

The logo for TAKUMA, featuring the word "TAKUMA" in a bold, white, sans-serif font. The background of the entire page is a blue geometric pattern of triangles, with a large white triangle on the left side.

TAKUMA

2019
Annual Report

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 provide that 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.

■ Municipal solid waste treatment plants

We support the realization of a recycling-oriented society using advanced waste treatment technologies that meet the needs of local communities.

- Energy from Waste plant
- Pyrolysis gasification and melting plant
- Resource recycling and collection plant
- Bulky garbage crushing plant
- Incineration ash and fly ash melting plant
- Waste to solid fuel conversion plant
- Transition and intermediate processing plant
- Raw fuel (biogas) recovery plant
- Various types of pollution prevention equipment



Energy from Waste plant



Bulky garbage crushing plant

■ Energy plants

Takuma's core technologies are utilized in various types of boilers, starting with biomass boilers, as well as total systems.

- Biomass boiler
- Fossil fuel boiler
- Waste heat boiler
- Power plant



Biomass power generation boiler



Waste heat boiler

■ Industrial waste treatment plants

Using advanced incineration technologies, we can even treat toxic substances suitably and we are supporting the environmental protection efforts of industry.

- Industrial waste treatment plant



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 plant
- Various types of advanced sewage treatment plant
- Sludge treatment plant
- Sewage sludge-fueled power plant
- Plant to process water that infiltrates final disposal sites



Upflow moving-bed filtration system



Sewage sludge-fueled power plant

■ 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)
- Package Water-tube Boilers
- Flue and Smoke Tube Boilers (RE Boiler)
- Heat Medium Oil Boilers (Thermoheater)
- Radiation Heating Equipment (Strip Heater)



Vacotin Heater



Thermoheater



Super EQOS



RE Boiler

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

■ 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 room
- Clean devices
- Chemical filters



Chemical filters



Clean oven



Clean booths

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Financial Highlights

Trend in Principal Management Indicators and Other Financial Data

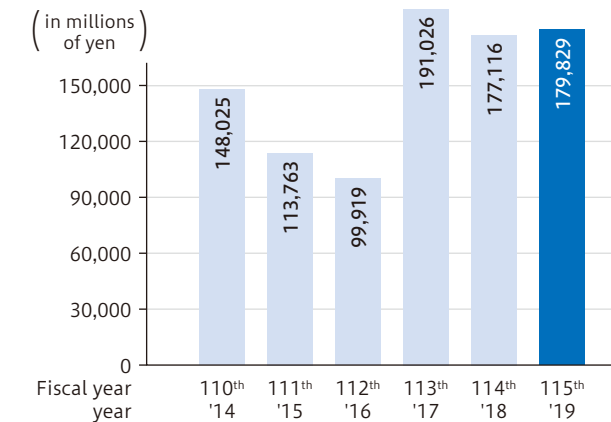
Fiscal year	110 th (Millions of yen)	111 th (Millions of yen)	112 th (Millions of yen)	113 th (Millions of yen)	114 th (Millions of yen)	115 th (Millions of yen)	115 th (Thousands of U.S. dollars)
End of fiscal year	March 2014	March 2015	March 2016	March 2017	March 2018	March 2019	March 2019
Net sales	¥ 96,334	¥ 103,875	¥ 113,088	¥ 116,309	¥ 118,199	¥ 121,951	\$ 1,098,753
Operating income	¥ 8,424	¥ 8,223	¥ 9,189	¥ 10,974	¥ 10,030	¥ 11,604	\$ 104,551
Ordinary profit	¥ 9,449	¥ 9,116	¥ 9,646	¥ 11,606	¥ 10,670	¥ 12,334	\$ 111,128
Profit attributable to owners of parent	¥ 8,835	¥ 8,030	¥ 7,817	¥ 8,551	¥ 7,847	¥ 8,854	\$ 79,772
Comprehensive income	¥ 9,935	¥ 9,398	¥ 7,149	¥ 9,937	¥ 10,177	¥ 7,325	\$ 66,000
Net assets	¥ 43,889	¥ 52,516	¥ 58,809	¥ 67,727	¥ 76,726	¥ 83,088	\$ 748,603
Total assets	¥ 108,520	¥ 123,127	¥ 132,614	¥ 140,201	¥ 151,489	¥ 155,989	\$ 1,405,431
Net assets per share (JPY or USD)	¥ 527.50	¥ 631.53	¥ 708.18	¥ 815.77	¥ 924.25	¥ 1,000.34	\$ 9.01
Net income per share (JPY or USD)	¥ 106.86	¥ 97.12	¥ 94.55	¥ 103.43	¥ 94.93	¥ 107.10	\$ 0.96
Diluted net income per share (JPY or USD)	-	-	-	-	-	-	-
Capital adequacy ratio (%)	40.2	42.4	44.1	48.1	50.4	53.0	53.0
Return on equity (%)	22.7	16.8	14.1	13.6	10.9	11.1	11.1
Price-to-earnings ratio	6.9	9.7	10.7	10.5	12.3	12.3	12.3
Cash flows from operating activities	¥ 8,270	¥ 21,727	¥ 6,728	¥ 9,590	¥ 5,141	¥ 10,817	\$ 97,460
Cash flows from investing activities	¥ (1,430)	¥ (160)	¥ (445)	¥ 143	¥ (328)	¥ (1,382)	\$ (12,453)
Cash flows from financing activities	¥ (5,867)	¥ (3,707)	¥ (2,900)	¥ (1,787)	¥ (1,670)	¥ (9,120)	\$ (82,164)
End-of-year balance of cash and cash equivalents	¥ 27,030	¥ 45,008	¥ 48,335	¥ 57,132	¥ 60,283	¥ 61,027	\$ 549,844
Number of employees	3,315	3,266	3,366	3,447	3,609	3,619	3,619

Note:

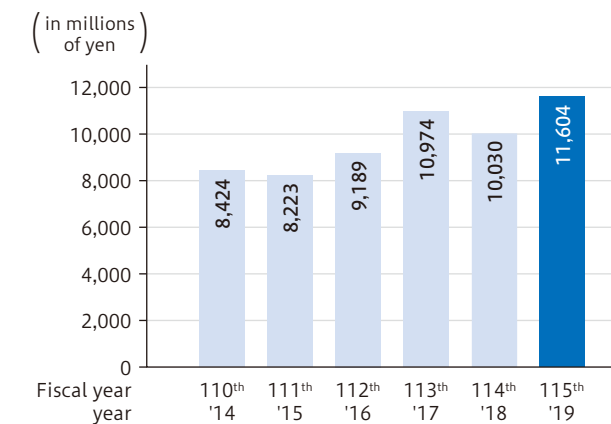
- U.S. dollar amounts are shown solely for the convenience of readers and are translated at the rate of ¥110.99 to U.S.\$1.00, the exchange rate prevailing at March 31, 2019.
- Ordinary profit is a measure of accounting profit that equals operating income plus other income minus other expenses, except for extraordinary items under Japanese GAAP.

Trend in Principal Management Indicators

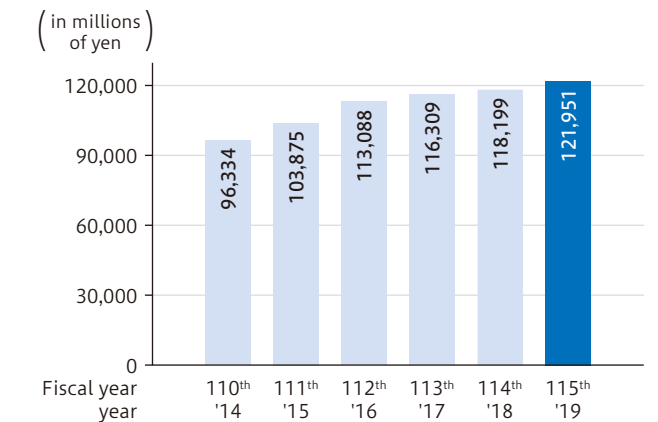
Value of orders received



Operating income

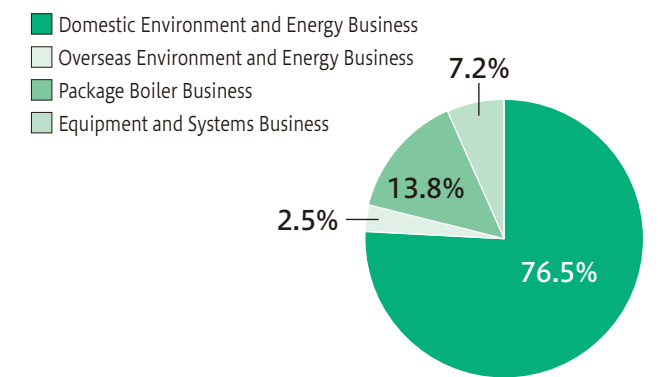


Net sales



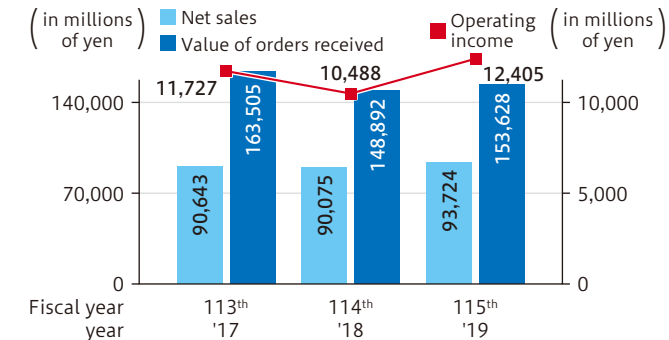
Net sales composition ratios

(FY2018)

