increasing the effectiveness of compliance and risk management

- Improving and enhancing educational programs
- Continuing and improving risk management activities [P81](#)

Domestic Environment and Energy Business

Municipal Solid Waste Treatment Plant Business



1 Business Summary

We provide solutions that extend throughout the plant life cycle, from construction (EPC) of municipal solid waste treatment plants for local governments to maintenance, primary equipment improvement and service life extension, operation management, and operation (O&M).

Principle products

- Waste incineration plants, biogas recovery plants, recycling plants, etc.



2 Strengths

Since delivering Japan's first fully continuous mechanical waste incineration plant in 1963, Takuma has supplied more than 360 municipal solid waste treatment plants, more than any other manufacturer in Japan. In addition to supplying products and services that meet regional needs based on the technology and expertise that we have accumulated through a long series of improvements across more than half a century, we are working to further increase the value we provide by incorporating leading-edge technologies like Artificial Intelligence (AI) and the Internet of Things (IoT).

Our achievements (cumulative deliveries to local governments)

- Waste incineration plants over 360 facilities
- Recycling plants over 90 facilities
- Biogas recovery plants 2 facilities

3 Market Environment

Some 1,000 facilities in Japan incinerate about 170,000 tons of waste per day, and those plants are aging, with more than 60% of them having been operating for at least 20 years. With many facilities built during the 1990s to address the problem of dioxin emissions reaching the point in their service lives at which they need to be updated, we expect to see strong replacement and service life extension demand continue for the time being.

Use of the O&M business, which comprises a comprehensive contract for facility operation management and maintenance, and DBO arrangements, which comprise orders for both facility construction and operation (O&M), is growing from the standpoint of taking advantage of private-sector expertise. At the same time, facilities are expected to provide functionality that creates new value for their region, for example by serving as regional disaster prevention facilities or energy centers, rather than simply treating waste.

Furthermore, as society works to realize carbon neutrality by 2050, we expect to see more sophisticated use of waste to generate electricity and heat along with growing demand for biogas recovery (methane fermentation) plants and combined systems that pair incineration with methane fermentation and other technologies.

4 Initiatives

Strengthening conventional businesses

- Improving quality and strengthening profitability in the plant operation business and after-sales service business
- Maximizing profitability by extending the service life of existing facilities
- Ensuring a sustained flow of orders by creating customer value

Responding to environmental changes

- Developing structures that will allow us to provide new services, for example additional use of private-sector partners and Regional Circular and Ecological Sphere (Regional CES) businesses

Currently, about 120 of the municipal solid waste treatment plants we have delivered continue to operate, and we are supporting safe, stable, and appropriate waste treatment in their regions through after-sales service including regular maintenance, functional improvements, service life extension work, and operation management.

In an effort to enhance its after-sales service offerings, the Takuma Group began offering remote support service for customer plants in 2004, and in 2016 we launched the POCOSYS[®] Plant Optimization Comprehensive Support System, which dramatically enhanced that functionality. Then in 2019, we opened the Solution Lab as a remote monitoring and operation support facility. In addition to supplying safe, secure, and stable plant operation to customers through 24-hour operational support, we are helping streamline plant operation, for example to increase the amount of power sold and reduce chemical consumption, by analyzing, visualizing, and otherwise utilizing operating data. Furthermore, we plan to launch the Supply Chain Lab, an after-sales service facility, in December 2022, and we will work to realize additional quality and profitability improvements in after-sales service by effectively utilizing these resources.

Going forward, municipal solid waste treatment plants will be called upon to create new value in order to resolve regional issues, for example by promoting the recovery and use of waste energy, serving as disaster prevention and energy facilities, and revitalizing regional economies as part of the effort to realize a decarbonized society and Regional Circular and Ecological Sphere (Regional CES) (local SDGs).

In addition to promoting power and labor savings in plant operation through the use of digital technologies while working to realize more efficient energy recovery through the refinement of combustion technology and energy recovery technology, which are core Takuma technologies, as well as use of Artificial Intelligence (AI) and the Internet of Things (IoT), we will help resolve regional issues by creating new value through the expansion of our Power Retail Business and through partnerships with various companies and organizations.

Materiality

- Helping combat climate change
- Strengthening relationships of trust with customers and communities
- Conserving resources and protecting the environment
- Pursuing partnerships and innovation

Water Treatment Plant Business



1 Business Summary

In addition to construction (EPC) and maintenance of water treatment and sludge incineration plants, particularly for sewage treatment plants run by local governments, we supply operation management and other services.

Principle products

- Sewage sludge-fueled power plants, moving-bed sand filtration systems (Uniflow Sand Filter), etc.



2 Strengths

Since entering the water treatment field in 1962, we have accumulated technology and expertise by supplying water treatment plants and sludge incineration plants in a variety of fields, including sewage, human waste, and industrial wastewater. In recent years, we have been particularly focused on the sewage treatment field, and we are helping resolve customers' issues with unique technologies like an energy-saving and energy-creating sludge-fueled power generation system featuring low emissions of the greenhouse gas N₂O and moving-bed sand filtration systems (Uniflow Sand Filter), of which we have delivered about 2,700 units since 1979.

Our achievements (to date)

- Moving-bed sand filtration systems (Uniflow Sand Filter)..... over 2,700 units
- Sewage sludge incineration plants..... over 20 facilities

3 Market Environment

There are some 2,200 sewage treatment plants in Japan, and those facilities are aging, with more than 80% having been operating for at least 15 years.

Additionally, as we work to realize a decarbonized society, there is growing need to reduce greenhouse gases in sewage treatment and to utilize sewage sludge, a type of biomass, as a form of renewable energy.

At the same time, we expect utilization of the private sector through arrangements such as Public Private Partnerships (PPPs) and Private Finance Initiatives (PFIs) to increase in the future due to the challenging management environment in which sewage projects run by local governments must operate.

4 Initiatives



Strengthening conventional businesses

- Ensuring a sustained flow of orders for sludge incineration plants
- Expanding the after-sales service business
- Accommodating replacement demand from existing facilities



Responding to environmental changes

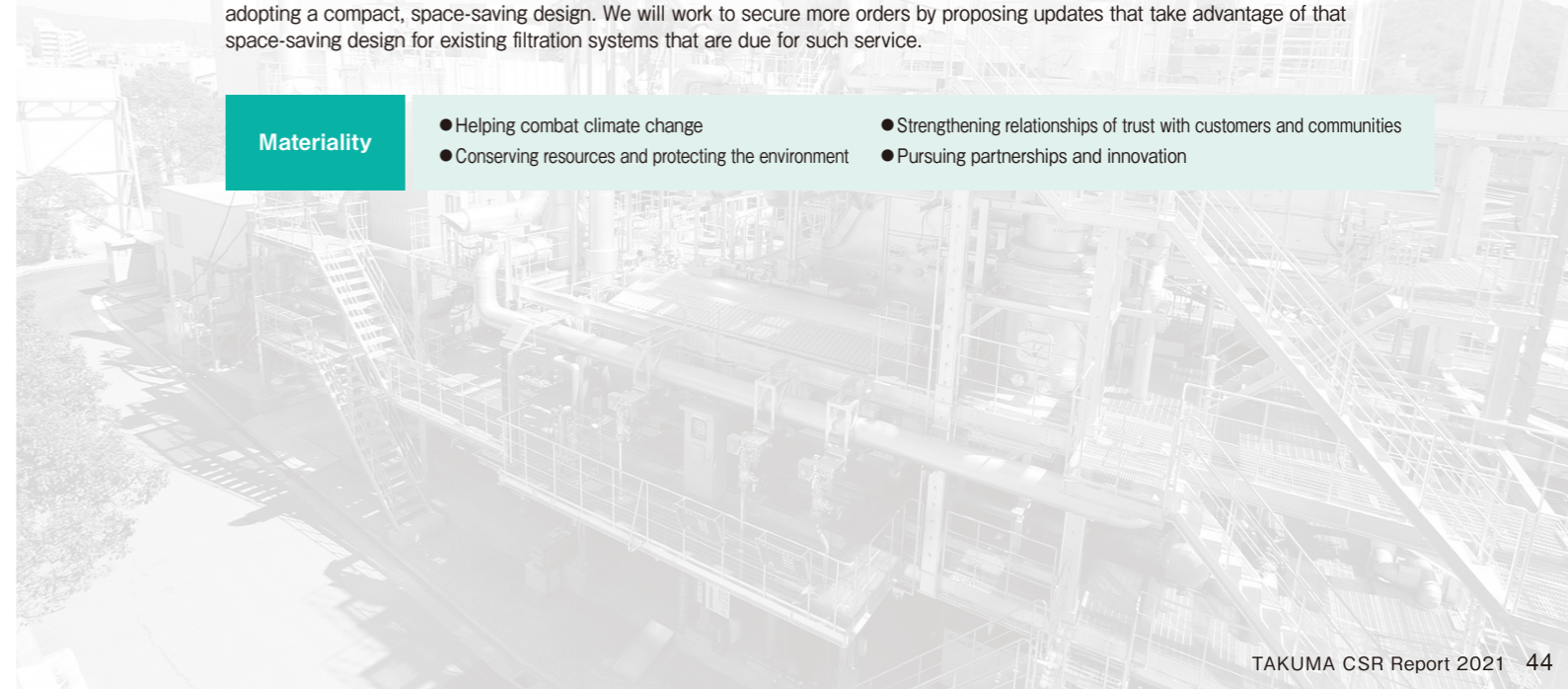
- Developing structures that will allow us to accept long-term comprehensive contracts

The sludge-fueled power generation system we developed differs from conventional incinerators in that it does not require auxiliary fuel, and it excels in terms of environmental performance thanks to its low emissions of the greenhouse gas N₂O, an issue affecting incineration treatment of sewage sludge. Moreover, the system is capable of generating electricity, and its low consumption of power offers excellent energy-saving performance. We have received orders for three plants using this system to date, and we will help reduce greenhouse gas emissions in sewage treatment by continuing to earn more orders in the future.

Additionally, we have delivered numerous high-speed sand filtration systems that boost filtration speed by a factor of two to three while adopting a compact, space-saving design. We will work to secure more orders by proposing updates that take advantage of that space-saving design for existing filtration systems that are due for such service.

Materiality

- Helping combat climate change
- Conserving resources and protecting the environment
- Strengthening relationships of trust with customers and communities
- Pursuing partnerships and innovation



Energy Plant Business



1 Business Summary

In addition to construction (EPC) and maintenance of energy plants for private-sector operators, we offer operation (O&M) and other services.

Principle products

- Biomass power and heat-use plants, RPF power and heat-use plants, industrial waste treatment plants, etc.



2 Strengths

Since our founding in 1938, we have manufactured an array of boilers for industrial, power, marine, and other applications, and we have delivered more than 3,200 boilers throughout Japan and around the world. Over the course of our long history, we have helped reduce and eliminate dependence on carbon on the part of customers and society through the supply of plants that recover energy from a variety of biomass and non-fossil fuels such as wood, poultry manure, and RPF based on proprietary combustion and heat recovery technologies that we have improved and evolved together with customers.

Our achievements (to date)

- Boilers over 3,200 units
Of which, biomass boilers..... over 630 units
- Industrial waste treatment plants over 120 facilities

3 Market Environment

Since Japan's 2012 launch of its Feed-In Tariff (FIT) program, which imposes fixed pricing on purchases of renewable energy, demand for biomass power plants has grown rapidly. Takuma, which has long manufactured biomass boilers, has delivered more than 40 biomass power and heat-use plants (including facilities that do not take advantage of the FIT program) since 2014, when it delivered its first FIT boiler. That said, as the FIT program is reviewed, we expect demand to shift towards small and medium-size biomass power and heat-use plants as a way to implement regional-use power supplies and regional decentralized energy.

Additionally, many industrial boilers that use fossil fuels such as coal and heavy fuel oil, which are common in plant applications, are due to be updated, and we expect that the level of need for conversions to non-fossil fuels such as biomass and RPF will grow as society works to reduce and eliminate dependence on carbon.

4 Initiatives



Strengthening conventional businesses

- Expanding our market presence through steady orders for biomass power plants
- Expanding our business through further promotion of proposals for after-sales service business



Responding to environmental changes

- Capturing demand for fuel conversions in industrial boilers

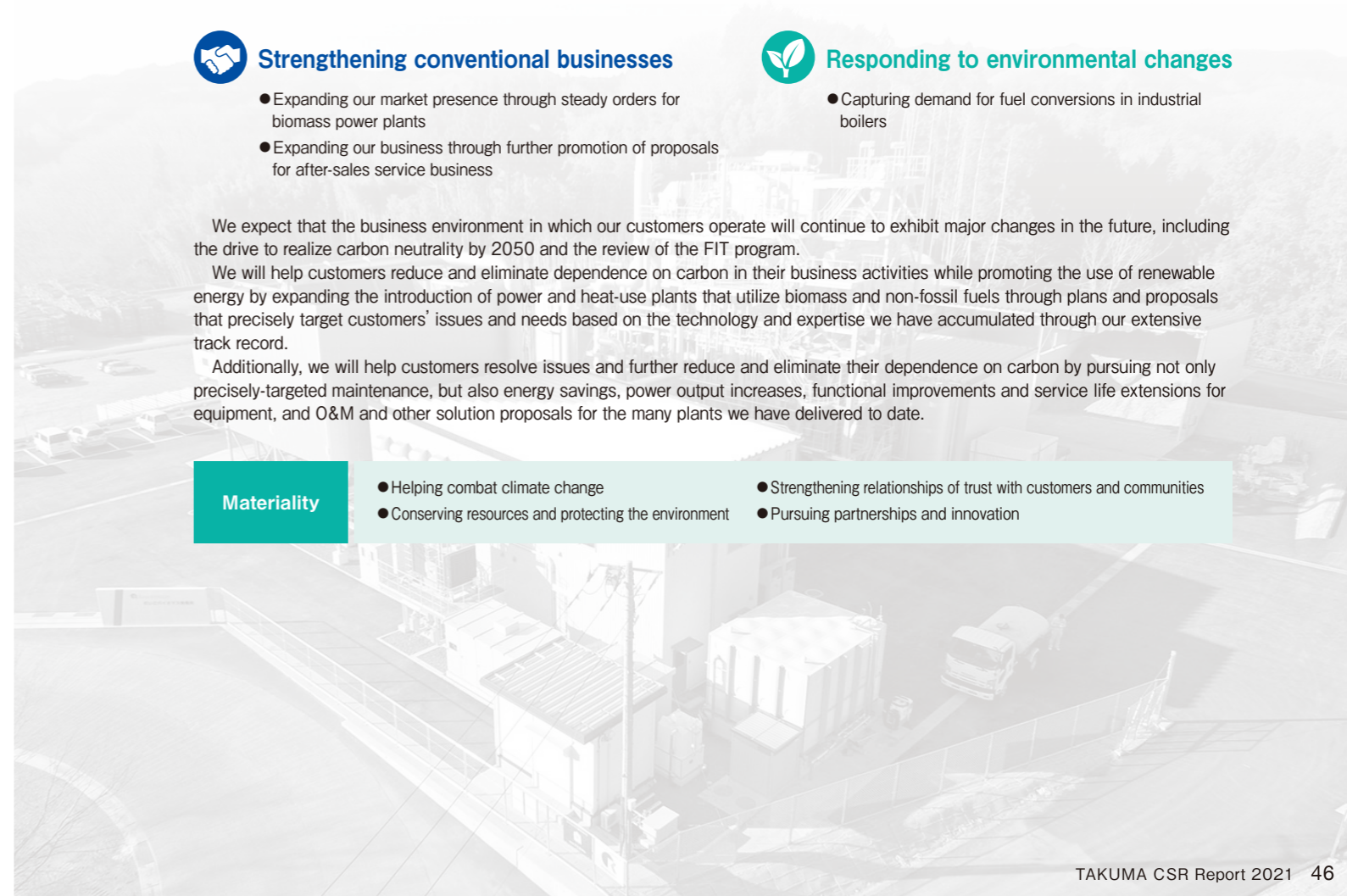
We expect that the business environment in which our customers operate will continue to exhibit major changes in the future, including the drive to realize carbon neutrality by 2050 and the review of the FIT program.

We will help customers reduce and eliminate dependence on carbon in their business activities while promoting the use of renewable energy by expanding the introduction of power and heat-use plants that utilize biomass and non-fossil fuels through plans and proposals that precisely target customers' issues and needs based on the technology and expertise we have accumulated through our extensive track record.

Additionally, we will help customers resolve issues and further reduce and eliminate their dependence on carbon by pursuing not only precisely-targeted maintenance, but also energy savings, power output increases, functional improvements and service life extensions for equipment, and O&M and other solution proposals for the many plants we have delivered to date.

Materiality

- Helping combat climate change
- Conserving resources and protecting the environment
- Strengthening relationships of trust with customers and communities
- Pursuing partnerships and innovation



Business Strategies

Power Retail Business



1 Business Summary

Takuma Energy Co., Ltd., a Group company, operates the Power Retail Business, which draws on power generated by municipal solid waste treatment plants and biomass power plants that Takuma has delivered as its principal sources of power.

2 Strengths

Takuma Energy Co., Ltd., which was established in August 2015 to supply services that increase the amount of value added by plants delivered by Takuma through the purchase and supply of power, operates the Power Retail Business.

The company is helping promote renewable energy power with a regional character in a way that takes advantage of the relationships that link Takuma's customers and Group companies, for example by operating a business that facilitates the local production and consumption of power by supplying power generated by municipal solid waste treatment plants and biomass power plants to public facilities and other regional energy users in four regions.

Our achievements in local production and consumption of power

- Hokutan region, Hyogo Prefecture Starting in August 2016
- Fujisawa, Kanagawa Prefecture April 2017 to March 2021
- Kizugawa, Kyoto Prefecture Starting in April 2018
- Kasaoka, Okayama Prefecture Starting in April 2019



3 Market Environment

The need for decentralized energy as well as the local production and consumption of power is growing from the perspective of securing energy supplies in times of emergency, utilizing energy efficiently, and revitalizing regions. We expect the importance of power and energy services in the Group's business domain to grow in the future, for example in the development of the Regional Circular and Ecological Sphere (Regional CES) in waste treatment and in regional-use power supplies in the FIT program.

Additionally, the level of need for renewable energy and CO₂-free power that have environmental value is growing from the perspective of reducing and eliminating dependence on carbon in business activities. The market is expected to grow further as society works to realize carbon neutrality by 2050.

4 Initiatives

Strengthening conventional businesses

- Expanding the scale of the business by enhancing products in areas such as renewable energy and CO₂-free power and developing new sales channels
- Realizing additional expansion in the local production and consumption of power

Responding to environmental changes

- Examining expansion of our service menu to provide the power demanded by communities and customers

In addition to working to expand our sales menu, for example with renewable energy power and CO₂-free power, we will seek to further expand our business involving the local production and consumption of power through region-optimized schemes that maximize use of environmental value and producing region value, with a focus on plants that Takuma has delivered. We will also work to expand our line of services designed to resolve regional issues through partnerships with a variety of companies.

