

TAKUMA

CSR Report
2020



Bringing new value to society with +TAKUMA

Founder Tsunekichi Takuma invented the first boiler to be produced entirely in Japan by bringing expertise and technology to a product that had to be imported until that time.

By passing down this philosophy over time and augmenting it with Takuma's technology, we continue to create products with new value today.

Going forward, we will continue to provide new value to customers through plants that take advantage of the proprietary technologies we have developed since our founding in areas such as combustion, waste treatment, and water treatment.

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(Cover: Miyazu-Yoza Clean Center)

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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.

Marshaling the Takuma Group's strengths to maximize profits and enhance its corporate value

The Takuma Group, which has adopted the goals 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 billion in FY2020, has embraced a vision of building structures capable of consistently earning an ordinary profit of at least JPY 10 billion even as the business environment undergoes a process of significant change, and we are pursuing a variety of business activities to achieve that vision. We believe that we will be able to do so by marshaling the strengths not only of Takuma on a standalone basis, but of the entire Group, and our management is guided by the basic policy of maximizing profits and enhancing corporate value on a consolidated basis. To that end, we are diligently implementing the 12th Medium-Term Management Plan (FY2018 to FY2020), which takes into account changes that are anticipated to occur in the business environment in the future and which adopts as its core theme the need to enhance our corporate capabilities to facilitate the

achievement of our vision and consistent growth afterwards.

Adapting to changes in the business environment and securing a consistent position in the markets we serve

The Takuma Group's core businesses are the construction of waste treatment plants, energy plants, water treatment plants, and other similar facilities (through its EPC business*) and the provision of after-sales services for them, including maintenance, operational management, and operation.

In the Group's principal business domain, expectations with regard to renewable energy and its potential to help realize a low-carbon and post-carbon society are rising as the effects of climate change increasingly manifest themselves. Additionally, work is being planned to update superannuated public infrastructure and to extend its service life. At the same time, the business environment is expected to undergo major changes over the medium and long term, including shifts in demand in response to evolving national policies and the structure of society, for

example due to Japan's low birthrate and the shrinking and aging of its population; increased reliance on comprehensive contracts as part of a trend to outsource government services; and increasing sophistication and diversity in customer needs.

In such a business environment, the plants provided by the Group through its EPC business have garnered customer praise and earned the Group a consistent position in the markets it serves. Continuing this trend, customers will begin operating sewage sludge-fueled power plants capable of creating energy while reducing greenhouse gas emissions this year.

As facilities that play an essential role in maintaining people's lives and our customers' business activities, the plants we build are called upon to operate for 20 or 30 years after delivery. In our after-sales service business, we formulate long-term repair plans based on the extensive expertise the Group has accumulated over time so that customers can use those plants longer and more effectively, and we help them realize stable operation over the long term by carrying out optimally planned and timed maintenance based on detailed site inspections. We recently launched our first 20-year long-term operations business at an energy plant, augmenting similar services that we provide for seven waste treatment plants. Our next priority is to build implementation and management structures for a long-term operations business for water

treatment plants and to carve out a path for expanding those businesses.

Pursuing sustained growth for society and our company based on our founding philosophy of “Serve society through boiler manufacturing”

The 12th Medium-Term Management Plan represents the final stage of our current medium- and long-term vision (FY2012 to FY2020), which means that FY2020 is a year during which we will formulate the next long-term vision. The previous medium- and long-term vision sought to improve profitability through the selection and concentration of resources, while the current medium- and long-term vision seeks to reinforce our business foundation for stability and profitability and to achieve a steady expansion in terms of both quantity and quality in order to lead to a strengthening of corporate capability to facilitate steady growth based on our development of structures capable of consistently securing an ordinary profit of at least JPY 10 billion. In formulating the next long-term vision, we will be considering how the Takuma Group can best forge ahead into the future.

At the same time, there is broad concern that the COVID-19 pandemic will impact social and economic activity in an increasingly significant manner for an extended period of time, and there is a growing sense of uncertainty with regard to the future. As we face unprecedented difficulty in forecasting what is to come, it will be critical to strengthen our ability to adapt to change and recover from crisis.

Takuma's Management Principles state, "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." This philosophy can also be found in our founding spirit of "Serve society through boiler manufacturing*," and it means contributing to the world through the goods and services that we create. It also informs Corporate Social Responsibility (CSR), which we have currently embraced as a key issue in the company's management. We will continue to work toward the realization of sustained growth of society and our company in keeping with these principles. In addition to creating new value in the fields of renewable energy and environmental protection, we will strive to address the new challenges arising from the COVID-19 pandemic by working to increase the effectiveness of our compliance, risk management structures, and Business Continuity Plan (BCP).

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, labour, environment, and anti-corruption. We will work to develop our business while understanding and respecting these globally shared principles. In addition, concerning the implementation of the Sustainable Development Goals (SDGs) adopted by the United Nations and the provisions of the Paris Agreement adopted at COP21, the Group is 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.



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. 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 sustainable development of society.

July 2020

Hiroaki Nanjo
President and CEO
Takuma Co., Ltd.

Sustainable Development Goals (SDGs)

Takuma is working to further progress toward the Sustainable Development Goals (SDGs) through its business activities.



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 "contribution 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.

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.

Takuma Group Code of Conduct

Harmony with society

1. Coexistence with the global environment
2. Coexistence with international society
3. Practice of social contribution activities

Practice of compliance with laws and ordinances as well as sound economic activities

4. Free competition and fair trade
5. Relationship with politics and public administration
6. Policies concerning business entertainment and gift-giving
7. Prohibition of involvement in anti-social activities
8. Appropriate export and import transactions

Respect for basic human rights

9. Prohibition of discriminatory actions
10. Respect for individuality, personality, and privacy of employees
11. Safe work environment

Practice of customer satisfaction

12. Safety of products and services as well as ensuring reliability
13. Policies concerning advertising

Making appropriate disclosure of information

14. Dissemination of corporate information
15. Ensuring reliability of financial reporting
16. Prohibition of insider trading

Protection of corporate assets and information

17. Management and proper use of corporate assets
18. Handling of confidential information
19. Intellectual property protection

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

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

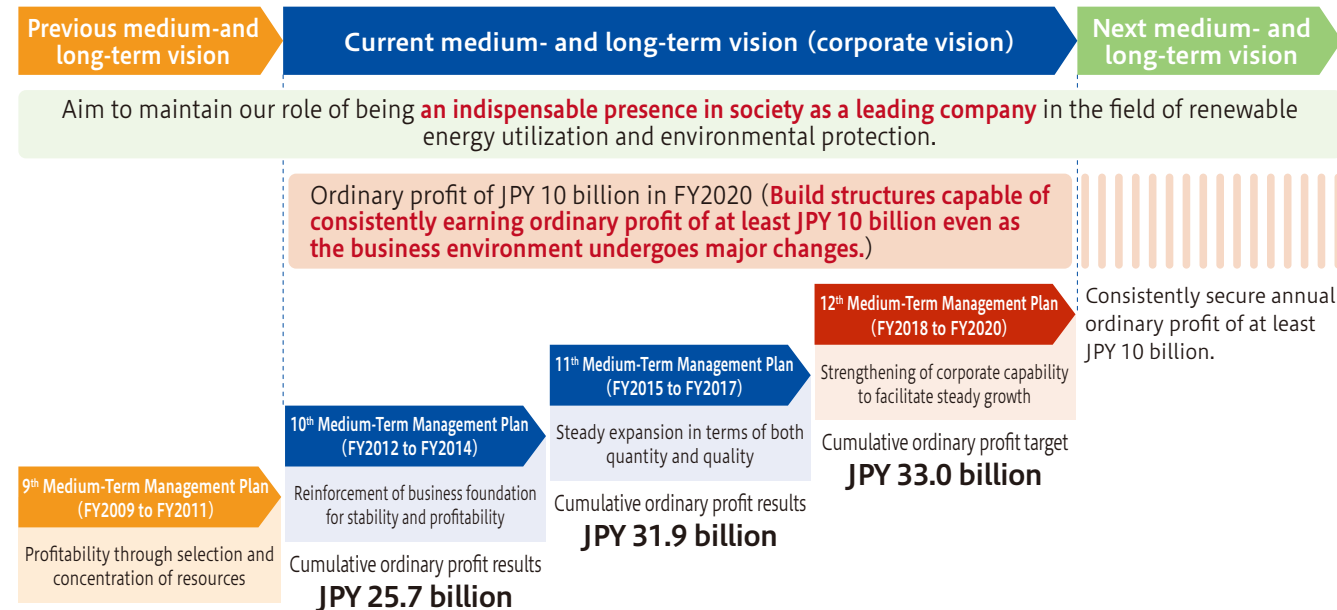
* United Nations Global Compact:



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.

1.Positioning of the 12th Medium-Term Management Plan

- The plan represents the final stage of the current medium- and long-term vision (corporate vision), for which FY2020 is the target year.
- During its three years, we will achieve the vision and boost our corporate capabilities to prepare for steady growth in the future in response to future changes that are forecasted to occur in the business environment.



2.Policies of the 12th Medium-Term Management Plan

1 Strengthening and expanding our revenue foundation

Many of the Group's products are used for a long period of time, for example for 20 or 30 years from the time of delivery. Offering high-quality after-sales service in an ongoing manner so that customers can use those products more effectively and over a longer period of time contributes to both customers' and the Group's profits, helping to create a foundation for stable, long-term earnings.

We will work to further strengthen and expand our revenue foundation by continuing to provide high-quality solutions throughout the plant and product life cycle as we meet customers' diversifying needs in an individualized manner.

2 Achieving sustained growth

Over the 80 years since the Group's founding, we have built a reputation as an essential part of society by providing products that are recognized for their value utilizing our technologies which are the core part of our company.

We will create customer value by continually developing unique technologies, services, and business models based on Takuma's strengths such as the technologies, track record, experience, and expertise that we've accumulated through our business activities to date. In addition, we will work to secure sustained growth by securing and creating competitive advantages as we respond quickly to changes in the business environment, such as evolving customer needs and emerging social issues.

3 Increasing productivity, for example by reforming business processes

The nature of the Group's businesses is undergoing major evolution as the business environment changes, for example due to changes in social structure such as the shrinking and aging of

Japan's population and the emergence of more advanced and diverse customer needs as well as social issues.

We will strive to improve productivity, make effective use of human resources, and further increase the level of value we provide by fundamentally reviewing and rebuilding business processes that have become increasingly complex in order to accommodate these changes while focusing on businesses with higher added value (which will help us create and provide value).

4 Using human resources effectively

We will work to hire and train the diverse workforce that will be essential as we develop the Group's businesses going forward. At the same time, we will strive to create an environment that keeps individual employees engaged in their work and able to make full use of their skills and abilities (by cultivating a healthy workplace culture, reforming individual awareness, and facilitating fulfilling workstyles).

5 Continuing to pursue compliance management

The Group considers compliance to be a key foundation of its corporate activities, and we've worked to spread awareness and foster adoption of good practices by including compliance as a policy in the last several Medium-Term Management Plans.

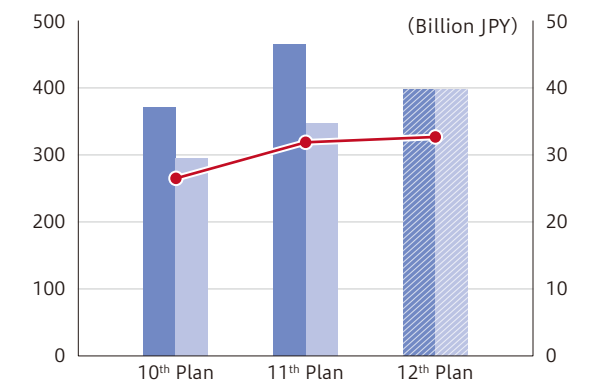
Awareness of the importance of compliance has steadily taken root among our employees thanks to ongoing awareness-raising and educational activities, and we will continue to pursue such initiatives to ensure that the trust we've built up in our quality and integrity remains unshakable. In addition, we will work to further spread and improve compliance awareness throughout the Group by effectively implementing and utilizing mechanisms such as our internal reporting system and CSR awareness survey.

3.Financial Target

Target: 3-year cumulative consolidated ordinary profit of JPY 33 billion

The 12th Medium-Term Management Plan, which represents the final stage of our current medium- and long-term vision, establishes the above targets to guide our achievement of the vision's goal of consistently earning ordinary profit of JPY 10 billion while simultaneously directing the company to utilize all its resources to build a robust business and management foundation in response to future changes in the business environment.

■ Order value (left scale)
■ Sales (left scale)
● Ordinary profit (right scale)



	10 th Medium-Term Management Plan results	11 th Medium-Term Management Plan results					12 th Medium-Term Management Plan		
	2012 to 2014	2015	2016	2017	Total		2018	2019	FY2018 to FY2020
Order value	371.0	99.9	191.0	177.1	468.0		179.8	148.8	JPY 400 billion (approx.) (3-year cumulative total; reference value)
Sales	296.5	113.0	116.3	118.1	347.5		121.9	134.4	
Ordinary profit	25.7	9.6	11.6	10.6	31.9		12.3	10.3	Target: JPY 33 billion (3-year cumulative total)

4.Core Business Units and Emphasis of Future Activities

Municipal Solid Waste Treatment Plant Business

Business Environment

- As facilities age, there is ongoing robust demand for renewal and service life elongation.
- Volume is growing for DBO projects as well as O&M services for existing facilities.

Emphasis of Future Activities

- Strengthen the profitability of our plant operation business.
- Further strengthen initiatives to prolong the service life of facilities.

Boiler Plant Business (Japan)

Business Environment

- FIT demand remains robust.
- The number of plants targeted for maintenance is increasing as facilities are completed and transferred to customers.
- There is growing demand for plant operational management and O&M.

Emphasis of Future Activities

- Capture new orders for FIT biomass plants.
- Strengthen our maintenance structures.
- Scale our waste management expertise horizontally to other businesses.

Waste Treatment Plant Business (Overseas)

Business Environment

- There is a growing need for proper waste management and energy utilization against a backdrop of growing urbanization, increase of waste volume, and diversification of waste characteristics.

Emphasis of Future Activities

- Build structures to facilitate collaboration with partner companies.
- Build schemes for entering new markets.

Water Treatment Plant Business

Business Environment

- There is growing demand for sludge incineration plants that conserve and create energy.
- There is increasing use of PPP/PFI arrangements in the sewer business.

Emphasis of Future Activities

- Strengthen the competitiveness of our sludge-fueled power system.
- Scale our waste management expertise horizontally to other businesses.

Boiler Plant Business (Overseas)

Business Environment

- Demand for biomass power plants in Southeast Asia remains robust.
- Our flagship bagasse-fired boiler plants continue to experience intense competition.

Emphasis of Future Activities

- Capture orders continually by creating competitive advantages.
- Strengthen the ability of our local subsidiary (SIAM TAKUMA) to carry out its business operations.

Package Boiler Business

Business Environment

- We are continuing to see a certain level of demand in Japan, particularly in terms of renewal demand.
- The need for energy-conserving boilers is increasing overseas, particularly in developing nations.

Emphasis of Future Activities

- Maintain and expand our domestic business.
- Expand our overseas business.

*DBO: Design, Build, Operate / O&M: Operation & Maintenance / PPP: Public Private Partnership / PFI: Private Finance Initiative
FIT: Feed-in Tariff / Bagasse: Fiber remaining after sugarcane is crushed

5. Progress in Implementing the 12th Medium-Term Management Plan

In this section, members of Takuma's management team present progress in implementing the goals of the 12th Medium-Term Management Plan, which began in FY2018.

Increasing customer satisfaction by enhancing our technological capabilities and strengthening our corporate capabilities to accommodate change in the business environment

Hideki Takeguchi

Director & Senior Managing Executive Officer
Executive Manager, Engineering Group



Strengthening our corporate capabilities so that we can secure stable annual ordinary profit of at least JPY 10 billion regardless of how the business environment in which we operate changes in the future remains the central theme of our current Medium-Term Management Plan. Our Engineering Group is responsible for strengthening the technological capabilities that are central to achieving that goal, specifically our capabilities in areas such as planning, design, purchasing, construction, manufacturing, and research and development. The plants we deliver bring together these technological capabilities, and to provide plants that satisfy our customers, it is important that we improve upon them, along with the human abilities of those who are involved in associated processes.

We operate in the dual business fields of the environment and energy, and under the current Medium-Term Management Plan we have identified, and are working toward, the targets that need to be achieved by each department in order to enhance our technological capabilities and foster the development of professionals so that we can expand in those fields. This fiscal year is the final year of the current Medium-Term Management Plan,

which makes it a year in which we must lay the groundwork for the next Medium-Term Management Plan. I look forward to closing out the final fiscal year of the current plan by generating solid results and starting to develop the next plan.

With regard to the policy of "strengthening and expanding our revenue foundation" as set forth in the current Medium-Term Management Plan and our effort to strengthen our after-sales service business to achieve it, we are working to develop technologies for increasing the ease with which facilities can be maintained and managed as well as technologies for plant monitoring and operation, including advanced technologies such as ICT and AI. Furthermore, we will add a Supply Chain Lab to the Harima Factory, which we plan to renovate and update in 2022, to serve as an after-sales service facility that can maintain a reliable inventory of maintenance-critical parts and supply them rapidly.

In this way, Takuma will work actively to construct, maintain, manage, and operate plants in the environmental and energy fields and to help realize the Sustainable Development Goals that society is pursuing by protecting the environment, realizing a recycling-based society, and reducing CO₂ emissions.



Harima Factory

Plan overview

Planned site	At the Harima Factory site
Total floor space	New factory: About 19,000 m ² (including associated facilities) Supply Chain Lab: About 3,500 m ²
Planned start of operations	December 2022

TOPICS Building a new factory and after-sales service facility

• Takuma had decided to update the Harima Factory and build a Supply Chain Lab.

We are planning to further enhance productivity and quality at the Harima Factory while carrying on the high-quality manufacturing policies developed over the last 77 years and to transform the factory into a sustainable factory that is kind to both workers and the surrounding environment.

As part of the development and enhancement of our after-sales service structures, the new factory will include a Supply Chain Lab in an effort to build structures to maintain a reliable inventory of parts that are essential to the operation of customers' facilities and supply them rapidly.

This new facility will help us meet a broad range of customer needs while contributing to society in the areas of renewable energy and environmental protection.

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, 2020)
Main business areas: 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): 875 (as of March 31, 2020)
Number of employees (consolidated): 3,816 (as of March 31, 2020)

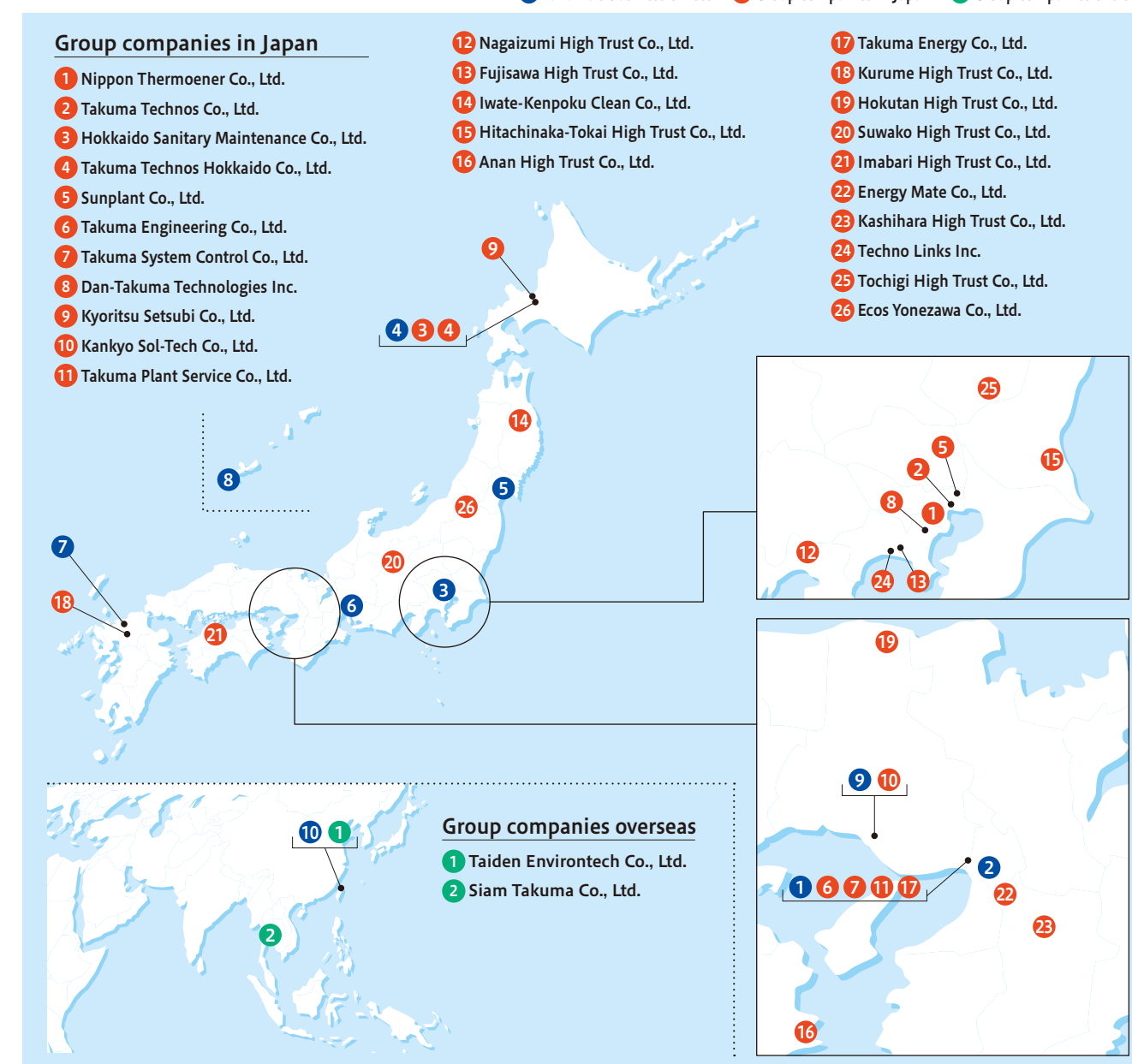
Takuma's business offices

- 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)

The Takuma Group Network

(As of June 25, 2020; see Takuma's website for details.)

● Takuma's business offices ● Group companies in Japan ● Group companies overseas



Business Summary

Environment and Energy Business

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.