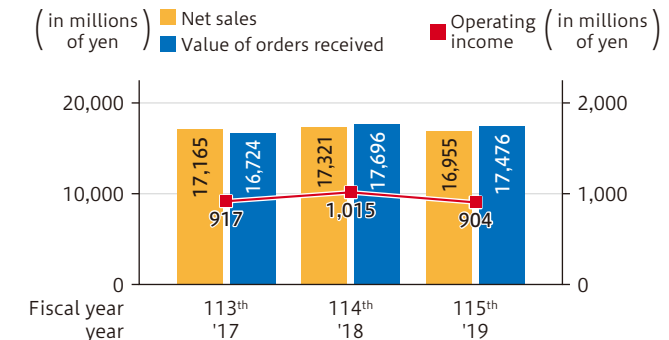


Trend by Segment

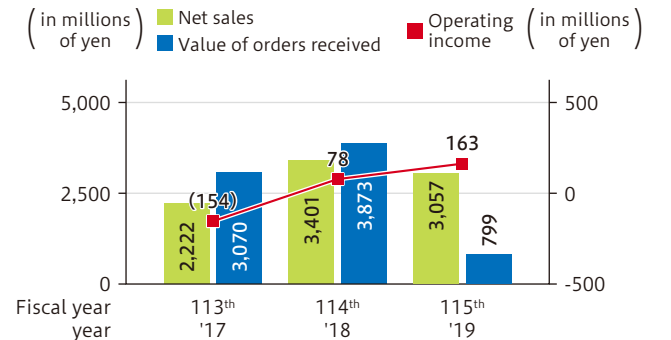
Domestic Environment and Energy Business



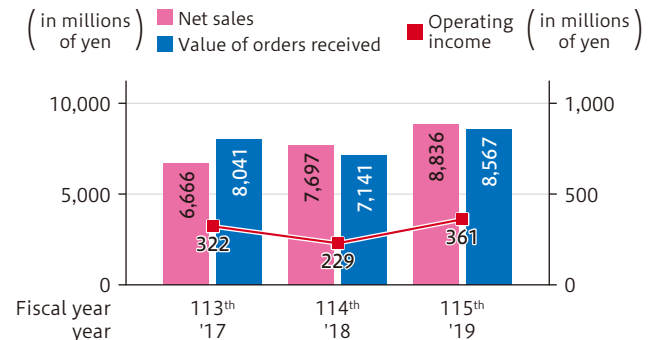
Package Boiler Business



Overseas Environment and Energy Business



Equipment and Systems Business



Message from Top Management

Contributing to
the sustainable
development of society
by providing new value
the world needs

Assessing change in the business environment and boosting our ability to grow

I'm Hiroaki Nanjo, and I became President and CEO of Takuma in April.

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 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. As the final stage in our direct to achieve that vision, we are working to implement the 12th Medium-Term Management Plan (FY2018 to FY2020). That effort includes a variety of business activities undertaken as part of the Plan, which outlines a three-year period during which we have sought to boost our corporate capabilities to facilitate the achievement of our vision and consistent growth afterwards based on a sure assessment of how the business environment is likely to change in the future.

Continuing to be a company that plays an essential role in society

I'd like to take advantage of this opportunity to describe my basic approach to management as I take on these new responsibilities.

First, I believe in the importance of respecting our Management Principles. The Takuma and Takuma Group 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." That impetus can also be found in our founding spirit of "Service to the nation 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. Companies must build and maintain good relationships with a variety of stakeholders, including customers, business partners, employees, shareholders, and investors. Such relationships cannot be realized in a day. The first step is for the company to conduct itself in a way that inspires trust on the part of stakeholders.

Through endless effort to provide new value after conducting ourselves in line with the dictates of legal compliance, impartiality, ethical values, and social mores while ensuring transparency in decision-making and fulfilling the obligations of accountability, we must build and maintain good relationships; only then will society acknowledge the value of Takuma's continued existence. I believe that management is founded on corporate governance, compliance, and risk management.

Second, I embrace the practice of seeing things from both a short-term and a medium-/long-term perspective. As the business environment continues to undergo significant change, we are called upon to deal with those changes in an appropriate manner and to generate results as we do so. Additionally, as a publicly held company, we are required to increase management efficiency and to improve our performance. However, merely pursuing short-term profits in the context of an effort to achieve long-term development of the business while satisfying all stakeholders is unlikely to lead to sustained growth. We must cultivate a medium- and long-term perspective and incorporate it into our management while reliably dealing with the immediate opportunities and issues that present themselves to us. In particular, the Group's products—Energy from Waste plants, water treatment plants, and energy plants—are key parts of society's underlying infrastructure, and as such they operate for 20 to 30 years after being delivered to the customer. We will continue to work to manufacture optimal products through careful attention to all phases of the life cycle, from design to construction and maintenance, in order to ensure that customers can utilize these facilities for as long, and in as effective a manner, as possible. At the same time, ESG investment is attracting attention as a means of boosting corporate value over the long term. We will contribute to society by focusing even more closely on developing and supplying products and services that make contributions to the environmental priorities of reducing environmental impacts and lowering greenhouse gas emissions.

Third, I am committed to carrying on a good corporate culture that allows all employees to pursue their jobs with enthusiasm and ambition while enjoying personal growth. Takuma has created a culture that encourages such growth by allowing relatively inexperienced employees to take on job responsibilities so that they can gain motivation and experience a sense of accomplishment while being mentored by supervisors and older colleagues. I look forward to continuing to develop an environment that allows each Takuma employee to approach his or her job with a desire to improve, to take full advantage of his or her skills and abilities, to grow through the company's activities, and to enjoy a sense of motivation and happiness.



Message from Top Management



Accommodating customers' diversifying needs through new initiatives such as the O&M* business

Currently, Takuma's principal businesses include the Solid Waste Treatment Plant Business; the Energy Plant Business, which includes our Package Boiler Business; and the Water Treatment Plant Business. These three core areas of operations have grown thanks to continuous effort over many years, and by cultivating trusting relationships with customers, they have earned us excellent market share. We are now embarking on a new initiative that will seek to develop an O&M business for energy plants, an area that shares our focus on maintenance, into a robust contributor to Takuma's bottom line by taking advantage of the experience we've gained in solid waste treatment plants. Continuous action will be needed in the future in order to accommodate customers' diversifying needs so that we can continue to grow. Through the creative efforts of all employees, we will show the way forward for each business so that we can achieve the goals of the 12th Medium-Term Management Plan and realize our medium- and long-term vision for the next stage in our history.

Helping solve social issues from the world's standard perspective

Takuma has been a signatory to the United Nations Global Compact* since 2006, and we support its 10 fundamental principles in the 4 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 generation of electricity using waste and biomass.

July 2019

Hiroaki Nanjo
President and CEO
Takuma Co., Ltd.

* Service to the nation 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).

* O&M: Operation & Maintenance

* 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.

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 "Service to the nation through boiler manufacturing," which in present-day language means "contribution to society by supplying goods and services that we yield." 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 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 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 properties 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, personal quality, and privacy
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

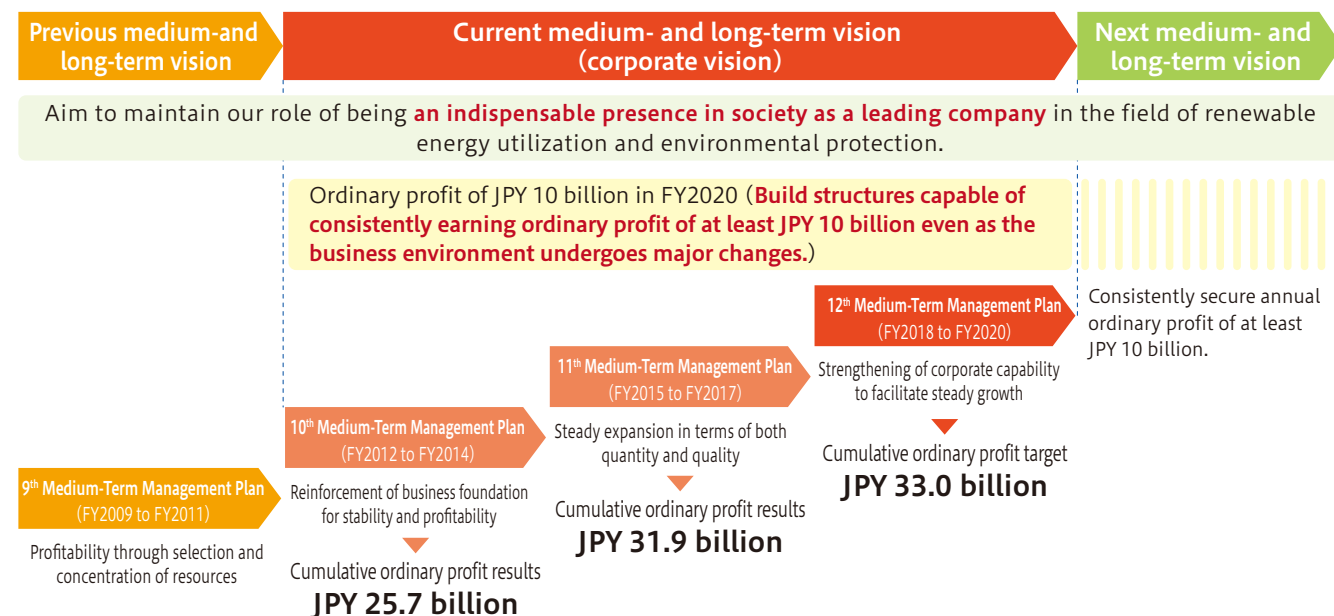
14. Transmission of corporate information
15. Ensuring reliability of financial reporting
16. Prohibition of insider trading

Protection of corporate properties and information

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

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

①Strengthening 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.