Materiality

- Helping combat climate change
- Strengthening relationships of trust with customers and communities
- Pursuing partnerships and innovation

Overseas Environment and Energy Business



Overseas Businesses

1 Business Summary

We supply construction and maintenance services for biomass power plants and Energy from Waste plants with a focus on Thailand and Taiwan, where we have local subsidiaries.

Principle products

- Biomass power plants, Energy from Waste plants



2 Strengths

Since delivering a bagasse fired boiler (bagasse: fiber remaining after sugarcane is crushed) to a customer in Taiwan in 1949, we have delivered more than 380 biomass boilers overseas, primarily to customers in Southeast Asia. Approximately 120 of those boilers were delivered in Thailand, primarily to sugar mills, highlighting how we have contributed to the development of the country's sugar industry.

We have also delivered a total of 16 waste treatment plants to customers in Taiwan, China, South Korea, and the UK since delivering our first such plant overseas in the U.S. in 1986.

3 Market Environment

Although we expect to continue to see a certain level of demand for bagasse-fired biomass power plants in Thailand, competition with Indian and Chinese manufacturers remains intense. At the same time, the Thai government has announced a policy of promoting biomass power generation, and demand, including for biomass other than bagasse, is expected to grow.

On the other hand, Energy from Waste projects in the emerging nations of Southeast Asia are often derailed for reasons such as a lack of programs and standards related to waste treatment and insufficient government funding, and a stable market has not yet developed. That said, the level of need for waste-fueled power generation is rising significantly due to population growth and urbanization, and we expect the sector to remain a growth market over the medium and long term.

4 Initiatives

Strengthening conventional businesses

- Ensuring a sustained flow of orders for biomass power plants
- Expanding the flow of orders for maintenance

Responding to environmental changes

- Capturing orders for Energy from Waste plants and developing associated structures
- Implementing global procurement

With regard to biomass power plants, we will strive to earn orders on an ongoing basis by both working to achieve further cost reductions, such as by expanding the scope of overseas procurement, and by differentiating ourselves from Indian and Chinese manufacturers, for example by enhancing maintenance services through our local subsidiary in Thailand.

With regard to Energy from Waste plants, we will put in place structures to secure orders, for example partnerships with local companies, in an effort to capture demand in the future, particularly in Thailand and Taiwan.

Materiality

- Helping combat climate change
- Conserving resources and protecting the environment
- Strengthening relationships of trust with customers and communities
- Pursuing partnerships and innovation

Package Boiler Business

Package Boiler Business

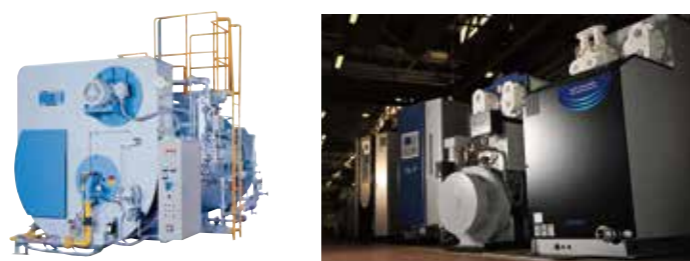


1 Business Summary

Group company Nippon Thermoener Co., Ltd., manufactures, sells, and maintains general-purpose boilers in addition to designing and building related heat source equipment and systems for various types of manufacturing plants as well as hotels, hospitals, commercial buildings, and other facilities.

Principle products

- Once-through Boilers (Equos)
- Vacuum-type Hot Water Heaters (Vacotin Heater)
- Heat-transfer Boilers (Thermoheater)
- Flue and Smoke Tube Boilers (RE Boiler)
- Hybrid Hot Water Systems, etc.



2 Strengths

Over the many years since its establishment in 1961, Nippon Thermoener Co., Ltd., has supported consumer lifestyles as well as industry by accumulating extensive experience in an array of package boilers, a type of boiler, which are used in a variety of industries and applications. In an effort to accommodate the changing times and environment as a manufacturer specializing in heat source equipment, the company meets a diverse range of customer needs by developing new heat source systems such as hybrid hot water systems based on the technological capabilities and expertise it has accumulated over its long history.

3 Market Environment

Although the domestic general-purpose boiler market has matured and is on track to shrink over the medium and long term, the sector remains broad in its reach. We expect a certain level of demand to continue for the time being, for example due to replacement demand. Additionally, demand for energy-saving boilers is expected to increase overseas, particularly in emerging nations. Furthermore, efforts to develop boilers with additional energy savings and higher energy efficiency are expected to accelerate as part of the effort to reduce and eliminate dependence on carbon, and over the long term, the field is likely to transition to heat source equipment that uses non-fossil energy.

4 Initiatives

- | | |
|---|--|
| <p>Strengthening conventional businesses</p> <ul style="list-style-type: none"> ● Maintaining and expanding the scale of orders in the existing domestic general-purpose boiler market ● Expanding our overseas business | <p>Responding to environmental changes</p> <ul style="list-style-type: none"> ● Building and expanding a basis for profit by developing a new market for heating systems based on a decarbonized society |
|---|--|

We will support consumer lifestyles as well as industry while working to maintain and expand the scale of orders received in the domestic market by proposing optimal systems that meet individual customers' needs based on our line of diverse products and to expand our overseas business, particularly in Southeast Asia, where our Thai subsidiary is located. At the same time, we will help reduce greenhouse gases by promoting energy-saving, high-efficiency systems.

Additionally, we will work to develop a new heat source equipment market that suits the characteristics of the decarbonized society of the future by offering systems with greater energy-saving effectiveness, for example hybrid hot water systems that combine heat pumps with vacuum-type hot water heaters, and new heat source equipment that uses non-fossil energy sources, for example wood chip-fueled biomass boilers.

Materiality

- Helping combat climate change
- Conserving resources and protecting the environment
- Strengthening relationships of trust with customers and communities
- Pursuing partnerships and innovation

Equipment and Systems Business

Equipment and Systems Business



1 Business Summary

Group companies SUNPLANT Co., Ltd., and Dan-Takuma Technologies Inc. design and build various types of building equipment, including air conditioning, water supply and drainage sanitation, and firefighting systems, and they manufacture, sell, and maintain equipment for the semiconductor and electronic device industries, including clean rooms, chemical air filters, and magnetically shielded chambers.

Principal products and services

- Building equipment installation, chemical air filters, environmental monitoring systems for use in clean rooms



2 Strengths

SUNPLANT Co., Ltd., which operates a building equipment business, was established as a boiler installation company in 1941. After entering the equipment construction business in 1965, the company began offering a variety of building equipment for use in education and research facilities, healthcare and social welfare facilities, commercial and cultural facilities, factories, railroad facilities, and other sites. In this way, it has supplied pleasant environments that are custom-made to suit a variety of applications and requirements based on the technology and expertise it has accumulated over many years.

Since its establishment in 1969, Dan-Takuma Technologies Inc., which operates a semiconductor industry equipment business, contributes to the development of the semiconductor and electronic device industries by supplying an array of clean technologies, primarily to customers in the semiconductor industry, and by drawing on the high level of trust it has earned through its extensive track record of deliveries to develop products that are customized in collaboration with customers.

3 Market Environment

Although there are concerns that construction demand may be affected by a temporary drop-off in private-sector investment due to the effects of the COVID-19 pandemic, robust demand is expected to continue over the medium and long term thanks to the replacement and repair of aging public facilities and the construction of new healthcare and social welfare facilities.

Additionally, the market for semiconductor manufacturing equipment is expanding thanks to rising semiconductor demand worldwide, which is being fueled by the adoption of new technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and 5G—all areas where there has been steady progress—and by the trend towards digitalization. Going forward, markets serving the semiconductor and electronic device industries are expected to grow over the medium and long term despite short-term fluctuations.

4 Initiatives

- | | |
|--|--|
| <p>Strengthening conventional businesses</p> <ul style="list-style-type: none"> ● Expanding the flow of orders by improving sales and construction capability (equipment) ● Expanding market share by improving products' competitiveness (systems) | <p>Responding to environmental changes</p> <ul style="list-style-type: none"> ● Improving functionality and expanding business opportunities through alliances (systems) |
|--|--|

In the building equipment business, we will work to further strengthen our sales and installation capabilities by hiring, retaining, and training human resources, and we will strive to achieve steady growth in the scale of orders received by creating optimal environments that are custom-made to suit a variety of applications and requirements.

For semiconductor manufacturing equipment, we will work to boost competitiveness by developing products that are customized in collaboration with customers and through joint research with universities, and we will strive to expand our business by supplying products that meet customer needs through a variety of alliances.

Materiality

- Strengthening relationships of trust with customers and communities
- Pursuing partnerships and innovation

Our Achievements

Main Recent Projects

This page introduces some of the main plants that Takuma supplied during FY2020 in the Domestic Environment and Energy Business.

Municipal Solid Waste Treatment Plants

New Construction



The Clean Plaza/ Regional Cleaning Union of the city of Ota and three towns

Project name: Regional Cleaning Union of the city of Ota and three towns Municipal Waste Treatment Facility Construction and Operation Project
Location: Gunma Prefecture
Capacity: 330 tons per day (165 tons per day × 2 units)
 Power output: 9,700 kW



Miyazu-Yoza Clean Center

Project name: Miyazu-Yoza Wide-area Waste Treatment Facility Development and Operation Project
Location: Kyoto Prefecture
Capacity: Waste incineration facility: 30 tons per day (30 tons per day × 1 unit)
 Methane gasification facility: 20.6 tons per day (20.6 tons per day × 1 system)
 Recycling facility: 14.9 tons per day
 Power output: 270 kW



Hikarigaoka Incineration Plant

Project name: Hikarigaoka Incineration Plant Reconstruction Project
Location: Tokyo
Capacity: 300 tons per day (150 tons per day × 2 units)
 Power output: 9,150 kW



Eco Clean Center Nanetsu (No.1 Clean Center)

Project name: Nanetsu Seiso Kumiai (Sanitation Association) New Waste Treatment Facility Development and Operation Project
Location: Fukui Prefecture
Capacity: 84 tons per day (42 tons per day × 2 units)
 Power output: 1,470 kW

Primary Equipment Improvements



Tankou District Sanitation Center Incineration Plant Waste Incineration Facility

Project name: Tankou District Sanitation Center Incineration Plant Waste Incineration Facility Primary Equipment Improvement Project
Location: Iwate Prefecture
Capacity: 240 tons per day (120 tons per day × 2 units)
 Power output: 1,990 kW



Clean OSHIMA

Project name: Clean OSHIMA Primary Equipment Improvement Project
Location: Hokkaido
Capacity: 126 tons per day (63 tons per day × 2 units)
 Power output: 1,600 kW



Hitachiota City Clean Center

Project name: Hitachiota City Clean Center Primary Equipment Improvement Project
Location: Ibaraki Prefecture
Capacity: 100 tons per day (50 tons per day × 2 units)

Water Treatment Plants



Tokyo Basin Sewerage Tamagawa Joryu Water Reclamation Center

Project name: Tamagawa Joryu Water Reclamation Center Sludge Incineration Facility Reconstruction Project
Location: Tokyo
Capacity: Sludge-fueled power generation system
 Treatment capacity: 140 tons per day × 1 unit
 Power output: 137 kW



Yahagi River Basin Sewerage Yahagigawa Sewage Treatment Center

Project name: Yahagi River Basin Sewerage Water Treatment Facility Equipment Project (No.1)
Location: Aichi Prefecture
Capacity: Moving-bed upflow continuous sand filter
 Treatment volume: 20,000 m³ per day
 Equipment specifications:
 M60 × 6 units per pond, total of 2 ponds

Energy Plants



Gifu Biomass Power Co., Ltd.

Project name: Power Plant No.2 Generation Equipment Installation Project
Location: Gifu Prefecture
Capacity: Fuel: Wood fuel
 Steam conditions (normal operation):
 28 tons per hour × 5.98 MPaG × 465°C
 Power output: 6,800 kW



Nihonkaisui Co., Ltd.

Project name: Ako Power Station No.2 Biomass Power Generation Equipment Construction Project
Location: Hyogo Prefecture
Capacity: Fuel: PKS, Wood fuel
 Steam conditions (normal operation):
 125 tons per hour × 6.0 MPaG × 460°C
 Power output: 30,000 kW



The owner of the facility, Clean Authority of Tokyo, is responsible for performing intermediate treatment of municipal waste in Tokyo's 23 wards in a stable manner.

The newly completed Hikarigaoka Incineration Plant is the result of demolishing the former Hikarigaoka Incineration Plant, which operated at the site until 2016, and building a new plant in the same location. Through this project, the outdated plant was reborn as a state-of-the-art facility that blends seamlessly into residents' lives while contributing to stable waste treatment.

In 2021 in Tokyo's Nerima City, we completed the next-generation, environmentally friendly

Hikarigaoka Incineration Plant

Facility name: Hikarigaoka Incineration Plant
Incineration capacity: 300 tons per day (150 tons per day × 2 units)
Power generating equipment: Steam turbine generator (rated output: 9,150 kW)
Design and construction: Takuma-Konoike Special Construction Joint Venture
Construction period: June 28, 2016, to March 15, 2021

A site surrounded by large apartment complexes A construction process shaped by careful consideration of the impact on the neighboring area

Situated in the northern part of Tokyo's Nerima City, Hikarigaoka Incineration Plant is surrounded by facilities that are frequented by large numbers of residents, including medium- and high-rise apartment complexes, shopping centers, and Hikarigaoka Park, a municipal park. In order to complete the rebuilding project in this location, it was necessary to give careful consideration to the impact on the surrounding environment.

In demolishing the old plant, it was particularly important to give adequate consideration to factors such as noise and dust. To resolve these issues, we installed an enormous, temporary tent that completely covered the old plant (measuring 121.5 meters by 78 meters in footprint and 47 meters in height) that completely covered the old plant. By incorporating soundproof sheets and soundproof panels that provided dual functionality and keeping the interior at negative pressure, the tent made it possible for workers to do their jobs while minimizing the effects of noise and dust on the neighboring area.



Former plant



After being completely covered with the tent



Steam turbine



Induced draft fan



Tour route



Solar panels

Maximizing surplus power and helping prevent global warming

The facility's steam turbine generator operates at higher efficiency than did the former plant's, allowing it to make effective use of the energy contained in waste.

Additionally, we took steps to reduce power consumption by the plant's equipment, for example by using high-efficiency compressors and implementing inverter control for the plant's major fans and pumps. Furthermore, we installed a circulating gas system* for the incinerators to reduce emissions, decrease fan power consumption, and reduce environmental impacts.

We also worked to lower energy use by building

equipment, for example by using high-efficiency hardware and LED lighting and otherwise greenifying the building.

As another initiative, we installed solar panels and skylights so that the facility can make effective use of natural energy.

In this way, the new facility combines high-efficiency power generation with energy-saving measures to maximize the surplus power that can be obtained by its waste-to-energy power generation process.

*Combustion technology for drawing in combustion gas above the burn-out grate, where the oxygen concentration is comparatively high inside the furnace, and blowing it as circulating gas into the incinerator. In this way, the technology fosters complete combustion while limiting generation of nitrogen oxides with less combustion air.

Message from our partner company

In June 2016, we began demolishing the former plant building inside a large tent that set a Guinness world record. Construction of the new plant began in earnest in March 2018. As a result of addressing various issues in a forward-looking manner with plant construction personnel and aligning our efforts so that we could pursue a unified approach, we were able to complete the project without incident. I would like to express my thanks to everyone who was involved, including the more than 130,000

construction and other workers at the construction site who worked diligently and closely together, and also to the facility owner as well as the local residents for their kind support and guidance. Going forward, my hope is that the facility will extend its roots into the surrounding community while helping residents enjoy a pleasant lifestyle.

Mr. Kenshin Nabeshima
Site Manager
KONOIKE CONSTRUCTION CO., LTD.



An exterior design that blends into the surrounding environment

Because it is situated in the heart of a residential area, the facility needed to incorporate a design that blends into the surrounding environment by reducing the imposing appearance that such plants tend to produce. By adopting an architectural structure that makes extensive use of underground areas, we designed the plant so that buildings visible aboveground are shorter than they were at the old plant.

Reflecting the need for the plant's color to give a sense of cleanliness, we chose a cream color that harmonizes with the surrounding residential areas for the building and the same white color that was used at the old plant for the stack so that the facility would offer the same appearance as a landmark even as it blends into the area.



Message from the construction coordinator

Completing a landmark in Hikarigaoka while accommodating changes in the social landscape

The Hikarigaoka Incineration Plant Reconstruction Project, which had a total construction period of 57 months and a construction site located in a dense urban area, unfolded successfully against the backdrop of a variety of changes in the social landscape, including soaring material and labor costs due to the economic boom fueled by the Olympics, ongoing workstyle reforms, and the COVID-19 pandemic.

This success was entirely the result of the understanding exhibited by the owner and by residents of the surrounding area, and I would like to express my thanks to them. My hope is that the plant will inspire affection as a new Hikarigaoka landmark.

Hideaki Kotani
Site Manager, Hikarigaoka Construction Site
Takuma Co., Ltd.
(Current Position: General Manager, Safety Control Dept.)



Section 02

ESG Initiatives

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Helping Combat Climate Change While Conserving Resources and Protecting the Environment

The Takuma Group recognizes the need to promote renewable energy (non-fossil energy), improve energy efficiency, conserve resources and reduce environmental impacts, and use unutilized resources effectively. As one way to do that, we will work to alleviate the global issue of climate change and to reduce environmental impacts while helping realize a sustainable society by supplying products and services that draw on technologies for effectively utilizing energy and protecting the environment that we have developed over more than 80 years of history.

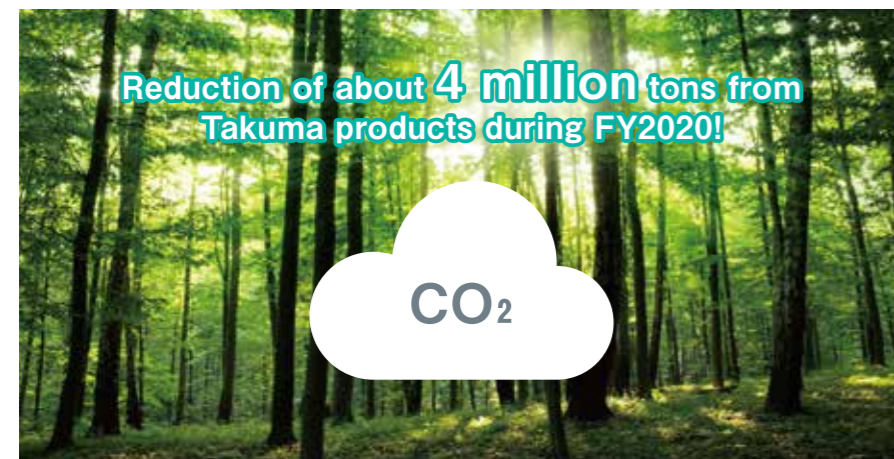
TAKUMA Environmental Policy

Our company has established the "TAKUMA Environmental Policy" as follows, aiming to ensure employees contribute to global environmental conservation. We will help resolve the issues faced by society. This policy applies to the activities of all company departments.