- Waste incineration plants
- Pyrolysis gasification and melting plants
- Resource recycling and recovery plants
- Bulky waste crushing plants
- Bottom ash and fly ash melting plants
- Refuse derived solid fuel conversion plants
- Transition and intermediate processing plants
- Raw fuel (biogas) recovery plants
- Various types of pollution prevention equipment



Waste incineration plants



Bulky waste crushing plants

Energy plants

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

- Biomass boilers
- Fossil fuel boilers
- Waste heat boilers
- Power plants



Biomass power generation boiler



Waste heat boiler

Package Boiler Business

General-purpose boilers

As the convergence of Takuma's combustion technologies, our boilers are a reliable brand that has earned the support of a wide range of industries.

- Steam Boilers (EQOS, Super EQOS)
- Vacuum-type Water Heaters (Vacotin Heater)
- Heat Medium Oil Boilers (Thermoheater)
- Flue and Smoke Tube Boilers (RE Boiler)
- Package Water-tube Boilers



Super EQOS



Vacotin Heater



Thermoheater



RE Boiler

Note: These products are handled by Nippon Thermoener Co., Ltd., which is one of our group companies.

Industrial waste treatment plants

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

- Industrial waste treatment plants



Industrial waste treatment plant



Plant that generates power from industrial waste and provides heat to a plantation

Water treatment plants

We are working to purify wastewater with a holistic perspective through a "dialogue with water."

- Sewage and wastewater treatment plants
- Various types of advanced sewage treatment plants
- Sludge treatment plants
- Sewage sludge-fueled power plants
- Landfill leachate treatment plants



Upflow moving-bed sand filtration system



Sewage sludge-fueled power plant

Equipment and Systems Business

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.

- Building equipment
- Air-conditioning equipment
- Cleaning and drying devices
- Clean rooms
- Clean devices
- Chemical air filters



Clean oven



Clean booths



Chemical air filters

Introduction to Group Company Businesses

(Related SDGs)



Established	September 15, 1941
Representative	Syusuke Suzuki, President
Employees	111 (as of March 31, 2020)



Business Profile: Sunplant

Tokyo Steam Power Construction Co., Ltd., was established as a boiler installation company when Takuma Steam Power Construction Co., Ltd., spun off its Tokyo Office. We changed our name to Sunplant in July 1976, and we have developed into a more generally focused facilities company as society has changed over time.

In recent years, we have carried out numerous installations that are backed by our technological capabilities and reliability at sites ranging from commercial facilities such as nursing homes and hotels to research facilities and facilities at U.S. military bases.

Next year, we will mark the 80th anniversary of our founding, and all of our employees are committed to working together to create comfortable spaces in buildings through the design and installation of air-conditioning, water and wastewater, and hygienic equipment in keeping with our philosophy of “gratitude and service” so that all people can lead healthy lives.

Business Activities

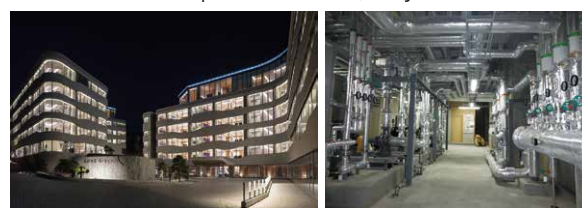
- Design and installation of air-conditioning, water and wastewater, and hygienic equipment



Research institution (Tsukuba, Ibaraki)



Hospital (Adachi-ku, Tokyo)



Resort hotel (Niseko, Abuta-gun, Hokkaido)

Future business policy

Cleanliness is becoming even more necessary in the environments inside and outside buildings, and companies performing installation work are under pressure to do so in a way that helps eliminate pollutants and viruses. We have the technology necessary to do this kind of work as well as a proven track record (including equipment installation work at university hospitals and clean room construction), and we will continue to work to enhance our capabilities and provide safer, cleaner spaces in line with our philosophy of “continual refinement.”



Established	August 21, 1969
Representative	Yoshiki Kita, President
Employees	77 (as of March 31, 2020)



Head Office (LIVMO Rising. Bldg., 2F, Shin-Yokohama)

Business Profile: Dan-Takuma

Our products have been used broadly in a variety of industries and social systems over half a century, and we have contributed to society by creating advanced clean environments that are an essential part of the manufacturing processes for semiconductors and electronic devices, which have a major impact on our lives.

We have world-class technological capabilities and a market share for chemical air filters for use in clean rooms and semiconductor manufacturing equipment and for magnetic shield rooms for use with high-precision electron beam equipment.

Business Activities

- Manufacture of products used in semiconductor manufacturing processes



Chemical air filter



Magnetic shield room



Polyimide curing oven



Wet station

New business domains

We are working with national universities to commercialize products by pursuing applied research and development of precision cleaning using micro- and nano-bubbles for the electronic industry and for the use of nano-bubble ozone water in the hygiene and healthcare fields.

The pictured system is a washing system featuring next-generation environmental technology that uses ozone and pure water to wash semiconductors instead of the heated mixed cleaning liquid used by conventional semiconductor washing equipment.

By using cleaning liquid made from ozone (oxygen) and water while maintaining washing performance that is as good as or better than conventional systems, the product simplifies waste liquid treatment while enhancing safety.



History

Founder Tsunekichi Takuma established our philosophy of
“Serve society through boiler manufacturing.”

The goal of becoming a technologically driven company based on that belief has been
the basis of Takuma's operations throughout our 80-years history.

1912 ▶

Founder Tsunekichi Takuma, who invented the first water tube-type boiler entirely produced in Japan, is one of the 10 great inventors of the Meiji and Taisho periods. He formulated the philosophy of “Serve society through boiler manufacturing” in 1938. That philosophy, which calls on the company to contribute (render service to) society and the environment through the manufacture of boilers, remains the foundation of Takuma's Management Principles today.



Tsunekichi Takuma

- 1938** Takuma Boiler Manufacturing Co., Ltd., founded (1)
- 1942** Operations began at Harima Factory (2)
- 1949** Bagasse-fired boiler, the first product of its kind in the industry, exported
Company listed on the Osaka and Tokyo stock exchanges
- 1950** Head Office moved to Osaka's Kita-ku District (Sonezaki) (3)



(1) Amagasaki Factory



(2) Harima Factory under construction



(3) Former head office (Sonezaki)

1938
Takuma Boiler Manufacturing Co., Ltd.,
founded

1951 ▶

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 1972, the company changed its name to Takuma Co., Ltd., which remains its name to this day.

- 1953** Head Office moved to Osaka's Kita-ku District (Dojimahama) (4)
- 1958** Business expanded into the environmental facility sectors, including waste incineration and water treatment plants
- 1961** Operations began at Kyoto Factory* (5)
*Currently operates as a factory of Nippon Thermoener Co., Ltd.
- 1963** Japan's first 24 hour operating waste incineration plant delivered (6)
Sewerage treatment facility delivered
- 1970** Waste Management and Public Cleansing Act and Water Pollution Control Act enacted
- 1972** Company renamed Takuma Co., Ltd. (7)
- 1975** Mass production began on “Vacotin Heater” the world's first vacuum-type hot water heater (8)



(4) Former head office (Dojimahama)



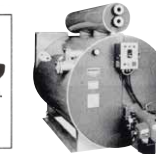
(5) Kyoto Factory at the time



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



(7) Company name change



(8) Vacotin Heater

1985 ▶

Takuma formulated its first Medium-Term Management Plan in order to adapt to the challenging economic environment. During this period, Takuma worked to develop technologies to accommodate a variety of customer needs, including demand for energy savings in industry, the growing volume and diversity of municipal solid waste, and the need for improvements in water quality by means of water treatment equipment.

- 1985** Takuma formulated the 1st Medium-Term Management Plan.
- 1986** The first overseas delivery of a waste treatment facility completed (U.S.A.)
- 1992** New Company Motto instituted: “Value Technology, Value People, Value the Earth”
- 1993** Basic Environment Act enacted
- 1995** Amagasaki Head Office Building completed (9)
- 1997** ISO9001 certification obtained
- 1998** Japan's largest waste incineration plant delivered (10)
(Tokyo Shin-Koto Incineration Plant Capacity: 1,800 tons per day)
- 1999** ISO14001 certification obtained for Harima Factory
- 1999** Act on Special Measures against Dioxins enacted



(9) Amagasaki Head Office Building



(10) Shin-Koto Incineration Plant

2000 ▶

Takuma continues to provide technology for utilizing and rendering harmless a variety of waste products and biomass energy sources through its businesses in the renewable energy and environmental protection fields. We established local subsidiaries overseas and continue to bring our technologies to customers not only in Japan, but also worldwide, particularly in Asia.

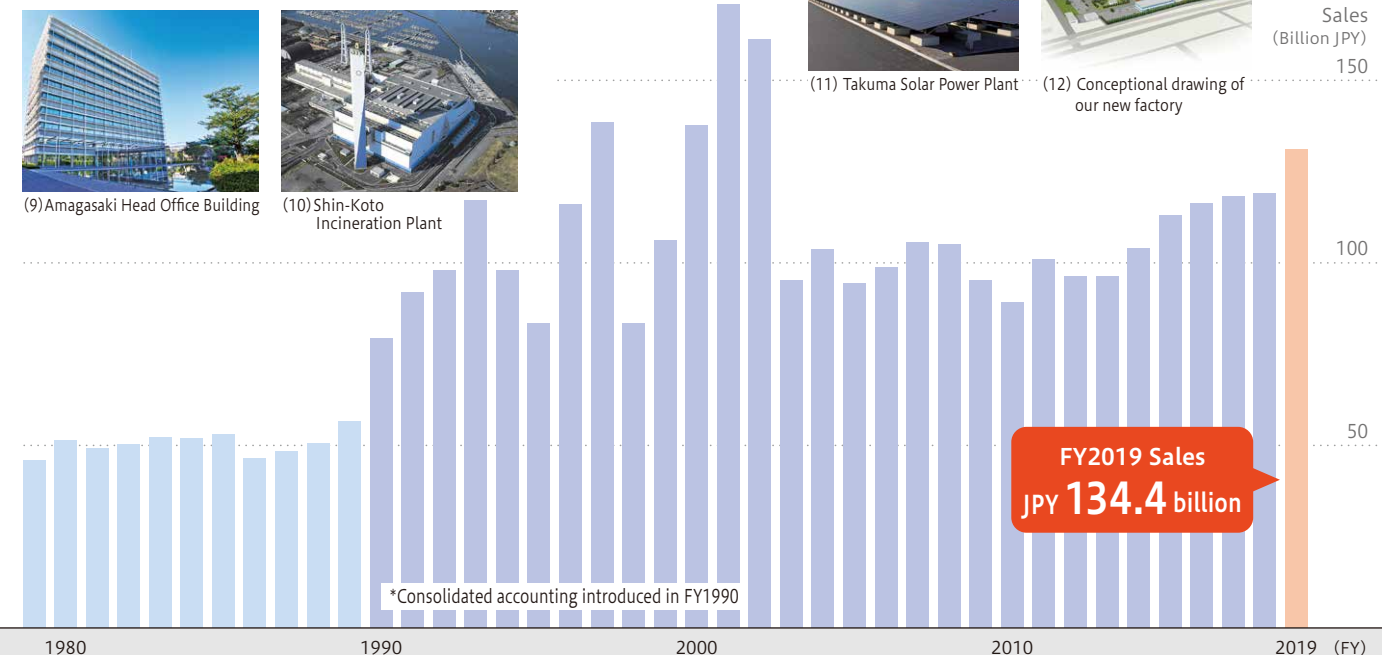
- 2004** Takuma's first “Environmental Report” issued
The “Takuma Group Code of Conduct” instituted
- 2005** Takuma Hanyokikai Co., Ltd., a subsidiary involved in the manufacture and sale of small boilers, and Ebara Boiler Co., Ltd., merged and renamed Nippon Thermoener Co., Ltd.
- 2005** The “Takuma Environmental Policy” instituted
The “Personal Information Protection Policy” instituted
- 2006** The “Compliance Declaration” instituted
The “Takuma Group Ethics Charter” instituted
Takuma participated in the UN Global Compact
- 2007** Takuma's first “CSR Report” issued
- 2010** Energy from Waste plant delivered in Europe (U.K.)
- 2012** Feed-in tariff (FIT) program launched to facilitate fixed-cost purchases of renewable energy
- 2013** Operation of the Takuma Solar Power Plant began (11)
- 2019** Decision made to build a new factory and after-sales service facility (12)



(11) Takuma Solar Power Plant



(12) Conceptional drawing of our new factory



1. Environmental Plant Business

(Related SDGs)



Municipal Solid Waste Treatment Plant Business

Since developing waste incineration technologies using proprietary technology and delivering Japan's first fully continuous mechanical waste incineration plant in 1963, Takuma has built more than 360 municipal solid waste treatment plants in Japan. Subsequently, we have introduced numerous new technologies and achieved the No. 1 share of plant deliveries in Japan. Today, we continue to refine our technologies and embrace the challenge of

operating to the highest possible standards.

Takuma will continue to contribute to stable regional waste treatment by pursuing integrated initiatives ranging from the construction of municipal solid waste treatment plants to after-sales service for those facilities through a broad product line and service based on an extensive track record as the industry's leading company.

Plant construction

• Stoker-type incinerators

Stoker-type incinerators are the most common type of waste treatment plant in Japan, and they are a flagship Takuma product. Today, most incinerators operated by local governments throughout Japan use this treatment method, and Takuma delivers secure, safe, stable, and highly efficient waste treatment in response to customers' needs through advanced technology and expertise based on its extensive track record.

Realizing stable combustion

① Stoker-type incinerators

Stoker-type incinerators realize stable combustion of a variety of waste thanks to proprietary stoker technology, state-of-the-art instrumentation, and advanced automatic combustion control.

Reducing environmental impacts

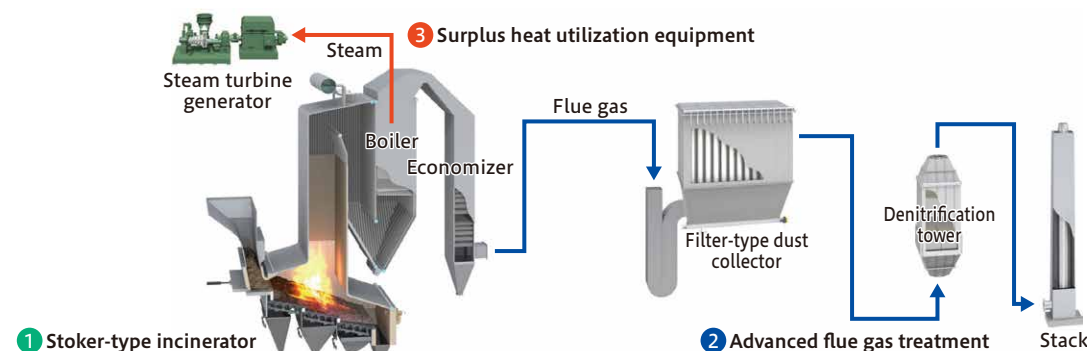
② Advanced flue gas treatment

We help reduce environmental impacts with advanced flue gas treatment technology that reliably removes toxic substances from flue gas and technology to reduce the amount of fly ash going to landfill.

Realizing high efficiency power generation

③ Surplus heat utilization equipment

High-temperature, high-pressure boilers and other equipment maximize recovery of the energy stored in waste to realize high-efficiency power generation.



Incineration of solid waste | Stable combustion

Solid waste introduced into the incinerator burns consistently at a temperature of 850°C or higher as it moves on the stoker (a step grate combustion equipment).

Flue gas treatment | Reliable removal

Flue gas, flowing out of the boiler and economizer, contains toxic substances which are then reliably removed by a filter-type dust collector and denitrification tower, before being released from the stack.

Utilization of surplus heat | Effective utilization of energy from waste

Heat generated by the waste incineration process is recovered as steam by the boiler and economizer and used to generate electricity at a steam turbine generator. The recovered steam is also used as a heat source in the plant and nearby facilities, for example for hot water, heating, and cooling.

• Methane gasification facilities

Recently the Ministry of the Environment has been encouraging the introduction of Methane gasification facilities for use with municipal solid waste. Takuma is helping reduce incinerated waste volume and environmental impacts with its combined system of methane fermentation and incineration for municipal solid waste, which recovers the maximum amount of energy possible from waste to realize highly efficient power generation. (The system received the New Energy Foundation's Chairman Award at the FY2014 New Energy Awards.)

Maintenance

Annual maintenance is essential in order to ensure stable operation of municipal solid waste treatment plants. Maintenance demands sophisticated technological capabilities as well as experience, because in addition to a range of expertise drawn on waste treatment plants, the manner in which their equipment deteriorates over time varies with the properties of the waste they process. Takuma takes maximum advantage of its accumulated expertise to contribute to stable waste treatment and long-term facility operation by developing long-term repair plans, carrying out elaborate site investigations, and then performing maintenance that has been optimized in terms of both timing and content.

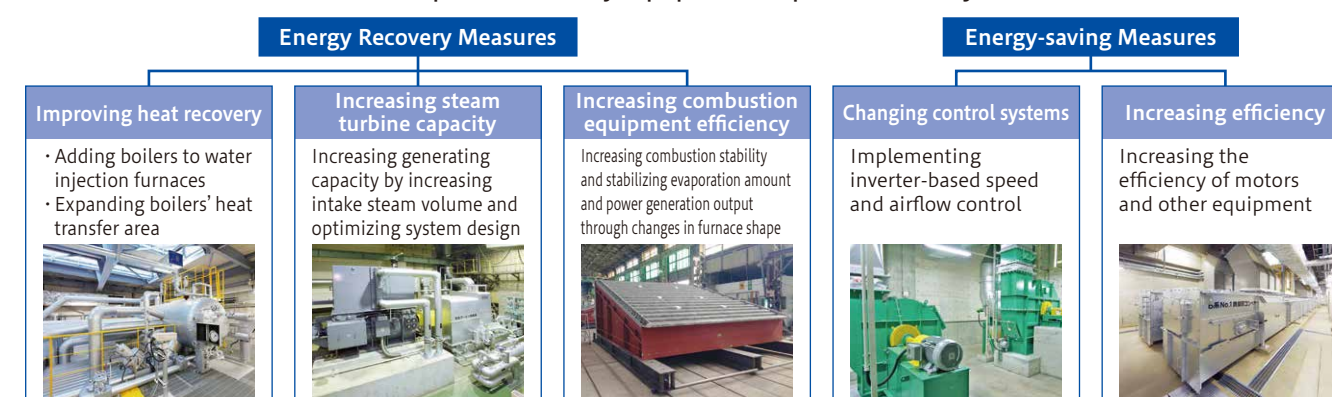


Replacing boiler tubes

Primary equipment improvements

70%* of all Japanese municipal solid waste treatment plants, which comprise a key type of infrastructure, have been operating for at least 15 years, and demand for updating plants and extending their service life is growing due to their aging. Using the advanced heat utilization and energy-saving technologies we have developed as a boiler and environmental plant manufacturer, Takuma helps extend plant service lives and reduce CO₂ emissions through high-added-value primary equipment improvement projects. *According to research conducted by the Ministry of the Environment in 2018 and reported in "Municipal Solid Waste Emissions and Disposal."

Example of a Primary Equipment Improvement Project



Long-term comprehensive operation business

The Long-term comprehensive operation business, in which customers enter into contracts covering both operation and maintenance management for a term of 10 to 20 years, has become the most common approach in the industry in recent years, for example in the form of DBO projects.

We have currently collected plant operating and maintenance management data for more than 10 municipal solid waste treatment plants with **POCSYS**®, which we use to provide real-time integrated management of plant and

equipment operating status.

Additionally, we operate Solution Lab to further enhance our remote monitoring and operational support functions for existing plants. Our Solution Lab provides remote monitoring and operational support by monitoring plant status and operating conditions 24 hours a day. It utilizes the latest Information and Communications Technologies (ICT), including the IoT, big data, and AI, to provide optimized solutions for customers and support to help ensure safer, more secure plant operation.

Takuma's Solution Lab remote monitoring and operational support facility

Optimal solutions that meet customers' needs

We provide high-quality solutions that have been optimized for customers based on data obtained from remote monitoring and operational support by identifying and analyzing issues related to plant operations using the latest Information and Communications Technologies (ICT).

We also create new value in the form of distinctive technologies and services so that we can respond to the social challenges that will face society in the future.

Safe, secure operation and efficient management

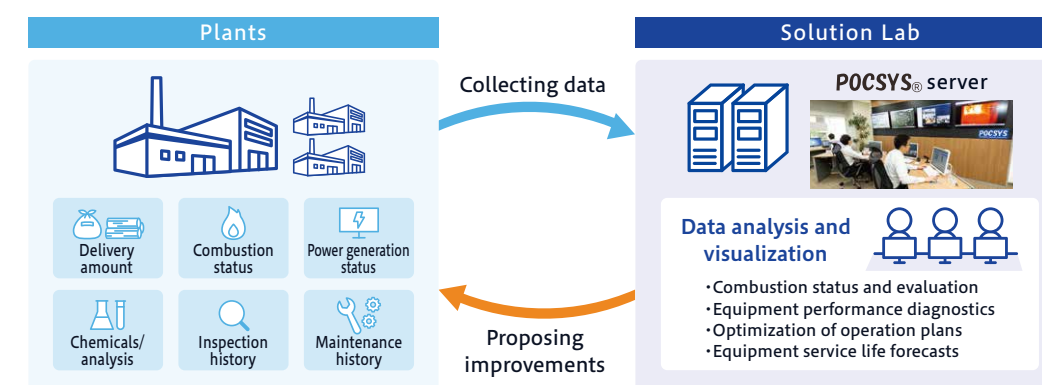
We provide even safer, more secure operation and more efficient management for customers through remote monitoring and operational support functions that utilize the latest ICT.

In the event of the unforeseen circumstances, our highly experienced engineering staff can provide precisely targeted guidance to customer sites 24 hours a day.

Human resources and technological development

In addition to ICT, facilitating the growth of the people involved in operations is essential in order to ensure plants to be operated in a stable manner over the long term.

Solution Lab improves workers' technical skills through highly effective education and training using operational training simulators.