②Achieving 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.

③Increasing 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).

④Using 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).

⑤Continuing to pursue compliance management

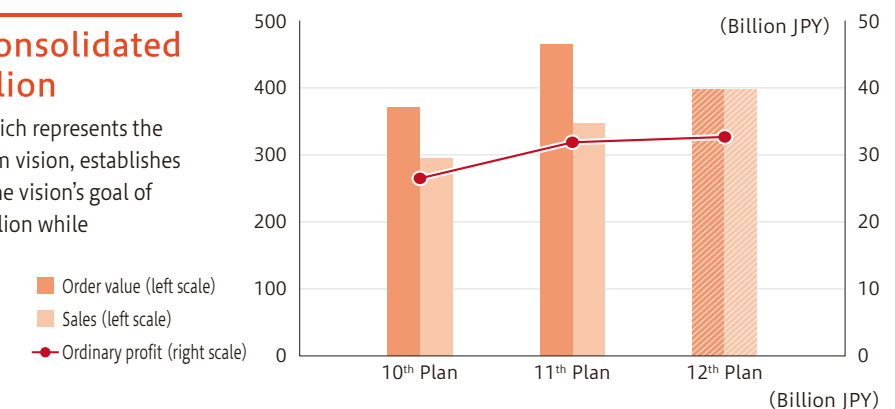
The Group considers compliance to be a key foundation of its corporate activities, and we've worked to spread awareness and foster adoption of good practices by including compliance as a policy in the last several Medium-Term Management Plans.

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.



	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	FY2018 to FY2020
Order value	371.0	99.9	191.0	177.1	468.0	179.8	JPY 400 billion (approx.) (3-year cumulative total; reference value)
Sales	296.5	113.0	116.3	118.1	347.5	121.9	Target: JPY 33 billion (3-year cumulative total)
Ordinary profit	25.7	9.6	11.6	10.6	31.9	12.3	

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.

* DBO: Design Build Operate / PPP: Public Private Partnership / PFI: Private Finance Initiative / FIT: Feed-in Tariff

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.

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.



Kengo Numata

Director & Executive Vice President
Executive Manager, Corporate Planning & Administration Division

The central theme of this Medium-Term Management Plan is strengthening our corporate capability to facilitate steady growth. During FY2018, we worked to do just that in an effort to not only boost profitability, but also better earn the trust of a wide range of customers and other stakeholders, including by offering high-quality solutions that help resolve a variety of today's social issues. I think it was a good start for the first year of the Plan.

In FY2019 and beyond, we will continue to help build a sustainable society by strengthening our corporate capabilities through operations including our environmental plant, energy plant, and other businesses and by maintaining our role of being an indispensable presence in society as a leading company in the field of renewable energy utilization and environmental protection.

The Japanese Solid Waste Treatment Plant and Boiler Plant Businesses performed well during the first year of the Plan. Orders, sales, and operating income all exceeded the initial planned values as we enjoyed a smooth start in terms of quantitative performance.

Looking at the business environment, the transition in the Japanese market from manufacturing alone to a service business that uses products as tools is accelerating, and there is demand in the overseas market for products and services that can accommodate individual countries' different situations and needs.

In order to achieve steady growth, it is necessary for companies to bolster their capabilities to ensure they can adapt to changes in the tenor of the times. One of the key themes for this plan is strengthening and expanding the Japanese plant operation business and bringing new creativity to its development overseas. Our goal is to enhance our adaptability and create a foundation that will enable us to secure stable profits in the future by actively developing more appropriate structures based on revamped resource allocation, accumulating more skills, and offering a selection of products that meet the needs of the times.



Hideki Takeguchi

Director & Senior Managing Executive Officer
Executive Manager, Engineering Group

In order to build a society in which the global environment and natural environment are protected and conserved in an appropriate manner into the future, it will be necessary to utilize waste effectively as a resource and to expand production of renewable energy.

Our mission is 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. In keeping with that mission, our Engineering Group will continue to help build a sustainable society by providing plants that make significant inroads in the drive to protect the environment, develop a recycling-based society, and reduce CO₂ emissions through pioneering solid waste treatment that helps reduce environmental impacts, Energy from Waste projects that generate power from municipal waste and sewage sludge, and carbon-neutral biomass power generation.



Tsuyohito Nishiyama

Director & Senior Managing Executive Officer
Executive Manager, Corporate Marketing Group

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, 2019)
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): 852 (as of March 31, 2019)
Number of employees (consolidated): 3,619 (as of March 31, 2019)

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 26-10202)
First-class architect office registration (01A02903)
ISO 9001 quality management system certification



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

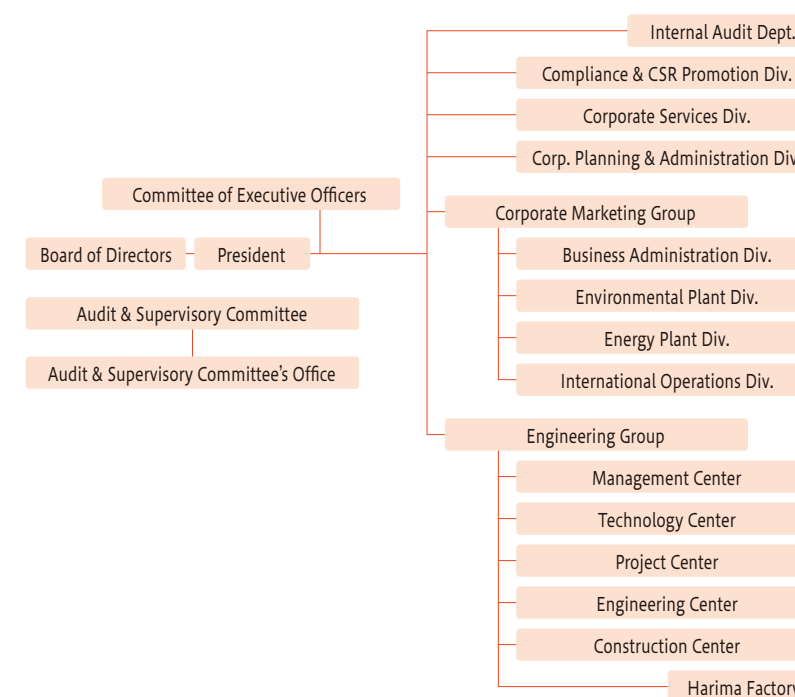
● Harima Factory

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)
Manufacture of refrigerators (Governor of Hyogo Prefecture)



JQA-EM0313
ISO 14001
certification
Harima Factory

Corporate structure



Head Office



Harima Factory

The Takuma Group Network

(As of June 26, 2019; see Takuma's website for details.)