Environmental Philosophy	Takuma is committed to preserving the environment and realizing an affluent society through business activities under the Company Motto: "Value Technology, Value People, Value the Earth".
Operational Guidelines	
<ol style="list-style-type: none"> All Takuma Group companies will recognize the importance of maintaining a balance between preservation of the environment and business activities. Continuously develop activities to preserve the environment that comply with applicable environmental laws and ordinances, and ensure environmental control and assessment systems conform to international environmental standards. Promote development of improved technologies and products for society that preserve the environment. Address resource conservation, energy efficiency, recycling, and minimization of waste generated by all business activities. Enhance employees' awareness and understanding about the importance of preserving the environment through environmental education and internal promotional activities. Provide the community with information on the activities of Takuma to preserve the environment. 	

Takuma's contribution to reducing CO₂ emissions

The municipal solid waste incineration plants and biomass power plants that we supply help save about 4 million tons of CO₂ emissions every year by converting waste and biomass into energy.



Reduction in CO₂ emissions from municipal solid waste incineration plants delivered by Takuma

Approx. 500,000 tons per year!

Reduction in CO₂ emissions from biomass power plants delivered by Takuma

Approx. 3.5 million tons per year!

Helping combat climate change Initiatives through our Energy Plant Business

Takuma has helped resolve customer issues for many years by delivering numerous boilers and energy plants of various types and specifications as a pioneer of the boiler industry. In recent years, alleviating climate change and realizing a decarbonized society have been identified as issues that should be addressed on a society-wide level, and renewable energy in the form of solar, wind, geothermal, small- and medium-scale hydro, and biomass will play an important role in that effort.

Because trees absorb CO₂ through photosynthesis during the growth process, wood biomass from forest thinning and other sources has the characteristic of being carbon neutral, in that use of energy from timber does not impact the atmospheric concentration of CO₂. We will help resolve issues faced by customers and society by promoting renewable energy through utilization of wood biomass.

Contributing to society through business activities

Promoting renewable energy



- Preserving the environment: water, air, and mountain forests
- Reducing CO₂ emissions through carbon neutrality

Alleviating climate change and realizing a decarbonized society

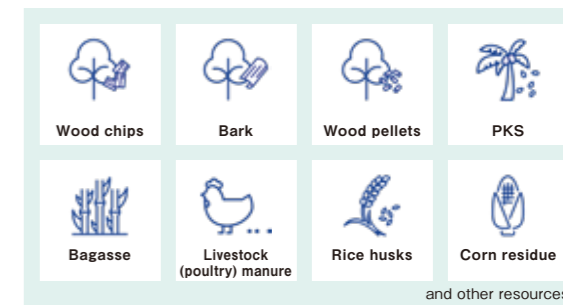
1 Realizing stable, long-term operation of energy plants

Advanced plant designs that can withstand stable operation over the long term are essential so that we can ensure customers can operate our energy plants with a sense of assurance. We design each plant after choosing the optimal combustion method based on customer requirements, the technology we have developed over our long history, and our extensive track record of delivered facilities. We also offer service (through maintenance and our O&M business) designed to ensure that plants can operate in a stable manner over the long term with security and reliability.



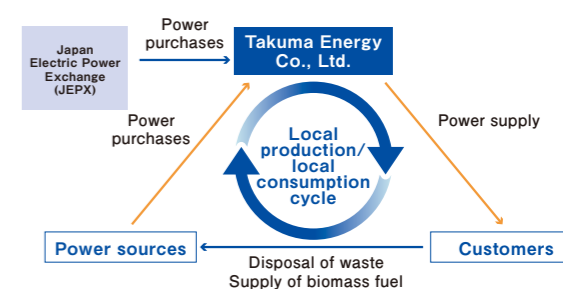
2 Making effective use of unutilized resources

Since biomass fuels are not uniform in terms of their properties, such fuels are characterized by the difficulty of realizing stable combustion. We specialize in drawing on our extensive experience and advanced technology to utilize various types of biomass effectively by burning them in a stable manner. We continually strive to increase energy efficiency in our plant designs so that resources can be utilized to the greatest extent possible.



3 Initiatives to create a regional Sound Material-Cycle Society

Since establishing Takuma Energy Co., Ltd., in 2015 to operate its Power Retail Business, the Takuma Group has worked to realize a regional Sound Material-Cycle Society through energy plants, for example by promoting the local production and consumption of power through an initiative in which Takuma Energy purchases power generated by Takuma-built plants and supplies it to regional public facilities and other consumers.



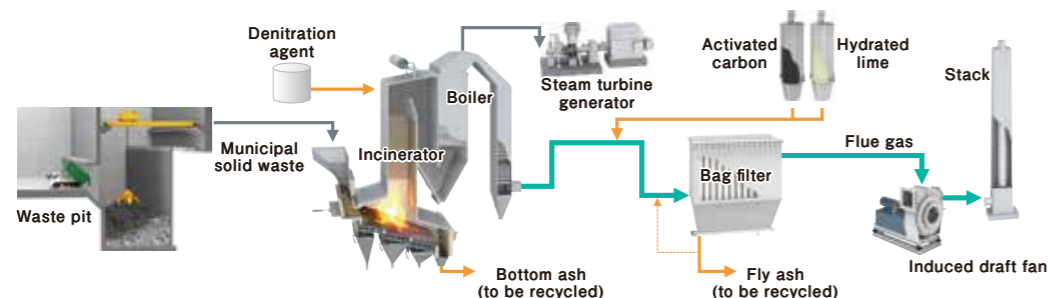
Environmental Initiatives

Conserving resources and protecting the environment

Initiatives through the Municipal Solid Waste Treatment Plant Business

Since delivering Japan's first fully continuous mechanical waste incineration plant in 1963, Takuma has built and delivered more than 360 municipal solid waste treatment plants, making Takuma the No.1 manufacturer in Japan. Most of the treatment technologies used in our plants are the result of in-house R&D by Takuma, which continues to embrace the highest standards of excellence while working to refine its technologies in order to accommodate the needs of society as they change over time.

Takuma contributes to resource conservation and environmental protection through a broad product line and after-sales service based on an extensive track record as the industry's leading company.

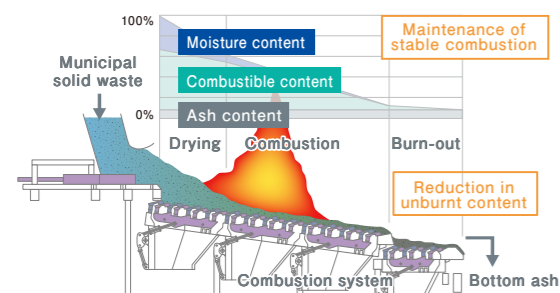


1 Resource conservation initiatives

We contribute to the formation of a Sound Material-Cycle Society by working to improve incineration and flue gas treatment technology, promoting recycling of ash, and reducing use of chemical agents.

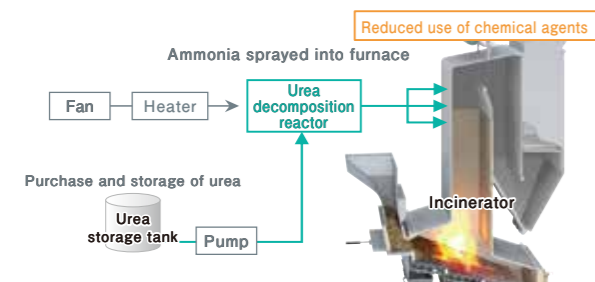
High-performance stoker furnace

We draw on the treatment experience that comes from having Japan's No.1 track record of deliveries to improve our stokers. We pursue the recycling business by maintaining stable combustion despite a diverse range of waste properties and creating bottom ash with few embers that exhibits uniform properties, making it well suited for use in cement production.



Denitration system using urea decomposition equipment

This system, which offers excellent denitration performance, consists of technology for converting an aqueous solution of urea into ammonia gas using a urea decomposition reactor. It can reduce use of chemical agents thanks to its superior reaction performance compared to conventional uncatalyzed denitration technology, which injects aqueous solution of urea into the furnace.

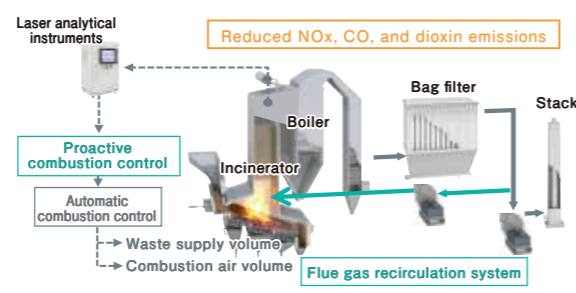


2 Environmental protection initiatives

We safeguard the surrounding region's environment by utilizing flue gas treatment technology as well as various technologies across combustion and maintenance management.

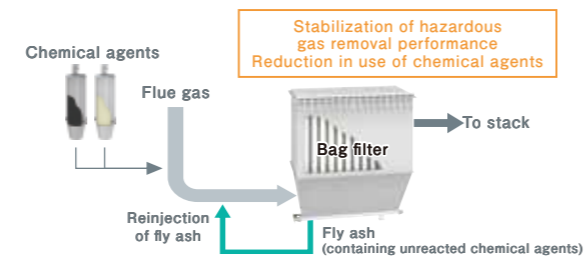
Advanced combustion system

Through the development of our advanced combustion system, which consists of components like proactive combustion control, an approach that uses laser analytical instruments to increase response, and a flue gas recirculation system, we are minimizing hazardous substances that are given off during waste incineration, including dioxins, nitrogen oxides, and carbon monoxide.



Fly ash circulation system

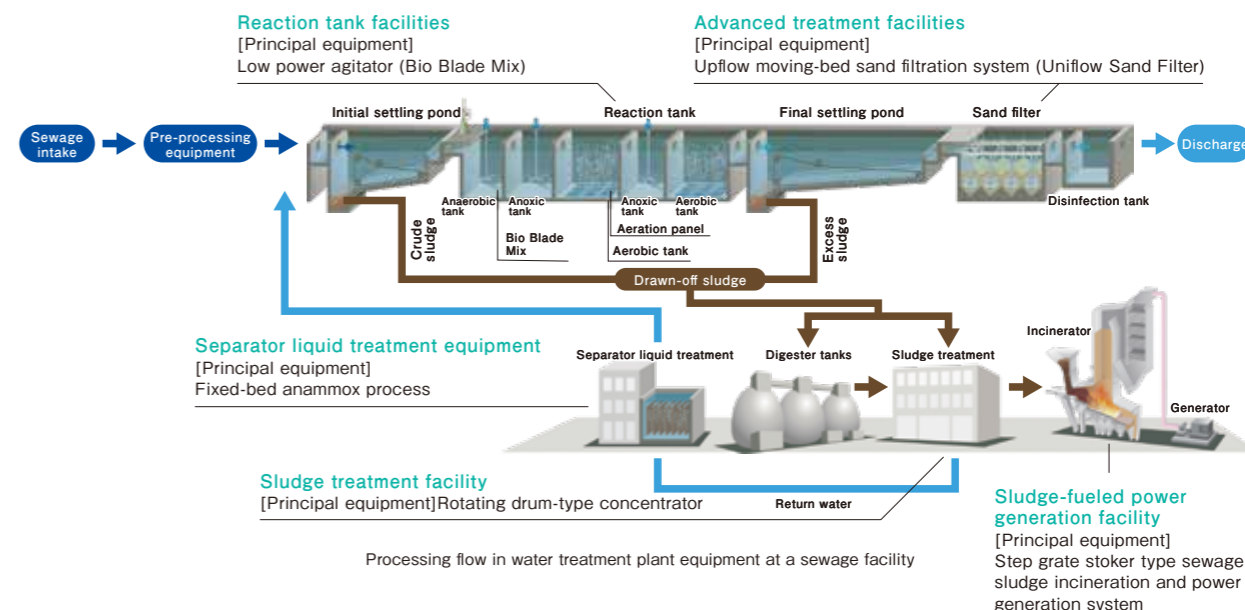
In the past, fly ash collected by bag filters contained chemical agents used to remove hazardous substances that retained some amount of removal capacity (specifically, hydrated lime and activated carbon). This system, which consists of technology for circulating use of fly ash that contains these chemical agents, makes it possible to stabilize hazardous gas removal performance without increasing use of chemical agents.



Conserving resources and protecting the environment

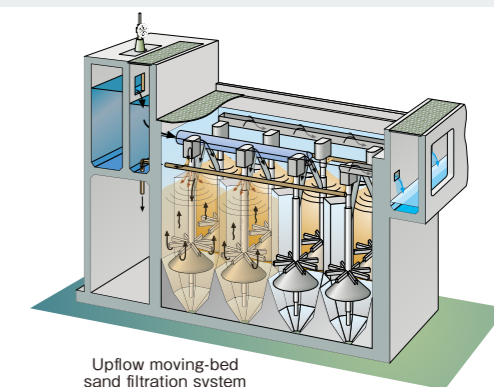
Initiatives through the Water Treatment Plant Business

We have operated our Water Treatment Plant Business with a focus on sewage facilities for more than 50 years, and during that time we have worked to conserve water resources and the water environment required by society by providing a variety of water treatment technologies. In recent years, companies in this sector have been called upon to address social needs involving priorities such as energy conservation, energy creation, and Life Cycle Cost (LCC) reductions. In response, we have helped realize sustainable sewage systems by taking advantage of the reliable technology and extensive experience we have developed to date.



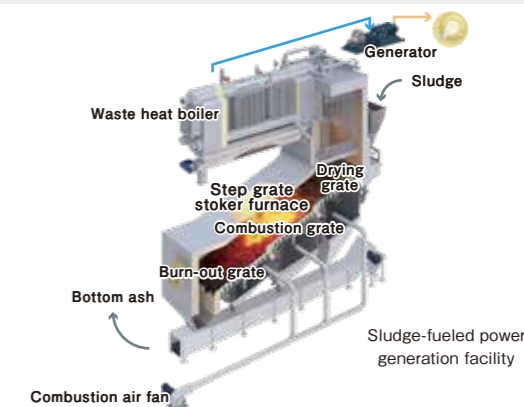
1 Upflow moving-bed sand filtration system

Our upflow moving-bed sand filtration system (Uniflow Sand Filter), which removes Suspended Solids (SS) from water, is primarily used for final treatment at sewage treatment plants to allow clean, treated water to be released into rivers. Some treated water is also reused at the facility, helping to conserve water resources. Uniflow Sand Filter systems boast top domestic market share in moving-bed sand filtration systems, and we have delivered more than 2,700 of these long-selling products, which feature water quality purification technology, in Japan. In recent years, many of the systems we have delivered have been a new high-speed model that delivers two to three times the treatment volume with the same area as conventional fixed-bed sand filtration systems. We are also seeing more projects that replace fixed-bed sand filtration systems with this system while retaining existing foundation work and related infrastructure.



2 Step grate stoker type sewage sludge incineration and power generation system

Sludge generated by the sewage treatment process is a type of biomass, and such resources are expected to be used as renewable energy. Conventional sludge incinerators were net consumers of energy because they required auxiliary fuel and used large amounts of electricity, but this system draws on the core Takuma technologies of combustion technology and boiler technology to make possible an energy-creating system that generates more power than the incinerator consumes while using sludge as fuel, as long as it operates at or above a certain scale.



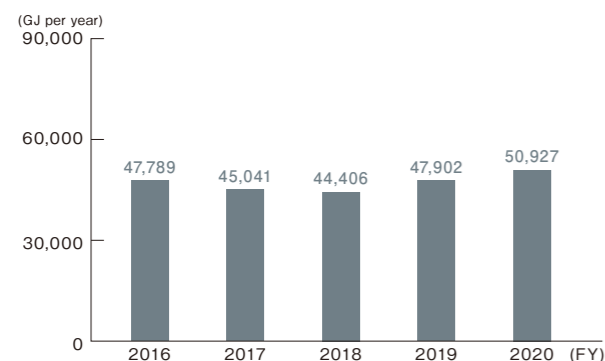
Environmental Initiatives

Environmental reporting

Takuma reports the environmental impact of its business activities as well as the manner in which it takes environmental considerations into account in accordance with the Environmental Reporting Guidelines (issued by the Ministry of the Environment). This environmental reporting program includes not only environmental information extracted from our overall business activities from an environmental standpoint, but also information about related economic and social aspects of those activities.

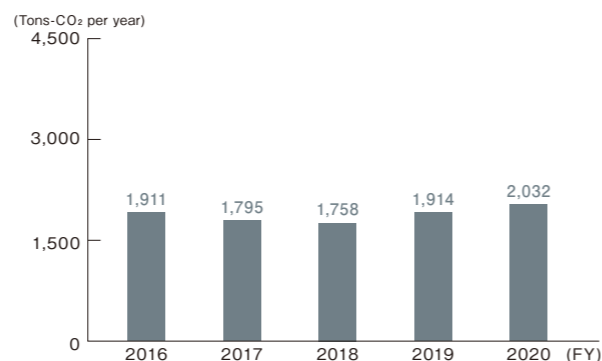
Environmental data (non-consolidated)

Total energy input volume



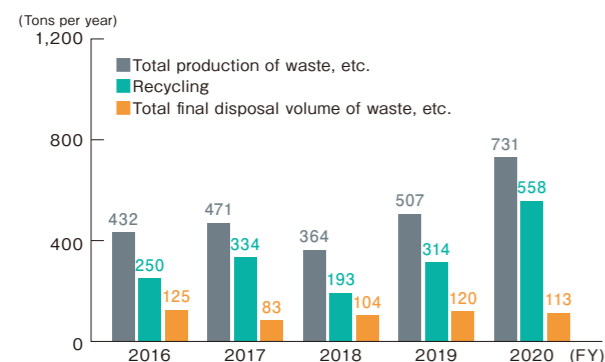
The total energy input volume of the fuel and the electricity consumed at Takuma during FY2020 rose slightly compared to FY2019 levels. We will continue to promote energy savings from here on out.

Greenhouse gas emissions



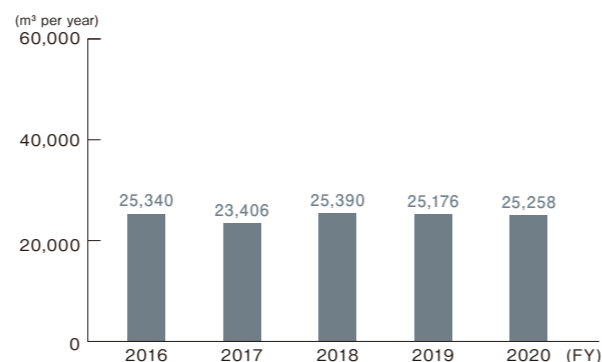
The greenhouse gas emitted by Takuma is limited to carbon dioxide (CO₂). The amount of CO₂ emissions in FY2020 rose slightly compared to FY2019 levels. We will continue striving to reduce CO₂ emissions.

Total production of waste, etc.



Although total production of waste, etc., grew during FY2020 compared to FY2019, total final disposal volume of waste, etc., fell thanks to appropriate treatment such as recycling. Going forward, we will work to further reduce the amount of waste we generate. Although we work to recycle and reuse waste, waste that cannot be reused is disposed of in accordance with the Industrial Waste Control Manifest System.

Input volume of water



Water resource input during FY2020 rose slightly compared to FY2019. We will continue striving to reduce water resource inputs.