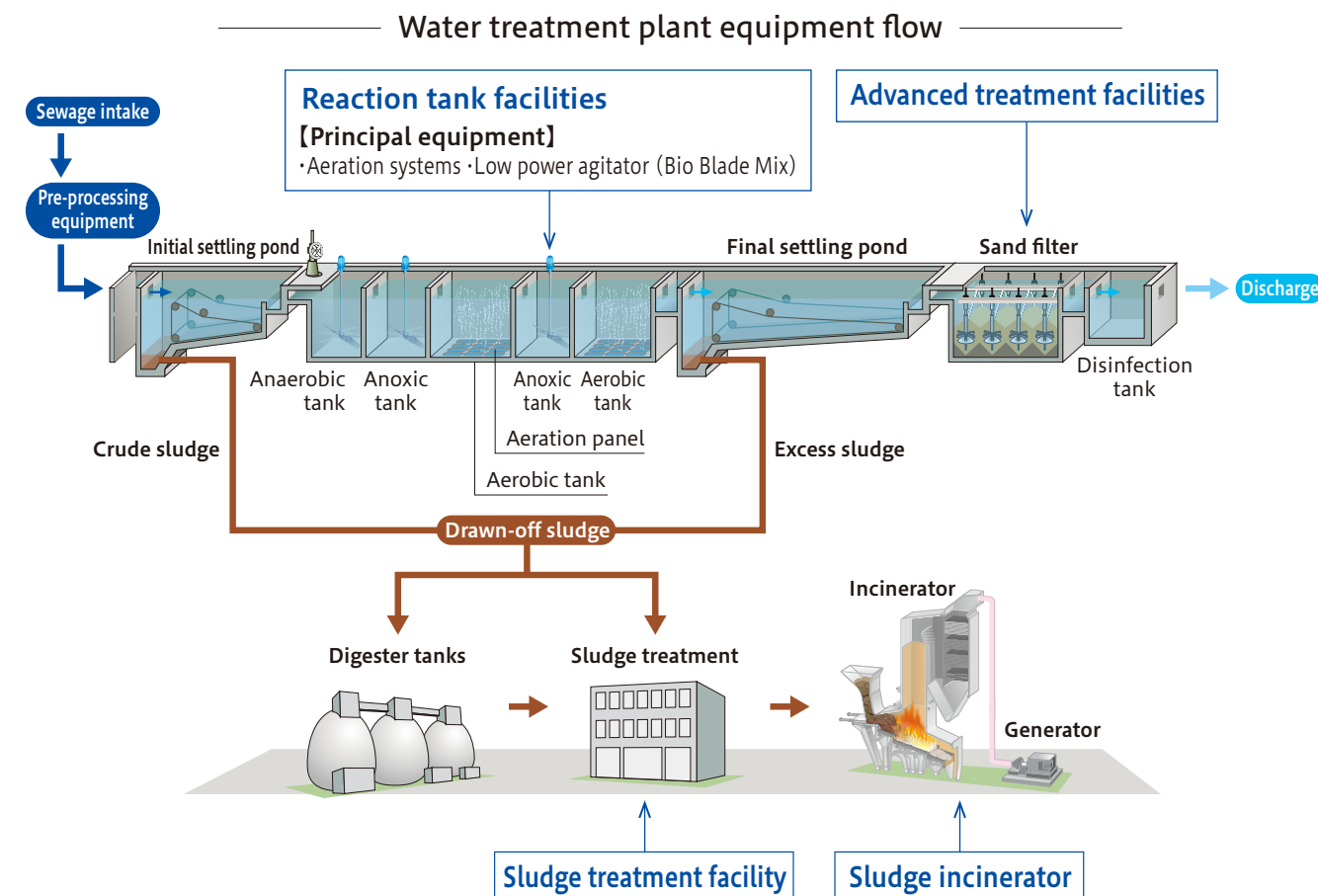
Water Treatment Plant Business

Takuma has delivered numerous systems, particularly in relation to technologies for advanced treatment of wastewater, in an effort to help conserve the aquatic environment.

The recent trend is for plants to be called upon not only to purify water, but also to reduce power use by treatment equipment and create energy from sewage sludge. In an effort to meet these requirements, Takuma has been focused on developing a step grate stoker type sewage sludge incineration and power generation system and implemented technologies using waste heat from the incineration process to generate electricity.

Going forward, we will continue to help conserve the aquatic environment by supplying products that meet the needs of our times.

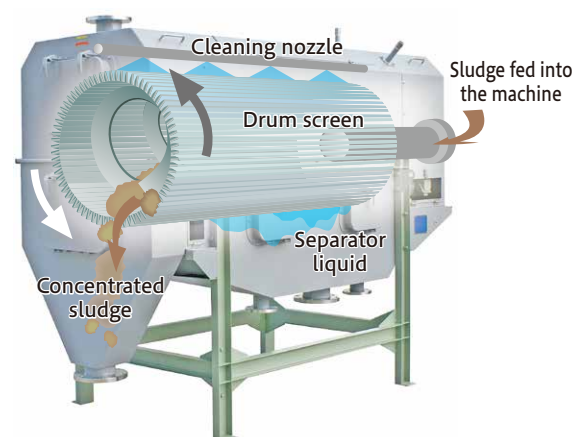
Water Treatment Plants



•Sludge treatment facility [Principal equipment]

•Rotating drum-type concentrator

A rotating drum-type concentrator consists of a drum-shaped screen consisting of metal wedge wire that separates and concentrates solid and liquid components from coagulated sludge as the drum rotates. Following solid-liquid separation, sludge is transported to the exit side of the system as it is concentrated and pushed by spiral-shaped vanes on the inside of the rotating drum screen, the system uses less power than its conventional counterparts, yielding high energy savings.

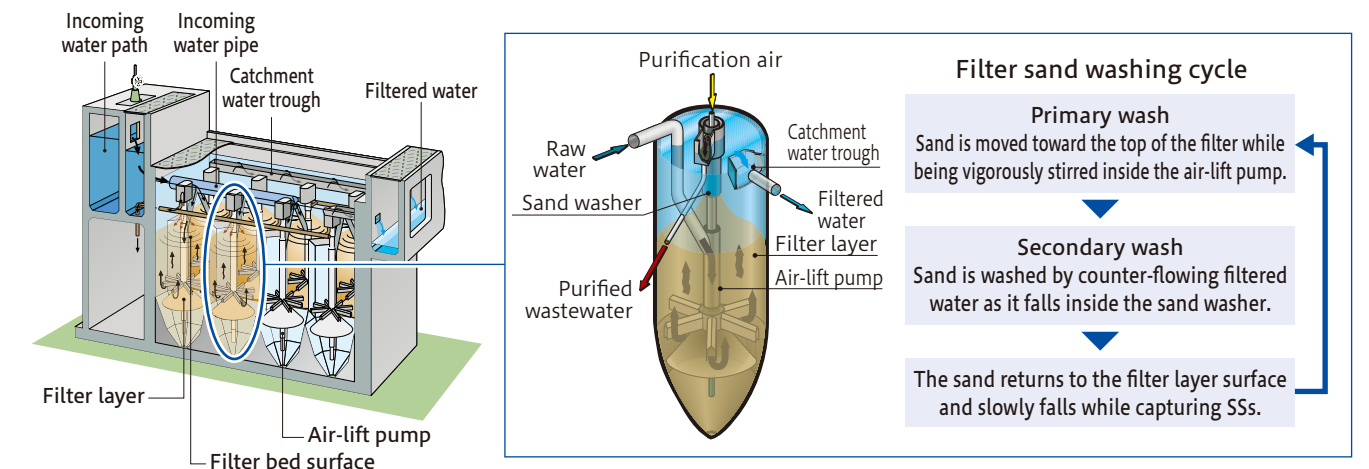


•Advanced treatment facility [Principal equipment] •Upflow moving-bed sand filtration systems (Uniflow Sand Filter)

Measures undertaken to improve the quality of public water sources and the need to reuse treated sewage are spurring demand for more advanced water treatment. Upflow moving-bed sand filtration systems (Uniflow Sand Filter), which eliminate suspended solids (SSs) from water, are used in a variety of fields, including in final processing at sewage treatment plants and in pre-processing to remove solids at water plants. This particular model is a long-selling product featuring proven water purification technology of

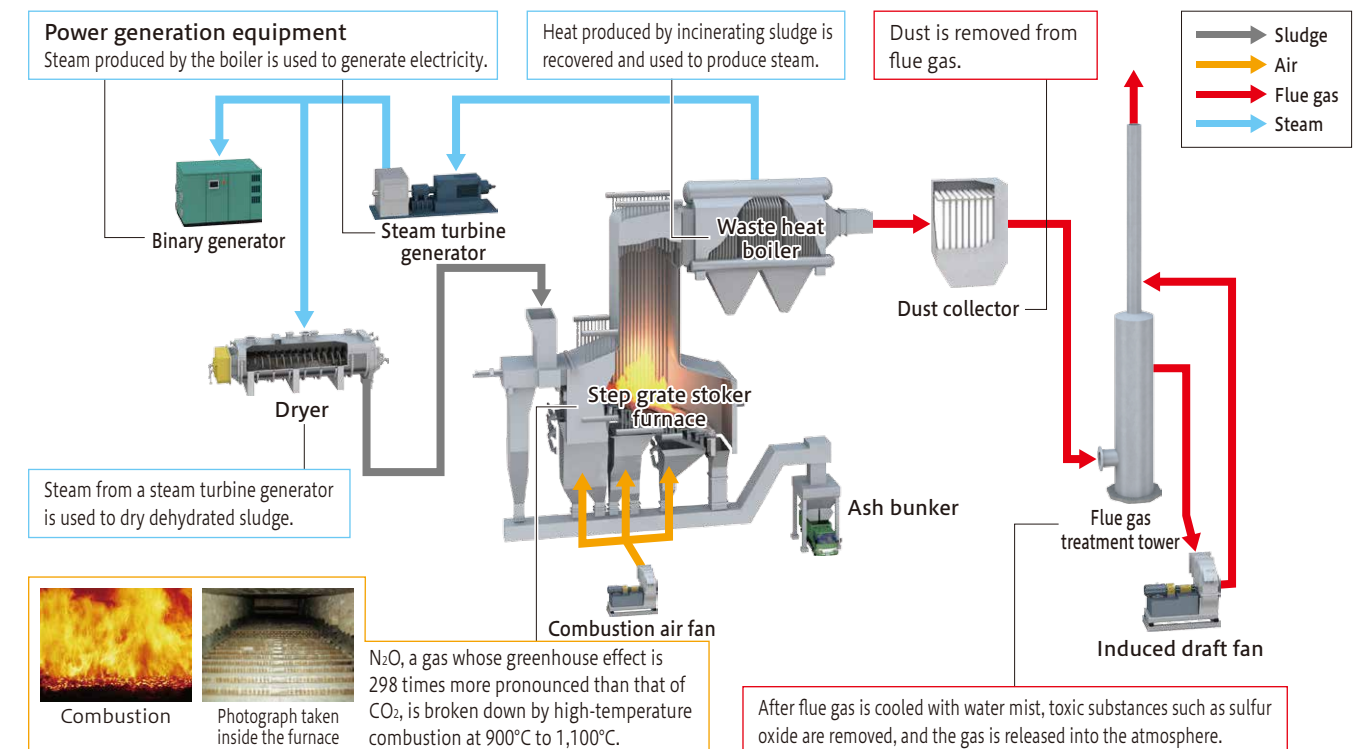
which we have delivered more than 2,700 units in Japan. A design that combines filtration treatment with continuous backwashing of the filtration sand ensures stable operation and exceptional maintainability.

The product line includes high-speed models with double or triple the filtration speed of the standard model as well as denitrifying and dephosphorizing variants that add functionality for eliminating nitrogen and phosphorus to standard SS elimination functionality.

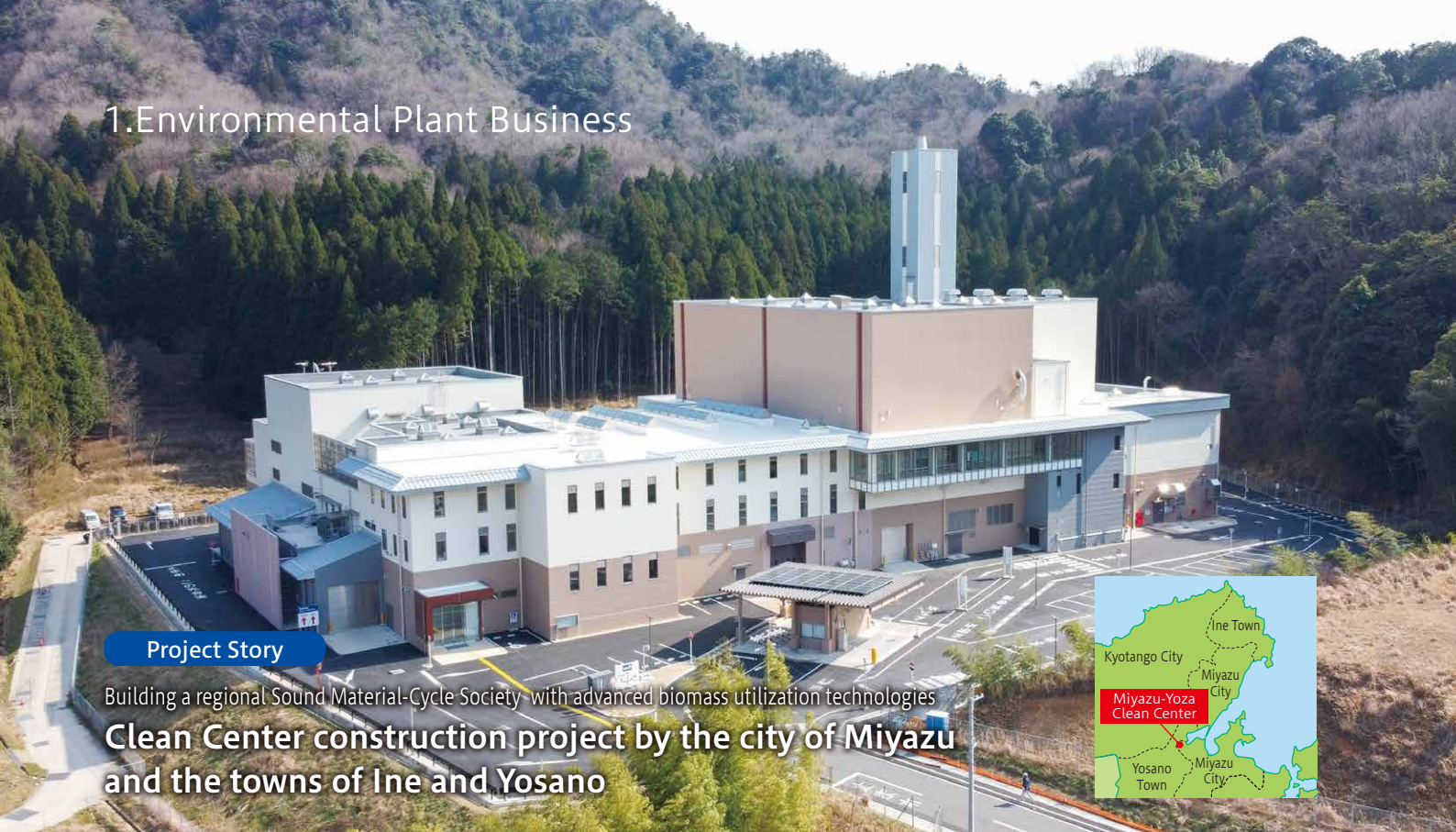


•Sludge incinerator [Principal equipment] •Step grate stoker type sewage sludge incineration and power generation system (step grate stoker furnace and innovative step grate stoker furnace)

Because it contains a large amount of energy, sludge generated during the sewage treatment process has been attracting attention in recent years as a biomass resource. We are taking advantage of our core incineration and boiler technologies to make effective use of the energy contained in sludge by using it as a fuel to generate electricity. Following the system's selection for inclusion in the Breakthrough by Dynamic Approach in Sewage High Technology Project (B-DASH) by the Ministry of Land, Infrastructure, Transport and Tourism (Japan) in FY2013, we have received orders for the system from the cities of Tokyo and Sapporo.



1.Environmental Plant Business



Project Story

Building a regional Sound Material-Cycle Society with advanced biomass utilization technologies

Clean Center construction project by the city of Miyazu and the towns of Ine and Yosano

Facility overview

Operator	Miyazu Yoza Union Environment	Project type	DBO (Design, Build, Operate)
Facility name	Miyazu-Yoza Clean Center	Project period	Construction phase: April 2016 to June 2020 Operational phase: July 2020 to February 2040

Miyazu-Yoza Clean Center is a wide-area waste treatment facility operated by a city (Miyazu) and two towns (Ine and Yosano) in northern Kyoto Prefecture. The complex, which consists of an energy recovery-type waste treatment facility (waste incineration + methane gasification) and a material recycling facility, incorporates the latest biomass technologies and will contribute to the realization of a Sound Material-Cycle Society.

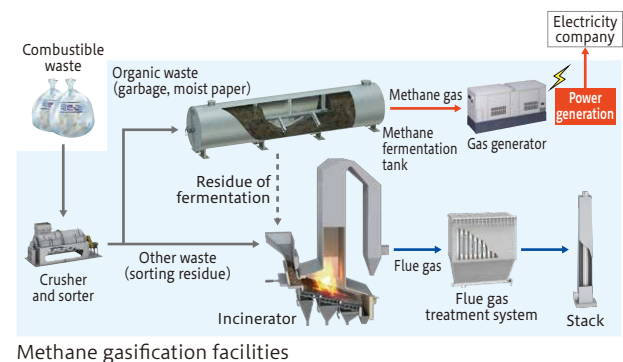
Energy recovery-type waste treatment facility

(Waste incineration facility)
The waste incineration facility uses high-temperature heat from the waste incineration process to make hot water.

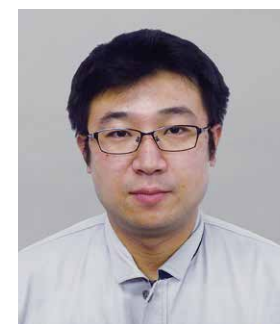
(Methane gasification facility)
The methane gasification facility recovers methane gas released by waste and uses it to generate electricity. The heat from that process can be reused.

Material recycling facility

The material recycling facility sorts and recycles waste such as noncombustible refuse, plastic containers and packaging, and cans. Sorting helps extend the service life of final disposal site by reducing the volume of waste to be landfilled.



Message from the engineering coordinator



Hiroshi Kogita

Section 2, Environmental Design Dept. 3
Engineering Center
Takuma Co., Ltd.

The complex consists of an energy recovery-type waste treatment facility (waste incineration + methane gasification) and a material recycling facility. The methane gasification facility ferments waste, paper, and other material that makes up the combustible waste stream to produce methane, which is then used to run a gas generator, allowing it to be recovered as electrical energy. Electricity that remains after certain local load requirements are met can be sold back to the grid.

In designing the methane gasification facility, we worked hard to precisely apply the expertise we have gained through past experience and to incorporate the latest information about other state-of-the-art facilities into the plant after a careful vetting process.

It is our hope that in addition to its basic role of treating waste in a hygienic manner, the plant will contribute to material recycling and to the effective use of biomass energy.



Construction

This project, through which the city of Miyazu and the towns of Ine and Yosano are seeking to realize a safe and hygienic living environment, was about more than just fulfilling the basic role of a waste treatment facility. Reflecting its belief that the project is one in which a new future can be pioneered through advanced biomass utilization technologies, the Takuma Group sought to create a model case demonstrating how a project could help create a Sound Material-Cycle Society. In undertaking the project, we identified three core concepts: providing peace of mind and vitality to the region, protecting the environment and coexisting with nature, and supporting a sound material cycle into the future.

Similarly, in planning the facility, we identified three design concepts: nature, history, and people. In addition to adopting a design that blends into the area's rich natural environment, we incorporated the distinguishing shapes of the region's traditional arts and crafts into the design, along with features that express gentle hospitality toward visitors, for example through the natural warmth of wood.

As it turned out, the construction phase posed many unexpected challenges, including the discovery of underground obstructions and flooding in a waste pit due to heavy rainfall. Nonetheless, we were able to overcome these obstacles to complete a facility whose advanced equipment is unique in Japan.

Construction site



July 2018 (heavy rainfall)



September 2018



April 2019



October 2019

Message from the construction coordinator



Takahiro Kimura

Section 2, Civil & Architectural Engineering Dept.
Construction Center
Takuma Co., Ltd.

The facility's location next to Yoza-Amanohashidate IC about 10 minutes by car from Amanohashidate, one of the three most famous scenic spots in Japan, makes it a picturesque destination in its own right.

Although the greatest concern when construction began in January 2017 was delays caused by accumulated snowfall during the winter, the project was blessed with a comparatively mild winter. However, in addition to boulders and other underground obstructions, a variety of problems, including inflows of muddy water caused by heavy rainfall in nearby mountainous valleys, impacted the construction schedule and led to a delay of about 11 months after discussions with the customer.

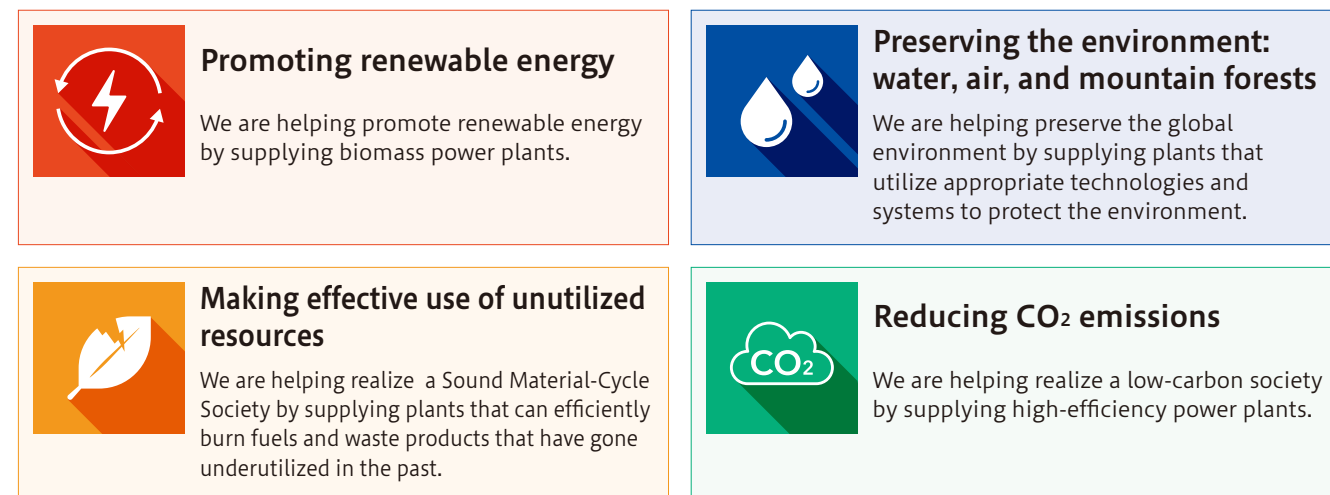
We were able to overcome the challenges with the customer in cooperation with a local general contractor with whom we shared the construction work, sharing information about problems arising in each scope of the plant construction and the civil work, and revamping the schedule.