● Takuma's business offices ● Group companies in Japan ● Overseas group companies

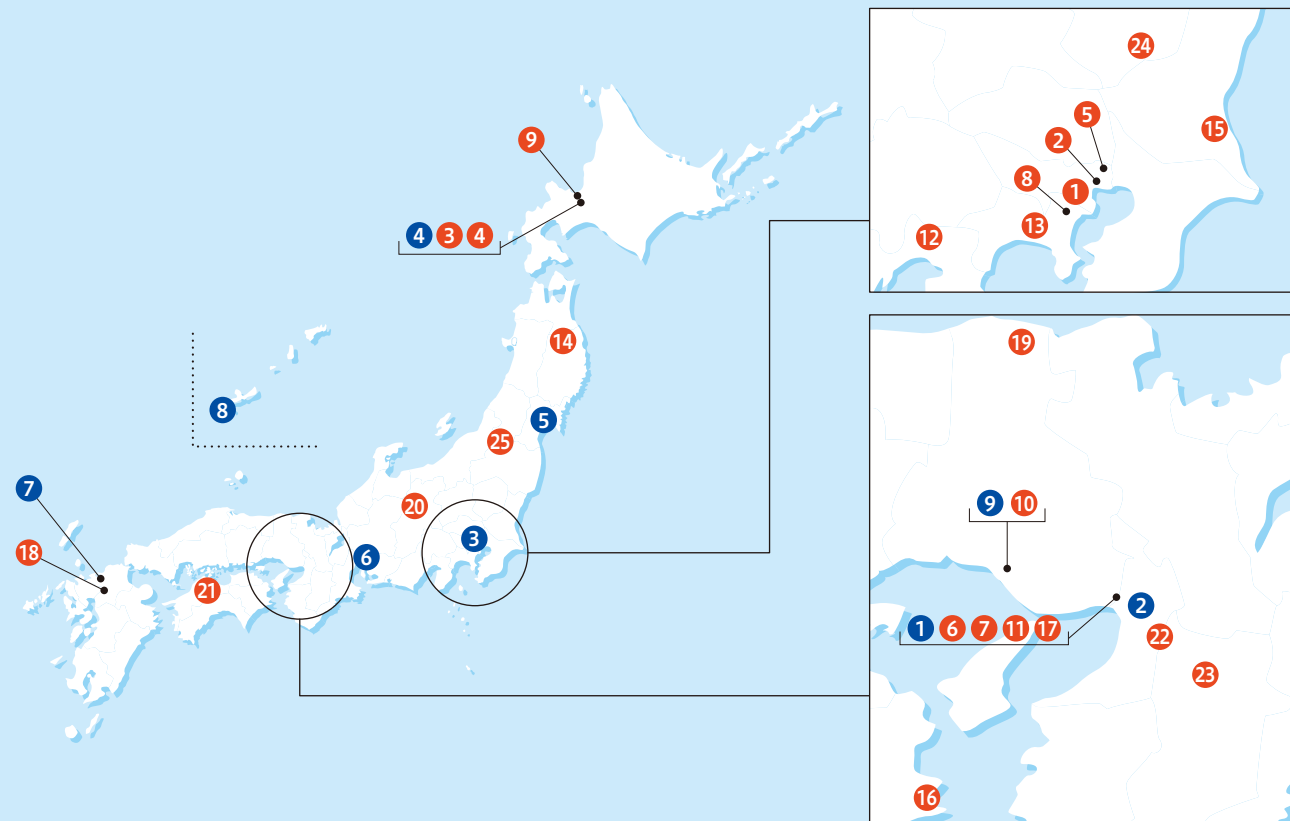
Takuma's business offices

- 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)

Group companies in Japan

- 1 Nippon Thermoener Co., Ltd.
- 2 Takuma Technos Co., Ltd.
- 3 Hokkaido Sanitary Maintenance Co., Ltd.
- 4 Takuma Technos Hokkaido Co., Ltd.
- 5 Sun Plant Co., Ltd.
- 6 Takuma Engineering Co., Ltd.
- 7 Takuma System Control Co., Ltd.
- 8 Dan-Takuma Technologies Inc.
- 9 Kyoritsu Setsubi Co., Ltd.
- 10 Kankyo Sol-Tech Co., Ltd.
- 11 Takuma Plant Service Co., Ltd.
- 12 Nagaizumi High Trust Co., Ltd.

- 12 Fujisawa High Trust Co., Ltd.
- 13 Iwate-Kenpoku Clean Co., Ltd.
- 14 Hitachinaka-Tokai High Trust Co., Ltd.
- 15 Anan High Trust Co., Ltd.
- 16 Takuma Energy Co., Ltd.
- 17 Kurume High Trust Co., Ltd.
- 18 Hokutan High Trust Co., Ltd.
- 19 Suwako High Trust Co., Ltd.
- 20 Imabari High Trust Co., Ltd.
- 21 Energy Mate Co., Ltd.
- 23 Kashiwara High Trust Co., Ltd.
- 24 Tochigi High Trust Co., Ltd.
- 25 Ecos Yonezawa Co., Ltd.















Overseas group companies

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



The History of Takuma

	1912	1912 The first "Takuma boiler" introduced by our founder, the venerable Tsunekichi Takuma	
	1920		
	1930	1930 The venerable Tsunekichi Takuma commended as one of the ten great inventors of Japan during the Meiji and Taisho periods (1868–1926)	
1938		Takuma Boiler Manufacturing Co., Ltd. founded Company Motto instituted: "Service to the nation through boiler manufacturing"	
1942		Operation begins at Harima Factory	
1949		Company listed on the Osaka and Tokyo stock exchanges	
1953		Head Office moved to Osaka's Kita-ku District	
1962		Operation begins at Kyoto Factory (Current: Nippon Thermoener Co., Ltd. Kyoto Factory)	
1972		Company renamed Takuma Co., Ltd.	
1992		New Company Motto instituted: "Value Technology, Value People, Value the Earth"	
1995		Amagasaki Head Office Building completed	
1997		ISO9001 certification obtained	
1999		ISO14001 certification obtained for Harima Factory	
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.	
2013		Operation of the Takuma Solar Power Plant began (Harima Factory)	
	1912		
	1920		
	1930		
	1940		
	1949	1949 Bagasse fired boiler, the first product of its kind in the industry, exported	
	1950		
	1958	1958 Business expanded into the environmental facility sectors, including waste incineration and water treatment plants	
	1960		
	1963	1963 Japan's first waste incineration plant delivered Sewerage treatment facility delivered	
	1970		
	1975	1975 Bulk production begins on "Vacotin Heater", the world's first vacuum-type hot water heater	
	1980		
	1986	1986 The first overseas delivery of a waste treatment facility completed (U.S.A.)	
	1990		
	1992	1992 The first delivery of a waste energy treatment facility completed in Taiwan (Nei-Hu, Taipei City)	
	1998	1998 Japan's largest Energy from Waste plant delivered (Tokyo Shinkoto Waste Treatment Plant capacity: 1,800 tons per day)	
	2000		
	2005	2005 The first delivery of a waste energy treatment facility completed in China (Tianjin City)	
	2010		
	2010	2010 Energy from Waste plant delivered in Europe (U.K.)	
	2012	2012 Installation and operation of temporary incinerators to process disaster waste from the Great East Japan Earthquake	
	2013		
	2019	2019 Order received for a 74,950 kW biomass power plant (FIT-approved facility)	

1.Environmental Plant Business

Strengthening our value chain and supplying facilities that create new value

Hidetoshi Tomita Executive Officer
Executive Manager, Environmental Plant Division

We receive orders for a broad range of services, from construction to maintenance.

Since constructing Japan's first fully continuous mechanical Energy from Waste plant in 1963, Takuma has delivered Energy from Waste plants for more than half a century as a leading company in its industry. To date, we've delivered more than 360 plants in Japan, including Energy from Waste plants with some of the largest processing capacities in Japan (at 1,800 tons per day) and methane gasification facilities.

During FY2018, we received two orders for new municipal solid waste treatment plants, one for the Osaka City · Yao City · Matsubara City Environment Facilities Association (located in Osaka Prefecture), and one for the Ariake Living Environment Facilities Association (located in Fukuoka Prefecture). We also received a total of four orders for primary equipment improvement work and equipment renovation work for customers including the Oshima District Cooperative of Municipal Solid Waste Management (located in Hokkaido Prefecture) and the City of Hitachiota (located in Ibaraki Prefecture). We also received orders for overhaul work, regular adjustment, and maintenance inspections from local governments, and we're working hard to maintain plant performance and stable operation.

We're seeing steady growth in orders for filtration systems.

Takuma also has more than 50 years of experience in water treatment, another key aspect of the Environmental Plant

Business. Our products excel particularly in advanced wastewater treatment technologies, and we've delivered numerous upflow moving-bed filtration systems (Uniflow Sand Filter).

During FY2018, we received orders for sand filtration systems and other products, and order volume is generally in line with our goals for the first year of the current Medium-Term Management Plan.

We're helping build a sustainable society.

Noteworthy accomplishments during FY2018 included receipt of the Grand Prix, the most prestigious award at the Association for Resilience Japan's Japan Resilience Award (Resilience Grand Prize) 2019, together with Imabari City (Ehime Prefecture), NPO Imabari Center, and Imabari High Trust Co., Ltd. The accolade recognized advanced and extensive disaster prevention initiatives carried out by the four partners at the Imabari City Waste Management Center, a facility that we delivered in FY2017.

In this way, we will continue to supply safe facilities that inspire peace of mind and comfort on the part of local residents, enhance operations and service, and strengthen our value chain in areas such as plant maintenance and operation.

The United Nations Sustainable Development Goals were adopted in 2015, and the Paris Agreement came into force in 2016. Going forward, Takuma will work to help build a sustainable society by striving to reduce its environmental impacts.

Business topics

Receiving the Japan Resilience Award (Resilience Grand Prize) 2019 Grand Prix

The Imabari City Waste Management Center, which received the Japan Resilience Award (Resilience Grand Prize) 2019, incinerates solid waste from about 160,000 residents of the city of Imabari and uses the resulting thermal energy to generate electricity. The plant is the first solid waste treatment facility in Japan to adopt the "Phase Free" concept, allowing it to function as a place where residents can gather and enjoy interaction with other members of the community during times of normal operation and as a designated evacuation center where residents can seek refuge in times of disaster. The facility has incorporated procedures such as disaster prevention training and evacuation center operation into its operation in order to ensure it can serve as a space where residents can evacuate with peace of mind in the immediate aftermath of a disaster.