PRTR target substance emissions

Although our business activities do not involve a wide variety of chemical substances on a massive scale, we use a few designated chemical substances. Consequently, we report and register such chemical substances designated under the Pollutant Release and Transfer Register (PRTR) Law, in accordance with relevant laws and ordinances, with the local government.

Dichloromethane (CAS No.75-09-2)

FY	2016	2017	2018	2019	2020
Emissions (tons per year)	0.43	0.45	0.27	0.08	0.00

Ethylbenzene (CAS No.100-41-4)

FY	2016	2017	2018	2019	2020
Emissions (tons per year)	0.14	0.96	0.98	1.34	1.41

Toluene (CAS No.108-88-3)

FY	2016	2017	2018	2019	2020
Emissions (tons per year)	0.09	0.07	0.06	0.09	0.07

Xylene (CAS No.1330-20-7)

FY	2016	2017	2018	2019	2020
Emissions (tons per year)	2.85	1.18	1.12	1.47	1.54

These materials are used for antirust painting of boiler structures and so on.

Environmental accounting

Environmental accounting is the process by which companies and other entities recognize the cost of environmental conservation in their business activities as well as the effects of those activities and measure and communicate them in as quantitative a manner as possible (either in terms of monetary amounts or amounts of materials) with the goal of pursuing environmental conservation initiatives in an efficient and effective manner while maintaining a good relationship with society so as to facilitate sustainable development.

We have disclosed our own environmental accounting system since FY2006 when we introduced it based on the "Environmental Accounting Guidelines 2005" issued by the Ministry of the Environment. As our business activities mainly involve environmental conservation plants and their equipment, Takuma Group employees have a significant awareness of the need for environmental conservation, and we have been implementing approaches toward such issues within the Takuma Group.

Environmental conservation cost

Item	Investment (thousand JPY)	Costs (thousand JPY)
Business area costs		
Pollution prevention costs	3,291	21,904
Global environmental conservation costs	21,339	22,724
Resource circulation costs	-	16,984
Administration costs	-	26,170
R&D costs	42,420	1,607,800
Social activity costs	-	10,442
Total	67,050	1,706,024

Investments and expense related to the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities are measured in monetary value.

Economic benefits of environmental conservation measures

Breakdown of benefits	Income from the sale of waste for recycling, etc. (thousand JPY)
	7,110

Economic benefits of environmental conservation measures, defined as contributions to the profit of a company or other entity derived from having pursued environmental conservation measures, are measured in monetary value.

Environmental conservation effect

Item	FY2019	FY2020
(1) Environmental conservation benefit related to resources input into business activities		
Total energy input volume (GJ)	100,973	103,839
Input volume of water (m ³)	47,340	47,295
(2) Environmental conservation benefit related to waste or environmental impact originating from business activities		
Volume of greenhouse gas emissions (tons-CO ₂)	4,273	4,422
Total waste emissions volume (tons)	1,047	1,209
Final waste disposal volume (tons)	155	164
Wastewater volume (m ³)	47,340	47,299

Environmental conservation benefits are measured in physical units and are the benefits obtained from the prevention, reduction, and/or avoidance of environmental impact, removal of such impact, restoration following the occurrence of a disaster, and other activities.

Period covered: April 1, 2020, to March 31, 2021
 Scope: Figures include the following companies.
 In Japan: Takuma Co., Ltd., (Head Office, other offices [including overseas sites], and the Harima Factory); Nippon Thermoener Co., Ltd.; Takuma Technos Co., Ltd.; Hokkaido Sanitary Maintenance Co., Ltd.; Takuma Technos Hokkaido Co., Ltd.; Sunplant Co., Ltd.; Takuma Engineering Co., Ltd.; Takuma System Control Co., Ltd.; Dan-Takuma Technologies Inc.; Kyoritsu Setsubi Co., Ltd.; Kankyo Sol-Tech Co., Ltd.; and Takuma Plant Co., Ltd.
 Overseas: Taiden Environtech Co., Ltd., and Siam Takuma Co., Ltd.

Environmental Management

The situation concerning the acquisition of ISO 14001

Our Harima Factory has acquired ISO 14001 certification and has been implementing environmental management activities based on an environmental management system established to comply with international standards. Our group companies Nippon Thermoener Co., Ltd.; Takuma Technos Co., Ltd.; Hokkaido Sanitary Maintenance Co., Ltd.; and Dan-Takuma Technologies Inc. have also acquired ISO 14001 certification.

Social Initiatives

Strengthening Relationships of Trust with Customers and Communities

Working through initiatives to pursue customer satisfaction, ensure the stable and continuous operation of plants and equipment, and create new value for regional resource recycling and communities, the Takuma Group will maintain and strengthen relations of trust with customers and communities by supplying high-quality products and services that facilitate stable, long-term operation on an ongoing basis in the form of infrastructure that supports regional society and customers' businesses.

Pursuing customer satisfaction

With the level of consumer (stakeholder) attention to quality in a broad range of areas in addition to manufacturing and service growing in recent years, Takuma's Head Office, branch companies, and other business offices have earned certification under the ISO 9001 international standard on quality management systems, and the Harima Factory has earned certification under the ISO 9001 and ISO 14001 international standards on quality management systems and environmental management systems, respectively. Operations comply with the latest version (2015) of both standards.

In addition to working to improve the quality of our products in accordance with our Quality Policy and quality management system, we are pursuing activities that emphasize customer satisfaction. In order to produce products and plants that customers truly appreciate, it is necessary not only to boost the quality of the product itself, but also to improve the operations and quality as well as employees' operational skills in each process from plant planning to delivery (sales, planning, design, procurement, manufacture, construction, and management).

1 Quality Policy

Takuma Co., Ltd., has adopted the following Quality Policy in order to provide satisfying products that meet customer expectations and earn a high level of trust while continuously improving the effectiveness of its quality management system.

Quality Policy | Manufacturing products that result in customer satisfaction

Based on that Quality Policy and the three priority items described below, Takuma is working to improve the quality of its products and services through a variety of initiatives that address every process, including in sales, planning, design, procurement, manufacture, construction, and management.

2 Priority items

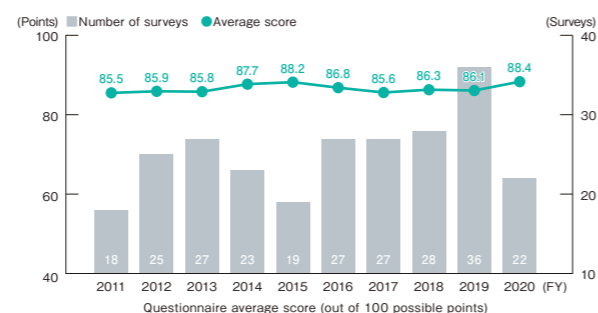
- Creating value to earn customer satisfaction** Ascertaining customer needs and making improvements based on past experience
- Carrying out risk management** Addressing changes in the business environment and human error
- Implementing human resources management** Implementing human resource development and ensuring skills are passed down to younger employees

3 Principal initiatives to improve quality

- Establishing quality targets for each division's processes; monitoring, measuring, and evaluating implementation status (twice a year)
- Holding QM Committee meetings (quality management reviews, twice a year)
- Carrying out internal quality audits to verify the soundness of each division's processes (once a year)
- Using an Operational Skill Achievement Checklist designed to improve employees' operational skills (once a year)

Customer satisfaction survey

We administer questionnaires targeting customers who had construction work done by asking them to assess the overall experience, including the nature of the work performed, suitability of the delivered equipment, and the level of service provided by Takuma staff. The QM Committee analyzes the status quo and studies measures to improve quality based on customer feedback while working to improve Takuma's operational quality and the quality of products supplied to customers by quickly applying measures across the company's organization. Scores averaging higher than 85 points for each of the last 10 years indicate a positive evaluation of these efforts.



Participation in the Community

Takuma and its group companies strive to build relationships of trust with local communities and safe plants that inspire peace of mind and trust on the part of local residents by working actively to participate in area activities and foster interactions with those residents, for example by disclosing information in an appropriate manner; hosting events that bring together residents, for example clean-up activities in areas around its facilities across Japan; and establishing shelters for use in the event of a natural disaster. During FY2020, although the effects of the COVID-19 pandemic forced a reduction of the scale of our activities, we continued to pursue these initiatives while working to combat the pandemic. This section introduces some examples.



Imabari City: Imabari City Waste Management Center ("Bari-Clean")

We joined Imabari High Trust Co., Ltd., which Imabari City has contracted to operate Imabari City Waste Management Center (informally known as "Bari-Clean"), in hosting the Imabari Environmental Festival 2020 in October 2020. More than 1,400 local residents came to the festival, which implemented a series of measures to prevent COVID-19 infections, including taking attendees' temperatures and ensuring everyone wore masks. Attendees enjoyed attractions including a flea market, events designed to raise awareness of environmental issues, and a dining area with numerous food stalls.

Suita City: Resource Recovery Energy Center

Suita City, to which we delivered a municipal solid waste treatment facility, holds the Suita Environmental Education Festa, a participatory event conceived to foster environmental conservation and creation, each year in order to deepen cooperation among stakeholders including residents, businesses, schools, and government agencies. In FY2020, the festival was held online due to the COVID-19 pandemic. We created and exhibited a video introducing the Suita City Resource Recovery Energy Center, which Takuma delivered.



Neighborhood of the Lake Administrative Affairs Association: Suwa Lakeside Clean Center

Suwako High Trust Co., Ltd., which operates Suwa Lakeside Clean Center under contract, has been holding eco Poppo Fellowship Festivals (as a venue to offer reports on facility operations) since FY2017 to inform a broad audience of residents about the role of the facility, its importance, the state of its operations, and other information. In FY2020, the festival was canceled due to the COVID-19 pandemic. Although it was not possible to host the event, we continued to work to promote understanding on the part of local residents by publishing *EcoPon News*, a newsletter featuring a profile of the facility and useful information for resident lifestyles.

Social Initiatives

Pursuing Partnerships and Innovation

Conventional products and services are undergoing a dizzying evolution against the backdrop of progress in the fourth Industrial Revolution and the evolution of information and communications technology, fueling fast-paced change in society. Working through initiatives to utilize digital technologies and promote open partnerships and innovation, the Takuma Group will look to further bolster its strengths by focusing on proposals based on society's and customers' needs, R&D to facilitate them, and technological improvements so that it can keep up with social change.

Utilization of digital technologies (AI, IoT, robots, and more)

Progress in the fourth Industrial Revolution and the evolution of information communications technology are driving fast-paced change in the nature of conventional products and services. Plant Engineering, Procurement, and Construction (EPC), operation management, and maintenance are no exception, and we believe that the transition to digital technologies will only accelerate going forward against the backdrop of trends including labor shortages and the widespread adoption of telework. We are pursuing development and other initiatives from a medium- and long-term perspective so that we can create added value, including to realize remote operation and full automation technologies for customers' plants, streamlining and labor savings in the operation business through the use of data, and strengthening of our competitiveness in EPC and after-sales service.

1 Increases in the added value of facilities and plants

In addition to 24-hour remote monitoring and operational support, Solution Lab, Takuma's remote monitoring and operational support facility, is striving to realize stable plant operation, for example by optimizing maintenance through the collection and analysis of operating data from various plants.

Topics

Development of AI-based automatic combustion stabilization technology

We developed a combustion Artificial Intelligence (AI) that can make judgments concerning incinerator operation on par with those of an experienced operator. By combining the AI with a conventional automatic combustion control system, we have reduced manual control inputs from incinerator operators by 99% while maintaining stable combustion.



2 Strengthening of competitiveness in EPC operations, operation management, and maintenance service

Plant EPC, operation management, and maintenance require many years of experience and expertise, and one of Takuma's strengths is the experience it has accumulated in this area since its founding. To provide higher-quality EPC and after-sales service, we are working to ensure that expertise and skills are reliably passed down to younger employees and to further improve individual workers' skills while making use of digital technologies. Additionally, we are working to strengthen our competitiveness in EPC and after-sales service by working to improve productivity, for example through streamlining initiatives based on the use of Robotic Process Automation (RPA) and other technologies.



Open partnerships

To ensure that we can consistently supply the products and services demanded by customers and society, we will accelerate R&D as well as efforts to strengthen our proposal capabilities through further deepening of partnerships with other companies and organizations.

1 Enhancement of resources and creation of synergies

We are pursuing partnerships and alliances with companies in related fields as well as M&As in order to strengthen our EPC capabilities.

Topics

Acquisition of Techno Links Inc.

We have acquired a 100% stake in Techno Links Inc., a manufacturer with operations spanning the design, fabrication, and installation of environmental recycling systems*, as well as associated after-sales service. By augmenting Takuma's overall plant design capabilities with this new subsidiary's ability to design custom equipment to suit the properties of specific waste streams, we will gain the ability to build more efficient sorting systems.

*Equipment that makes up recycling plants (equipment for crushing, sorting, compacting, and transporting drink containers; equipment for sorting and compacting other plastics; belt conveyors, etc.)



2 Initiatives to contribute to the maintenance and expansion of existing businesses

In an effort to strengthen our ability to produce proposals for solving issues facing customers and communities, we are pursuing collaboration with knowledgeable companies and organizations.

Topics

Initiatives at Imabari City Waste Management Center

Having adopted the concept of Phase Free^{*1} operations at waste treatment facilities, Takuma built and operates Imabari City Waste Management Center as a new type of waste treatment facility that contributes to its community during both normal times and times of emergency. The plant has a role as a disaster-prevention base to safeguard residents in the event of an emergency as well as serving as a familiar presence to residents during normal times, other than incinerating waste. In addition to providing functionality to serve as a shelter where people can take refuge with peace of mind, the facility is improving its ability to deal with any contingencies that might arise in the event of a disaster and strengthening its cooperative structures by joining the city, a Special-Purpose Company (SPC)^{*2}, and local NPOs as well as residents to hold annual training involving opening itself as a shelter and carrying out improvements based on that training. Moreover, the Center is earning praise not only for playing a role in times of emergency, but also for operating as a Phase Free facility that maintains a familiar presence for residents in regular times by allowing them to enjoy sports and events.

*1: A concept that augments daily operations with the ability to play a role in the event of a disaster.
*2: Imabari High Trust Co., Ltd., a Special-Purpose Company (SPC) established with investments by Takuma and Takuma Technos Co., Ltd., which is part of the Takuma Group, is tasked with operating Imabari City Waste Management Center.



3 Initiatives to create new businesses by promoting open innovation

In addition to joint research with universities and other companies, we are working in partnership with other companies to develop new businesses and decarbonization technologies.

Pursuit of innovation

As demands have grown in recent years for realizing a decarbonized society through carbon-neutral technology and better protecting the environment against the backdrop of the problem of climate change, we are focusing on R&D and technological improvement in order to develop the technologies and products that are required by society and customers.

Topics

Development of a CO₂ supply system for SARA Inc.

We developed a system for supplying a large volume of CO₂ in a safe, economical manner from combustion flue gas from a biomass power plant and delivered it to SARA Inc. By locating the biomass power plant that incorporates this system next to a greenhouse, we have realized a biomass tri-generation system that uses heat, electricity, and CO₂ in vegetable cultivation. Through this system, which combines the expertise of SARA Inc., an expert in vegetable cultivation, with Takuma's flue gas treatment technology, we are contributing to smart agriculture that utilizes the fertilizing effects of CO₂ while realizing economic, carbon-negative^{*} operation. The system received the Japan Machinery Federation Chairman Prize at the Federation's 2020 Equipment and System Awards for Excellence in Energy Savings.

*The system absorbs more CO₂ than it gives off (making it carbon-negative) as its CO₂ source is combustion gases from wood biomass, which is carbon-neutral, and because it makes effective use of the CO₂ in those gases.



Social Initiatives

Promoting Activities of Human Resources

The Takuma Group's human resources have fostered and passed down key strengths in the form of technology, expertise, and trust-based relationships with customers. Through initiatives to strengthen the hiring and development of human resources as well as to promote diversity and improve employee satisfaction, we will continue to ensure that the Group's strengths are effectively passed down and strengthened by using human resources effectively so that employees embodying a diverse range of values can take full advantage of their abilities, and by putting in place structures to keep employee motivation high.

Respect for human rights and the abolition of discrimination

Our company sets out its respect for basic human rights and prohibition of discriminatory acts in Takuma Group Ethics Charter, Takuma Group Code of Conduct, and labor regulations. In addition, we also support respect for human rights, without contributing to human rights violations, elimination of forced labor/child labor, and the abolition of discrimination through participation in the UN Global Compact. We are also working to promote employment of disabled and elderly individuals.

- **Takuma Group Ethics Charter (excerpt)**
4. We shall respect fundamental human rights and never practice discrimination.
- **Takuma Group Code of Conduct (excerpt)**
[Respect for basic human rights]
9. Prohibition of discriminatory actions
10. Respect for personality, individuality, and privacy of employees
11. Safe work environment

Working with our employees

Making the most of each and every employee's abilities and using human resources effectively by ensuring employees feel engaged and motivated while working over the long term are top priorities for Takuma as it works to promote activities of human resources.

Employee data	
Number of employees	894 (Including 819 men and 75 women)
Average age	43.1
Average years of service	15.3
Attrition rate	5.5% (past 3 years)

*As of March 31, 2021

1 Securing and training human resources

Initiatives related to securing human resources

In addition to utilizing a variety of techniques in our hiring activities to ease the labor shortage, we made 62 new and mid-career hires in FY2020, making active use of online interviews due to the COVID-19 pandemic. Going forward, we will continue to focus on securing human resources, including by taking advantage of the Internet to hold information sessions for job-seekers in distant areas and approaching other interested applicants.



Number of new regular employees (based on when new employees began working for Takuma; number of female employees in parentheses)

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021 *New hires only
New hires	18 (1)	24 (2)	21 (2)	20 (2)	25 (3)	26 (2)
Mid-career hires	11 (1)	10 (0)	22 (1)	25 (1)	37 (2)	-
Total	29 (2)	34 (2)	43 (3)	45 (3)	62 (5)	26 (2)

Initiatives related to human resources development

We offer grade-specific educational programs, from new hires to management candidates. We are also making use of the New TAKUMA Building (Training Center), which was completed in October 2020, to improve employees' abilities, technical skills, and management skills.

- ▶ New-employee training
- ▶ Technical presentation by 2-year employees
- ▶ Thesis discussion by 5-year employees
- ▶ Presentation by 10-year employees
- ▶ Mid-career training
- ▶ Management training



2 Promoting diversity

Initiatives to increase female participation

In addition to putting in place a workplace environment that provides flexible workstyles and continuous employment, we have continued to pursue initiatives that encourage employees to understand Takuma. As a result, the number of female employees in management positions and the number of female employees on the main career track (including individuals who have been tentatively offered positions) as of March 31, 2021, increased to 25, which would be double the corresponding number as of March 31, 2016. We will strengthen these initiatives over the next five years in an effort to increase the number of female employees on the main career track and in management positions by a factor of at least two over corresponding numbers for the most recent five-year period (to 35 or more employees).