Our hope is that the facility, which was completed thanks to the understanding and cooperation of the customer and local residents, will continue to operate and develop as a site that can contribute to the region as part of Takuma's comprehensive operation business.

2. Energy Plant Business

For more than 100 years, Takuma has delivered numerous boilers and plants of various types and specifications, including for use in power, shipping, and air-conditioning applications, while accumulating extensive experience and expertise as a pioneer of the boiler industry. We will continue to help realize a sustainable society while working to resolve customers' issues as well as social problems through our business activities.

Contributing to society through business activities



Value provided by Takuma's Energy Plant Business

1. Plant engineering

We supply plants that combust a variety of fuels and waste in a stable manner over extended periods of time based on our extensive track record of deliveries.

Biomass power plants

We supply power plants that can utilize a variety of biomass fuels to operate in a stable manner over extended periods of time, including unused lumber, lumber waste, construction waste, PKS (Palm kernel shells), pellets, livestock manure, bagasse, and paper sludge.

Industrial waste incineration and power generation facilities

We supply facilities that can recover heat in a highly efficient manner, including by using it to generate electricity, after burning even difficult-to-treat waste in an appropriate manner.

2. After-sales service

We offer service designed to ensure that plants can operate in a stable manner over the long term based on our advanced technologies and extensive experience.

Maintenance

We offer proposals for, and carry out, plans for periodic inspections and maintenance, functional improvements, and preventive maintenance in order to maintain high plant performance and prevent unplanned stoppages.

O&M*

We accept orders for operation, maintenance, and management on 20-year terms to reduce workload and life cycle costs so that customers can maximize the profitability of their businesses.

* O&M: Operation & Maintenance

(Related SDGs)



Products and services

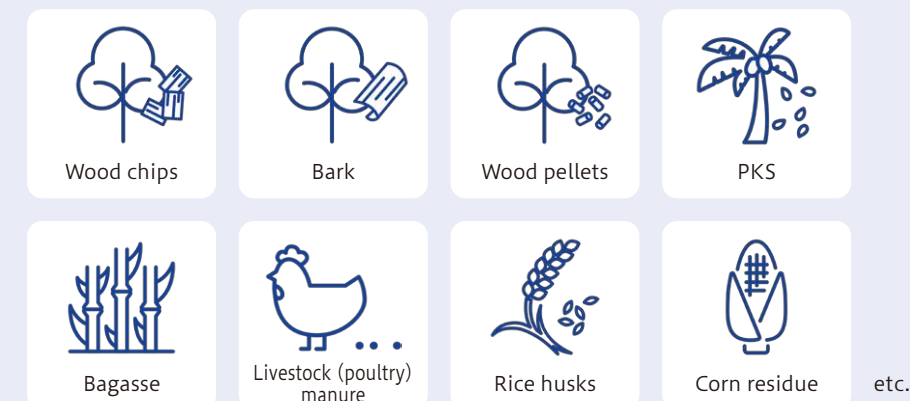
Biomass Power Plants

These plants produce heat and power from a variety of biomass fuels, including wood fuels such as wood chips and bark, PKS, and bagasse.

Four Advantages

Advantage 1 Ability to burn a wide range of fuels

These plants can effectively use a variety of substances that have been difficult to use in the past as fuel.



Advantage 2 Custom designs

From our four combustion furnace types, we select the model that best suits each customer's plan and design a plant accordingly.



Advantage 3 Stable operation over the long term

We supply plants that can operate in a stable manner for decades with the least number of breakdowns or sudden stoppages by designing them based on our extensive experience and expertise and by maintaining them in an optimal manner, even when biomass with inconsistent properties is used.

Advantage 4 High-efficiency, energy-saving performance

We supply plants characterized by high transmission end efficiency and boiler efficiency by selecting the optimal combustion method and boiler for each installation and by reducing auxiliary power and the unburnt portion.



Project Story

Supporting continuity of the renewable energy industry with a biomass power plant
Biomass power plant construction project in Toyohashi, Aichi Prefecture

Customer	SALA e POWER Co., Ltd.
Project name	SALA e POWER Biomass Power Plant Construction Project
Power output capacity	22,100 kW 150 million kWh per year (Equivalent to the power used by about 40,000 households)
Principal fuel	PKS, wood fuel, wood pellets
Completion date	June 2019

The customer, a wholly owned subsidiary of SALA Energy Co., Ltd., which is a central company in the SALA Group and its array of energy-oriented businesses, was established to operate a wood biomass power plant business. The biomass power plant that we delivered in this project uses PKS imported from Southeast Asia as its primary fuel, and it uses the heat generated by burning a mixture of chips produced from unused lumber and other wood from Okumikawa in Aichi Prefecture and the Enshu region of Shizuoka Prefecture to generate electricity.

In addition to providing a clean, stable source of power that also helps reduce greenhouse gases regardless of the weather, the facility contributes to the appropriate protection of the region's woodland resources by working closely with local communities.

Message from the engineering coordinator



Ryoji Higuchi
Section 2, Energy Engineering Dept. 1
Project Center
Takuma Co., Ltd.

I currently work in Takuma's engineering oversight department, where I am involved with boiler plant planning and design.

Since the project represents SALA e POWER's first purchase of a Takuma boiler plant, we conducted a series of highly detailed meetings, starting during the design phase. I believe that we were able to construct a plant that would satisfy the customer as a result of the unity and effort by each and every person who was involved with the project.

Going forward, I look forward to contributing to plant planning and design so that we can leverage Takuma's experience and technology to better meet customers' needs.



Construction

This plant, which was constructed on a site of about 30,000 square meters on Mikawa Harbor in the Shinnishihama-cho district of the city of Toyohashi, is one of the few wood biomass power plants in Japan with a generating capacity of 150 million kWh a year, equivalent to the power used by 40,000 households. It uses PKS and lumber from forest thinning in Japan as fuel. Reflecting our belief that the project will play a key role in the adoption of renewable energy in Japan, we emphasized an early start of operations and thorough safety management in its construction.

Construction began in April 2018, and commissioning began in April 2019. Work was completed in June 2019, 15 months after it

began. The schedule was extremely tight for a plant of this scale, but we were able to transfer the facility to the customer after completing it without incident (while setting a record of about 160,000 accident-free hours). The project's successful completion is entirely due to the customer's cooperation and the hard work of the cumulative total of 20,900 employees of Takuma and of partner companies who were involved with the plant's construction.

We look forward to taking advantage of the experience gained from this project to build the kind of plants that are required by our changing times.

Construction site



Stakeholder message

Mr. Naohiro Fujita
President
SALA e POWER Co., Ltd.

The energy industry has embarked in an era of consolidation and borderless operations as a result of an across-the-board liberalization of the power and gas retail sector. The SALA Group has responded to these changes by augmenting its natural gas and propane supply operations with power retail and generation businesses. We believe that by putting in place structures that allow us to carry out integrated operations extending from power generation to power sales, we will be able to earn the trust, and meet the expectations, of regional society as well as of our customers.

We look forward to supplying clean, stable renewable energy to the region in a way that also helps reduce greenhouse gases by operating this biomass power plant built by Takuma and to deepen our partnership with local communities while bringing innovation to the infrastructure that underpins society by making effective use of unused lumber from nearby regions.

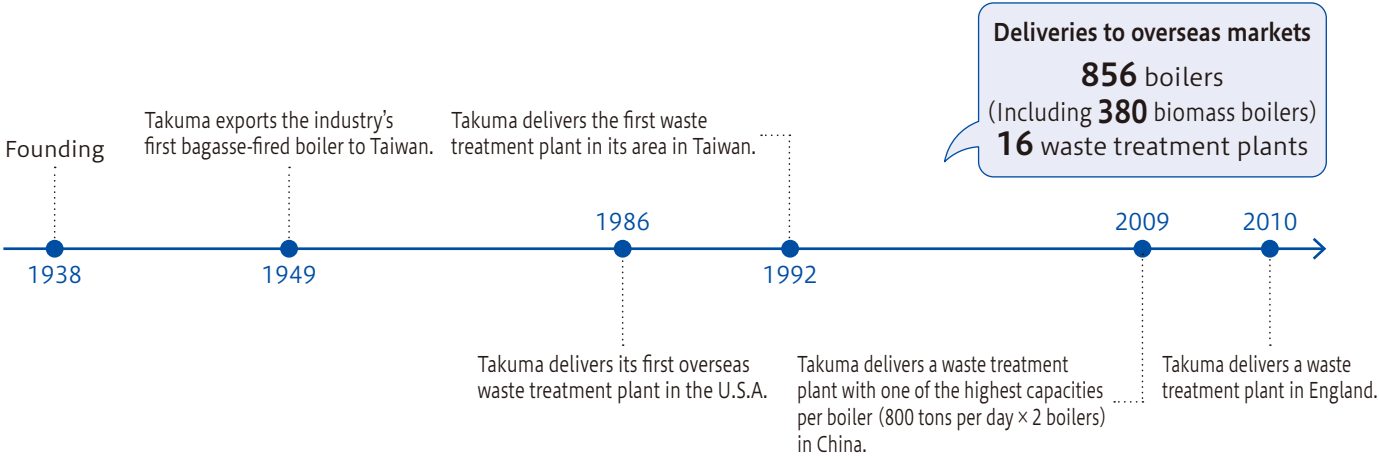
3.Overseas Business

Our overseas business began in 1949, when we exported the industry's first bagasse-fired boiler to Taiwan. During the subsequent 70 years, we have delivered more than 850 boilers to overseas customers. The combustion technologies we have developed since our founding can accommodate not only fossil fuels, but also special fuels such as bagasse, palm, and wood, and we have both supported local industry by providing a source of power for manufacturing facilities in various countries and promoted effective use of renewable resources.

We have also delivered 16 waste treatment plants to customers in the U.S.A., Taiwan, China, South Korea, and England. Takuma technology allows these facilities to incinerate a variety of waste products. We help these customers achieve stable operation over the long term by providing optimal solutions for waste streams whose properties vary by country and region.

In recent years, biomass boilers have received new

attention from the dual standpoints of global warming prevention and energy policy based on international frameworks such as the Paris Agreement, and there is now a major trend toward using biomass as a source of power at scale. At the same time, the appropriate treatment of waste is becoming a particularly pressing issue in developing nations. The path to solutions is by no means a simple one as a result of the complexities of environmental awareness, legal structures, budgets, and other considerations, but there is no doubt that plants provided by Takuma make a valuable contribution to achieve the Sustainable Development Goals (SDGs) in a number of areas, including by providing "affordable and clean energy", aiding in the development of "sustainable cities and communities," and so on. We will continue to harness such products, which are the embodiment of Takuma's technologies, to support customers' businesses while contributing to international society.



Our Achievements



LuTsao Incineration Plant, ChaiYi County (Taiwan)

嘉義縣鹿草垃圾焚化廠

Facility	Treatment capacity
Waste incineration power plant	900 tons per day (450 tons per 24 hours × 2 units)
Completed	Power output
December 2001	28,000 kW (rated)
Treatment type	
Step grate stoker	



TSM Group (Thailand)

TSM Power Co., Ltd.
Thai Udonthani Power Co., Ltd.

Facility	Steam conditions (normal operation)
Biomass boiler plant (4 units)	150 tons per hour × 4.2 MPaG × 450°C × 2 units
Completed	170 tons per hour × 4.2 MPaG × 450°C × 2 units
2 units in November 2012, 2 units in January 2019	Fuel
	Bagasse
Combustion furnace type	
Traveling stoker	



Kenana Sugar Co., Ltd. (Sudan)



This bagasse-fired boiler plant was delivered to a customer in Sudan. Kenana Sugar, which was established in 1976, is a large company that manages integrated operations extending from sugarcane cultivation to sugar refining. The project was part of a national effort to take advantage of water from the Nile River and the area's extensive insolation to greenify the region and transform it into a grain-growing area.

Takuma contributed to regional development by delivering six boilers in 1981, followed by one boiler each in 1999 and 2004, while contending with challenges including the project's scale, demanding

Facility Completed	Biomass boiler plant (8 units) 6 units in 1981, 1 unit in March 1999, 1 unit in January 2004
Combustion furnace type	Traveling stoker
Steam conditions (normal operation)	113.4 tons per hour × 3.2 MPaG × 360°C × 6 units 136 tons per hour × 3.1 MPaG × 370°C × 2 units
Fuel	Bagasse

requirements, a completely different culture, and a harsh work environment in distant Africa during a time when communications were limited. A number of national presidents and other distinguished guests from various countries attended an elaborate dedication ceremony following the project's completion in 1981.



A 10-Sudan-pound note featuring a depiction of Kenana Sugar to commemorate the facility's completion

Lakeside Energy from Waste Ltd. (UK)



We delivered this waste incineration power plant in 2010 to a customer in Slough, a suburb of London, England. The company's website introduces the facility as a plant that is large enough to supply electricity to power all 86,267 households in the area by processing 450,000 tons of waste to generate 306 GWh of power every year.

Overseas, private-sector companies are often responsible

Facility Completed	Waste incineration power plant
Treatment type	January 2010
Treatment capacity	Step grate stoker
Power output	1,370 tons per day (685 tons per 24 hours × 2 units) 36,650 kW (rated)

for waste treatment, including municipal solid waste, at facilities such as this one. Durable plants that can operate at high efficiency in a stable manner over the long term are essential in order to improve the profitability of revenue such as processing fees and power sales when such plants are operated as a business, and this facility has earned high praise in this regard.



Message



Yasuo Takamatsu

Deputy Executive Manager
International Division
Takuma Co., Ltd.

The eight boilers we have delivered to Kenana Sugar continue to operate today, close to 40 years after the first units were delivered. Ten years has passed since we delivered the facility we completed in 2010 for Lakeside EfW, and that plant, too, continues to operate smoothly and earn high praise from the customer as Europe's No. 1 EfW plant. Our products contribute to our customers' businesses and to society by operating in a stable manner over the long term, and their performance is our greatest pride. Although the overseas business poses unique challenges that must be met before a plant can be delivered, I look forward to continuing our initiatives in this area as a bridge to the future, based on the willingness to embrace difficult challenges that we inherit from those who came before us and the experience we have accumulated to date.

Main Recent Projects

The following are the main plants supplied by Takuma during FY2019.

Municipal Solid Waste Treatment Plant Business

Primary equipment improvements



Yamaguchi City Incineration Plant

Project name

Yamaguchi City Incineration Plant
Primary Equipment Improvement Project

Capacity

Incineration facility: 220 tons per day (110 tons per 24 hours × 2 units)
Power output: 3,600 kW

Location

Yamaguchi Prefecture

Water Treatment Plant Business



Tokyo Kasai Water Reclamation Center

Project name

Tokyo Kasai Water Reclamation Center Sludge
Concentration Tank No. 4
Machinery and Equipment Improvement Project

Equipment capacity and specifications

Project overview: Update work on a sludge scraper
Type: Center-drive post type
Capacity: $\phi 28,000$ mm × 1 unit

Location

Tokyo

Energy Plant Business



CEPO Handa Biomass Power Co., Ltd.

Project name

CEPO Handa Biomass Power Plant
Construction Project

Equipment capacity and specifications

Fuel: PKS, wood fuel
Steam conditions (normal operation):
190 tons per hour × 6.2 MPaG × 480°C
Power output: 50,000 kW

Location

Aichi Prefecture



SALA e POWER Co., Ltd.

Project name

SALA e POWER
Biomass Power Plant Construction Project

Equipment capacity and specifications

Fuel: PKS, wood fuel, wood pellets
Steam conditions (normal operation):
85 tons per hour × 6.0 MPaG × 480°C
Power output: 22,100 kW

Location

Aichi Prefecture



Aoki Environmental Enterprise Co., Ltd.

Project name

Waste Incineration Power Plant
Construction Project

Equipment capacity and specifications

Treated waste type: Industrial waste
Treatment capacity: 93.6 tons per day
Power output: 1,050 kW

Location

Niigata Prefecture



Uji City Higashiuji Sewage Treatment Plant

Project name

Uji City Higashiuji Sewage Treatment Plant
Water Treatment Equipment Project No. 17

Equipment capacity and specifications

Project overview: Modification to early sedimentation,
reaction tank, final sedimentation,
disinfection, and water equipment
Capacity treatment volume: 3,650 m³ per day
Treatment method:
Biological nitrogen removal with agglomerating agent
Specifications: Aeration system, sludge scraper, etc.

Location

Kyoto Prefecture



Osaka City Hokko Landfill site

Project name

Hokko Landfill site
Wastewater Treatment Facility
Restoration Work (Phase 2)

Equipment capacity and specifications

Project overview: Work to restore operation to a wastewater
treatment facility that was damaged
by Typhoon 21 in September 2018
Capacity treatment volume: 3,000 m³ per hour
Treatment method:
Coagulating sedimentation
Specifications: Turbid water treatment system

Location

Osaka Prefecture



Kochi Prefecture Urado Bay Eastern Basin Takasu Sewage Treatment Plant

Project name

Urado Bay Eastern Basin Takasu Sewage
Treatment Plant
Sludge Treatment System Construction Part 15

Equipment capacity and specifications

Project overview: Dehydrator expansion work
Type: Pressurized screw press dehydrator
Treatment capacity: 225 kg-DS per hour

Location

Kochi Prefecture



SARA Inc.

Project name

Waste Gas Purification System
Installation Project

Equipment capacity and specifications

Equipment overview: Equipment to supply CO₂
Waste gas source: Incineration waste gas from
biomass power plant
CO₂ supply volume: 2,750 kg of CO₂ per hour

Location

Okayama Prefecture

Hayashi Plywood Industrial Co., Ltd.

Project name

Biomass Power Plant Construction Project

Equipment capacity and specifications

Fuel: Wood fuel
Steam conditions (normal operation):
31 tons per hour × 5.98 MPaG × 415°C
Power output: 6,800 kW

Location

Kyoto Prefecture

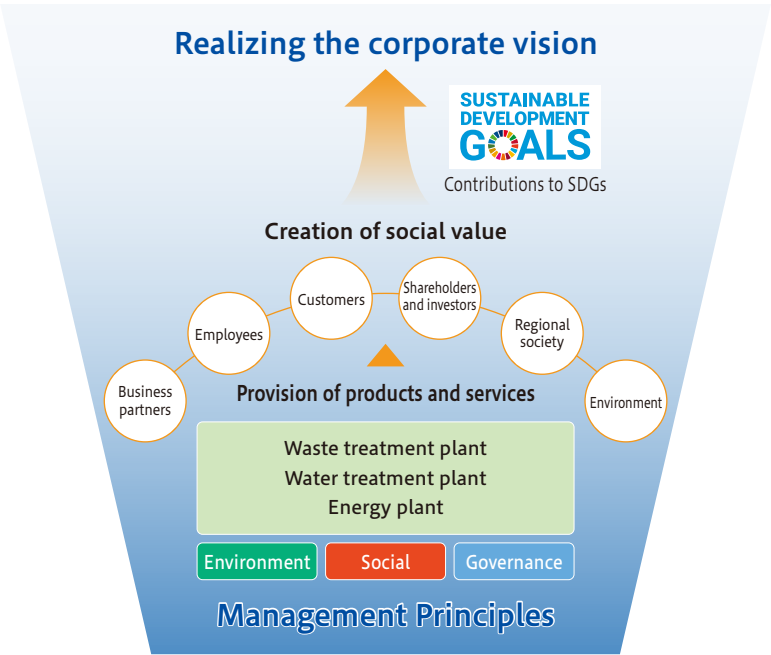
CSR Activities for the Future

The Takuma Group's relationship with society

Basic approach

Takuma provides products and services centered on environmental and energy plants on the basis of its environmental, social, and governance initiatives. We believe that the entire range of business activities pursued by Takuma with regard to social requirements, expectations, and responsibility in this way collectively constitute CSR.

The sustainability of society has been called into question in recent years in a trend that is illustrated by the very phrase Sustainability Development Goals (SDGs). Going forward, Takuma will continue to strive to realize a sustainable society along with the Group's Management Principles and corporate vision by adding new social value to its products and services and by contributing to the resolution of social issues.



Environmental, social, and governance initiatives

As Takuma looks toward the future and strives to become a sustainable company, we choose key issues involving the environment, society, and governance based on the GRI Standards (a set of international guidelines on corporate sustainability reporting) and ISO 26000 and then work to resolve them. Each department discussed CSR issues in line with those key issues and developed its own action program. At the end of the year, these departments then conducted self-evaluations to assess how well they had implemented their programs.

The table below outlines some of the results of that process.