The plant received the Grand Prix in recognition of these advanced and extensive disaster prevention initiatives.

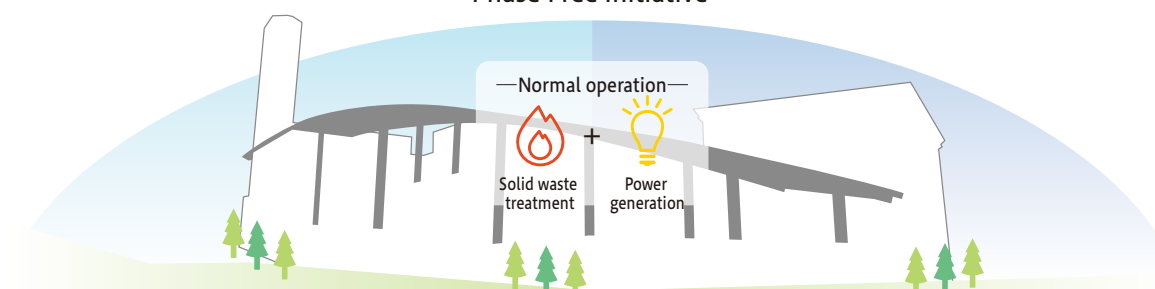
* Japan Resilience Awards

The Japan Resilience Awards recognize advanced companies and organizations that have undertaken activities, technology or product development programs, or other initiatives to help make their country, region, people, or industry more resilient in an effort to build a next-generation society that is resistant to the effects of disasters.



At the award ceremony

Imabari City Waste Management Center Phase Free initiative



Always (normal operation)	In times of emergency (natural disasters)
<ul style="list-style-type: none"> Waste treatment Events Communication of facility information 	<ul style="list-style-type: none"> Continuation of waste treatment Evacuation center Provision of space for evacuees



The facility's gym is used for resident activities.



The facility supports events by local NPOs.



The gym can be used as an evacuation center.



The facility supports evacuation center operation by local NPOs.

Equipment-focused initiatives (Resilient facilities and equipment) Organizational initiatives (Personnel support and community development)

Opening Solution Lab, a next-generation facility that utilizes ICT

Since opening in 2004, Takuma's Comprehensive Operation Support Center has provided remote monitoring and operational support for municipal solid waste treatment facilities. In 2019, we opened the Solution Lab with the goal of further enhancing the Center's functionality by augmenting the expertise it's accumulated to date with use of operational and maintenance management data obtained by means of the latest information and communications technologies (IoT, "Big Data," and AI). As a result, it is able to offer optimal, high-quality operational support services in partnership with group company Takuma Technos.

The Solution Lab will move to the sixth floor of the tentatively named Takuma Building New Wing (Training Center)*, which is being built at our Head Office campus.

* The Takuma Building New Wing, which is scheduled to be completed in October 2020, is a six-story, next-generation wood structure built using cross-laminated timber (CLT) and fireproof laminated wood. The structure was selected as part of the Ministry of Land, Infrastructure, Transport and Tourism's FY2018 Sustainable Building Leading Program (Leading Wood Structures).

Operation and maintenance support	Customer issue resolution and research	Human resources development and technology training
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1.Environmental Plant Business



Municipal Solid Waste Treatment Plant Business

Municipal solid waste treatment plants built recently are required to offer far-reaching performance and functionality, including increased generating efficiency and recycling rates, reduced greenhouse gas emissions, enhanced facility resilience, and longer service lives.

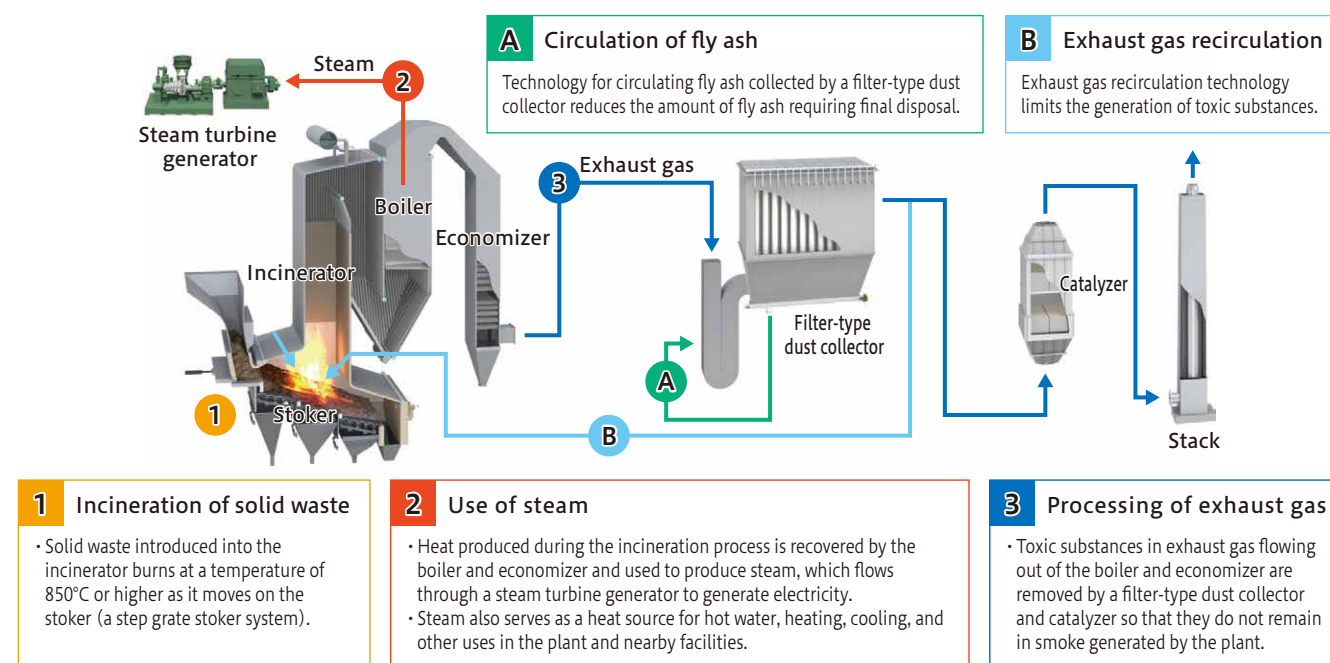
To meet precisely these demands from society and customers, Takuma delivers safe facilities that inspire peace of mind by taking maximum advantage of the advanced technologies and expertise that have been fostered by its extensive track record of projects.

Plant construction

Stoker-type incinerators

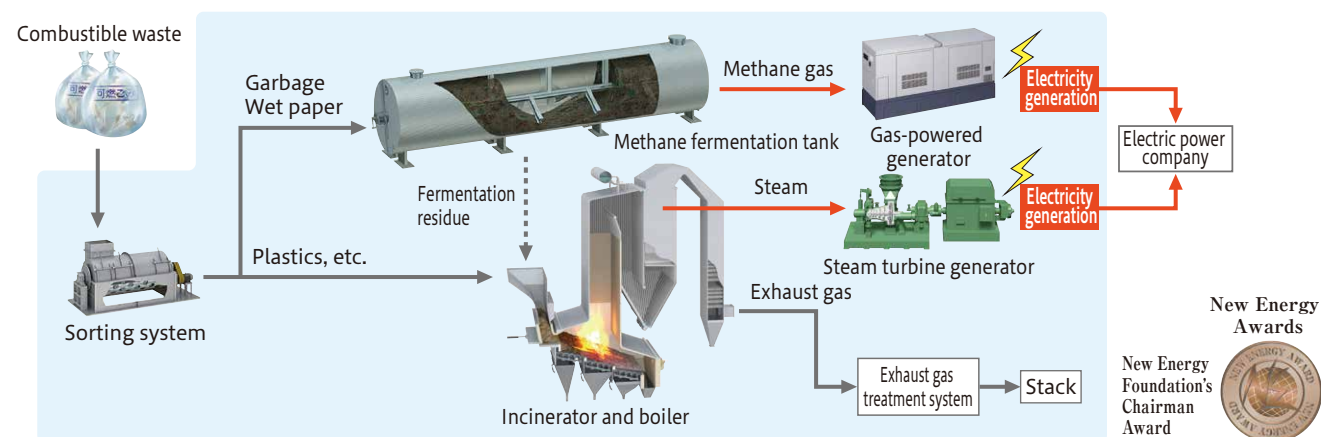
Energy from Waste plants must process waste in a safe and stable manner. Takuma stoker-type incinerators, which are one of our flagship products, excel at safe, stable combustion and generate lower CO₂ emissions than other designs that require auxiliary fuel.

By combining a stoker-type incinerator with other technologies such as high-efficiency power generation and advanced exhaust gas treatment, we're helping municipalities around Japan solve their solid waste treatment issues.