Initiatives to increase hiring of disabled individuals

In addition to hiring people with disabilities to work primarily in general work in various departments and creating the Office Support Section in the Human Resources Department to manage work by people with disabilities and "outsource" internal tasks to them as part of an effort to promote more broadly-based hiring, we currently employ five* workers with disabilities who clean offices, perform light work and other tasks, and help maintain and manage an employee social welfare facility (cafe space). (*As of April 30, 2021)

3 Improving employee satisfaction

Programs to ensure employees can work over the long term with peace of mind

We have introduced the following programs to facilitate healthy work-life balance and to help employees make the most of their skills and abilities while balancing their work with child-raising and nursing-care responsibilities. Additionally, we will work to increase utilization of parenting support programs to at least 25%, which would double current levels, by further enhancing those programs and spreading awareness of them.

- Half-day annual paid leave program
- Childcare leave program
- Nursing-care leave program
- Flex time program
- Telework program
- Staggered working hours program
- Leave program for husbands whose wives are giving birth
- Shortened working hours program

Impressions from an employee who has taken advantage of Takuma's flex time program

I was worried about whether I would be able to continue working while raising my child, but the flex time program eased those concerns. The most helpful part of the program is the ability to see my elementary school-age child, who leaves the house before 8:00 in the morning, off to school before heading to work. Even when I am scheduled for crossing-guard duty, which is 15 times a year, I am able to get to work by core time without taking a half-day of paid leave in the morning. Naturally, the understanding and cooperation of my coworkers and supervisor help make this possible. (Clerical female employee in her 40s)

Initiatives to support career development

We have established the following programs to support the development of employees' careers.

- Supervisors schedule two interviews with each subordinate every year to review progress toward operational goals and listen to their wishes and advice directly.
- A self-reporting program session is held every three years to facilitate long-term career development.
- A work group transfer program facilitates movement from clerical and labor positions to the main career track.

We have also introduced programs that give talented employees promotions without regard to whether they were a new or mid-career hire.

Social Initiatives

Ensuring Safety and Health

The Takuma Group will work to further strengthen its core strengths of technology and expertise as well as relationships of trust with customers while preventing a decline in the quality of its products and services or in the level of trust it enjoys from society by safeguarding workers' physical and mental health and building an environment in which it is easy for employees to do their jobs. Specifically, we will accomplish these goals by ensuring occupational safety and health, managing employee health, and putting in place an employee-friendly workplace environment.

Occupational safety and health initiatives

Since FY2006, we have introduced TK-COHSMS based on an occupational safety and health management system for the construction industry and worked actively and independently to improve our safety and health activities. We believe that among these efforts, the manner in which (1) safety inspections, (2) mandatory safety and health education (education for construction site representatives), and (3) creation of pre-work safety procedure checklists known as SSAs have been steadily adopted by all departments and used to consistently improve the level of knowledge about Takuma's safety and health is particularly noteworthy.

We have adopted the following safety and health objectives for FY2021: eliminating fatal accidents and accidents that result in work stoppages (of four or more days); pursuing a thorough program of safety and health education, ensuring adherence to safety inspection guidelines, and implementing the branch safety patrol plan; and strengthening collaboration with the Safety and Health Cooperative Association. Branches, worksites, and involved contractors will work together to revitalize safety and health activities companywide by reliably fulfilling their respective roles.

Rather than contenting ourselves with the status quo, we will pursue new safety and health initiatives to foster a strong awareness of the concept that underlies our safety and health policy — "Understanding the need for respecting people and giving top priority to safety and health" — on the part of everyone who is involved in our operations.

Safety and health activities and their results

1 Safety inspection system

We maintain a system where any construction or installation work starts only after the safety and health manager or other responsible official in each department conducts a successful safety inspection based on safety and health plans for the construction or installation work as prepared by our primary partner companies.

We strive to ensure a safe work environment at all construction sites by eliminating risk factors identified by those inspections before work begins.

●Number of safety inspections completed in FY2020:99



A safety inspection meeting

2 Safety patrols and safety lectures

Based on an annual plan, safety patrols are carried out at worksites by the Safety and Health Committee (comprised of committee members and advisors), Safety Control Department, and Construction Division along with safety lectures in a precisely targeted and efficient manner.

Safety patrols focus on identifying and eliminating risks as early as possible, while safety lectures are conceived to prevent occupational accidents and raise employees' safety awareness by offering an opportunity to hand out and explain materials such as examples of accidents. Both programs help ensure safety at worksites in the field.

●Number of safety patrols implemented in FY2020
 By Safety and Health Committee (members, advisors)..... 40
 By Safety Control Department 110
 By Construction Division 255



Safety patrols

3 Safety and health education (education for construction site representatives)

We continuously provide specialized safety and health education at branches and worksites to increase the levels of safety awareness and knowledge of our employees and partner companies.

We are putting in place mechanisms for preventing accidents, including by assigning workers with extensive knowledge in areas such as safety and health-related laws and ordinances thanks to an education program that began on April 1, 2004, to individual construction sites.

●April 2004 to March 2021
 Cumulative number of trainees 36,470
 Number of trainees passing the completion exam 19,804



Head Office venue (left) and Tokyo Branch venue (right)

4 Education that lets employees experience a hazard (falling) via Virtual Reality (VR)

In FY2020, we began offering education based on Virtual Reality (VR) at the Head Office, Tokyo Branch and other branches and worksites as part of an effort to prevent occupational accidents by increasing sensitivity to hazards and raising safety awareness.

●Number of participants during FY2020
 Takuma employees 458
 Attendees from partner companies 128



Education that lets employees experience hazards via VR

Safety and health awards in the Construction Division / Safety and Health Promotion Meeting

Takuma recognized employees who worked to prevent occupational accidents at worksites and set zero-accident records at an internal award ceremony held on the anniversary of the company's founding. Although we had planned to similarly recognize primary partner companies who helped set zero-accident records at the Safety and Health Promotion Meeting, we were forced, with great regret, to cancel the event along with the awards ceremony in FY2020 due to the COVID-19 pandemic. However, we were able to recognize award recipients who set zero-accident records by sending them a commemorative award.

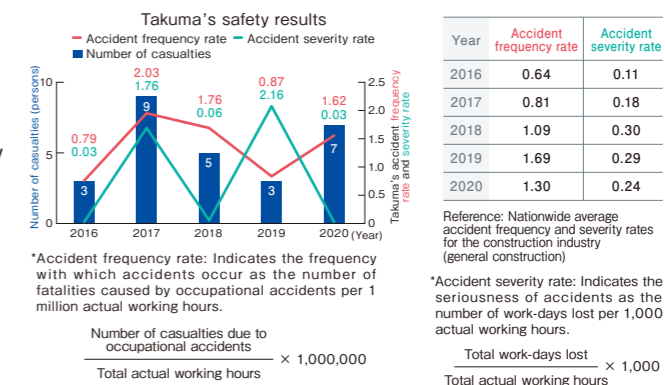


Internal presentation of a zero-accident record award

Occurrence of occupational accidents at Takuma in recent years (Number of casualties, accident frequency rate, and accident severity rate)

The total actual working hours for Takuma in 2020 was about 4.3 million hours. Both the number of occupational accidents and accidents resulting in work stoppages increased significantly from 2019.

Although the accident severity rate was significantly lower than the national average, the accident frequency rate exceeded the national average, posing a serious problem that needs to be addressed. We will work to eliminate occupational accidents through a unified and redoubled effort by all involved to halt this trend while strengthening risk management and enhancing our safety and health management structures.



Managing employee health

We follow up on employees' regular check-ups by working with industrial physicians to recommend tests and treatments to individual employees and to provide health guidance from industrial physicians. Additionally, we are working to assist employees who work excessively long hours, for example by assessing the conditions under which they work, conducting interviews as necessary, and having their supervisors consider possible remedies. Furthermore, we offer assistance to defray the cost of using cafeteria plans as an initiative to increase employee health.

Strengthening Corporate Governance

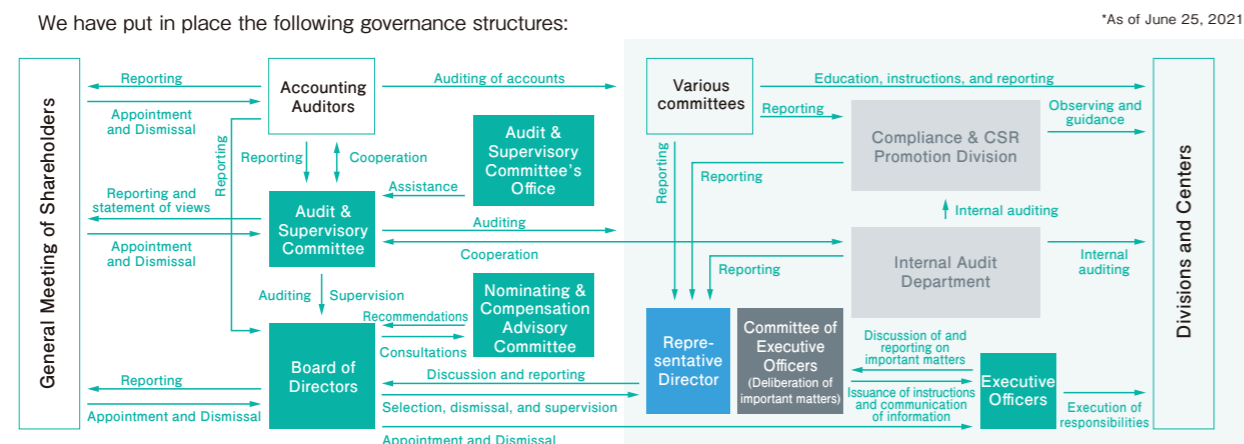
Through efforts to strengthen corporate governance, enhance risk management, and implement thorough compliance, the Takuma Group is working to build structures that make possible highly transparent and appropriate decision-making and to maximize its corporate value by assessing and managing risk in an appropriate manner and by preventing the cessation of business operations and loss of social trust from violations of laws and regulations.

Corporate governance structures

1 Basic policy on corporate governance

In order to safeguard and steadily increase Takuma's corporate value over the long term, it is essential not only to ensure the development of the company's businesses, but also to clearly define governance in corporate operations—that is, to ensure that shareholders' oversight of operations is carried out appropriately and that officers carry out their operational responsibilities by means of a process that is clear, rational, efficient, and legally compliant. For that reason, we believe that understanding the Corporate Governance Code and putting it into practice in an autonomous and systematic manner are top-priority management issues.

2 Takuma's governance structures



3 Board of Directors

As of June 25, 2021, the Board of Directors was comprised of six directors (excluding directors who are members of the Audit & Supervisory Committee) and five directors (of whom four were outside directors). The Board of Directors meets regularly once a month as a rule and whenever else it is necessary to make decisions about important issues related to business management and issues established by law and ordinances, as well as to oversee the execution of the directors' duties.

Directors: 11 (10 men and 1 woman), including 4 outside directors (3 men and 1 woman)

4 Executive Officers

In order to accelerate management decision-making and clarify where management responsibilities are placed, we have adopted an executive officer system in which we appoint executive officers who are entrusted with the responsibility of executing our business activities. As of June 25, 2021, there were 15 executive officers (including those who also serve as directors). Moreover, we have also established a Committee of Executive Officers, which is chaired by the president/chief executive officer, as an organization that deliberates matters that are brought up at meetings of the Board of Directors and other important issues related to the execution of our business activities. This committee communicates and provides direction about items decided by the Board of Directors and other important items related to the execution of our business activities appropriately to the divisions that are to execute them.

5 Audit & Supervisory Committee

An Audit & Supervisory Committee that consists of five members, of whom four are outside directors, is responsible for accounting and operational audits. Members of the committee attend important meetings, including those of the Board of Directors and the Committee of Executive Officers, and they strive to understand and observe the status of business execution in a timely and appropriate manner. Drawing on their professional background and experience, they express their opinions as necessary from an objective perspective, and they conduct strict auditing of the business execution performed by the directors. To facilitate the effectiveness of audits carried out by the Audit & Supervisory Committee, the representative director holds regular meetings with committee members to ensure good communication.

6 Audit & Supervisory Committee's Office

Takuma has established an Audit & Supervisory Committee's Office to help carry out the committee's work.

7 Nominating & Compensation Advisory Committee

To augment the structures described above, we have established a Nominating & Compensation Advisory Committee comprised of independent officers, representative directors, and the officer in charge of human resources. The purpose of the committee, a majority of whose membership consists of independent outside directors, is to increase transparency and objectivity in the selection of candidates for director and executive officer positions and in the determination of the compensation and other terms so as to enhance the oversight function of the Board of Directors.

Appointment and dismissal criteria for directors and executive officers

1 Policy on the appointment and dismissal of executives

To maintain an appropriate number of members who can conduct effective discussions and assure that the body can appropriately carry out its role of decision-making on basic policies and important matters related to the company's management and supervision of directors' and executive officers' execution of their job responsibilities, Takuma takes various steps to ensure that the Board of Directors' membership exhibits a good balance of knowledge, experience, and ability. The Policy on the Appointment and Dismissal of Executives put in place by the Board of Directors establishes appropriate processes for appointing and dismissing executives along with basic requirements for director candidates and executive officers; criteria for appointing director candidates, executive officers, and other positions; and criteria for dismissing directors and executive officers.

2 Procedures for appointing and dismissing executives

The Nominating & Compensation Advisory Committee, whose membership consists of independent officers, representative directors, and the officer in charge of human resources (with a majority of independent outside directors), discusses the appointment and dismissal of directors and executive officers, including the position of president and CEO, in accordance with the Policy on the Appointment and Dismissal of Executives put in place by the Board of Directors. The Board of Directors makes final decisions in such matters after sufficient discussion based on factors including directors' past and present performance of their responsibilities while respecting reports and advice from the Committee.

Selection criteria for independent executives

Takuma designates all outside executives who satisfy certain qualifications as independent executives. We assess the independence of outside directors based on standards of independence adopted by the Tokyo Stock Exchange as well as our own internal Standards for Determining the Independence of Outside Executives.

Standards for Determining the Independence of Outside Executives

In Takuma's view, the following individuals do not exhibit sufficient independence to qualify as an independent executive:

- (1) Individuals/entities whose principal business partner is Takuma*1 and their officers*2
- (2) Principal business partners of Takuma*3 and their officers
- (3) Consultants, accounting experts, and legal experts who are receiving financial compensation or other assets in excess of a certain amount*4 from Takuma, apart from executive compensation (If the entity receiving such assets is an organization such as a corporation or an association, then this criterion refers to individuals belonging to that organization.)
- (4) Individuals/entities that receive donations or aid in excess of a certain amount*4 from Takuma, apart from executive compensation (If the entity receiving such assets is an organization such as a corporation or an association, then this criterion refers to individuals belonging to that organization.)
- (5) Major shareholders*5 of Takuma and their officers

*1: "Individuals/entities whose principal business partner is Takuma" refers to individuals and entities that earned at least 2% of their consolidated net sales during the most recent business year from Takuma.

*2: "Officers" refers to managing directors, executive officers, and other personnel.

*3: "Principal business partners of Takuma" refers to individuals and entities whose payments to Takuma constituted at least 2% of Takuma's consolidated net sales during the most recent business year.

*4: "A certain amount" refers to at least JPY 10 million (for individuals) or at least 2% of gross sales (for organizations) during the most recent business year.

*5: "Major shareholder" refers to an individual or entity that holds at least 10% of the total voting rights.

Governance Initiatives

Compensation and other remuneration paid to directors (Except Audit & Supervisory Committee members)

1 Matters relating to the General Meeting of Shareholders' resolution concerning director compensation and other remuneration

Meeting on June 28, 2016, the 112th Annual General Meeting of Shareholders resolved to limit compensation and other remuneration paid to directors (except Audit & Supervisory Committee members) to JPY 350 million per year. When the Annual General Meeting of Shareholders in question ended, there were six directors (not counting Audit & Supervisory Committee members).

Meeting on June 26, 2019, the 115th Annual General Meeting of Shareholders resolved to pay monetary compensation rights not greater than JPY 90 million per year to directors (except Audit & Supervisory Committee members) for use in acquiring restricted stock, separate from the above compensation limit. (The resolution limited the total number of shares of Takuma common stock issued or disposed for this purpose to 120,000 shares per year.) When the Annual General Meeting of Shareholders in question ended, there were six directors (not counting Audit & Supervisory Committee members).

Meeting on June 28, 2016, the 112th Annual General Meeting of Shareholders resolved to limit compensation and remuneration paid to directors who are members of the Audit & Supervisory Committee to JPY 72 million per year. When the Annual General Meeting of Shareholders in question ended, there were four directors that were members of the Audit & Supervisory Committee.

2 Method for formulating policies for determining of compensation and other remuneration

Takuma's Policy on Executive Compensation and Other Remuneration, which was established by resolution of the Board of Directors, codifies Takuma's policies for determining compensation and other remuneration for directors (except Audit & Supervisory Committee members). The policy is revised as necessary by resolution of the Board of Directors following consultation with, and consideration of recommendations submitted by, the Nominating & Compensation Advisory Committee.

3 Overview of policies for determining compensation and other remuneration

(1) Basic policies

Takuma has adopted the following basic policies concerning the determination of compensation:

- Compensation should be suited to the role and responsibilities of the director in question, and it should help the company secure talented human resources.
- The compensation system should reflect appropriate consideration of the need to motivate directors to increase fiscal year performance as well as corporate value over the medium- and long-term.
- The process used to determine compensation should exhibit transparency and objectivity so that the company can fulfill its obligation of accountability to shareholders and other stakeholders.

(2) Compensation system

Compensation for directors and executive officers consists of fixed compensation, bonuses paid according to fiscal year performance, and stock compensation (compensation in the form of restricted stock), which is used to motivate recipients to increase medium- and long-term corporate value.

- Fixed compensation
Fixed compensation is set depending on the role and responsibilities of each position and paid on a monthly basis.
- Bonuses
Takuma has adopted a set of standards for calculating bonuses based on indicators such as fiscal year performance and achievement of targets, and the Board of Directors determines whether to pay bonuses and, if so, in what amount using those standards as a guide. Bonuses are paid at predetermined times each year. As a general rule, bonuses are capped at a maximum of 25% of fixed salary (annual amount).
- Stock compensation
Stock compensation takes the form of shares of restricted stock that are granted in advance. Monetary compensation rights set depending on the role and responsibilities of each position are allocated at predetermined times each year, and shares in Takuma are granted in exchange for the pay-in of those rights. As a general rule, stock compensation is capped at a maximum of 30% of fixed salary (annual amount), with the percentage increasing with seniority of position.

(3) Procedure for determining compensation

The Nominating & Compensation Advisory Committee, whose membership consists of independent officers, representative directors, and the officer in charge of human resources (with a majority of independent outside directors), discusses matters related to compensation and remuneration programs, the amount or calculation standard for each director's compensation and other remuneration, and other executive officers' compensation and other remuneration in accordance with the Policy on Executive Compensation and Other Remuneration and reports the results to the Board of Directors. Having received that report, the Board of Directors makes final decisions on related matters after sufficient discussion while respecting the Committee's report.

In determining the amounts of individual compensation packages, the suitability of those packages is verified based on factors including the Group's performance, compensation levels for executives at other companies, and employee salary levels.