	ISO 26000 core subjects	Key issue	CSR issue	Department	FY2019 action program	
					Action plan	Self-evaluation of results
ENVIRONMENT Environmental Initiatives Page 33	Environment	Contributions to resolving environmental problems	Initiatives to save energy and reduce CO ₂ emissions	Engineering Division	Enable the optimization of power sales volume without regard to individual skills and abilities by building an operational plan optimization system.	We were able to increase power sales volume by using system-generated operational plans and comparing them to power sales volume for operational plans proposed by human workers.
				Engineering Division	Actively contribute to the resolution of environmental problems by pursuing measures to save energy and reduce CO ₂ emissions at plants during the planning stage.	We actively proposed improvements incorporating measures to save energy and reduce CO ₂ emissions.
SOCIAL Social Initiatives Page 37	Consumer issues	Safety and quality of products and services	Design of facilities that satisfy customers through safe, stable operation	Engineering Division	Carry out safety-focused design and design review processes so as to eliminate accidents at facilities after they have been transferred to customers. Additionally, utilize review lists and checklists, and carry out performance verifications during plant commissioning in order to achieve stable operation of facilities after handover.	There were no instances of additional work related to safety measures being carried out at facilities that have been transferred to customers or of problems related to stable operation as of the time of transfer.
	Labour practices and human rights	Appropriate employment relationships and labor conditions (including safety and health, social dialog, etc.)	Initiatives to establish appropriate working conditions and healthy work-life balance	General Affairs / Human Resources Division	Reduce overtime work, for example by streamlining operations and leveling employee workloads after having all personnel take an operational inventory and put in place an environment in which employees can actively take time off.	We completed an operational inventory, developed an associated manual, and worked to level employees' workloads. As a result, we were able to achieve the goal.
			Occupational health and safety initiatives in areas such as testing	Engineering Division	With regard to testing and related operations, in addition to verifying safety measures at progress management meetings that are held on a regular basis, prevent occupational accidents by thoroughly carrying out advance reviews and reporting of safety and hygiene, for example by using work journals and checklists.	In addition to verifying safety measures, for example at meetings, we prevented occupational accidents by developing checklists related to safe work and by thoroughly carrying out advance reviews and reporting.
GOVERNANCE Governance Initiatives Page 47	Community involvement and development	Contribution to society	Contribution to the communities around our worksites	Marketing Division	Carry out community service activities that align with issues in the areas around worksites.	Employees participated in volunteer clean-up activities in June in areas around worksites.
	Organizational governance	Compliance	Cultivation of a robust corporate culture	CSR Division	Share formulations of Takuma's basic approach, for example Management Principles, the Takuma Group Ethics Charter, and the Takuma Group Code of Conduct, and work to ensure that they permeate the organization and take hold.	We highlighted the Management Principles, the Takuma Group Ethics Charter, and the Takuma Group Code of Conduct in the CSR Report and in internal education and worked to ensure that they permeate the organization and take hold.
		Risk management	Study and implementation of risk management plans	Marketing Division	Formulate risk reduction measures by working with related departments at Takuma to identify and visualize risks before and after orders are received.	We conducted negotiations with customers to avoid and mitigate identified risks during the pre-order stage and continued to put in place structures for managing various risks during the post-order stage.
		Corporate governance	Support for measures to increase the effectiveness of the Board of Directors	Planning Division	Conduct a questionnaire targeting directors in order to increase the effectiveness of the Board of Directors. Evaluate, analyze, and report on the results to facilitate useful discussions at Board of Directors meetings.	We conducted a questionnaire targeting directors and held interviews, evaluated and analyzed the results, and reported them to the Board of Directors.
	Fair operating practices	Compliance with the Antimonopoly Act	Assurance of understanding of, and compliance with, the Antimonopoly Act	Marketing Division	Offer training on the Antimonopoly Act and continue to implement the Regulations Concerning Management of the Pledge of Antimonopoly Act Compliance.	We offered training on the provisions of the Antimonopoly Act and worked to ensure that employees understand the "Regulations Concerning Management of the Pledge of Antimonopoly Act Compliance" and the "Regulations on Managing Contact with Competitors' Sales Departments" and that they will comply with those and other regulations.

Creating social value through corporate activities and businesses

Along with trusting relationships with customers and other stakeholders, our technical capabilities and expertise in the areas of the environment and energy that we have accumulated over many years based on our Management Principles lie at the heart of our business activities and comprise a core strength that allows us to make a broad contribution to society. Takuma creates value for, and contributes to, society through corporate activities and businesses that draw on these strengths. This section introduces some examples.

Helping reduce CO₂ emissions

We help reduce CO₂ emissions by burning waste and biomass fuels, recovering the heat that is produced, and using it to generate electricity. (See page 34 for details.)

Clean centers as regional facilities

Imabari City Waste Management Center (informally known as "Bari-Clean"), which was delivered by Takuma, is a facility that contributes to its region in many ways, for example by hosting environmental events attended by local residents and by serving as a shelter in times of disaster.



Bari-Clean Beautification Project (Planting flower beds)



Shelter training exercise

Revitalizing the region through local generation and consumption of power

The Takuma Group's Takuma Energy strives to increase the added value of power plants while revitalizing the regions in which those plants operate by supplying power generated by waste power plants and biomass power plants delivered by Takuma to local communities.

Communities served Kizugawa, Kyoto Prefecture Hokutan region, Hyogo Prefecture
Fujisawa, Kanagawa Prefecture Kasaoka, Okayama Prefecture

Constructing a new building (Training Center) at Takuma's head office

Takuma's new building which is scheduled to be completed in October 2020, will help realize a sustainable society by augmenting ordinary office functionality with a variety of features, including use of Cross-Laminated Timber (CLT) and plant remote monitoring and operational support.

Facility features

- Enhanced plant remote monitoring and operational support
- Effective use of Japanese lumber, including CLT and fire-resistant laminated lumber, as building materials
- Disaster prevention functionality for the region, including a high level of fire and seismic resistance
- Employee training and skill development



The Environment

Basic Environmental Policy

Our company has established the “Basic Environmental Policy” as follows, aiming to ensure employees contribute to global environmental conservation. This basic 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

1. All Takuma Group companies will recognize the importance of maintaining a balance between preservation of the environment and business activities.
2. 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.
3. Promote development of better technologies and products for society that preserve the environment.
4. Address resource conservation, energy efficiency, recycling, and minimization of waste generated by all business activities.
5. Enhance employees' awareness and understanding about the importance of preserving the environment through environmental education and internal promotional activities.
6. Provide the community with information on the activities of Takuma to preserve the environment.

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.



Harima Factory

Takuma's CO₂ Emission Reduction Technologies

We convert waste/biomass into energy and reduce CO₂ emissions!

In 1 year, Takuma products
cut about **5 million tons!**



**Equivalent to
the annual CO₂ emissions
from the population of Osaka**

Assuming per-capita CO₂ emissions of 1.92 tons
(household emissions for FY2018)

Source: Greenhouse Gas Inventory Office of Japan



Reducing CO₂ emission with biomass power plants

The sugar industry is an example of an industry that generates power using biomass. Factories that make sugar produce large quantities of residue from sugarcane, the raw material used to make sugar. Sugarcane is crushed into a pulp, and sugar is extracted in a mill. The remaining fiber is called bagasse and can be used as plant fuel. The steam and electricity generated by the plant are used as sources of heat for the milling process and of power for plant operations, while surplus power is sold to a power company. The amount of power generated at sugar factories has grown greatly, with examples of single plant that generate 50,000 kW.

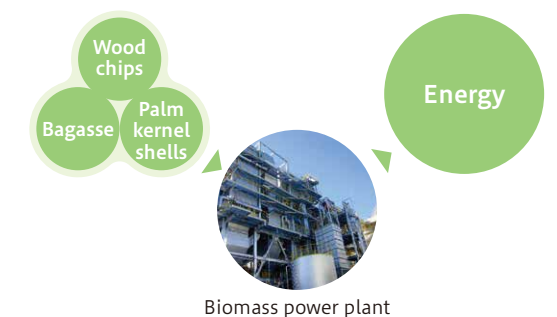
In 1 year,
cut approx.
4 million tons!

CO₂ emission reduction achieved by
Takuma's biomass power plants

(as of end of FY2019)

• How does biomass power generation help reduce CO₂ emissions?

Biomass is any recyclable organic material derived from a living organism, but does not include fossil fuels, such as oil and coal. For example, even though CO₂ is emitted when wood chips are incinerated, this CO₂ is offset as it is absorbed through photosynthesis in the growth process of trees, thus there is no increase in CO₂ in the atmosphere. Biomass power generation helps reduce the amount of electricity generated from fossil resources, helping lower CO₂ emissions.



CO₂ emission reduction from waste incineration plants

Waste, is an important source of energy. Approx. 500 kW** of power can be generated from one ton of waste. In Europe and the Americas, waste incineration plants are often called Energy from Waste (EfW) plants, and recovering energy from waste has become the norm. Waste means “resource.” Takuma is seeking to be the best in the world with our technologies to convert waste into energy and reduce CO₂ emissions.

** Presumes waste with a calorific value of 8,800 kJ per kg and a plant with electrical efficiency of 20%



In 1 year,
cut approx.
1 million tons!

CO₂ emission reduction achieved by Takuma's
municipal solid waste incineration plants

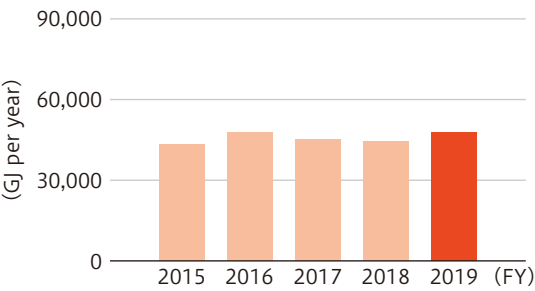
(as of end of FY2019)

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.

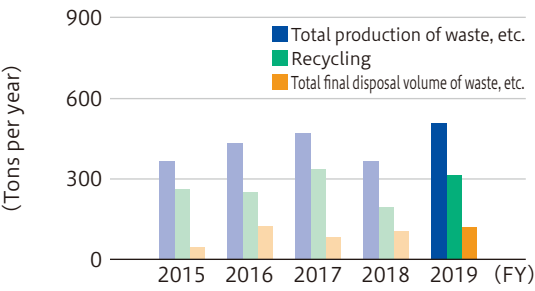
Environmental data (non-consolidated)

Total energy usage



The total energy usage of the fuel and the electricity consumed at Takuma during FY2019 rose slightly compared to FY2018 levels. We will continue to promote energy savings from here on out.

Total production of waste, etc.



Although total production of waste, etc., grew during FY2019 compared to FY2018, total final disposal volume of waste, etc., grew only slightly thanks to appropriate treatment such as recycling. Going forward, we will work to 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.

PRTR target substance emissions (non-consolidated)

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)

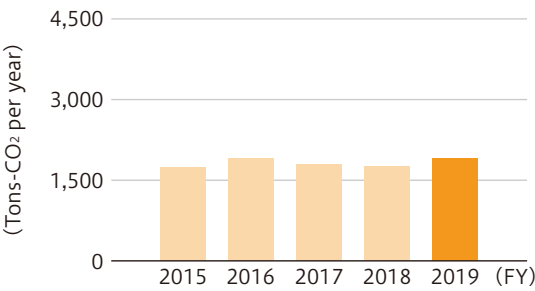
FY	2015	2016	2017	2018	2019
Emissions (tons per year)	0.42	0.43	0.45	0.27	0.08

Toluene (CAS No. 108-88-3)

FY	2015	2016	2017	2018	2019
Emissions (tons per year)	0.26	0.09	0.07	0.06	0.09

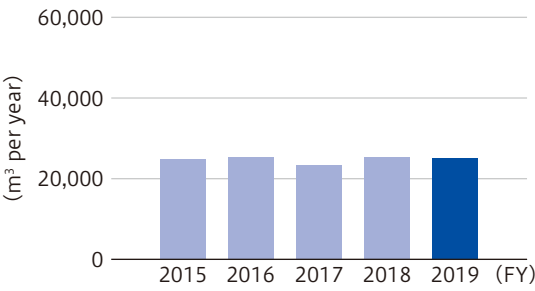
These materials are used for antirust painting of boiler structures and so on.

Greenhouse gas emissions



The greenhouse gas emitted by Takuma is limited to carbon dioxide (CO2). The amount of CO2 emissions in FY2019 rose slightly compared to FY2018 levels. We will continue striving to reduce CO2 emissions.

Water resource inputs



Water consumption during FY2019 fell slightly compared to FY2018. We will continue to work to lower our water use.

Ethylbenzene (CAS No. 100-41-4)

FY	2015	2016	2017	2018	2019
Emissions (tons per year)	0.34	0.14	0.96	0.98	1.34

Xylene (CAS No. 1330-20-7)

FY	2015	2016	2017	2018	2019
Emissions (tons per year)	2.22	2.85	1.18	1.12	1.47

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.

Environmental conservation cost

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. ("Environmental Accounting Guidelines")

Item	Investment (thousand JPY)	Costs (thousand JPY)
Business area costs		
Pollution prevention costs	3,764	22,307
Global environmental conservation costs	3,125	19,318
Resource circulation costs	—	14,277
Administration costs	—	36,120
R&D costs	14,301	1,637,750
Social activity costs	—	12,863
Total	21,190	1,742,635

Environmental conservation effect

Environmental conservation benefit is measured in physical units and is the benefit 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. ("Environmental Accounting Guidelines")

Item	FY2018	FY2019
(1) Environmental conservation benefit related to resources input into business activities		
Total energy input volume (GJ)	95,047	100,973
Input volume of water (m³)	48,034	47,340
(2) Environmental conservation benefit related to waste or environmental impact originating from business activities		
Volume of greenhouse gas emissions (tons-CO2)	3,977	4,273
Total waste emissions volume (tons)	934	1,047
Final waste disposal volume (tons)	150	155
Wastewater volume (m³)	48,034	47,340
BOD emissions (kg)	2,565	2,567
COD emissions (kg)	2,747	2,760
T-N emissions (kg)	693	706
T-P emissions (kg)	121	125

Eco-efficiency

Even as total environmental impacts must be reduced, it is necessary from a business management standpoint to pursue environmental initiatives that are characterized by a high degree of economic efficiency. We report eco-efficiency using an index calculated in accordance with examples provided by the Ministry of the Environment in its Environmental Performance Indicators Guidelines for Organizations.

At the Takuma Group, we calculate eco-efficiency as the ratio of consolidated net sales to greenhouse gas emissions. In FY2019, this value improved slightly compared to FY2018.

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.

Scope of data collected

Period covered: April 1, 2019, to March 31, 2020

Companies targeted:

12 domestic companies

- 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.
- Takuma Plant Service Co., Ltd.

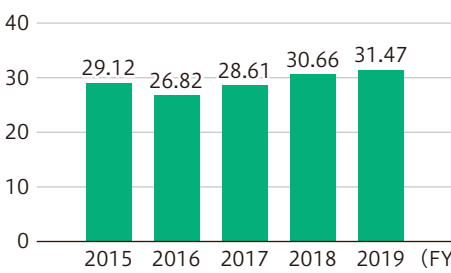
2 overseas companies

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

The Takuma Group's definition of eco-efficiency

Consolidated net sales (million JPY)
Greenhouse gas emissions (tons-CO2)

Eco-efficiency



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 the 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 employees' skills and creating workplaces where employees can feel engaged and motivated while working over the long term are top priorities for Takuma.

We reorganized our Human Resources Department in April 2020 to better address manpower shortages, develop employees' skills, and realize workstyle reform, work-life balance, and diversity. As part of those changes, new Human Resources Development and Office Support sections were created to develop workplace environments that value people so that employees can feel more motivated and better take advantage of their skills.

Employee data *As of March 31, 2020

Number of employees	875 (Including 805 men and 70 women)
Average age	43.2
Average years of service	15.5
Attrition rate	1.6% (past 3 years)



Employee retention programs

1. Workstyle reform initiatives

1 Initiatives related to improving productivity and streamlining operations

- Reassessing workflows
 - Streamlining and improving operations
 - Utilizing chat tools
 - Utilizing videoconferencing systems
 - Automating work using RPA*
- *RPA: Robotic process automation

2 Putting in place an environment that encourages employees to take annual paid leave

Reflecting our respect for employees' individuality, we treat simultaneous leave as special leave in line with our employment rules, which means it does not count against employees' annual paid leave. In addition, we've put in place an environment that encourages mutual understanding and cooperation among employees while making it easy for all employees to take annual paid leave by having team members announce in advance their plans to take five days of allotted annual paid leave each year.

【Average number of days of annual paid leave, number of annual public holidays and leave days, and number of special leave days (unit: days)】

	FY2015	FY2016	FY2017	FY2018	FY2019
Average days of annual paid leave taken	7.9	6.5	6.7	8.7	8.9
Annual public holidays and leave days (except annual paid leave)	129	129	128	129	132
Of which, special simultaneous leave days	11	11	12	13	9

2. Initiatives related to work-life balance

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.

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



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

We have children ages 2, 6, and 10, and we both work. Until now, when one of our kids gets sick, we've used the childcare program for kids recovering from sickness, and when that's not available, we've adjusted our schedules or used annual paid leave or half-day paid leave. The availability of a work-from-home option has been extremely helpful for our family. (Main career track male employee in his 40s)

3. Initiatives that promote diversity

1 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. Our goal is to increase 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, to 20, which would be double the corresponding number as of March 31, 2016.

【Number of newly hired employees over the last 5 years by gender
(Figures in parentheses: number of newly hired graduates for main career track positions)】

	FY2015	FY2016	FY2017	FY2018	FY2019
Men	26(19)	27(18)	28(19)	34(17)	38(16)
Women	2(1)	2(1)	2(2)	3(2)	3(2)
Total	28(20)	29(19)	30(21)	37(19)	41(18)



2 Initiatives to increased participation by disabled individuals

We added the Office Support Section to the Human Resources Department to provide work assistance and management for disabled individuals and to aid in the "outsourcing" of various internal tasks to these workers as a way to boost employment of disabled individuals. Individuals with disabilities, including serious or mental disabilities, do cleaning and other light work to assist Takuma employees.

4. Employee health initiatives

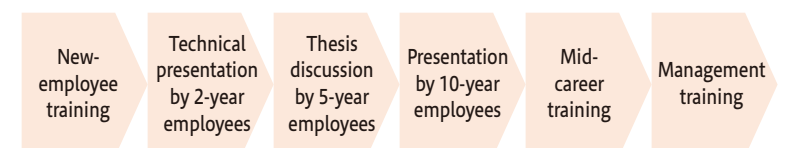
- Stress checks
- Lifestyle disease checkups (added to regular checkups)
- Cancer screening and stomach tests (for interested employees)
- Health consultations by industrial physicians (once a month)
- Counseling by clinical psychologists (twice a month)
- Interviews and follow-up conversations with employees who are working unusually long hours

Initiatives to help develop employee skills and boost motivation

1. Educational and training programs

<Grade-specific educational programs>

We're working to enhance employee ability, technological skills, and management capability by offering grade-specific educational programs, from new hires to management candidates.



<Technical training sessions>

We hold several technical training sessions a year in order to increase employees' technical knowledge, including lectures by university professors and outside researchers and presentations by Takuma engineering employees about their work responsibilities and research themes.

<Support for skill development>

We reimburse employees for the cost of acquiring various licenses and offer incentives for earning professional certifications.

<Help for building language skills>

To improve employees' language skills, we host the TOEIC test twice a year and offer incentives to employees who earn a high score.



Working with Our Employees

2. Career development programs

- 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.

3. In-house commendation system

We hold an award ceremony commemorating the founding of the company every year on June 10, the date on which Takuma was founded, to recognize employees who have given exceptional service.

- Takuma Prize: Employees who have helped improve operations or who have exceptional achievements in community service
- Takuma Technical Review Outstanding Paper Award
- Invention and idea commendations: Employees who have earned patents or other intellectual property rights
- Qualifications acquisition commendations, patent commendations
- Safety and Health Award in Construction Division: Foremen at sites without accidents or damage
- Length-of-Service Award (Every 5 years of service after 20 years)



Social welfare programs

We have introduced a number of social welfare programs, including a cafeteria plan and employee shareholder association, designed to meet a diverse array of employee needs.

Employee feedback (from Takuma's website)



Question: Why did you decide to join Takuma?

- I felt it would be appealing to work for a business that plays a supporting role in many people's lives behind the scenes.
- When I participated in an internship at Takuma as a student, I saw how older colleagues were engaged in their jobs, and I realized I'd like to work here, too.
- I liked the way Takuma gives young people lots of responsibility.
- I'm able to put what I learned as a student to use.

Question: What do you find motivating about your job?

- The scale of the facilities we build, for example power plants I've been involved with that provide enough power for tens of thousands of people's homes
- An environment that lets you embrace whatever challenges you're willing to set for yourself
- Expressions of joy from customers when a plant I helped build starts operating... they're enough to make me forget all the hard work that went into the facility!
- The ability to gain practical experience from a young age

Question: What are your future goals?

- To become an engineer who earns the trust of others, both inside and outside the company
- To leave concrete expressions of my own experience and skill that can be passed down to younger colleagues
- To strive daily to become a manufacturing professional
- To consistently present optimal proposals to customers despite frequent changes in applicable laws and regulations

Efforts for Occupational Safety and Health

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 FY2020: for construction sites, eliminating accidents that result in

work stoppages (of four or more days); for branches, pursuing a thorough program of safety and health education, ensuring adherence to safety inspection guidelines, and implementing the branch safety patrol plan; and for the Safety and Health Cooperative Association, strengthening collaboration with partner companies. We will work to revitalize safety and health activities throughout the company by carrying out that role.

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's 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 potential hazards and risk factors identified by those inspections before work begins.

• FY2019

Number of safety inspections done: 212



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 FY2019

By Safety and Health Committee (members, advisors) : 95
By Safety Control Department : 236
By construction division : 362



Safety patrols



Safety lectures

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.

As indicated at right, more than 19,000 trainees have passed the completion exam. We are involved in a variety of initiatives to put in place mechanisms for preventing accidents, including by assigning workers with extensive knowledge in areas such as safety-related laws and ordinances to individual construction sites.

• April 2004 to March 2020

Cumulative number of trainees : 35,682
Number of trainees passing the completion exam : 19,099



Head Office venue



Tokyo Branch venue

Efforts for Occupational Safety and Health

Safety and Health Promotion Meeting

Takuma holds a Safety and Health Promotion Meeting to bring workers with safety- and health-related responsibilities together to improve and share their safety and health awareness with the goal of ensuring worker safety and health and promoting the development of a pleasant work environment. During FY2019, we presented awards to businesses that helped achieve a zero-accident record at our worksites and hosted a guest lecture entitled,



Presentation of a zero-accident record award

“Creating True Safety in the Context of Japanese Honne and Tatemaie.” In addition, safety and health partner companies gave presentations on their safety and health policies and goals, and all participants closed the meeting by chanting the FY2019 slogan and pledging to continue to work toward thorough safety and health management by utilizing TK-COHSMS.

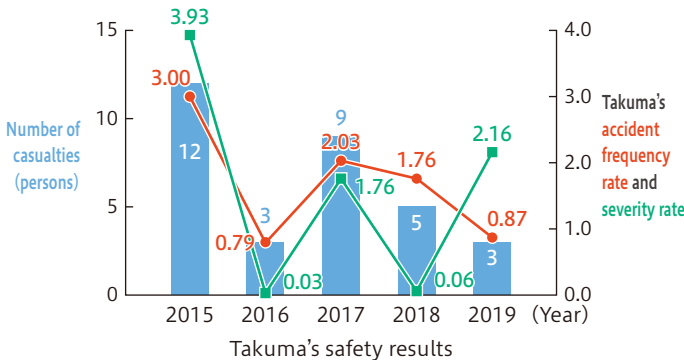


Pointing and chanting of the slogan by all participants

Takuma's safety results in recent years
(Number of casualties, accident frequency rate, and accident severity rate)

Although the total number of worked hours in 2019 rose about 22% from the previous year, the total number of occupational accidents and accidents leading to missed workdays fell compared to 2018. However, the accident severity rate significantly 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.