Methane recovery plants

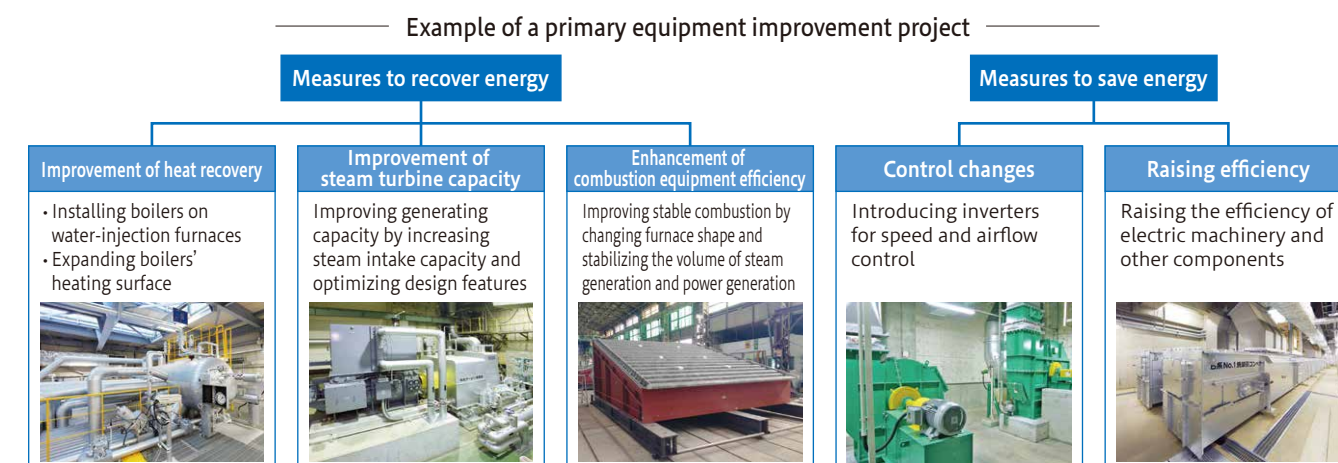
Recently the Ministry of the Environment has been encouraging the introduction of methane recovery plants for use with municipal solid waste. This is an area where Takuma is helping further lower CO₂ emissions with a combined system of methane fermentation and incineration for municipal solid waste to recover the maximum amount of energy from the waste treatment and utilize it in high-efficiency power generation. (The system received the New Energy Foundation's Chairman Award at the FY2014 New Energy Awards.)



Primary equipment improvements

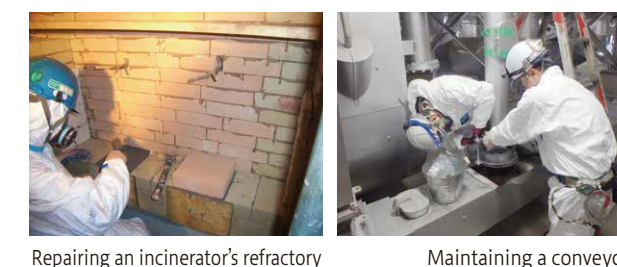
Municipal solid waste treatment plants must operate for extended periods of time, but their equipment must be updated once 20 or more years have passed since the start of operation. In addition, changes to applicable laws and social conditions may necessitate large-scale modifications.

Takuma draws on the sophisticated heat utilization technologies and energy-saving technologies it has accumulated as a boiler and environmental plant manufacturer to carry out high-value-added and large-scale renovation projects. In this way, we are able to help extend facilities' service life while lowering CO₂ emissions.



Maintenance

Annual maintenance is essential in order to ensure stable operation of municipal solid waste treatment plants. Maintenance demands both sophisticated technological capabilities and experience, both because waste treatment plants draw on a range of expertise and because 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.

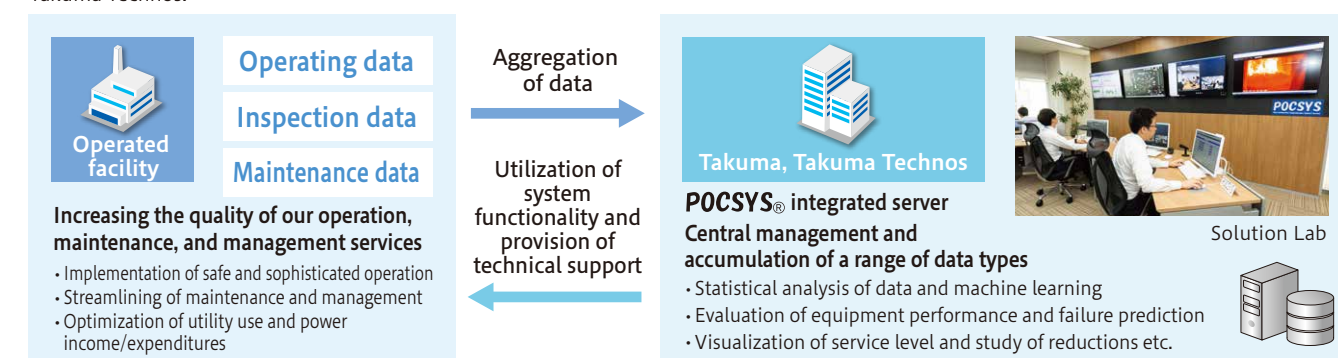


Long-term turnkey operation business

The long-term turnkey 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. The Takuma Group operates many facilities using this approach.

We've been introducing **POCSYS**, a comprehensive operation, maintenance, and management support system that we developed in FY2016, to these facilities in an effort to improve our operation and maintenance management services. Furthermore, we're offering additional support for operation while helping customers resolve issues by using data collected from facilities we operate by the Solution Lab (see page 26).

We will continue to meet the needs of customers and society by making maximum use of the Takuma Group's technologies and expertise, including maintenance management expertise accumulated by Takuma and operational management expertise accumulated by Group company Takuma Technos.



1.Environmental Plant Business



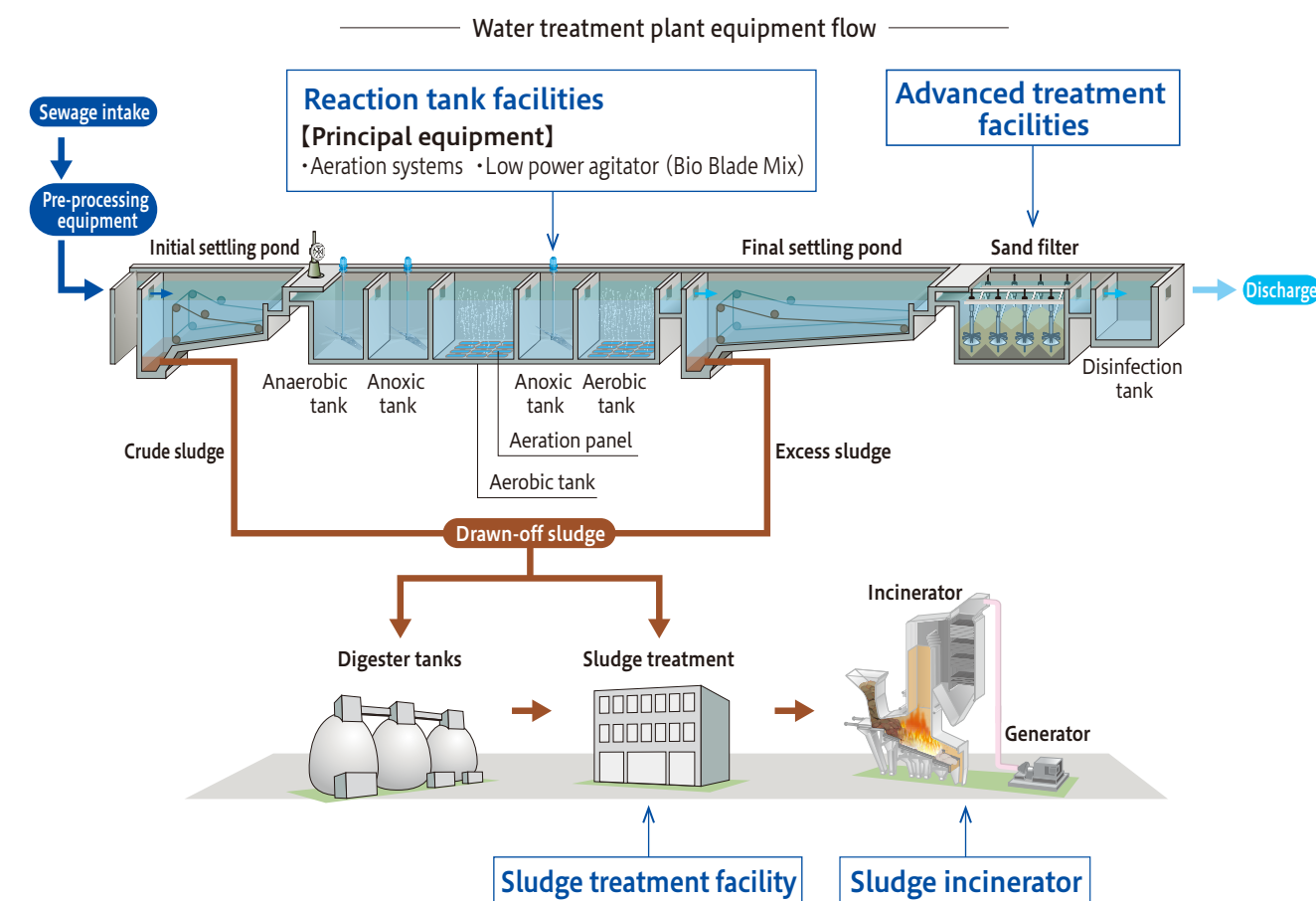
Water Treatment Plant Business

Takuma has delivered numerous systems utilizing advanced technologies, particularly for treating 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 furnace sewage sludge power generation system and commercializing technologies that use waste heat from the incineration process to generate electricity.