Compensation and other remuneration for the business year under review were discussed by the Nominating & Compensation Advisory Committee, which addressed the amounts and calculation standards for each director while referring to executive compensation research data from an outside research organization, and determined by the Board of Directors based on the Committee's report.

(4) Justification for the Board of Directors' determination that the compensation and other remuneration for individual directors for the business year under review are in line with applicable policies

The suitability of compensation and other remuneration for directors during the business year under review was verified by the Nominating & Compensation Advisory Committee based on factors including the Group's performance, compensation levels for executives at other companies, and employee salary levels by means of a transparent and highly objective process in accordance with Takuma's Policies on Executive Compensation and Other Remuneration, and the individual compensation packages were finalized by the Board of Directors after sufficient discussion while respecting the Committee's report. As a result, the Board of Directors has determined that the contents of those compensation packages are appropriate and in accord with applicable policies.

(5) Matters related to performance-linked compensation

Because the Group's business operates primarily on a build-to-order basis and because it considers consolidated ordinary profit to be the most important management indicator, consolidated order value and consolidated ordinary profit serve as key performance indicators in calculating bonuses that are based on fiscal year performance.

Specifically, a calculation table is used to calculate a coefficient based on the consolidated ordinary profit for the business year in question, the rate of growth relative to the average consolidated ordinary profit for the most recent three years, the extent to which the consolidated ordinary profit target has been achieved, and the extent to which the consolidated order value target has been achieved. Bonus amounts are then determined based on this coefficient. (Consolidated ordinary profit performance figures are calculated before deducting executive bonuses at companies included in consolidated accounting.) Performance forecasts included in the financial briefing announced in May are used as target values in the evaluation.

Targets and results for these indicators during the business year under review were as follows: actual consolidated order value of JPY 188,563 million versus a target of JPY 180,000 million, and actual consolidated ordinary profit of JPY 11,234 million (before deducting executive bonuses) versus a target of JPY 11,500 million.

(6) Non-monetary compensation and remuneration

Takuma offers directors stock compensation in the form of shares of restricted stock as a medium- and long-term incentive and as a means of sharing shareholder value. Transfer is restricted for a period of 30 years from the date on which the allocation of Takuma common stock is made, and the restriction is removed when that period ends or if the individual in question passes away, completes his or her term, retires, or otherwise ends his or her involvement with the company before the period ends for a legitimate reason approved in advance by the Board of Directors.

(7) Total amounts of compensation and other remuneration for directors

Executive category	Total compensation and other remuneration (millions of yen)	Total compensation and other remuneration by type (millions of yen)			Number of executives included	
		Basic compensation	Performance-linked compensation and other remuneration	Non-monetary compensation and other remuneration		
Director (except Audit & Supervisory Committee member)	283	196	40	45	6	*Performance-linked compensation and other remuneration consists of bonuses awarded to directors (except Audit & Supervisory Committee members).
Director (Audit & Supervisory Committee member) (outside director)	56 (36)	56 (36)	-	-	7 (6)	*Non-monetary compensation and other remuneration consists of shares of restricted stock granted to directors (except Audit & Supervisory Committee members).

Evaluation of the effectiveness of the Board of Directors

In order to increase the effectiveness of the Board of Directors, all directors participate in a questionnaire and interviews about the body's effectiveness. Those results are then analyzed, evaluated, reported to the Board by the executive in charge of the evaluation process, and discussed by the Board.

In the FY2020 evaluation, the effectiveness of the Board of Directors was analyzed and evaluated from four perspectives: the body's composition, its operation, the responsibilities of its members, and its overall effectiveness. This evaluation found that the Board had operated in an effective and efficient manner, for example by holding meetings online and working to provide materials on a paperless basis, and that it was implementing ongoing initiatives to improve its functionality and ensure its effectiveness, for example by evaluating items recorded in meeting minutes, from the standpoint of facilitating energetic meetings and enhancing discussions. As a result, the Board was determined to be functioning in an effective manner. At the same time, the process identified areas where improvements could be made, including discussing and providing information about progress towards strategic themes informed by a long-term perspective. We will continue to work to improve the effectiveness of the Board of Directors based on the results of this analysis and evaluation.

Internal control

Takuma has adopted a Basic Policy for Establishment of an Internal Control System (the full text is available on our website) in accordance with the Companies Act. We continue to review and improve this policy in response to changing circumstances. Working towards thorough compliance, Takuma built a compliance promotion organization in FY2006 in order to continuously implement enlightenment and educational activities that make corporate ethics, related laws and ordinances, and internal rules fully understood. To control the danger of loss, we have also prepared a "Risk Management Code" that determines the person in charge of each risk, and we set up our risk management organization according to that Code. When the unexpected occurs, emergency headquarters are established with the company president as the director in charge of risk management, and an organization is put in place in order to minimize and prevent further damage through prompt action.

Internal control, constructed and evaluated in order to report on and prevent misstatements in our financial reporting, is based on the Financial Instruments and Exchange Act. This internal control on financial reporting for the Group has resulted in reports that indicate this system has been effective. In this way, we will continue to work in the future to ensure thorough compliance while carrying out business properly and efficiently while also deepening risk management.

Governance Initiatives

Executive Profiles

*As of June 25, 2021

Directors



Hiroaki Nanjo
President and Representative Director & Chief Executive Officer

- April 1982 Joined the Company
- April 2009 General Manager of Environmental Engineering Department 1, Project Center, Engineering Group
- September 2010 General Manager of Energy Engineering Department 1, Project Center, Engineering Group
- April 2013 Executive Officer of the Company
- Deputy Executive Manager of Project Center, Engineering Group and General Manager of Energy Engineering Department 1
- April 2014 Executive Manager of Project Center, Engineering Group
- June 2015 Director & Executive Officer of the Company
- April 2016 Director & Managing Executive Officer of the Company
- Executive Manager of Engineering Group and Executive Manager of Management Center
- April 2018 Director & Senior Managing Executive Officer
- April 2019 President and Representative Director & Chief Executive Officer (up to the present)

Mr. Hiroaki Nanjo has mainly been engaged in the Planning Technology Division, and currently supervises the overall management as Chief Executive Officer, after serving as a Director & Senior Managing Executive Officer and Executive Manager of the Engineering Group. He possesses abundant experience and knowledge regarding operations and management of the Company.



Tsuyohito Nishiyama
Director & Senior Managing Executive Officer

- April 1985 Joined the Company
- April 2012 General Manager of Project Administration Department 1, Business Administration Division, Corporate Marketing Group
- April 2014 General Manager of Corporate Planning Department, Corporate Planning & Administration Division
- April 2015 Executive Officer of the Company
- Deputy Executive Manager of Corporate Planning & Administration Division and General Manager of Corporate Planning Department
- April 2016 Executive Manager of Corporate Planning & Administration Division
- June 2016 Director & Executive Officer of the Company
- April 2018 Director & Managing Executive Officer
- April 2019 Director & Senior Managing Executive Officer (up to the present)
- Executive Manager of Corporate Marketing Group and Executive Manager of Business Administration Division (up to the present)

Mr. Tsuyohito Nishiyama has mainly been engaged in the Business Administration Division, the Marketing Division and the Corporate Planning & Administration Division, and currently serves as a Senior & Managing Executive Officer and Executive Manager of Corporate Marketing Group that supervises overall marketing. He possesses abundant experience and knowledge regarding operations and management of the Company.



Keizo Masugi
Director (Audit & Supervisory Committee Member)

- January 2001 Joined the Company
- April 2014 General Manager of Accounting Department, Corporate Planning & Administration Division
- April 2016 General Manager of Corporate Planning Department, Corporate Planning & Administration Division
- April 2018 General Manager of General Affairs Department and General Manager of Legal Affairs Department, Corporate Services Division
- April 2021 Assistant General Manager of Audit & Supervisory Committee's Office
- June 2021 Director (Standing Audit & Supervisory Committee Member) of the Company (up to the present)

Mr. Keizo Masugi has mainly been engaged in the accounting department and Corporate Planning & Administration Division, and served as General Manager of General Affairs Department and Legal Affairs Department handling shareholder response and other general affairs duties and as well as preventive legal work and other legal affairs. He currently serves as a Standing Audit & Supervisory Committee Member. He possesses abundant experience and a wide range of knowledge regarding operations and management of the Company.



Osamu Iwahashi
Outside Director (Audit & Supervisory Committee Member)

- April 1974 Joined the National Police Agency
- March 1985 First Secretary, Embassy of Japan in Thailand
- August 1995 Chief Constable of Kumamoto Prefectural Police
- August 1999 Director General for Crisis Management Policy Coordination of Cabinet Security and Crisis Management Office, Cabinet Secretariat
- June 2004 Director General of Commissioner-General's Secretariat, National Police Agency
- March 2005 Director General of Kinki Regional Police
- October 2006 Joined ALL NIPPON AIRWAYS CO., LTD. (currently ANA HOLDINGS, INC.)
- Senior Advisor
- September 2007 Outside Corporate Auditor of SANKO MARKETING FOODS CO., LTD.
- June 2012 External Auditor of the Company
- November 2013 Retired from ANA HOLDINGS, INC.
- December 2013 Executive Director of Public Interest Incorporated Foundation Japan Police Scholarship Association
- June 2016 Director of the Company (Audit & Supervisory Committee Member) (up to the present)
- September 2019 Resigned from Outside Corporate Auditor of SANKO MARKETING FOODS CO., LTD.

Mr. Osamu Iwahashi has served in many important positions in the National Police Agency, and in addition to possessing abundant experience and a high level of insight regarding various types of risk management, has served for many years as an External Auditor and Director who is an Audit & Supervisory Committee Member of listed companies, including the Company, and possesses knowledge regarding financial and accounting from his experience participating in audit and supervisory operations.



Hideki Takeguchi
Director & Senior Managing Executive Officer

- April 1985 Joined the Company
- April 2012 Deputy General Manager of Environmental Engineering Department 1, Project Center, Engineering Group
- April 2014 General Manager of Environmental Engineering Department 1, Project Center, Engineering Group
- April 2015 Executive Officer of the Company
- Deputy Executive Manager of Project Center, Engineering Group and General Manager of Environmental Engineering Department 1
- April 2016 Executive Manager of Project Center, Engineering Group
- June 2016 Director & Executive Officer of the Company
- April 2018 Director & Managing Executive Officer
- April 2019 Director & Senior Managing Executive Officer (up to the present)
- Executive Manager of Engineering Group and Executive Manager of Management Center (up to the present)

Mr. Hideki Takeguchi has mainly been engaged in the Planning Technology Division, and currently serves as a Director & Senior Managing Executive Officer and Executive Manager of Engineering Group that supervises overall engineering. He possesses abundant experience and knowledge regarding operations and management of the Company.



Koji Tanaka
Director & Managing Executive Officer

- April 1986 Joined the Company
- April 2009 Deputy General Manager of European Operations Department, Corporate Planning & Administration Division
- August 2011 General Manager of Corporate Planning Department, Corporate Planning & Administration Division
- April 2014 General Manager of Human Resources Department, Corporate Services Division
- April 2017 Executive Officer of the Company
- Executive Manager of Compliance & CSR Promotion Division, Executive Manager of Corporate Services Division and General Manager of Legal Affairs Department
- June 2017 Director & Executive Officer of the Company
- April 2018 Executive Manager of Compliance & CSR Promotion Division and Executive Manager of Corporate Services Division
- April 2021 Director & Managing Executive Officer (up to the present)
- Executive Manager of International Division and Executive Manager of Compliance & CSR Promotion Division
- June 2021 Executive Manager of International Division (up to the present)

Mr. Koji Tanaka has mainly been engaged in the Information Systems Division, neutral divisions such as human resources, Corporate Planning & Administration Division and the International Division, and currently serves as a Managing Executive Officer and Executive Manager of the International Division, which is responsible for the Company's overseas business. He possesses abundant experience and a wide range of knowledge regarding operations and management of the Company.



Tomomi Fujita
Outside Director (Audit & Supervisory Committee Member)

- October 2004 Registered as Attorney at Law (Osaka Bar Association)
- Joined Kitahama Partners
- January 2012 Partner of Kitahama Partners
- March 2016 Left Kitahama Partners
- April 2016 Founded Innoventier
- Partner of Innoventier (up to the present)
- February 2017 Director, Licensing Executive Society JAPAN
- April 2018 Assistant Lecturer, Kyoto University Law School (up to the present)
- June 2019 Director (Audit & Supervisory Committee Member) of the Company (up to the present)
- June 2019 Outside Auditor of TAIYO YUDEN CO., LTD. (up to the present)
- February 2020 Vice President of Licensing Executives Society JAPAN (up to the present)

Ms. Tomomi Fujita is involved in management of law firm Innoventier as a Partner while serving as Vice President of the Licensing Executive Society Japan and Assistant Lecturer of Kyoto University Law School. She possesses abundant experience and expertise regarding corporate law covering intellectual property, business revitalization, M&As, and the Companies Act. In addition to serving as Outside Director who is an Audit & Supervisory Committee Member of the Company, she serves as an Outside Auditor for a listed company.



Yoshiaki Ito
Outside Director (Audit & Supervisory Committee Member)

- October 1985 Joined Showa Ota & Co. (currently Ernst & Young ShinNihon LLC)
- July 2001 Partner, Showa Ota & Co.
- July 2008 Senior Partner, Showa Ota & Co.
- June 2014 Resigned, Showa Ota & Co.
- July 2014 Representative, Ito Certified Public Accountant Office (up to the present)
- March 2015 Outside Director, NAIIGA TRANS LINE LTD. (up to the present)
- June 2020 Director (Audit & Supervisory Committee Member) of the Company (up to the present)

Mr. Yoshiaki Ito has engaged in audit business, IPO support and consulting business, etc., for listed companies for many years while he was serving at Showa Ota & Co. (currently Ernst & Young ShinNihon LLC). After serving as Senior Partner at Showa Ota & Co., he has been also serving as Outside Director of a listed company for many years, and possesses abundant experience and expert knowledge on finance and accounting as well as abundant experience and knowledge on audit and supervision.



Kunio Hamada
Director & Executive Officer

- July 1990 Joined the Company
- April 2012 Deputy General Manager of Cost Control & Project Administration Department, Management Center, Engineering Group
- June 2013 General Manager of Cost Control & Project Administration Department, Management Center, Engineering Group
- April 2018 Executive Officer of the Company
- Deputy Executive Manager of Corporate Planning & Administration Division and General Manager of Corporate Planning Department
- April 2021 Executive Manager of Corporate Planning & Administration Division (up to the present)
- June 2021 Director and Executive Officer of the Company (up to the present)

Mr. Kunio Hamada has mainly been engaged in the engineering division and cost management division, and currently serves as Executive Officer and Executive Manager of Corporate Planning & Administration Division responsible for finance and formulation and implementation of corporate plans. He possesses abundant experience and a wide range of knowledge regarding operations and management of the Company.



Hiroshi Oishi
Director & Executive Officer

- April 1988 Joined The Dai-ichi Kangyo Bank, Ltd. (currently Mizuho Bank, Ltd.)
- January 2008 Deputy General Manager of Human Resources Department, Mizuho Securities Co., Ltd.
- January 2013 Deputy General Manager of Corporate Planning Department
- April 2013 General Manager of Securities & Trust Promotion Department, Mizuho Bank, Ltd.
- April 2016 General Manager of Customer Service Department and General Manager of Management Department, Mizuho Financial Group, Inc.
- August 2019 Executive Officer of the Company
- Deputy Executive Manager of Energy Plant Division, Corporate Marketing Group
- April 2021 Executive Manager of Corporate Services Division (up to the present)
- June 2021 Director and Executive Officer of the Company (up to the present)

Since joining The Dai-ichi Kangyo Bank, Ltd. (currently Mizuho Bank, Ltd.), Mr. Hiroshi Oishi engaged in various operations at the bank and its group companies including deposits, money transfers, loans, currency exchange, business planning, human resources and customer service. At the Company, he has engaged in product and service sales in the marketing division, and currently serves as Executive Officer and Executive Manager of Corporate Services Division responsible for general affairs and human resources. He possesses abundant experience and a wide range of knowledge regarding operations and management of the Company.



Tetsuya Kaneko
Outside Director (Audit & Supervisory Committee Member)

- April 1981 Joined The Dai-ichi Kangyo Bank, Ltd. (currently Mizuho Bank, Ltd.)
- September 2000 Deputy General Manager of Singapore Branch, The Dai-ichi Kangyo Bank, Ltd.
- April 2002 Deputy General Manager of Singapore Branch, Mizuho Corporate Bank, Ltd. (currently Mizuho Bank, Ltd.)
- November 2004 Associate Director of International Administration Department, Mizuho Corporate Bank, Ltd.
- April 2005 General Manager of Yokohama Sales Department, Mizuho Corporate Bank, Ltd.
- April 2008 General Manager of International Sales Promotion Department, Mizuho Corporate Bank, Ltd.
- April 2010 Deputy Director of Human Resources Management Department, Mizuho Corporate Bank, Ltd.
- July 2010 Deputy Director of Corporate Planning Department, Mizuho Financial Group, Inc.
- Seconded to Mizuho Research Institute Ltd., Senior Executive Officer, General Manager of Education Business Department
- November 2010 Senior Executive Officer, General Manager of Education Business Department, Mizuho Research Institute Ltd.
- May 2011 Left Mizuho Research Institute Ltd.
- June 2011 Director of KANEMATSU CORPORATION
- June 2014 Managing Executive Officer of KANEMATSU CORPORATION
- June 2019 Resigned from KANEMATSU CORPORATION
- June 2019 Standing Auditor, Yushu Building Co., Ltd. (currently Yushu Corporation Ltd.)
- June 2020 Director (Audit & Supervisory Committee Member) of the Company (up to the present)
- June 2020 President, Yushu Corporation Ltd. (up to the present)

Mr. Tetsuya Kaneko has served as Director and Managing Executive Officer at a global company, KANEMATSU CORPORATION, for many years. He possesses abundant experience and knowledge on corporate management, as well as knowledge on overseas business from his abundant experience working overseas while he was serving at The Dai-ichi Kangyo Bank, Ltd. (currently Mizuho Bank, Ltd.).

Executive Officers

- | | |
|---|--|
| Ryoji Tani
Managing Executive Officer
Executive Manager,
Construction Center | Norito Uchiyama
Managing Executive Officer
Executive Manager,
Engineering Center |
| Mitsuaki Adachi
Managing Executive Officer
Executive Manager,
Energy Plant Div. | Akira Taguchi
Managing Executive Officer
Executive Manager,
Technology Center |
| Hidetoshi Tomita
Executive Officer
Executive Manager,
Environmental Plant Div. | Norio Maeda
Executive Officer
Executive Manager,
Project Center |
| Keiji Nakamura
Executive Officer
Deputy Executive Manager,
Construction Center | Yasushi Enomoto
Executive Officer
Executive Manager,
Compliance & CSR Promotion Div. |
| Kiyoshi Shibata
Executive Officer
Deputy Executive Manager,
Engineering Center | |

Governance Initiatives

Messages from Outside Directors

I became an outside auditor at Takuma nine years ago after working for more than 32 years as a civil servant, primarily at the National Police Agency, and then serving in a variety of positions, including as an outside auditor at another listed company. At the time, I was only one of two outside executives at Takuma, but our number subsequently grew to three and then four. Today, our diversity has grown thanks to the appointment of a female member, and all of us have become directors who are members of the Audit & Supervisory Committee, strengthening the institutional underpinnings of our role. Of course, it is not possible to prevent fraud and misconduct merely by putting in place formal structures. Ensuring that such structures function in a substantial and meaningful manner requires unceasing effort on the part of both the company and its outside executives. Takuma addresses this challenge by working to deepen the understanding of outside directors, for example by hosting regular sit-downs with the president for candid exchanges of views, holding interviews with executive officers, and orchestrating tours of subsidiaries and worksites, opportunities which we as outside directors actively take advantage of.