Year	Accident frequency rate	Accident severity rate
2015	0.92	0.21
2016	0.64	0.11
2017	0.81	0.18
2018	1.09	0.30
2019	1.69	0.29

Reference: Nationwide average accident frequency and severity rates for the construction industry (general construction)

TOPICS President Sakaguchi of SEIKO Co., Ltd., honored at Construction Station Ginosya Kensyo (Engineer Awards)

In October 2019, President Michiko Sakaguchi of SEIKO Co., Ltd., a partner company in the Sludge Incinerator Redevelopment Project at the Takuma-built Tamagawa Joryu Water Reclamation Center, received the Engineering Excellence Award at the 27th CCI Tokyo Construction Station Ginosya Kensyo (Engineer Awards).

The accolade is conferred by the Tokyo Metropolitan Government in recognition of exceptional engineers who utilize advanced skills and specialized knowledge, exhibit leadership at construction stations, and work to improve safety and quality through better communication.

The honor is especially meaningful for construction sites where a variety of partner companies lend assistance on a daily basis. Going forward, Takuma will continue to build plants in close partnership with all stakeholders, including partner companies, in order to improve safety and quality.



Ms. Michiko Sakaguchi (center)

Message from a partner company



Mr. Tetsuyuki Okabayashi
Safety Quality Training
Department General Manager
Executive Officer
Asahi Synchrotech Co., Ltd.

We do a lot of work for Takuma as a construction management company that focuses primarily on pipe equipment in plants. Last fiscal year, we were proud to work closely with Takuma on the building of a number of plants, including the CEPO Handa Biomass Power Plant, the Ako Plant of Nihonkaisui, the Aoki Environmental Enterprise Energy from Waste Plant, and the Hikarigaoka Incineration Plant.

With regard to safety management, we've put in place construction structures based on what we learned at site manager training offered by Takuma, and we work to identify potential hazards when compiling SSAs (safe work procedures that are created by subcontractors before starting each day's work). We develop construction methods that are designed to reduce potential hazards through risk assessment based on a careful consideration of how to transport materials at the site and how to set up temporary staging, before work begins.

Then we strive to perform work safely at the site using those predetermined construction methods while exercising care with regard to the progress of other companies' work and mixed-company work, all under the umbrella of Takuma's safety management.

Additionally, our sales managers and Safety Management Group conduct safety patrols at least once a month. Those patrols assess conditions at the site, check for problems in terms of safety management and construction management, and meet with the employees responsible for supervising work to take corrective action to address any issues that were identified.

We look forward in the future to improving our employees' construction management skills with the goal of eliminating accidents by offering supervisor training and to working alongside Takuma to implement safety management and construction management at worksites.

From the Takuma department responsible for the project



Jyunichi Hashimoto
General Manager
Construction Dept. (Tokyo)
Construction Center
Takuma Co., Ltd.

We turn to Asahi Synchrotech Co., Ltd., to carry out pipe equipment installation work at numerous construction projects, including Takuma waste incineration facilities and biomass power plants. In the area of safety and health activities, Asahi Synchrotech is an associate safety and health partner company, and we're deeply grateful for the enormous cooperation and hard work that they bring to our projects.

About seven years ago, I worked as the site manager at the Joso Environmental Center Third Waste Treatment Facility Construction Project. The site, which uses three pyrolytic gasification melting furnaces to treat waste, was characterized by not only a large number of pieces of equipment, but also an extensive amount of work associated with pipe equipment installation. It was an extremely long project, but we were able to complete it without a single accident. Out of the many construction projects we've worked with Asahi Synchrotech on, there have been only two non-lost-time incidents, and overall the company has an extremely successful track record.

Safety management is generally considered to consist of risk management, and the risk of an accident occurring rises as projects involve more time and people, increasing the factors and opportunities that could trigger an accident. In theory, accidents can be prevented by identifying these risk factors and eliminating them in advance through safety and health management at the site. Although it's easy to formulate this approach on paper, in fact its successful implementation requires having everyone involved with the construction, including all contractors, at a site where conditions change daily carefully examine the site and develop effective measures accordingly as they painstakingly and methodically utilize their knowledge to eliminate risk one day at a time.

We look forward to having Asahi Synchrotech continue its basic stance toward safety and health management in the future as the company cooperates with Takuma on safety management so that we can achieve our goal of eliminating accidents in all projects.

Initiatives for Product Quality

The amount of attention paid by consumers (stakeholders) to quality in a wide range of fields, including manufacturing and services, has been growing in recent years. This section introduces Takuma initiatives that are designed to provide safe, confidence-inspiring products and plants.

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 of both standards (the 2015 versions).

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 each individual's ability to create a good plant in each process from planning up to delivery (sales, planning, design, procurement, manufacture, construction, and management).

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.

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 resources development and ensuring skills are passed down to younger employees)

Specific initiatives for improving quality

• Organizational initiatives for improving quality

As an organizational initiative that's designed to boost product quality, we have each department establish quality targets at the beginning of the year and then provide regular reports (twice a year) on progress towards achieving those goals at QM Committee meetings (quality management reviews).

As part of the transition to ISO 9001:2015, we're working to further improve quality by identifying an effort to clarify and address risks and opportunities as a key quality goal and evaluating the effectiveness of that effort.

• Internal quality audits

In addition to increasing the precision of operations by standardizing operating procedures in each department's processes, we are improving operations as necessary by carrying out an internal quality audit of each department to verify the status of quality management system operation.

Internal quality audits are carried out regularly by employees who have been certified as internal auditors after completing internal quality auditor training seminars offered by instructors from an outside organization. At the training seminars, employees master content ranging from basic knowledge about ISO 9001 to specific methods for conducting internal audits.

• Improving the employees' individual operational skills

To improve employees' individual operational skills, we have created an operational skill achievement checklist that identifies the skills required by personnel in each process for use in regular assessments, and we are reviewing the targets we have chosen.

• Quality control and process reviews

Quality control is an important measure that allows us to provide exceptional products and plants.

We take action (improvement measures) as outlined by a manual (standard) in the event a non-conforming product is discovered, but even if an issue doesn't lead to a non-conforming product, we conduct a review as a preventive measure if there are processes that could have caused the issue.

Furthermore, we actively offer training to new business partners and retraining (instruction) for existing business partners to prevent defects in the products we purchase.

Customer satisfaction survey

Takuma has conducted an annual customer satisfaction survey since FY2007 to solicit the views of customers concerning products we have delivered as well as the Takuma employees they worked with. We use that information to improve quality and service.

First, we administer questionnaires targeting customers who had construction work done by asking them to assess the overall experience after the work is completed, including the nature of the work performed, suitability of delivered equipment, and the level of service provided by Takuma staff.

Next, the QM Committee calculates a score based on the survey results as well as a report from the responsible department. The committee then analyzes the resulting data.

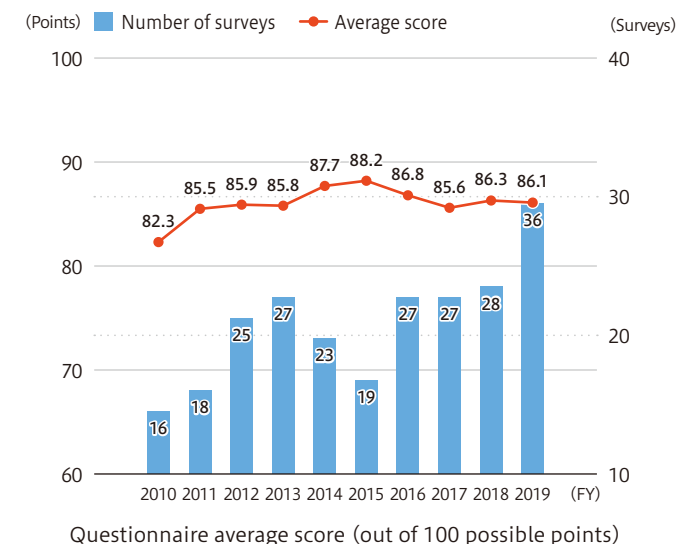
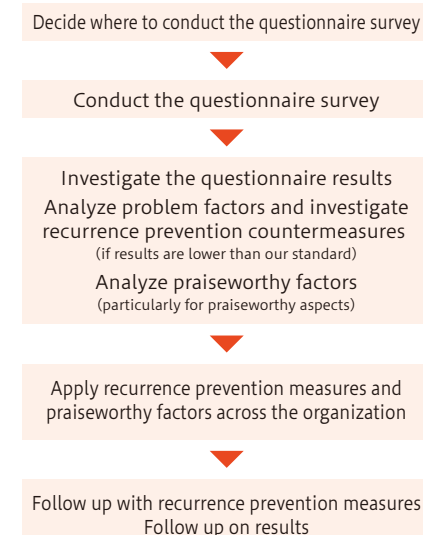
If there are any issues, for example if the score fails to meet our standards or if there are individual areas where the customer was dissatisfied, the QM Committee analyzes the cause of the problems based on interviews with the department in question and considers preventive measures. We also evaluate aspects of our products and services that receive especially high praise from customers and work to further enhance customer satisfaction by combining problem areas and praiseworthy areas and applying them horizontally across involved departments at the company.

For customers targeted for problem analysis and consideration of preventive measures based on the survey results, we also conduct a follow-up survey to discern whether those measures were reliably implemented and whether their level of satisfaction has indeed improved.

With scores averaging higher than 80 points for each of the last 10 years, the questionnaire demonstrates the effectiveness of our initiatives.

In this way, we work to improve product and plant quality so that all customers are satisfied.

Customer satisfaction survey process



Message



Mitsuo Ishiguro

Section 2, Quality Control Dept.
Construction Center
Takuma Co., Ltd.

Takuma's quality control team works to supply customers with safe, secure plants by means of reliable product testing and a rugged commissioning process.

Commissioning marks the first time a newly built plant will operate, so we strive to check safety and operate the facility with care as we adjust combustion and operation and verify that the plant provides the performance and operational characteristics required by the customer.

To ensure that the customer will be able to enjoy the benefits of plant operation with peace of mind over the long term once it has been transferred, we solicit feedback from the customer, compile operating documentation that uses photographs and explanatory figures to ensure content is easily understood, provide an explanation to the customer, and then operate, or provide guidance on, the plant.

We carry out commissioning work at sites day in and day out with the goal of supplying customers with plants that satisfy them.



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

Permits and registrations

• Head Office, branch offices and other business offices

Construction license (Minister of Land, Infrastructure, Transport and Tourism license, Special 27-6129, Special 29-6129)
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)

Participation in the Community

Reflecting their dedication to providing safe, reliable facilities that inspire peace of mind on the part of local residents, Takuma and its group companies work actively to disclose information in an appropriate manner, keep the areas around plants clean, participate in regional activities, and engage in exchanges with local residents.

This section introduces some of those efforts.



Children making drink coasters

Anan High Trust Co., Ltd.

At Ecopark-Anan, which we operate on a contract basis, we use the adjacent environmental learning facility to hold hands-on classes for parents and children and handicraft events on a regular basis.

More than 200 people attended a Summer Vacation Eco Event in July 2019, where they took tours of the plant, made drink coasters, and enjoyed other events.

Kurume High Trust Co., Ltd.

Kurume Municipal Environmental Interchange Plaza at Miyanojin Clean Center, which we operate on a contract basis, features the Miyanojin “Manabino” Biotope, a study facility designed around the theme of a natural environment that allows the appealing spaces of Kurume to be passed down to the next generation.

The biotope provides an environment inhabited by a variety of living organisms that live and reproduce in the watershed’s rivers and waterways and in the surrounding region. During FY2019, the facility held a learning event about artificial methods for keeping insects entitled “Mission: Keeping Fireflies!” in May with the goal of enabling fireflies of the species *Luciola cruciata* to live at the biotope.

Many parents brought their children to the event, where they enjoyed a talk by an expert about methods for keeping fireflies, viewed artificial firefly habitats, and experienced waterway management at the biotope (by catching spirogyra).



Children viewing artificial firefly habitats



Experiencing waterway management (catching spirogyra)



Report on facility operations

Suwako High Trust Co., Ltd.

Suwa Lakeside Clean Center (familiarily known as “eco Poppo”), which we operate on a contract basis, held eco Poppo Fellowship Festivals in July and November 2019 to communicate to area residents the role and importance of the facility along with information about the status of waste treatment and other aspects of its operation. The events were held in concert with the Neighborhood of the Lake Administrative Affairs Association.

The festivals were a success, drawing numerous visitors who enjoyed reports on facility operations, a prize drawing, fair stalls, and a chance to take a commemorative photograph with the facility’s mascot.

Iwate-Kenpoku Clean Co., Ltd.

In FY2018, Iwate-Kenpoku Clean entered into an “Agreement on Providing a Shelter and Wide-area Temporary-stay Facility” with the Village of Kunohe, where the company is located. Under the agreement, the company gives something back to the community by providing facilities it owns for use as shelters in the event of a natural disaster or other emergency.

The facility also participates in an annual fall festival—the Kunohe Industry, Art, and Culture Festival—that combines local industry, art, and culture. During FY2019, the event attracted local residents of all ages, who enjoyed a variety of activities, including quizzes on environmental topics, “fishing” for candy, and building models of an incinerator.



Quiz on environmental topics



Incinerator model

Contribution to Society

This page introduces some examples of Takuma’s community service activities.

Takuma Group coordinated cleanup activities

The Takuma Group orchestrates coordinated clean-up activities in the areas around its worksites each year as a way for volunteers to beautify the environment and contribute to society. During FY2019, a total of 570 employees participated in two such activities. The activities provided an opportunity for employees to think afresh about waste-related issues and their connection to the community. Going forward, the Takuma Group will continue this initiative.



Participation in the “Osaka Marathon ‘Cleanup’ Campaign”

In November 2019, volunteers from Operation & Maintenance Services Department 2 participated in the “Osaka Marathon ‘Cleanup’ Campaign,” a cleanup activity that is held every year as part of the Osaka Marathon. The activity brought together organizational, group, and individual volunteers to beautify public spaces throughout the city.



Blood donation campaign

Takuma supports blood donation activities through the Japanese Red Cross Society. During FY2019, we held a blood drive at the Harima Factory. Many employees participated on an ongoing basis, and some even received an award commemorating their 10th donation. We plan to continue this activity in the future.



WFP fundraising activities

Takuma serves on the Board of Trustees of the Japan Association for the World Food Programme, the official supporting partner of the World Food Programme in Japan. Each year, we provide information about fundraising activities during a campaign that lasts from June through August, including by displaying WFP posters at the entrances to company buildings and in cafeterias and run articles in our company newsletter. The campaign serves both to increase employee interest in the world’s food problems and to collect donations to address them.

Contributions to NPOs

Purchasing UNICEF Christmas cards

Takuma purchases UNICEF Christmas cards. A portion of the proceeds is used to fund UNICEF in their work to help children around the world.

Donating unused calendars

Each year, Takuma donates unused calendars to a non-profit organization. The proceeds from selling the calendars at a charity calendar market sponsored by the NPO Nippon Volunteer Network Active in Disasters are used to provide aid for victims of natural disasters and other crises. We also donate calendars to the NPO Community Support Center Kobe’s Gift on Heart Calendar project for delivery to local residents’ associations and other groups, elderly residents, and individuals with disabilities.

Publications

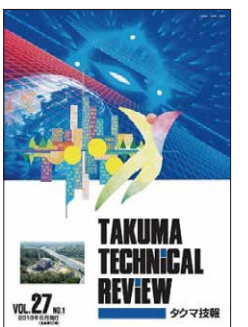
Publication of the Takuma Technical Review

We publish the Takuma Technical Review twice a year to introduce technologies that Takuma has developed.

During FY2019, topics included explaining transitions in NOx reduction technology for waste incineration, reporting on the operation of plant equipment, reporting on overseas tours, and introducing new products. Abstracts are available on Takuma’s website.

[Takuma top page > Technical Information > Technical Review]

<https://www.takuma.co.jp/english/gijutu/gihou.html>



Corporate Governance

Corporate Governance

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

Board of Directors

As of June 25, 2020, 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	Including the following outside directors:
11 (10 men and 1 woman)	4 (3 men and 1 woman)

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, 2020, there were 16 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.

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.

Audit & Supervisory Committee

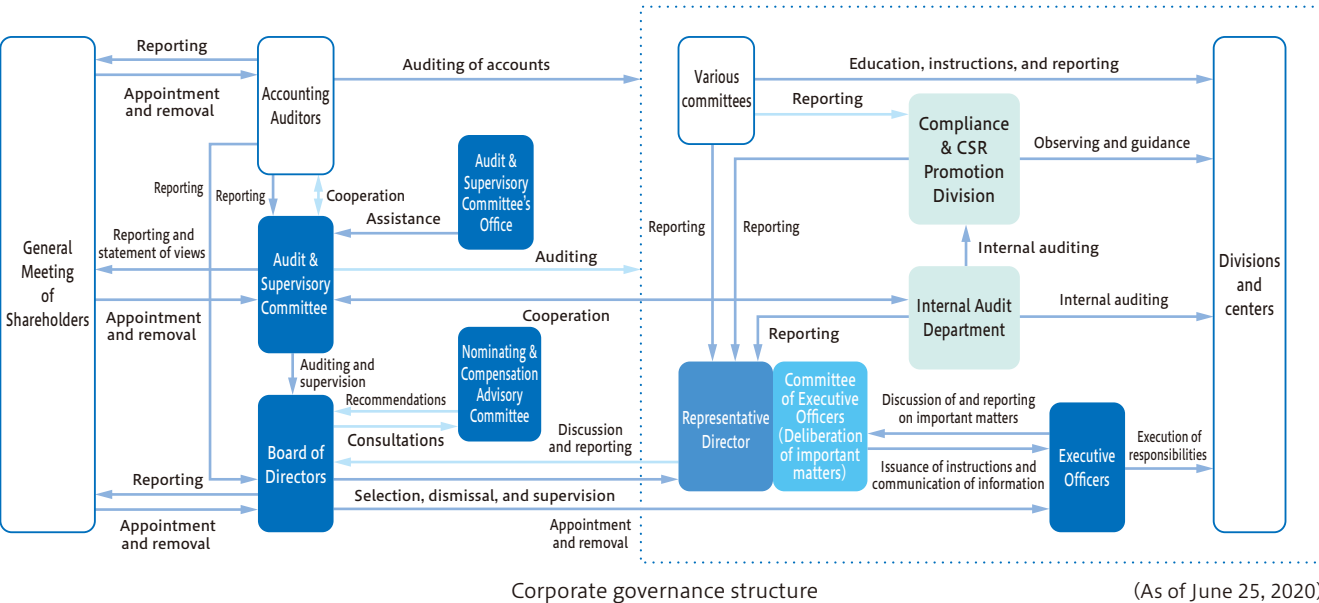
An Audit & Supervisory Committee that consists of five members, of whom four are outside directors, is responsible for accounting and operational audits. Members of the committee attend important meetings, including those of the Board of Directors and the Committee of Executive Officers, and they strive 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.

Audit & Supervisory Committee's Office

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

Nominating & Compensation Advisory Committee

To augment the above structures, 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.



Corporate governance structure (As of June 25, 2020)

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.

Compliance & CSR Promotion Structure

Basic approach

Led by the department in charge of compliance and CSR promotion (CSR Department), Takuma aims at encouraging proper activities through the Compliance & CSR Promotion Organization which was installed for the purpose of enabling compliance and CSR to concretely permeate company-wide through an in-house organization.

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 awareness and education in compliance and CSR in their respective departments, department managers are appointed as Compliance and CSR Promoters. The meetings conducted within this mechanism include regular meetings and departmental meetings.

Regular meetings

Regular meetings are held once a year. The person in charge of promotion receives reports on the status of compliance and CSR promotion company-wide, as well as on the status of the implementation of compliance and CSR promotion education for the past year, etc., and participants deliberate on a promotion plan for the current fiscal year.

Departmental meetings

Promotion members convene departmental meetings once a quarter, with educational training aiming at the permeation of compliance and CSR in each department. After departmental meetings, promotion members implement compliance and CSR promotion education in their respective departments using training materials or in-house educational materials and report the results to the Secretariat.

Takuma Group Coordinating Committee for Compliance & CSR Promotion

We are pursuing awareness-raising and educational activities targeting group companies through our Takuma Group Coordinating Committee for Compliance & CSR Promotion to ensure thorough compliance and risk management throughout the Group. During FY2019, we invited representatives of group companies to participate in two meetings of the committee.



Compliance & CSR promotion structure

Risk Management Structure

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 and CSR Promotion.

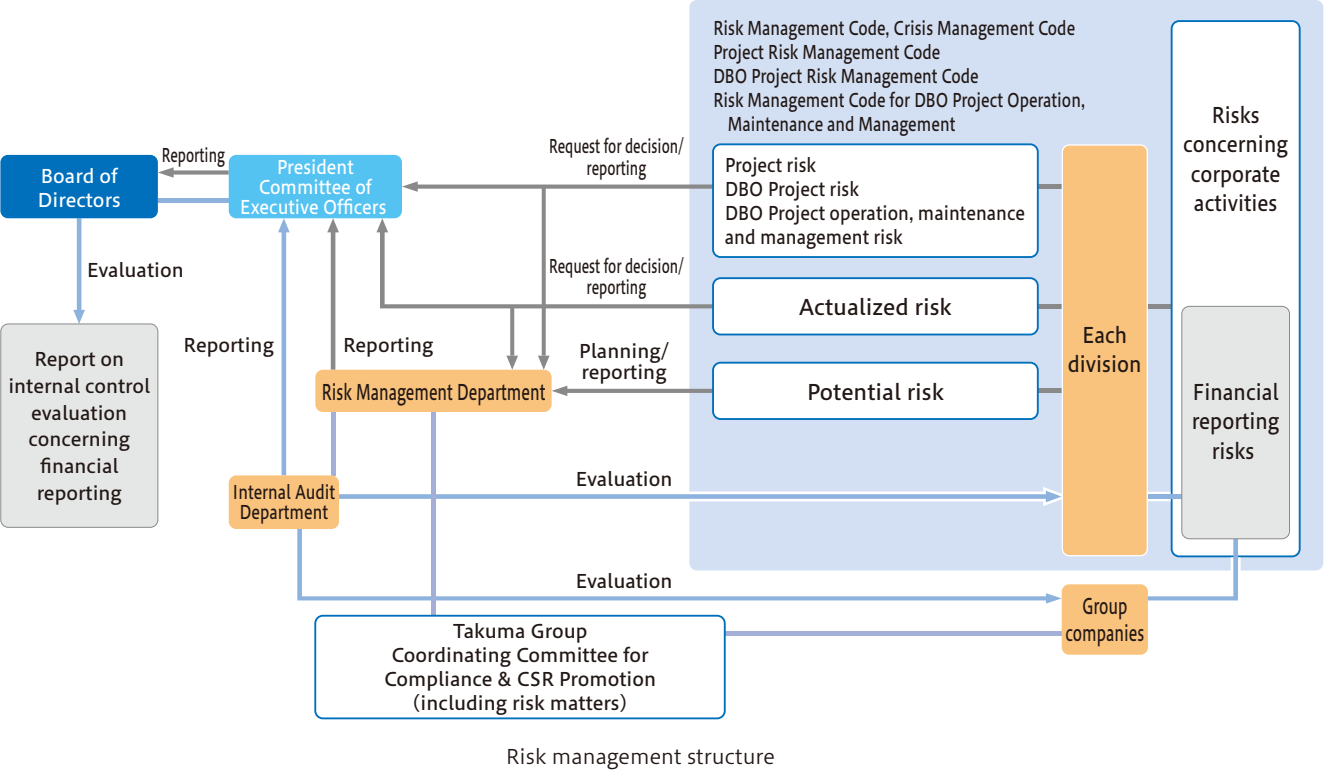
Risk Management Policy

[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.