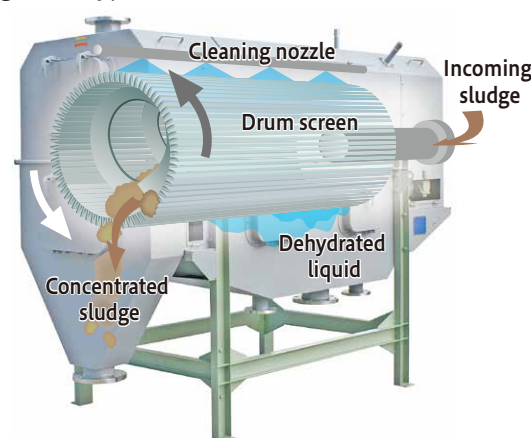
Going forward, we will continue to help conserve the aquatic environment by supplying products that meet the needs of our times.

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. Thanks to a simple design whose operation hinges on a slowly rotating drum screen, the system uses less power than its conventional counterparts, yielding high energy savings.

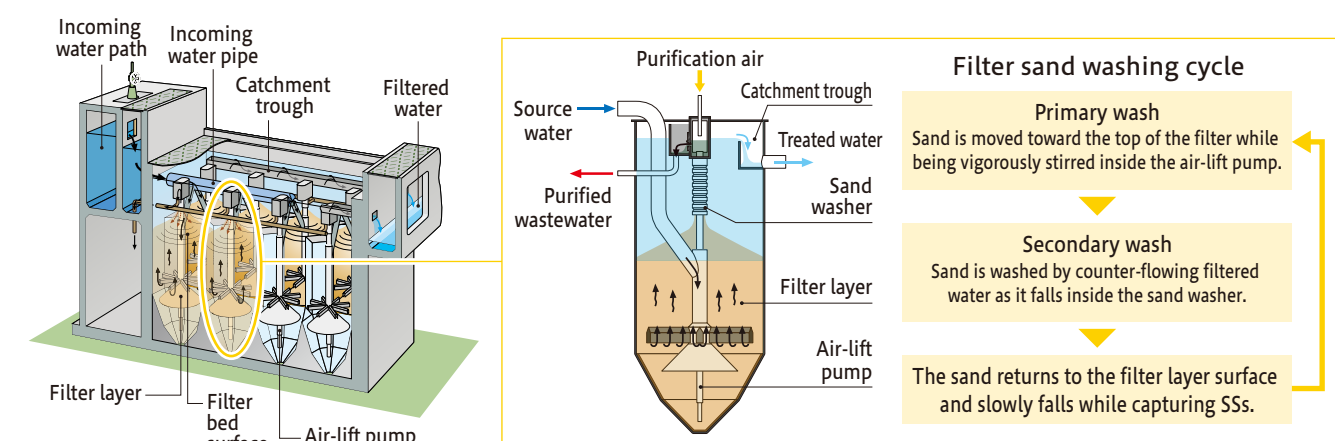


Advanced treatment facility [Principal equipment] · Upflow moving-bed filtration (Uniflow Sand Filter)

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 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

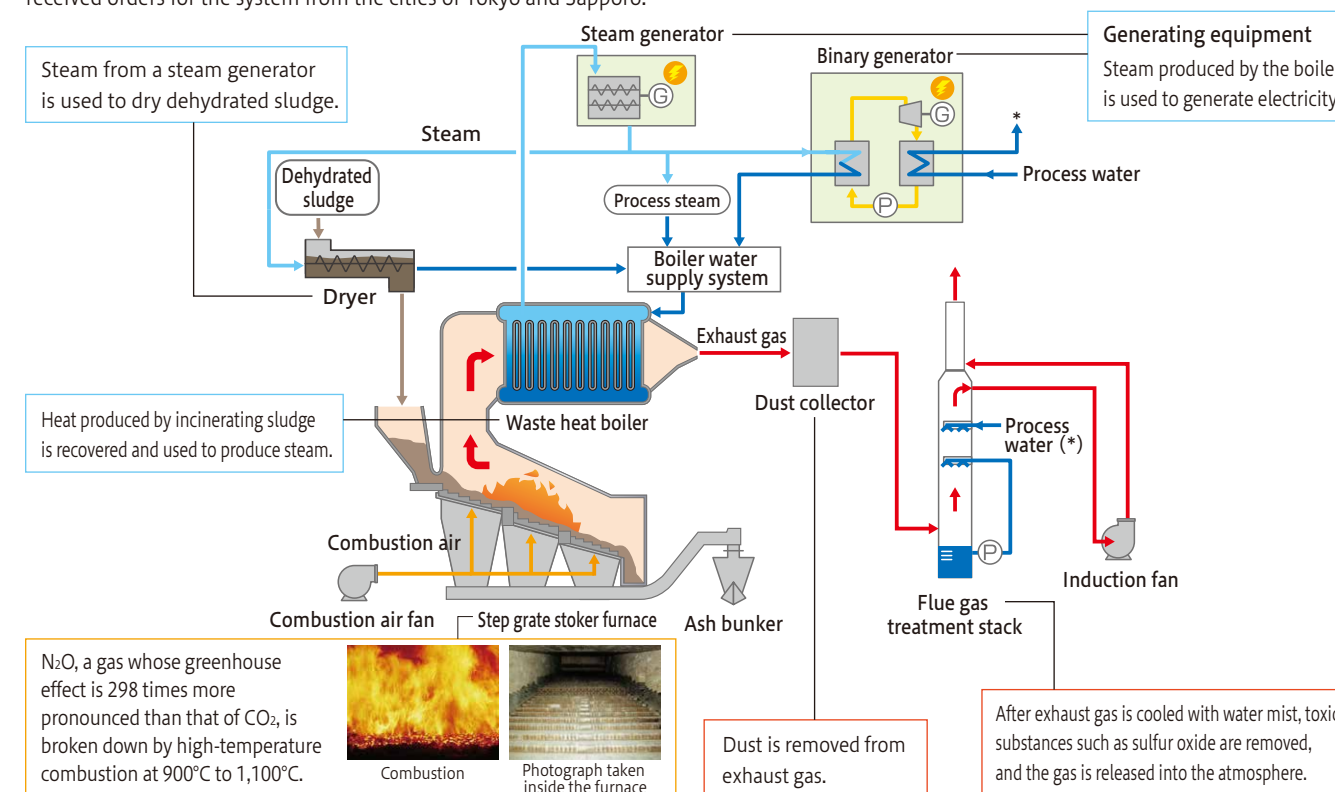
have delivered more than 2,700 units in Japan. A design that combines filtration treatment with continuous backwashing of the filtration sand ensures stable operation and exceptional maintainability.

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 furnace sewage sludge 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 Ministry of Land, Infrastructure, Transport and Tourism's Breakthrough by Dynamic Approach in Sewage High Technology Project (B-DASH) in FY2013, we have received orders for the system from the cities of Tokyo and Sapporo.



1.Environmental Plant Business

Main Recent Projects The following are the main plants supplied by Takuma during FY2018.