The company also takes a more proactive approach to disclosing information than it did nine years ago, and I believe steps like enhancing IR briefings and the website are helping increase transparency from the standpoint of outside stakeholders. It is also a welcome development that Vision 2030, Takuma's long-term vision, has set the target of doubling ordinary profit, which is an ambitious goal for a company in a mature industry. I expect that the way the vision has clarified the relationship between Takuma's business targets and the Sustainable Development Goals (SDGs) will also serve to promote the company's ESG-centric stance.

Osamu Iwahashi

Outside Director (Audit & Supervisory Committee Member)



One year has passed since I began serving as an outside director (Audit & Supervisory Committee Member) at Takuma in 2020. I have gained a new appreciation of how Takuma prizes the values of fairness and sincerity, and how it is characterized by a high level of compliance awareness, confirming the impression I had before accepting the position. All important matters are brought before the Board of Directors as resolutions, and managing directors engage in sufficient discussion of new projects and projects that encountered problems in the past. As a result, I think that the Board has established a sufficient level of transparency in the company's management.

Vision 2030, Takuma's long-term vision, and the 13th Medium-Term Management Plan both started in FY2021. These documents offer detailed content that provides a more concrete vision for the company's future while focusing on expanding its businesses and strengthening its profitability. They address not only Takuma's domestic businesses, but also its advance into overseas markets. With regard to the latter, careful attention will be essential as risk management is the paramount consideration. The vision and plan also give sufficient consideration to environmental conservation in line with the SDGs, and I am confident that they deserve high expectations.

Finally, I look forward to working closely with my three counterparts in contributing as outside directors.

Yoshiaki Ito

Outside Director (Audit & Supervisory Committee Member)



FY2020 began during the global chaos of the COVID-19 pandemic. In the midst of that confusion, Takuma went about its daily business while taking steps to prevent the spread of the disease, for example by moving quickly to enhance staggered working hours and telework programs, so that the company could contribute to society through its environmental and energy plant business. I believe that the Board of Directors, along with committees and councils, has been able to utilize online meetings and paperless meeting systems effectively to facilitate the candid exchange of views. While we as outside directors are not responsible for carrying out the company's operations, each of us takes advantage of the specialized knowledge he or she has gained to offer opinions and contribute to robust discussions with Takuma's inside directors.

With FY2021, a new stage has begun for Takuma under the 13th Medium-Term Management Plan. Environmental conservation and utilization of renewable energy have become important global issues, and I believe that the development and expansion of Takuma's businesses will serve the interests of its stakeholders as well as society in general. I look forward to contributing to Takuma's growth as one of its outside directors.

Tomomi Fujita

Outside Director (Audit & Supervisory Committee Member)



I have participated in meetings and discussions of the Board of Directors and other bodies as an outside director, and I feel that those discussions are always sincere and fruitful. The number of meetings convened online has grown, and they have been held so as to ensure that all participants feel involved.

Those discussions have left me with an impression that the high level of trust Takuma has built with customers through its business model, which is characterized by long-running customer relationships, serves as the basis for the expansion of its businesses, and that the company is steadily investing in future technological innovation, as symbolized by the completion of the New TAKUMA Building (Training Center) and the start of construction of the new Harima Factory. A strategy that focuses on both the present and the future is exactly what Takuma needs, and I believe that spirit has been reflected in the long-term vision (Vision 2030) and in the 13th Medium-Term Management Plan, both of which started with FY2021.

I have high expectations towards the further development of Takuma as it takes advantage of its current strengths and a favorable environment where the SDGs are becoming a central theme in the global economy.

Although I was not able to see much with my own eyes over the last year due to the COVID-19 pandemic, I look forward to visiting plant sites once things calm down and making a contribution that is based on a more finely attuned appreciation of what is going on out in the field.

Tetsuya Kaneko

Outside Director (Audit & Supervisory Committee Member)



Governance Initiatives

Strengthening risk management

Risk management structure

We consider it necessary to effectively address risks that could interfere with the group's achievement of its business goals so that we can safeguard and steadily increase our corporate value over the long term.

Takuma follows a "Risk Management Policy" that connects company-wide risks and separately classifies them into project risks related to our core business, i.e., plant construction; DBO project risks and DBO project operation, maintenance and management risks related to our DBO business; and potential risks, actualized risks, and financial reporting risks related to other corporate business activities.

Group companies also work to develop and strengthen approaches to risk management through the Takuma Group Coordinating Committee for Compliance & CSR Promotion.

Risk Management Policy

[Basic purpose of risk management]

Risk refers to all phenomena that interfere with the Group's ability to achieve its business objectives or cause losses or harm to the interests of stakeholders.

The Takuma Group practices risk management with the goal of increasing its corporate value by working to maximize returns while minimizing the negative impacts of risk.

[Risk management action guidelines]

1. The president and CEO is responsible for risk management at Takuma.
2. All officers and employees participate in risk management activities.
3. Risk management activities are carried out in accordance with applicable guidelines such as the Risk Management Rules.
4. Risk management activities are carried out in line with the Medium-Term Management Plan and annual plan, and we work to make improvements on an ongoing basis.
5. When risk manifests itself, we respond by taking responsible action quickly to minimize any damage and creating provisional organizational entities as necessary.
6. Group companies carry out risk management activities in accordance with their own policies and plans, with support from Takuma.

Business continuity plan (BCP)

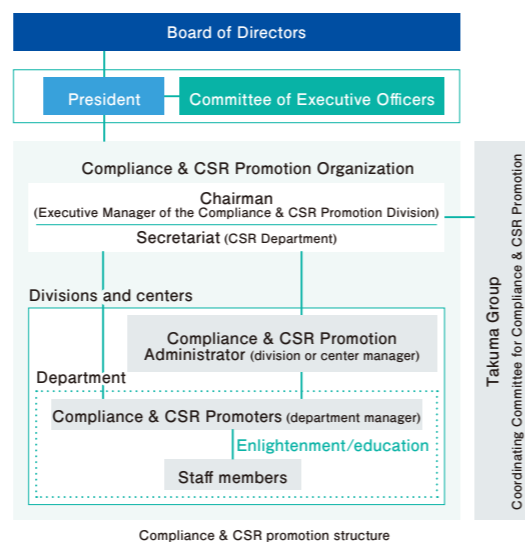
In addition to formulating a "Business Continuity Plan" based on the policies listed to the right to ensure proper and appropriate continuity of business operations in the event of a large-scale disaster, pandemic, or other emergency, Takuma conducts disaster prevention exercise and other training on a regular basis.

1. In addition to implementing disaster-related measures to secure the safety of corporate officers and employees, maintain structures so as to enable continuity of business operations while minimizing damage in an emergency.
2. Strive to respond to customer needs and recover from damage quickly by working closely with suppliers and partner companies to maintain business operations.
3. Earn the trust of numerous stakeholders, including employees, their families, shareholders, and nearby residents, and fulfill social needs by maintaining business operations.

Ensuring compliance

Compliance & CSR promotion structure

Takuma works to promote compliance and CSR through the Compliance & CSR Promotion Organization, which was established in order to spread awareness of compliance and CSR issues among employees. This organization is composed of a chairman (the Executive Manager of the Compliance & CSR Promotion Division), a secretariat (positioned in the CSR Department), and an executing organization in each division, center, and department. As the person in charge of promoting compliance and CSR in his or her division, each division or center manager is appointed as a Compliance and CSR Promotion Administrator. As persons who implement enlightenment and education in compliance and CSR in their respective departments, department managers are appointed as Compliance and CSR Promoters. The initiative includes an annual regular meeting at which Compliance & CSR Promotion Administrators discuss the state of compliance and CSR promotion throughout the company as well as quarterly departmental meetings at which Compliance & CSR Promoters are given training to help them better carry out related activities in their departments. Additionally, we established the Takuma Group Coordinating Committee for Compliance & CSR Promotion, which brings together representatives of group companies to help ensure that compliance and risk management are implemented throughout the group.



Fair business practices

Compliance measures

[Initiatives to ensure compliance with the Antimonopoly Act]

Towards ensuring permanent compliance with the Antimonopoly Act, Takuma enacted "Regulations Concerning Management of the Pledge of Antimonopoly Act Compliance", which provides for the submission of a written oath in regard to observing the Antimonopoly Act. When employees interact with the sales department of a competitor, they must apply and receive approval from the affiliated division or center manager in advance to ensure fair business contact.

[Introducing a Legislation Information Service]

Takuma has introduced a Legislation Information Service in order to gain a continuous grasp of the latest changes to laws and ordinances.

[Utilizing the Compliance Manual]

We distribute a Compliance Manual that includes an explanation of the rules and standards of conduct as well as an FAQ to all employees in accordance with Takuma Group Ethics Charter and Takuma Group Code of Conduct. This manual is utilized in the course of daily operations and departmental training.

Compliance & CSR promotion education

Takuma offers compliance and CSR promotion education through the Compliance & CSR Promotion Organization, which was established in order to spread awareness of compliance and CSR issues among employees. We offered the following four compliance and CSR promotion education sessions during FY2020. We also host regular CSR lectures for members of the company's executive leadership.

- 1st term: Corporate misconduct: Mechanisms that lead to fraud Intellectual property rights: Copyright, trademark rights, and design rights
- 2nd term: Environmental course: Thinking about environmental problems from a familiar perspective
- 3rd term: Overview of security export controls, Takuma's CSR comprehension test 2020
- 4th term: Internal reporting system, insider trading

Number of sessions per year:	4
Number of participating departments:	45
Total number of attendees:	4,453

CSR lecture for executives

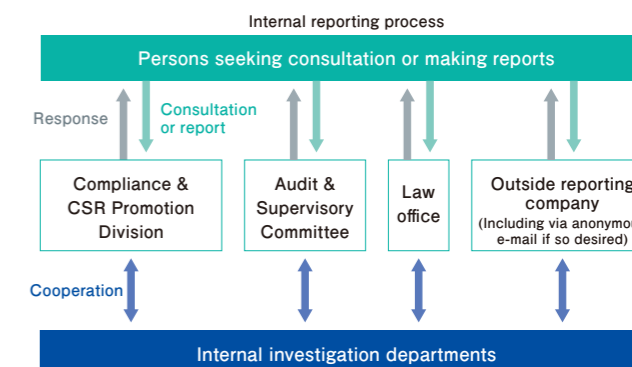
Date	October 28, 2020
Lecture theme	Promoting ESG management
Lecturer	KPMG AZSA Sustainability Co., Ltd.



Internal reporting system

Takuma has been operating an internal reporting system since FY2006, with the aim of promoting compliance management by preventing illegal or unfair acts, uncovering them as early as possible, and undertaking corrective measures.

Reporting hotlines are set up internally at our Audit & Supervisory Committee and Compliance & CSR Promotion Division as well as externally at an outside law office and a dedicated outside company for anonymous e-mail reporting. Our "Internal Reporting Code" and "Takuma Group Code of Conduct" further declare that no informant shall be subjected to disadvantageous treatment simply because he or she filed a report.



CSR awareness survey

We conduct an annual CSR awareness survey in order to quantitatively assess the level of compliance and CSR awareness along with the effectiveness of related promotional and educational efforts. The results of this survey are used when summarizing the activities of each fiscal year and in formulating the upcoming year's action plan, as well as in future compliance and CSR promotion activities. We make active use of survey results, for example by offering additional education, particularly in areas that received lower scores than in the previous survey.

Section 03

Corporate Information

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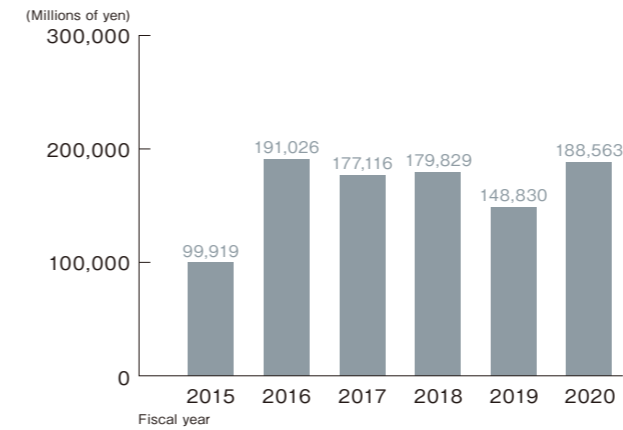
Financial Data

Trend in principal management indicators and other financial data

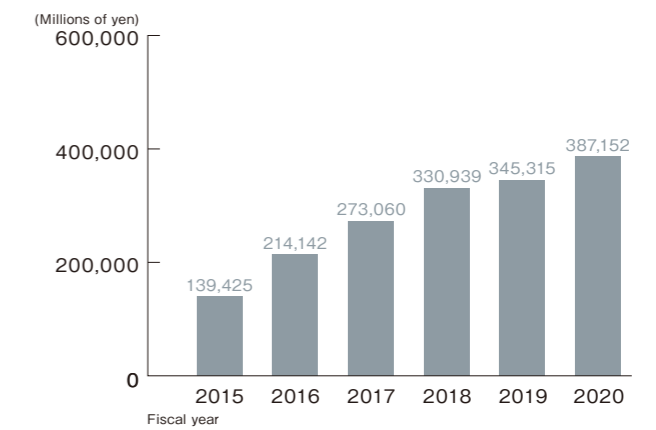
Fiscal year	112 th (Millions of yen)	113 th (Millions of yen)	114 th (Millions of yen)	115 th (Millions of yen)	116 th (Millions of yen)	117 th (Millions of yen)	117 th (Thousands of U.S. dollars)
End of fiscal year	March 2016	March 2017	March 2018	March 2019	March 2020	March 2021	March 2021
Value of orders received	¥ 99,919	¥ 191,026	¥ 177,116	¥ 179,829	¥ 148,830	¥ 188,563	\$ 1,703,224
Order backlog	¥ 139,425	¥ 214,142	¥ 273,060	¥ 330,939	¥ 345,315	¥ 387,152	\$ 3,497,000
Net sales	¥ 113,088	¥ 116,309	¥ 118,199	¥ 121,951	¥ 134,454	¥ 146,727	\$ 1,325,326
Operating income	¥ 9,189	¥ 10,974	¥ 10,030	¥ 11,604	¥ 9,600	¥ 10,474	\$ 94,601
Ordinary profit	¥ 9,646	¥ 11,606	¥ 10,670	¥ 12,334	¥ 10,301	¥ 11,029	\$ 99,618
Profit attributable to owners of parent	¥ 7,817	¥ 8,551	¥ 7,847	¥ 8,854	¥ 7,445	¥ 7,529	\$ 68,009
Comprehensive income	¥ 7,149	¥ 9,937	¥ 10,177	¥ 7,325	¥ 5,881	¥ 8,345	\$ 75,376
Capital investment	¥ 1,089	¥ 342	¥ 505	¥ 638	¥ 1,564	¥ 2,420	\$ 21,861
Depreciation	¥ 840	¥ 850	¥ 789	¥ 797	¥ 917	¥ 1,036	\$ 9,358
R&D expenditures	¥ 743	¥ 972	¥ 928	¥ 960	¥ 1,154	¥ 1,047	\$ 9,457
Net assets	¥ 58,809	¥ 67,727	¥ 76,726	¥ 83,088	¥ 85,040	¥ 90,555	\$ 817,950
Total assets	¥ 132,614	¥ 140,201	¥ 151,489	¥ 155,989	¥ 163,498	¥ 177,742	\$ 1,605,471
Net assets per share (JPY or USD)	¥ 708.18	¥ 815.77	¥ 924.25	¥ 1,000.34	¥ 1,043.15	¥ 1,109.87	\$ 10.03
Net income per share (JPY or USD)	¥ 94.55	¥ 103.43	¥ 94.93	¥ 107.10	¥ 90.36	¥ 92.73	\$ 0.84
Cash dividends (JPY or USD)	¥ 11.00	¥ 13.00	¥ 16.00	¥ 22.00	¥ 31.00	¥ 36.00	\$ 0.33
Diluted net income per share (JPY or USD)	—	—	—	—	—	—	—
Capital adequacy ratio(%)	44.1	48.1	50.4	53.0	51.8	50.7	50.7
Return on equity(%)	14.1	13.6	10.9	11.1	8.9	8.6	8.6
Price-to-earnings ratio	10.7	10.5	12.3	12.3	13.3	25.8	25.8
Cash flows from operating activities	¥ 6,728	¥ 9,590	¥ 5,141	¥ 10,817	¥ (11,733)	¥ (1,680)	\$ (15,183)
Cash flows from investing activities	¥ (445)	¥ 143	¥ (328)	¥ (1,382)	¥ (202)	¥ (2,053)	\$ (18,550)
Cash flows from financing activities	¥ (2,900)	¥ (1,787)	¥ (1,670)	¥ (9,120)	¥ (4,350)	¥ 1,903	\$ 17,193
End-of-year balance of cash and cash equivalents	¥ 48,335	¥ 57,132	¥ 60,283	¥ 61,027	¥ 44,753	¥ 42,957	\$ 388,023
Number of employees	3,366	3,447	3,609	3,619	3,816	3,925	3,925

Note: 1. U.S. dollar amounts are shown solely for the convenience of readers and are translated at the rate of ¥110.71 to U.S.\$1.00, the exchange rate prevailing at March 31, 2021.
2. Ordinary income is a measure of accounting profit that equals operating income plus other income minus other expenses, except for extraordinary items under Japanese GAAP.