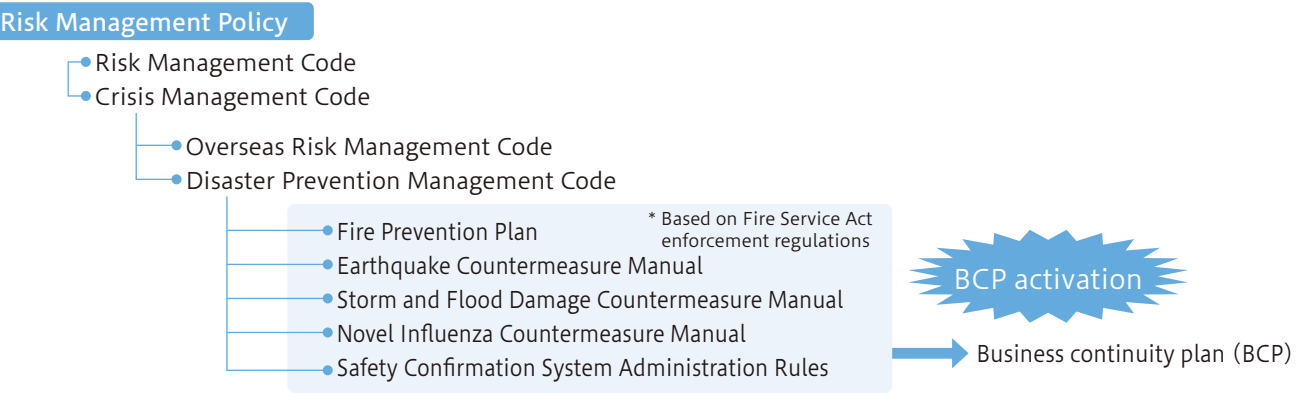


Business Continuity Plan (BCP)

Takuma has formulated a “Business Continuity Plan” based on the following policies to ensure proper and appropriate continuity of business operations in the event of a large-scale disaster, pandemic, or other emergency:

- 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 continue business operations.
- 3. Earn the trust of numerous stakeholders, including employees, their families, shareholders, and nearby residents, and fulfill social needs by continuing business operations.

[Disaster rule system diagram]



Disaster prevention exercises

On November 19, group and partner companies joined head office personnel in participating in disaster prevention exercises, which included drills to test readiness for a Nankai Trough earthquake and tsunami, firefighting practice, and an evacuation. The head office is equipped to serve as a temporary shelter in the event of a tsunami or other emergency, and the exercises included practice for providing evacuation guidance to residents. On October 9, Takuma’s company fire brigade competed in the indoor fire hydrant category of a firefighting technique competition organized by the Amagasaki City Bouka Kyokai (Fire Protection Association) to maintain and improve firefighting skills. The event offered the brigade an opportunity to improve its ability to respond in the event of a fire. We also held two safety confirmation exercises using a system developed specifically for that purpose.

With regard to the maintenance and restoration of information systems, which is the top priority of the Company’s business continuity plan (BCP), we carried out exercises envisioning an earthquake and subsequent power outage. These exercises and related activities served to verify that participants understand the applicable rules and procedures and that they have the necessary knowledge and skills. We will apply the results to future educational exercises and countermeasures as we work to improve our ability to respond in the event of a crisis.



A disaster prevention exercise

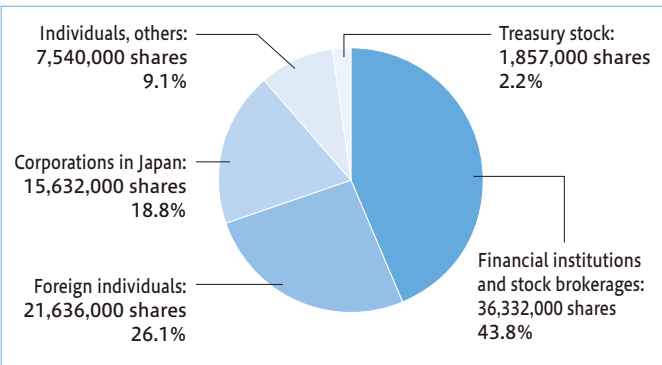


A response exercise

IR Activities

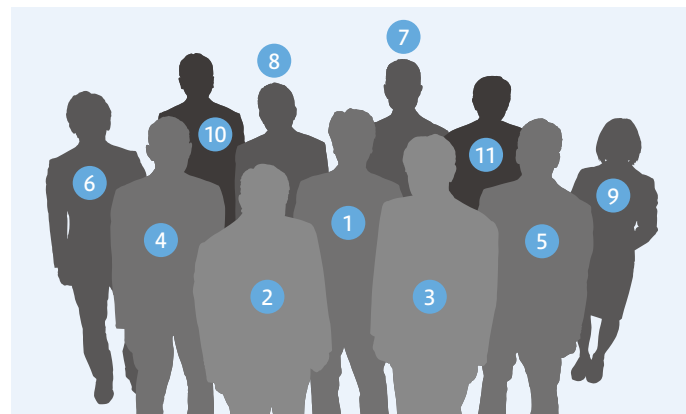
In keeping with the “Takuma Group Code of Conduct,” we provide our shareholders and investors with accurate corporate information in a timely and fair manner. As a part of this, we provide notifications on the convening of General Meetings of Shareholders, balance sheet information, timely disclosure information, marketable securities reports, shareholders reports, annual reports in English and other business information, all on our website.

[Takuma website > IR information]
<https://www.takuma.co.jp/english/investor/index.html>



Distribution by shareholder type (as of March 31, 2020)

Executive Profiles: Directors



- 1

Hiroaki Nanjo
Representative Director
President and Chief
Executive Officer
- 2

Takaaki Kato
Director
Chairman Executive Officer
- 3

Kengo Numata
Director
Executive Vice President
- 4

Tsuyohito Nishiyama
Director
Senior Managing
Executive Officer
- 5

Hideki Takeguchi
Director
Senior Managing
Executive Officer
- 6

Koji Tanaka
Director
Executive Officer
- 7

Yasushi Enomoto
Director
(Audit & Supervisory
Committee Member)
- 8

Osamu Iwahashi
Outside Director
(Audit & Supervisory
Committee Member)
- 9

Tomomi Fujita
Outside Director
(Audit & Supervisory
Committee Member)
- 10

Yoshiaki Ito
Outside Director
(Audit & Supervisory
Committee Member)
- 11

Tetsuya Kaneko
Outside Director
(Audit & Supervisory
Committee Member)

Messages from New Outside Directors



Yoshiaki Ito
Outside Director
(Audit & Supervisory Committee Member)

I am truly honored to have been chosen to serve as an outside director (Audit & Supervisory Committee Member) at Takuma. Over some 30 years as a certified public accountant, I was involved with corporate accounting audits at a major auditor. I was responsible for audits of companies in an array of industries, including manufacturers, real-estate companies, and service businesses. At the same time, I also gained experience providing operational support for companies preparing for their IPO. I look forward to taking advantage of the auditing and corporate support experience I have gained to date in order to help Takuma further increase its corporate value.

Takuma has consistently traveled the path of a pioneer in the boiler industry since its founding, and more recently it has advanced into the environmental protection field while accommodating changes in society.

In 2015, the Corporate Governance Code was drawn up to offer publicly listed companies a blueprint for initiatives for securing sustained growth. If you examine Takuma's financial statements and related materials, you will be left with the impression that the company's corporate governance initiatives are extremely robust in terms of their structures and mechanisms compared to those of other companies. You can infer that these structures are being implemented at a high level of sophistication. As an outside director, I am committed to helping maintain a high level of governance, which is the most important priority of management, by fulfilling my position's oversight function with regard to operational execution from the objective perspective of stakeholders, particularly shareholders, after I develop a sufficiently deep understanding of the Company's operations.



Tetsuya Kaneko
Outside Director
(Audit & Supervisory Committee Member)

During some 30 years as a banker, I gained experience in a number of areas, including domestic and international facility operations and oversight, international monetary exchange, human resources, and consulting on companies looking to enter overseas markets. After that, I began working for a trading company, where I played a management role for eight years as the executive in charge of a department that provided general support in areas such as reviews, legal affairs, distribution, insurance, and IT planning. Today, I serve as the president of a real-estate holding company.

I look forward to taking advantage of the knowledge I gained during my years as a banker and trading company executive to contribute to the growth of Takuma as a leading company in the environmental and energy fields.

Shibusawa Eiichi, whose face is slated to appear on the new ¥10,000 note, started many companies during the Meiji and Taisho periods, and he also wrote *Analects of Confucius and the Abacus* more than 100 years ago to explain the need for both ethics and profit. The spirit of that philosophy lives on in the Sustainable Development Goals (SDGs) that the international community is pursuing today, and I believe it will only become more important—essential, even—as Takuma looks to help achieve the SDGs through its technological capabilities and expertise. It is my fervent hope that Takuma will move to take those capabilities to a new level so that it can meet these rising expectations.

I am truly honored to have been chosen to serve as an outside director (Audit & Supervisory Committee Member) of a company that has developed businesses in response to the needs of its times and in doing so has led its industry. I look forward to taking advantage of the broad knowledge I've gained in Japan and overseas to date to live up to the expectations of my role once I have developed a sufficiently good understanding of the company's businesses.

Executives' Profiles: Executive Officers



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.

“Rules on Controlling Contact with Competitors’ Sales Departments, etc.,” defines the procedure for an employee when interacting with the sales department, etc., of a competitor and specifies that an application should be made to and an approval should be obtained from the affiliated division or center manager in advance to ensure fair business contact.

Holding training sessions about the Antimonopoly Act

We hold regular training sessions about the Antimonopoly Act to deepen participants’ understanding of the act and to ascertain the latest information about it.

Introducing a Legislation Information Service

In order to allow its employees to gain a continuous grasp of the latest changes to laws and ordinances, Takuma introduced a Legislation Information Service. In this system, legislation alerts highlighting revisions to, and abolition of, laws and ordinances are sent by e-mail in advance to employees, who can also review detailed information about the corresponding law or ordinance on the system’s website as needed.

In addition to current laws and ordinances, the system lets users search for legal precedents and public comments to facilitate an even greater understanding of relevant laws and ordinances.

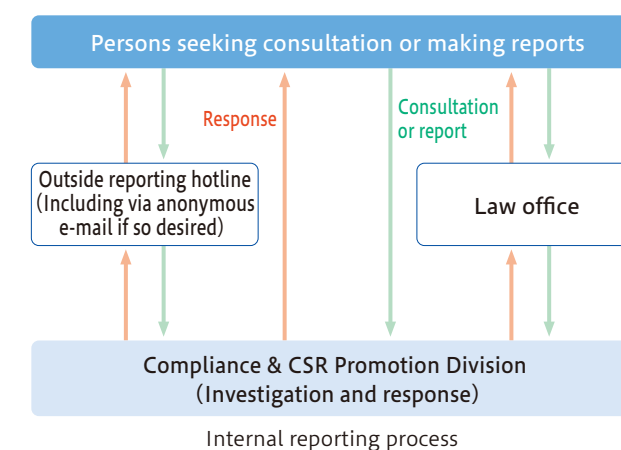
Internal Reporting System

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

Reporting hotlines are set up at our Compliance & CSR Promotion Division and at an outside law office, as well as a dedicated outside report hotline for anonymous e-mail reporting. Our “Internal Reporting Code” and the Takuma Group Code of Conduct further declare that no informant shall be subjected to disadvantageous treatment simply

because he or she filed a report.

Furthermore, in order for this system to be correctly understood and utilized, we distribute a card to all employees with information on the reporting hotlines and regularly publicize the system. Although awareness of this system exceeded 90% according to the results of the FY2019 CSR awareness survey, some respondents indicated that they were unaware of the system or uninterested in utilizing it, suggesting that issues remain for the reporting system.



Internal reporting system

Employees who become aware of a legal violation, improper conduct, or other issue that would be problematic from a compliance standpoint must work to help rectify the problem and prevent future recurrences by reporting it to the Company's hotline, regardless of their own involvement.

Employees reporting information to the hotline will not be subjected to disadvantageous treatment simply because they filed a report. *Please see the "Internal Reporting Code."

Hotlines (help lines)

Internal reporting hotline	Compliance & CSR Promotion Division CSR Department
Outside reporting hotline	Law office
Outside reporting hotline	Specialized company

Compliance Card

Compliance & CSR Promotion Education

Takuma offers compliance and CSR promotion education through the Compliance & CSR Promotion Organization (see page 48), which was established in order to spread awareness of compliance and CSR issues among employees. During FY2019, we implemented education focusing on compliance and CSR promotion in four separate stages (see below) in keeping with our policy of pursuing a sustained and thorough program of spreading and improving

compliance and CSR awareness and risk management. This effort, through which we sought to live up to society's requirements and expectations, while taking into account internal circumstances and the characteristics of group companies, was based on the Compliance & CSR Promotion Division's medium-term policy of continuing to practice compliance-focused management in accordance with the 12th Medium-Term Management Plan.

- 1st term : Insider trading
- 2nd term: Training on compliance with Japan's Antimonopoly Act
- 3rd term : Overview of security export controls
Takuma's CSR comprehension test
- 4th term : Preventing power harassment
Forward-looking CSR activities, CSR issues and an action program



Number of sessions per year: 4 (May, August, November, and January)
Number of participating departments: 45
Total number of attendees: 4,315

We invited an outside expert to give lectures and training in August 2019 (2nd term) and January 2020 (4th term).

2nd term lecture

“Training on Compliance with Japan’s Antimonopoly Act: Avoiding Involvement with Bid-rigging and Cartels”

Mr. Yuki Takei
Attorney at Law
Midosuji Legal Profession Corporation



4th term training session

“Preventing Power Harassment: From the Standpoint of Workplace Mental Health”

Ms. Miyuki Matsuoka
Certified public psychologist/Clinical psychologist/Industrial counselor
H2 Consultant Co., Ltd.



A variety of educational methods

We use a variety of methods to foster a high level of awareness of compliance and CSR, including CSR education and discussions implemented directly by promoters (department managers) as well as computer-based e-learning and the pursuit of CSR goals and action programs throughout the year at each department. Since 2006, we also have been distributing 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 the Takuma Group Ethics Charter and the Takuma Group Code of Conduct. This manual is utilized in the course of daily operations and departmental training.



Internal CSR lecture for executives

Date: December 25, 2019
Lecture topic: Understanding and Using the Antimonopoly Act in the Future
Lecturer:
Mr. Kentaro Hirayama
Attorney at Law and Representative of Hirayama Law Offices
Associate Professor (Economic Law), Kyushu University Faculty of Law



CSR Awareness Survey

We have been conducting a CSR Awareness Survey since FY2008 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. The survey was expanded to include group companies in FY2013. We actively use survey results in our activities, for example by offering additional education in areas that

received lower scores than in the previous survey. FY2019, responses indicated that 975 (of 993) employees are conducting themselves in accordance with standards such as the company's Management Principles and the Takuma Group Code of Conduct, indicating that awareness of the importance of compliance and CSR have spread widely among employees. We will continue to offer this survey and use its results to improve compliance and CSR promotion education on an ongoing basis.

Material Procurement Policy

Our Purchasing Department carries out procurement activity in accordance with its Material Procurement Policy. We provide fair opportunities for all suppliers, irrespective of nationality, company size, or transaction history. Suppliers are selected based on our comprehensive evaluation of their reliability and safeness in terms of quality, price, delivery, etc., as well as their abilities in technological development and supply capabilities. Long-term stable transactions with dependable suppliers result in improved product reliability and greater corporate value. We, therefore, seek to establish relationships of mutual trust and mutual development with our suppliers. While also respecting relevant laws and regulations as well as social norms, we strictly control and maintain any confidential information that we obtain through our business transactions. More information about the procurement procedures used by our Purchasing Department is available on the following website:

【Takuma website > Material Procurement】 <https://www.takuma.co.jp/procurement/> (content in Japanese)

Material Procurement Policy

1. Treat all candidates fairly when selecting a supplier.
2. Strive to discover new manufacturers.
3. Strictly control confidential information.
4. Strive to acquire new and pertinent information.
5. Promote green procurement.
6. Comply with laws and ordinances related to business dealings.
7. Always keep VA and VE* in mind.
8. Strive for self-development.

*VA and VE : Value Analysis and Value Engineering

President Nanjo visits worksites involved in plant operation

From September to October 2019, President Nanjo visited nine worksites that are responsible for the long-term operation of waste treatment plants and biomass power plants (including operational management and maintenance). Comprehensive operation contracts for plants have grown more common in recent years, and high-quality after-sales service is becoming more important than in the past. Through these visits, President Nanjo shared with workers the Group's continued commitment to come together to provide high-quality after-sales service that aligns with customer and regional needs.



Financial Data

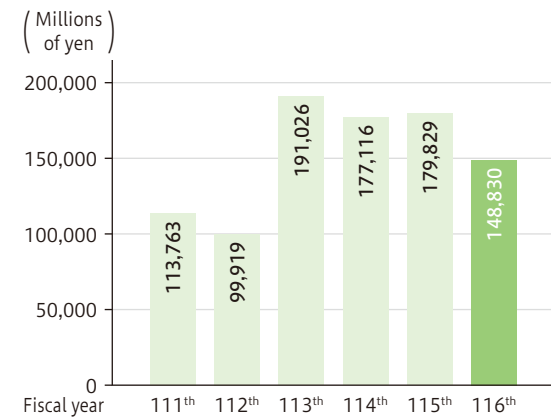
Trend in Principal Management Indicators and Other Financial Data

Fiscal year	111 th (Millions of yen)	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)	116 th (Thousands of U.S. dollars)
End of fiscal year	March 2015	March 2016	March 2017	March 2018	March 2019	March 2020	March 2020
Net sales	¥ 103,875	¥ 113,088	¥ 116,309	¥ 118,199	¥ 121,951	¥ 134,454	\$ 1,235,453
Operating income	¥ 8,223	¥ 9,189	¥ 10,974	¥ 10,030	¥ 11,604	¥ 9,600	\$ 88,215
Ordinary profit	¥ 9,116	¥ 9,646	¥ 11,606	¥ 10,670	¥ 12,334	¥ 10,301	\$ 94,649
Profit attributable to owners of parent	¥ 8,030	¥ 7,817	¥ 8,551	¥ 7,847	¥ 8,854	¥ 7,445	\$ 68,413
Comprehensive income	¥ 9,398	¥ 7,149	¥ 9,937	¥ 10,177	¥ 7,325	¥ 5,881	\$ 54,041
Net assets	¥ 52,516	¥ 58,809	¥ 67,727	¥ 76,726	¥ 83,088	¥ 85,040	\$ 781,403
Total assets	¥ 123,127	¥ 132,614	¥ 140,201	¥ 151,489	¥ 155,989	¥ 163,498	\$ 1,502,329
Net assets per share (JPY or USD)	¥ 631.53	¥ 708.18	¥ 815.77	¥ 924.25	¥ 1,000.34	¥ 1,043.15	\$ 9.59
Net income per share (JPY or USD)	¥ 97.12	¥ 94.55	¥ 103.43	¥ 94.93	¥ 107.10	¥ 90.36	\$ 0.83
Diluted net income per share (JPY or USD)	-	-	-	-	-	-	-
Capital adequacy ratio (%)	42.4	44.1	48.1	50.4	53.0	51.8	51.8
Return on equity (%)	16.8	14.1	13.6	10.9	11.1	8.9	8.9
Price-to-earnings ratio	9.7	10.7	10.5	12.3	12.3	13.3	13.3
Cash flows from operating activities	¥ 21,727	¥ 6,728	¥ 9,590	¥ 5,141	¥ 10,817	¥ (11,733)	\$ (107,806)
Cash flows from investing activities	¥ (160)	¥ (445)	¥ 143	¥ (328)	¥ (1,382)	¥ (202)	\$ (1,858)
Cash flows from financing activities	¥ (3,707)	¥ (2,900)	¥ (1,787)	¥ (1,670)	¥ (9,120)	¥ (4,350)	\$ (39,971)
End-of-year balance of cash and cash equivalents	¥ 45,008	¥ 48,335	¥ 57,132	¥ 60,283	¥ 61,027	¥ 44,753	\$ 411,224
Number of employees	3,266	3,366	3,447	3,609	3,619	3,816	3,816

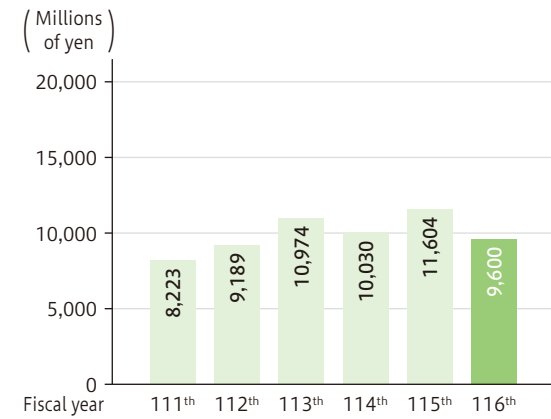
Note:

1. U.S. dollar amounts are shown solely for the convenience of readers and are translated at the rate of ¥108.83 to U.S.\$1.00, the exchange rate prevailing at March 31, 2020.
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.