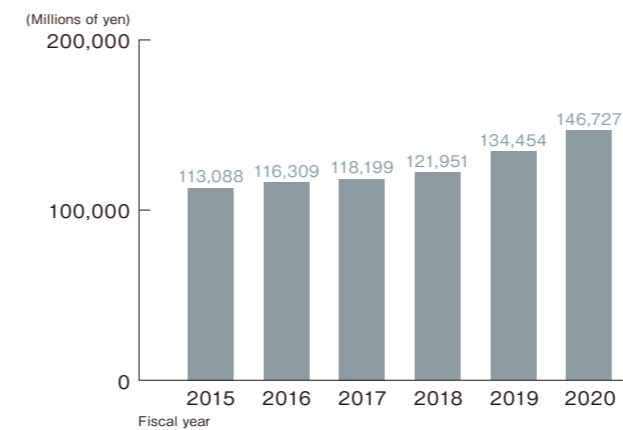
1 Value of orders received



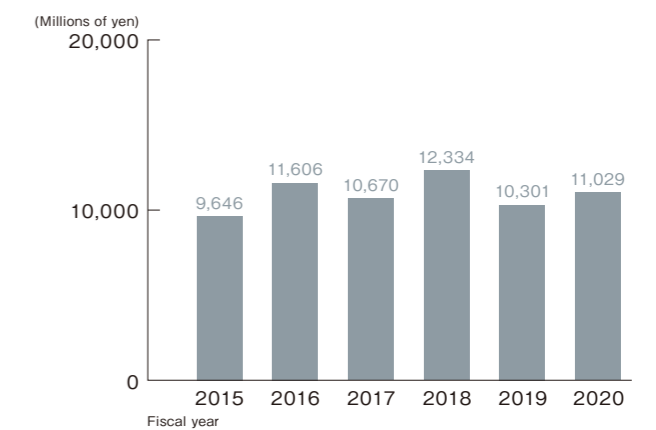
2 Order backlog



3 Net sales



4 Ordinary profit



Trend by segment (FY2020)

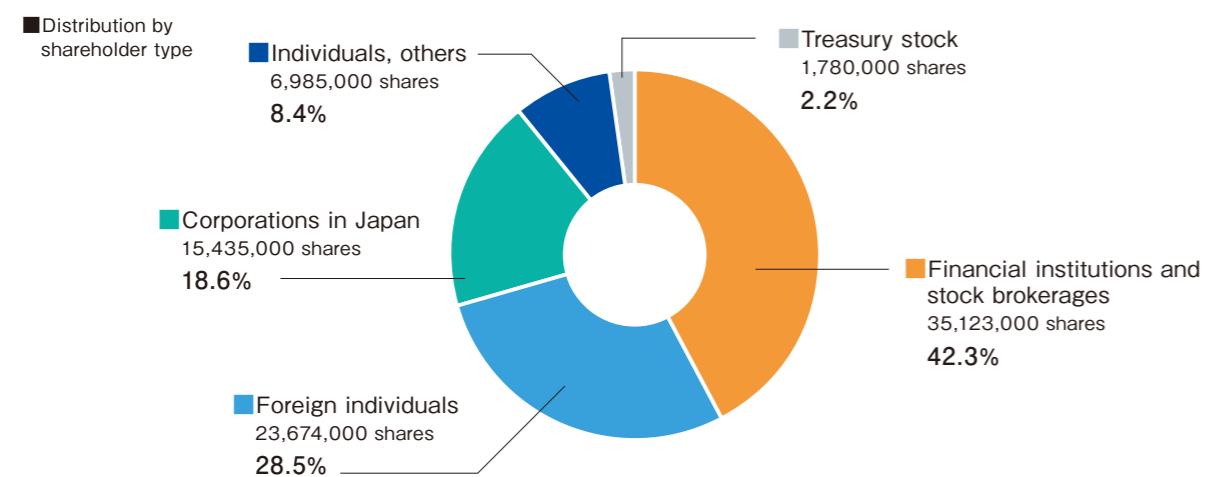
Segment	(Millions of yen)			
	Value of orders received	Net sales	Operating income	Order backlog
Domestic Environment and Energy Business	160,591	120,771	11,475	377,143
Overseas Environment and Energy Business	883	1,189	(141)	427
Package Boiler Business	17,524	16,932	641	4,521
Equipment and Systems Business	10,166	8,271	877	5,348
Sub-total	189,165	147,163	12,852	387,441
Adjustment	(601)	(436)	(2,378)	(288)
Total	188,563	146,727	10,474	387,152

Stock Information

Basic share information (as of March 31, 2021)

Business year	April 1 to March 31
Annual General Meeting of Shareholders	June
Record date	Voting rights at the Annual General Meeting of Shareholders: March 31 Distribution of surplus: Year-end dividend: March 31 Interim dividend: September 30
Shareholder registry and special account administrator	Mizuho Trust & Banking Co., Ltd.
Contact information	Stock Transfer Agency Department, Mizuho Trust & Banking Co., Ltd. 2-8-4 Izumi, Suginami-ku, Tokyo 168-8507 Toll-free (within Japan) : 0120-288-324
Method of public notice	Electronic notices (published on the company's website (https://www.takuma.co.jp/english/)) If it is not possible to publish electronic notices due to an accident or other unforeseen circumstance, public notices will be published in the <i>Nihon Keizai Shimbun</i> .
Listed stock exchange	Tokyo Stock Exchange (stock code: 6013)
Share unit	100
Total number of authorized shares	321,840,000
Total number of issued shares	83,000,000
Number of shareholders	6,335

Shareholder distribution (as of March 31, 2021)

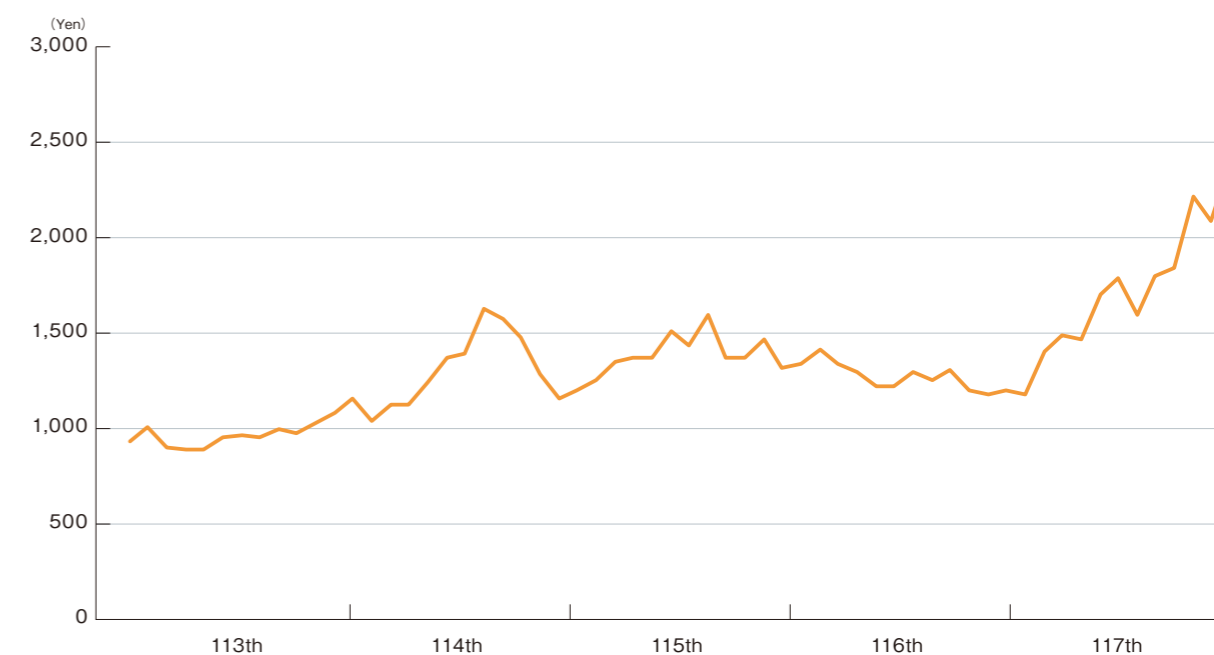


Major shareholders (top 10) (as of March 31, 2021)

Shareholder	Number of shares	Shareholding ratio (%)
The Master Trust Bank of Japan, Ltd. (Trust Account)	8,445,000	10.4
Custody Bank of Japan, Ltd. (Trust Account)	5,919,000	7.3
Mizuho Trust & Banking Co., Ltd. (Retirement Benefits Trust, Mizuho Bank, Ltd. Account) Custody Bank of Japan, Ltd. (Re-entrustment)	4,022,000	5.0
Nippon Life Insurance Company	3,593,000	4.4
HIKARI TSUSHIN, INC.	3,091,000	3.8
JP MORGAN CHASE BANK 380072	2,120,000	2.6
JP MORGAN CHASE BANK 385632	1,796,000	2.2
TAKUMA CO., LTD. Kyoeikai	1,785,000	2.2
Sumitomo Mitsui Banking Corporation	1,621,000	2.0
CEP UK-THREADNEEDLE INVESTMENT FUNDS ICVC-JAPAN FUND	1,520,000	1.9

Notes 1. As of March 31, 2021, Takuma held 1,780,000 shares of treasury stock. Those shares were excluded when calculating the shareholding ratio for major shareholders as listed above.
2. Shareholding ratio figures do not include treasury stock (1,780,000 shares).

Share price



Company Outline

Company Outline

Name	TAKUMA CO., LTD.
Head office location	2-2-33 Kinrakuji-cho, Amagasaki, Hyogo 660-0806, Japan TEL +81-6-6483-2609 / FAX +81-6-6483-2751 (operator)
Representative Director	Hiroaki Nanjo, President and CEO
Established	June 10, 1938
Capital	JPY 13,367,457,968 (as of March 31, 2021)
Main businesses	The design, construction and superintendence of a wide variety of boilers, plant machinery, pollution prevention plants, environmental equipment plants, and heating and cooling equipment and feed-water / drainage sanitation equipment and facilities The design, construction and superintendence of civil, architecture and other works
Number of employees (non-consolidated)	894 (as of March 31, 2021)
Number of employees (consolidated)	3,925 (as of March 31, 2021)

Permits and registrations

Head Office, branch offices, and other business offices

Construction license (Minister of Land, Infrastructure, Transport and Tourism license, Special 2-6129) / Construction consultant registration (Minister of Land, Infrastructure, Transport and Tourism registration, Construction 01-10202) / First-class architect office registration (01A02903) / ISO 9001 quality management system certification

Harima Factory

ISO 9001 quality management system certification / ISO 14001 environmental management systems certification / Manufacture of thermal equipment for power generation (Ministry of Economy, Trade and Industry) / Permission to manufacture boilers and pressure vessels, permission to manufacture cranes (Ministry of Health, Labour and Welfare) / Manufacture of specific high-pressure gas facilities (Ministry of Economy, Trade and Industry)



JQA-1952
ISO 9001 certification
Head Office, Osaka Office,
Tokyo Branch, Chubu
Branch, Kyushu Branch,
Hokkaido Branch and
Harima Factory



JQA-EM0313
ISO 14001
certification
Harima Factory

The Takuma Group Network (as of June 25, 2021)

See Takuma's website for details.

Takuma's business offices

- 1 Head Office (Amagasaki, Hyogo)
- 2 Osaka Office (Osaka)
- 3 Tokyo Branch (Minato-ku, Tokyo)
- 4 Hokkaido Branch (Sapporo, Hokkaido)
- 5 Tohoku Branch (Sendai, Miyagi)
- 6 Chubu Branch (Nagoya, Aichi)
- 7 Kyushu Branch (Fukuoka)
- 8 Okinawa Branch (Ginowan, Okinawa)
- 9 Harima Factory (Takasago, Hyogo)
- 10 Taipei Branch (Taipei, Taiwan)

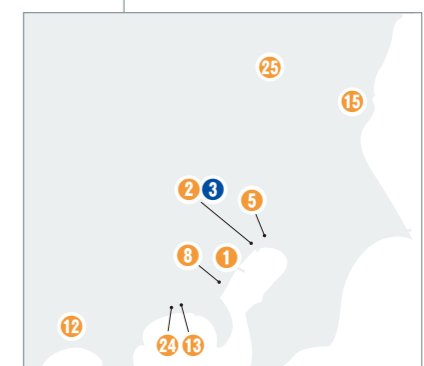
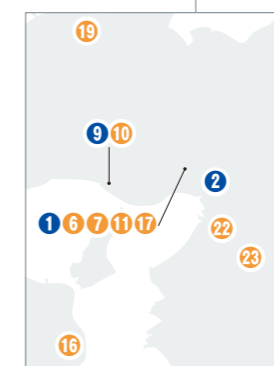
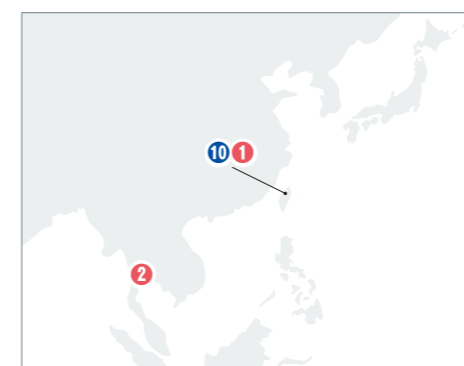
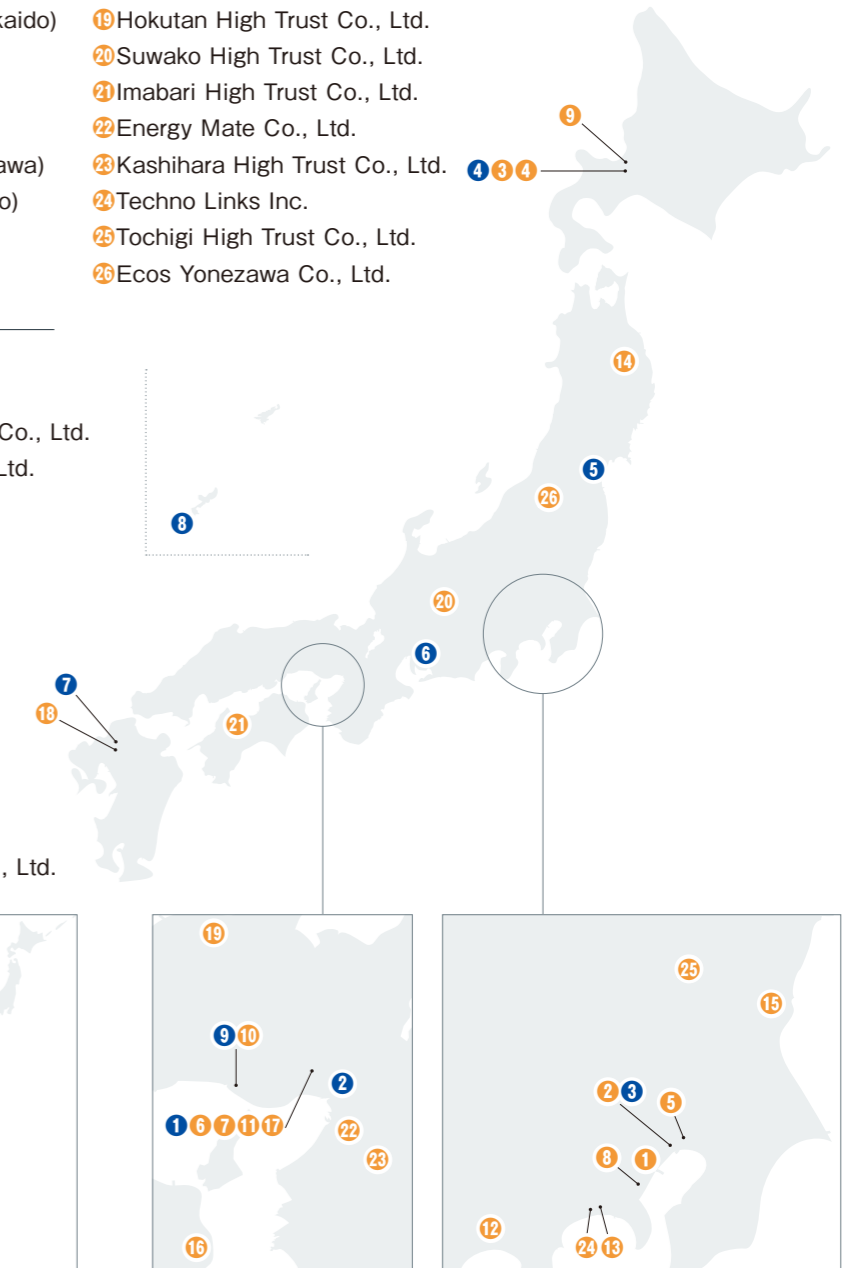
- 16 Anan High Trust Co., Ltd.
- 17 Takuma Energy Co., Ltd.
- 18 Kurume High Trust Co., Ltd.
- 19 Hokutan High Trust Co., Ltd.
- 20 Suwako High Trust Co., Ltd.
- 21 Imabari High Trust Co., Ltd.
- 22 Energy Mate Co., Ltd.
- 23 Kashihara High Trust Co., Ltd.
- 24 Techno Links Inc.
- 25 Tochigi High Trust Co., Ltd.
- 26 Ecos Yonezawa Co., Ltd.

Group companies overseas

- 1 Taiden Environtech Co., Ltd.
- 2 Siam Takuma Co., Ltd.

Group companies in Japan

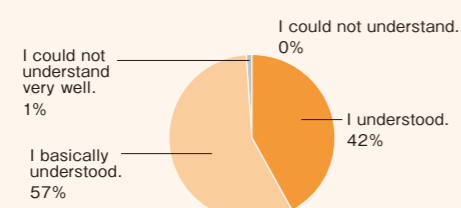
- 1 Nippon Thermoener Co., Ltd.
- 2 Takuma Technos Co., Ltd.
- 3 Hokkaido Sanitary Maintenance Co., Ltd.
- 4 Takuma Technos Hokkaido Co., Ltd.
- 5 Sunplant Co., Ltd.
- 6 Takuma Engineering Co., Ltd.
- 7 Takuma System Control Co., Ltd.
- 8 Dan-Takuma Technologies Inc.
- 9 Kyoritsu Setsubi Co., Ltd.
- 10 Kankyo Sol-Tech Co., Ltd.
- 11 Takuma Plant Co., Ltd.
- 12 Nagaizumi High Trust Co., Ltd.
- 13 Fujisawa High Trust Co., Ltd.
- 14 Iwate-Kenpoku Clean Co., Ltd.
- 15 Hitachinaka-Tokai High Trust Co., Ltd.



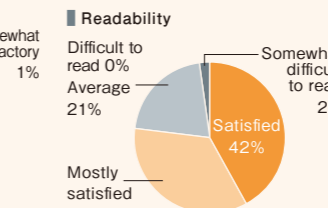
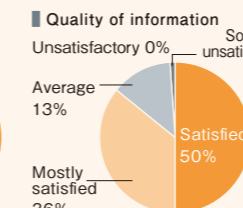
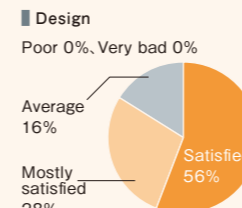
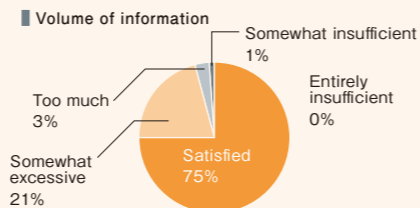
Takuma CSR Report 2020 Questionnaire Survey Results

Survey period: July 2020 to June 2021
Number of respondents: 1137

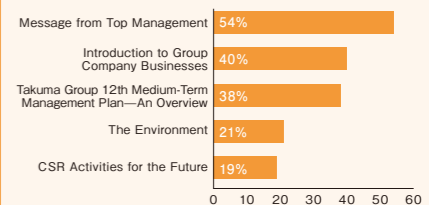
Q1 Did you understand the activities of our company?



Q2 What is your level of satisfaction regarding this Report?



Q3 Which items were you interested in? (Select up to three, top five responses.)





2-2-33 Kinrakuji-cho, Amagasaki, Hyogo, 660-0806, Japan
Website: <https://www.takuma.co.jp/english/>

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