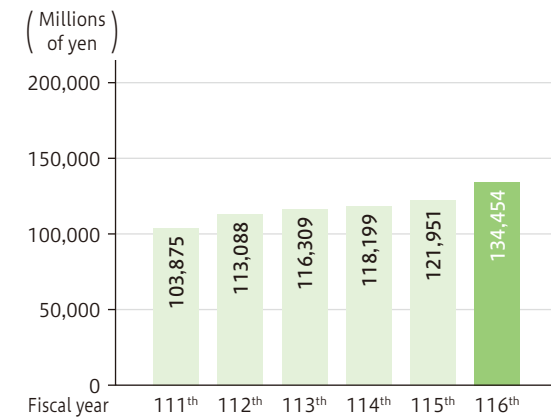
Value of orders received



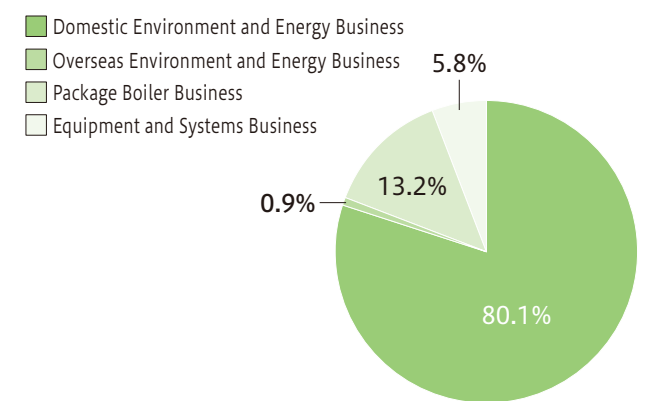
Operating income



Net sales



Net sales composition ratios (FY2019)



Trend by Segment

Segment	(Millions of yen)			
	Orders received	Sales amount	Operating income	Backlog
Domestic Environment and Energy Business	123,154	108,124	10,619	337,322
Overseas Environment and Energy Business	1,351	1,143	(202)	733
Package Boiler Business	17,925	17,869	966	3,928
Equipment and Systems Business	6,790	7,840	384	3,453
Sub-total	149,221	134,976	11,767	345,437
Adjustment	(390)	(522)	(2,167)	(122)
Total	148,830	134,454	9,600	345,315

Consolidated Balance Sheets

TAKUMA CO., LTD. and Consolidated Subsidiaries
As of March 31, 2020 and 2019

	Millions of yen		Thousands of U.S. dollars
ASSETS	2020	2019	2020
Current assets:			
Cash and time deposits	¥ 46,145	¥ 61,769	\$ 424,015
Notes and accounts receivable:			
Trade	73,034	49,046	671,083
Unconsolidated subsidiaries and affiliated companies	556	764	5,104
Other	785	281	7,216
Less allowance for doubtful accounts	(20)	(28)	(183)
Total	74,355	50,063	683,220
Inventories	4,681	4,356	43,014
Other	1,787	1,732	16,414
Total current assets	126,968	117,920	1,166,663
Property, plant and equipment:			
Land	2,497	3,013	22,945
Buildings and structures	11,955	11,905	109,856
Machinery, equipment, lease assets and construction in progress	10,114	8,969	92,932
	24,566	23,887	225,733
Less accumulated depreciation	(16,146)	(15,593)	(148,360)
Total property, plant and equipment	8,420	8,294	77,373
Investments and other assets:			
Investment securities	13,815	15,138	126,945
Investments in:			
Unconsolidated subsidiaries and affiliated companies	2,112	4,163	19,403
Other	5,433	5,460	49,923
Less allowance for doubtful accounts	(109)	(109)	(998)
Total	7,436	9,514	68,328
Deferred tax assets	6,529	4,810	59,993
Net defined benefit asset	54	-	494
Other	276	313	2,533
Total investments and other assets	28,110	29,775	258,293
Total assets	¥ 163,498	¥ 155,989	\$ 1,502,329

	Millions of yen		Thousands of U.S. dollars
LIABILITIES AND NET ASSETS	2020	2019	2020
Current liabilities:			
Short-term loans payable	¥ 470	¥ 645	\$ 4,319
Current portion of long-term debt	80	117	735
Notes and accounts payable:			
Trade	43,708	37,587	401,622
Unconsolidated subsidiaries and affiliated companies	301	334	2,761
Other	1,493	1,227	13,721
Total	45,502	39,148	418,104
Accrued income taxes	1,673	3,628	15,374
Advances received	10,029	9,798	92,155
Allowance for guarantees on completed work	165	149	1,516
Allowance for losses on sales contracts	3,401	1,739	31,251
Provision for loss on liquidation of subsidiaries and associates	833	999	7,656
Other	5,429	6,023	49,881
Total current liabilities	67,582	62,246	620,991
Long-term liabilities:			
Long-term debt	262	342	2,409
Allowance for directors' and executive officers' retirement benefits	220	185	2,022
Net defined benefit liability	10,111	9,746	92,906
Other	283	382	2,598
Total long-term liabilities	10,876	10,655	99,935
Total liabilities	78,458	72,901	720,926
Contingent liabilities			
Net assets:			
Common stock	13,367	13,367	122,829
Authorized: 321,840,000 shares			
Issued: 83,000,000 shares			
Capital surplus	3,818	3,768	35,084
Retained earnings	66,244	60,866	608,688
Treasury stock, at cost	(2,178)	(235)	(20,017)
1,857,894 shares in 2020 and 331,644 shares in 2019			
Total shareholders' equity	81,251	77,766	746,584
Unrealized gains on securities	3,764	5,390	34,590
Deferred gains and losses on hedges	4	8	35
Foreign currency translation adjustments	(3)	(4)	(24)
Remeasurements of defined benefit plans	(373)	(463)	(3,431)
Total accumulated other comprehensive income	3,392	4,931	31,170
Non-controlling interests in consolidated subsidiaries	397	391	3,649
Total net assets	85,040	83,088	781,403
Total liabilities and net assets	¥ 163,498	¥ 155,989	\$ 1,502,329

Consolidated Statements of Operations

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2020 and 2019

	Millions of yen		Thousands of U.S. dollars
	2020	2019	2020
Net sales	¥ 134,454	¥ 121,951	\$ 1,235,453
Cost of sales	108,592	94,491	997,817
Gross profit	25,862	27,460	237,636
Selling, general and administrative expenses	16,262	15,856	149,421
Operating income	9,600	11,604	88,215
Other income (expenses):			
Interest and dividend income	485	419	4,459
Interest expense	(17)	(59)	(155)
Gain on sales of investment securities	710	-	6,521
Settlement package	(565)	-	(5,196)
Provision for loss on liquidation of subsidiaries and associates	-	(999)	-
Loss on sales of investment securities	(214)	-	(1,965)
Loss on valuation of investment securities	(92)	(155)	(842)
Commitment fee	(29)	(17)	(263)
Loss on disposal of property, plant and equipment	(53)	(58)	(490)
Provision for doubtful accounts	-	(49)	-
Equity in earnings of affiliated companies	222	473	2,044
Other, net	92	(19)	840
Other income (expenses), net	539	(464)	4,953
Income before income taxes	10,139	11,140	93,168
Income taxes:			
Current	3,891	4,179	35,756
Deferred	(1,169)	(1,991)	(10,740)
Total income taxes	2,722	2,188	25,016
Profit	7,417	8,952	68,152
Profit (loss) attributable to non-controlling interests in consolidated subsidiaries	(28)	98	(261)
Profit attributable to owners of parent	¥ 7,445	¥ 8,854	\$ 68,413
	Yen		U.S. dollars
Per share:			
Net income	¥ 90.36	¥ 107.10	\$ 0.83
Diluted net income	-	-	-
Cash dividends applicable to the year	31.00	22.00	0.28

Consolidated Statements of Comprehensive Income

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2020 and 2019

	Millions of yen		Thousands of U.S. dollars
	2020	2019	2020
Profit	¥ 7,417	¥ 8,952	\$ 68,152
Other comprehensive income:			
Unrealized losses on securities	(1,625)	(1,772)	(14,934)
Deferred gains and losses on hedges	(5)	58	(41)
Foreign currency translation adjustments	5	(9)	42
Remeasurements of defined benefit plans	89	96	822
Total other comprehensive income	(1,536)	(1,627)	(14,111)
Comprehensive income	¥ 5,881	¥ 7,325	\$ 54,041
Comprehensive income attributed to:			
Owners of the parent	¥ 5,907	¥ 7,227	\$ 54,275
Non-controlling interests	(26)	98	(234)

Consolidated Statements of Changes in Net Assets

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2020 and 2019

	Common stock	Capital surplus	Retained earnings	Treasury stock, at cost	Total shareholders' equity	Unrealized gains on securities	Deferred gains and losses on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests in consolidated subsidiaries	Total net assets
For the years ended March 31, 2020	Millions of yen				Millions of yen							
Balance at the beginning of current period	¥ 13,367	¥ 3,768	¥ 60,866	¥ (235)	¥ 77,766	¥ 5,390	¥ 8	¥ (4)	¥ (463)	¥ 4,931	¥ 391	¥ 83,088
Cash dividends (¥25.00 per share)	-	-	(2,068)	-	(2,068)	-	-	-	-	-	-	(2,068)
Profit attributable to owners of parent	-	-	7,446	-	7,446	-	-	-	-	-	-	7,446
Purchase of treasury stock	-	-	-	(2,000)	(2,000)	-	-	-	-	-	-	(2,000)
Disposal of treasury shares	-	50	-	57	107	-	-	-	-	-	-	107
Other changes during the year, net	-	-	-	-	-	(1,626)	(4)	1	90	(1,539)	6	(1,533)
Balance at the end of current period	¥ 13,367	¥ 3,818	¥ 66,244	¥ (2,178)	¥ 81,251	¥ 3,764	¥ 4	¥ (3)	¥ (373)	¥ 3,392	¥ 397	¥ 85,040
For the years ended March 31, 2019	Millions of yen				Millions of yen							
Balance at the beginning of current period	¥ 13,367	¥ 3,768	¥ 52,949	¥ (235)	¥ 69,849	¥ 7,161	¥ (46)	¥ 2	¥ (559)	¥ 6,558	¥ 319	¥ 76,726
Cash dividends (¥19.00 per share)	-	-	(1,571)	-	(1,571)	-	-	-	-	-	-	(1,571)
Profit attributable to owners of parent	-	-	8,854	-	8,854	-	-	-	-	-	-	8,854
Change in scope of consolidation	-	-	657	-	657	-	-	-	-	-	-	657
Change in scope of equity method	-	-	(23)	-	(23)	-	-	-	-	-	-	(23)
Purchase of treasury stock	-	-	-	(0)	(0)	-	-	-	-	-	-	(0)
Other changes during the year, net	-	-	-	-	-	(1,771)	54	(6)	96	(1,627)	72	(1,555)
Balance at the end of current period	¥ 13,367	¥ 3,768	¥ 60,866	¥ (235)	¥ 77,766	¥ 5,390	¥ 8	¥ (4)	¥ (463)	¥ 4,931	¥ 391	¥ 83,088
For the years ended March 31, 2020	Thousands of U.S. dollars				Thousands of U.S. dollars							
Balance at the beginning of current period	\$ 122,829	\$ 34,625	\$ 559,274	\$ (2,165)	\$ 714,563	\$ 49,522	\$ 76	\$ (38)	\$ (4,252)	\$ 45,308	\$ 3,590	\$ 763,461
Cash dividends (\$0.23 per share)	-	-	(19,000)	-	(19,000)	-	-	-	-	-	-	(19,000)
Profit attributable to owners of parent	-	-	68,414	-	68,414	-	-	-	-	-	-	68,414
Purchase of treasury stock	-	-	-	(18,377)	(18,377)	-	-	-	-	-	-	(18,377)
Disposal of treasury shares	-	459	-	525	984	-	-	-	-	-	-	984
Other changes during the year, net	-	-	-	-	-	(14,932)	(41)	14	821	(14,138)	59	(14,079)
Balance at the end of current period	\$ 122,829	\$ 35,084	\$ 608,688	\$ (20,017)	\$ 746,584	\$ 34,590	\$ 35	\$ (24)	\$ (3,431)	\$ 31,170	\$ 3,649	\$ 781,403

Consolidated Statements of Cash Flows

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2020 and 2019

	Millions of yen		Thousands of U.S. dollars
	2020	2019	2020
Cash flows from operating activities:			
Income before income taxes	¥ 10,139	¥ 11,140	\$ 93,168
Adjustments to reconcile income before income taxes to net cash provided by operating activities:			
Depreciation	917	798	8,426
Impairment loss	-	40	-
Loss (gain) on sales of investment securities	(496)	7	(4,557)
Loss (gain) on valuation of investment securities	92	155	842
Increase (decrease) in allowance for bonuses	183	4	1,683
Increase (decrease) in allowance for losses on sales contracts	1,662	1,367	15,267
Increase (decrease) in provision for loss on liquidation of subsidiaries and associates	(166)	999	(1,523)
Increase (decrease) in net defined benefit liability	494	470	4,539
Interest and dividend income	(485)	(419)	(4,458)
Interest expense	17	59	155
Equity in losses (earnings) of affiliated companies	(222)	(473)	(2,044)
Net decrease (increase) in notes and accounts receivable and advances received	(23,614)	(2,229)	(216,984)
Decrease (increase) in inventories	(312)	3	(2,864)
Decrease (increase) in other current assets	(529)	(27)	(4,858)
Net increase (decrease) in notes and accounts payable and advance money	6,146	1,865	56,474
Increase (decrease) in other current liabilities	(551)	431	(5,059)
Other	211	(3,197)	1,935
Subtotal	(6,514)	10,993	(59,858)
Interest and dividend received	563	647	5,175
Interest paid	(19)	(60)	(170)
Income taxes received (paid)	(5,763)	(763)	(52,953)
Net cash provided by operating activities	(11,733)	10,817	(107,806)
Cash flows from investing activities:			
Net decrease (increase) in time deposits	(650)	(14)	(5,973)
Purchase of property, plant and equipment	(1,520)	(482)	(13,967)
Sale of property, plant and equipment	508	2	4,666
Purchase of intangible fixed assets	(36)	(51)	(334)
Purchase of investment securities	(1,253)	(802)	(11,513)
Sale of investment securities	2,621	105	24,087
Disbursement for loans receivable	(50)	-	(459)
Collection of loans receivable	140	112	1,284
Other	38	(252)	351
Net cash used in investing activities	(202)	(1,382)	(1,858)

	Millions of yen		Thousands of U.S. dollars
	2020	2019	2020
Cash flows from financing activities:			
Net increase (decrease) in short-term bank loans	(175)	(7,030)	(1,608)
Payment of long-term debt	(117)	(470)	(1,072)
Purchase of treasury stock	(2,000)	(0)	(18,377)
Payment of cash dividends	(2,068)	(1,571)	(19,000)
Dividends paid to non-controlling interests	(24)	(28)	(219)
Other	34	(21)	305
Net cash used in financing activities	(4,350)	(9,120)	(39,971)
Effect of exchange rate changes on cash and cash equivalents	11	(11)	102
Net increase in cash and cash equivalents	(16,274)	304	(149,533)
Cash and cash equivalents at beginning of year	61,027	60,283	560,757
Increase (decrease) in cash and cash equivalents resulting from change in scope of consolidation	-	440	-
Cash and cash equivalents at end of year	¥ 44,753	¥ 61,027	\$ 411,224

Outside Expert Opinion

Outside Expert Opinion



Kazuhiko Takano

Professor, Ph.D. in Law (LL.D.)
Graduate School and Faculty of Societal Safety Sciences, Kansai University
Senior Director
Japan Society for Business Ethics
Senior Researcher
Business Ethics Research Center

1. Characteristics of the Takuma CSR Report 2020

The Takuma Group is a key part of the foundation on which Japanese industry operates and one of Japan's leading plant engineering groups, and its continued operation is of critical importance to society. Consequently, in rendering my opinion of this report I would like to focus particularly on its characteristics with regard to the concept of sustainability.

The first characteristic is the ability to manage operations based on an understanding of societal issues. For example, Takuma works to resolve issues such as greenhouse gases and renewable energy through its core businesses, for example the development of biomass power plants and energy from waste plants. I believe that these products will continue to earn social support in the future as companies become the focus of stepped-up scrutiny due to the need to realize a low-carbon society.

The second characteristic is a rich selection of content related to the development of programs and an organizational culture that make it easier for employees to work at Takuma. The report contains extensive descriptions of programs that are designed to ensure employees continue their employment over the long term, including workstyle reforms and work-from-home programs. The report notes that President Nanjo visited nine worksites that are responsible for plant operation as part of an initiative that was presumably conceived to help develop a culture that is characterized by good communication. The report also offers a glimpse of managers' belief that valuing employees helps increase the Company's competitiveness.

The third characteristic is the Company's pursuit of initiatives to improve resilience. In last year's Outside Expert Opinion, I suggested that enhancing risk management structures could provide a way to further increase the effectiveness of the Business Continuity Plan (BCP) by facilitating regular exercises simulating a natural disaster. This year's report describes an effort to increase crisis management capability by holding disaster prevention exercises and BCP training with the goal of maintaining and restoring information systems.

In this way, I am pleased to see that the Takuma CSR Report 2020 demonstrates the continued evolution of the Company's programs.

2. Towards further development

I'd like to describe some of my expectations toward the Takuma Group's future CSR management.

The first involves studying the value creation process. The year 2020 was identified as a year in which the next long-term vision would be formulated, and I expect to see the Company develop a vision that seeks to realize the sustainable society of the future by resolving societal issues such as those identified in the Sustainable Development Goals (SDGs) through business activities that draw on the Group's strengths, as President Nanjo described in his message at the beginning of this report.

The second involves further deepening global compliance structures. In the "Introduction to Takuma's Businesses" section, the report introduces how the Company is developing its businesses overseas, and this effort will continue in the future. One major risk associated with overseas businesses is that Western laws in areas such as bribery and data protection extend outside their home jurisdictions. Takuma is pursuing an advanced series of compliance initiatives at present, but I hope to see those efforts expanded in the future, including with regard to the unique risks that face global businesses.

The third involves additional resilience initiatives. The COVID-19 pandemic has become a societal problem, and I'd like to see Takuma treat it as an opportunity to increase sustainability by reassessing and improving its BCP.

I believe that the Takuma Group is carrying out a high-quality program of CSR activities in a serious manner. Going forward, I expect to see the Company develop further by contributing to the resolution of societal problems through its core businesses.

Response to the Outside Expert Opinion



Koji Tanaka

Director & Executive Officer
Executive Manager
Compliance & CSR Promotion Division
Corporate Services Division

I would like to thank Professor Takano of Kansai University for offering his valuable insights on the CSR Report 2020.

In compiling this report, we have worked to offer stakeholders an easy-to-understand introduction to a variety of activities carried out by the Takuma Group with the goal of resolving social issues and increasing corporate value by achieving sustainable growth as well as to the Group's 12th Medium-Term Management Plan, through which we are working to achieve our corporate vision, and we have focused on inviting involved parties to express their thoughts on related subjects in their own words.

In "1. Characteristics of the Takuma CSR Report 2020," Professor Takano offers valuable insights from the standpoint of business continuity, which the Group takes very seriously. We will continue to pursue these initiatives in order to realize the Group's sustainable growth.

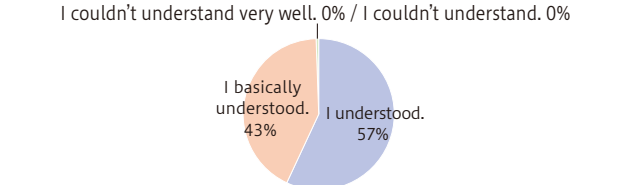
In "2. Towards further development," Professor Takano suggests measures that ought to be pursued as part of CSR management. I am grateful to him for suggesting directions for future initiatives. They say that even a journey of a thousand miles begins with a single step, and we are committed to building an even more resilient foundation for our operations so that we can realize the Group's new vision.

We value Professor Takano's observations and take them seriously, and I would request stakeholders' continued support and encouragement as we work to practice CSR management and enhance our CSR Report.

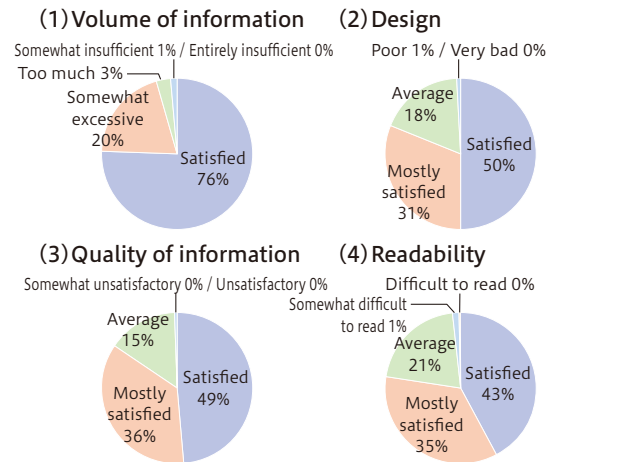
Takuma CSR Report 2019 Questionnaire Survey Results

Survey period: July 2019 to June 2020
Number of respondents: 1079

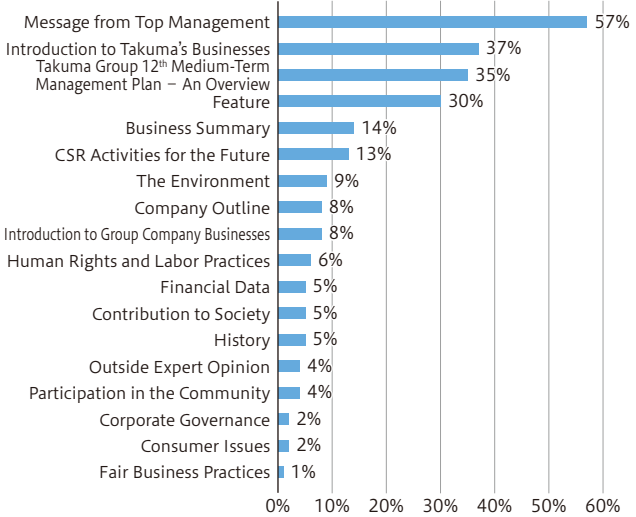
Q1 Did you understand the activities of our company?



Q2 What is your level of satisfaction regarding this Report?



Q3 Which items were you interested in? (Select up to three.)



Editorial Policy

We have prepared this document as a CSR Report that details our CSR activities.

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From April 1, 2019, to March 31, 2020, in principle. In addition, some activities in FY2020 are included.

Coverage

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Time of Issue

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Next issue: Scheduled for July 2021
Last issue: July 2019



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