■Municipal Solid Waste Treatment Plant Business

● New construction



Environmental Forest Center, Kizugawa

Project name	Capacity	Location
Clean Center Facility Maintenance Project	Incineration facility: 94 tons per day (47 tons per 24 hours × 2 units) Power output: 1,220 kW	Kyoto Prefecture

● Primary equipment improvements



Kumagaya Sanitation Center No. 1 Plant

Project name
Kumagaya Sanitation Center No. 1 Plant Primary Equipment Improvement Project
Capacity
Incineration facility: 140 tons per day (70 tons per 24 hours × 2 units)
Location
Saitama Prefecture



The Inariyama Environmental Center

Project name
Primary Equipment Improvement Project, The Inariyama Environmental Center, Sayama City
Capacity
Incineration facility: 165 tons per day (55 tons per 24 hours × 3 units) Power output: 264 kW
Location
Saitama Prefecture

■Water Treatment Plant Business

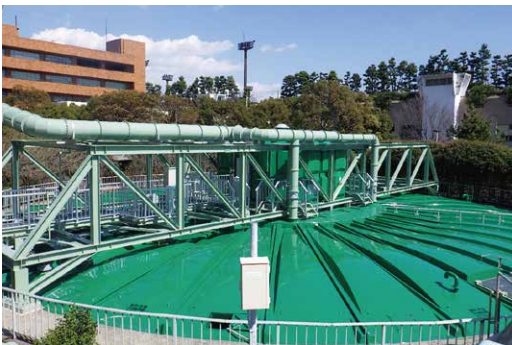


Takasu Sewage Treatment Plant

Project name
Urado Bay Eastern Basin Takasu Sewage Treatment Plant Sludge Treatment System Construction Part 12
Capacity
Type: Pressurized screw press dehydrator Treatment capacity: 225 kg-DS per hour
Location
Kochi Prefecture

Matsubara Preprocessing Plant

Project name
FY2017 Matsubara Preprocessing Plant Automatic Coarse Dust Eliminator Renovation Project
Capacity
Type: Intermittent front-surface mixing-type screen Specifications: 3,500 (W) × 1,100 (D) mm
Project name
FY2018 Matsubara Preprocessing Plant No. 2 Concentration Tank Sludge Scraper Update Project
Capacity
Type: Sludge scraper (center-drive vertical type) Specifications: ø17.9 m × 1 unit
Location
Hyogo Prefecture



Kasai Water Reclamation Center

Project name
Kasai Water Reclamation Center Sludge Concentration Tank No. 1 Machinery and Equipment Improvement Project
Capacity
Type: Sludge scraper (center-drive post type) Specifications: ø28 m × 1 unit
Location
Tokyo Prefecture

Iizaka Clean Site

Project name
Iizaka Clean Site Phase 2 Final Treatment Plant Seepage Water Treatment Plant Construction Project (No. 2 Area)
Capacity
Type: Contact oxidation-type nitrification denitrification system Specifications: 110 m³ per day Type: Centrifugal dehydrator Specifications: 515 kg-DS per hour
Location
Fukushima Prefecture



2. Energy Plant Business



(Related SDGs)

Contributing to local communities and the renewable energy industry with plants of the highest possible level of quality

Mitsuaki Adachi
Managing Executive Officer
Executive Manager, Energy Plant Division

Meeting growing demand with a sure track record

Our Energy Plant Business traces its roots back to the founding of Takuma in 1938 by Tsunekichi Takuma, who developed Japan's first high-performance boiler. Since that time, we've enhanced technologies for using a variety of fuels including biomass and solid waste and delivered numerous boilers to customers (more than 600 in Japan and overseas; a total of more than 3,220 boilers including units that burn oil, gas, and wood).

Demand for wood-fueled biomass power plants has been growing since Japan's introduction of a feed-in tariff (FIT) program for renewable energy in 2012, and we have delivered such facilities to many customers that have praised our long-running track record. I am grateful for this achievement and recognize that it is the result of our stakeholders' support. We take pride in marshalling all of our capabilities to fill orders by supplying plants of the highest possible level of quality.

Biomass power as a solution for social problems

We recently received our first O&M order for a biomass power plant that will be delivered to a private-sector company. Going forward, we will strive to ensure we can contribute to customers' businesses in a comprehensive way by offering a range of proposals, including for O&M projects.

Under the FIT program, biomass power is treated as a source of power that strives to facilitate medium- and long-term autonomy while coexisting with local communities, and it is a business that can contribute directly to the resolution of social issues in the form of unused lumber left on mountains and local employment. Consequently, we look forward to helping facilitate the sustainable development of local communities and of the renewable energy industry by making a broad contribution to customer businesses based on technologies and comprehensive capabilities developed over many years, even as we keep tabs on factors such as discussions of an expected future review of the FIT program.

Contributing to society through business activities

We're helping realize a sustainable society while working to resolve customers' issues as well as social problems through our business activities.



Promoting renewable energy

We're helping promote renewable energy by supplying biomass power plants.



Preserving the environment in the form of water, air, and mountain forests

We're helping preserve the global environment by supplying plants that utilize appropriate technologies and systems to protect the environment.



Making effective use of unutilized resources

We're helping realize a recycling-based society by supplying plants that can efficiently burn fuels and waste products that have gone underutilized in the past.



Reducing CO₂ emissions

We're helping realize a low-carbon society by supplying high-efficiency power plants.

Value provided by Takuma's Energy Plant Business

1. Plant engineering

We supply plants that can burn a variety of fuels and waste products 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, pellets, livestock waste, bagasse, and papermaking sludge.

Facilities that incinerate industrial waste to generate power

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 products 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 over 20-year terms to reduce workload and life cycle costs so that customers can maximize the profitability of their businesses.

2. Energy Plant Business

Main Recent Projects

The following are the main plants supplied by Takuma during FY2018.

Energy plants



KOBE BUSSAN CO., LTD.

Project name
Biomass Power Plant Construction Project

Capacity
Fuel: Wood fuel
Steam conditions (normal operation):
28 tons per hour \times 5.98 MPaG \times 425°C
Power output: 6,250 kW

Location
Hokkaido Prefecture

Daisen Biomass Power Generation Co., Ltd.

Project name
Biomass Power Plant Construction Project

Capacity
Fuel: Wood fuel
Steam conditions (normal operation):
28 tons per hour \times 5.98 MPaG \times 480°C
Power output: 7,050 kW

Location
Akita Prefecture



Ariake Co., Ltd., No. 2 Power Plant

Project name
Arao No. 2 Biomass Power Plant
New Construction Project

Capacity
Fuel: Wood fuel
Steam conditions (normal operation):
29.2 tons per hour \times 6.0 MPaG \times 425°C
Power output: 6,250 kW

Location
Kumamoto Prefecture



Chugoku Mokuza Co., Ltd., Hyuga factory

Project name
Chugoku Mokuza Wood-fueled Boiler (No. 2)
Construction Project

Capacity
Fuel: Wood fuel
Steam conditions (normal operation):
24 tons per hour \times 1.3 MPaG \times 195°C

Location
Miyazaki Prefecture



Mogami Biomass Power Co., Ltd.

Project name
Mogami Wood Biomass Power Plant
Generating System Construction Project

Capacity
Fuel: Wood fuel
Steam conditions (normal operation):
28 tons per hour \times 5.98 MPaG \times 465°C
Power output: 6,800 kW

Location
Yamagata Prefecture

SARA Inc.

Project name
SARA Power Plant Construction Project

Capacity
Fuel: Wood fuel, PKS
Steam conditions (normal operation):
50 tons per hour \times 6.0 MPa \times 425°C
Power output: 10,000 kW

Location
Okayama Prefecture



3. Overseas Business

(Related SDGs)



Assessing changes in global trends in the overseas market to ensure we can continue to contribute to the development of industry in countries worldwide

Takashi Manabe

Managing Executive Officer
Executive Manager, International Division

Resolving issues by accommodating a diversifying array of needs

The International Division is responsible for sales of boiler plants and waste treatment plants in overseas markets. We take pride in the fact that promoting those businesses, which reduce greenhouse gases by making effective use of non-fossil fuels while contributing to the resolution of environmental issues through the appropriate treatment of waste, will help achieve the Sustainable Development Goals (SDGs) that Takuma is pursuing.

We've already delivered close to 400 biomass boilers to overseas customers. Nowhere is the viability of this business more apparent than in Thailand, where Takuma has a local subsidiary and where we have been supporting the sugar industry as well as other sectors of the economy for over 60 years. In the past, biomass boilers were used to provide heat and power for equipment at industrial plants, but today their role is diversifying as a recent global trend toward converting to renewable energy drives expectations that they will function as true power plants by taking on some responsibility for ensuring society's supply of electricity.

We've also delivered dozens of waste treatment plants overseas. In recent years, the appropriate treatment of waste has become a particularly urgent issue in developing nations. While environmental awareness, governmental programs, budgets, and other considerations vary from country to country, we're making preparations to ensure success in a careful and steady manner based on these and related developments, for example by formulating optimal schemes by which to pursue potential orders and develop projects.

Bringing necessary, valuable products to the international community

There is no doubt that plants that generate electricity using Takuma's core technologies to burn biomass and waste are earning recognition as both necessary and valuable in a society that's working to achieve the SDGs in a concerted manner. Although the business environment will remain intensely competitive, we will continue to contribute to the international community by developing latent customer demand in a fine-grained manner and supplying solutions that meet those needs.

Overseas boiler plant business

The sugar business has been booming in Thailand, where Takuma has a local subsidiary. We have supported the industry for many years and have an extensive track record of supplying boilers that burn bagasse (fiber remaining after sugarcane is crushed) since our first delivery in 1959.

Going forward, we will continue to tap sure technology and fine-grained service based on our experience to date to help realize the biomass-derived, Earth-friendly supply of power in not only Thailand, but also in Indonesia, Vietnam, and other Southeast Asian countries.

*For more information on facilities delivered during FY2018, please see Feature 02, "Biomass Power Plant Construction Project in Thailand," on page 21.

Overseas waste treatment plant business

As emerging nations develop, they experience population growth and urbanization, causing waste-related issues to manifest themselves. Their environmental regulations and legal systems are also in a state of development, and inadequacies in information about waste and technologies for treating it mean these countries have high expectations for Energy from Waste technologies. We pursue sales activities, for example by studying information such as local systems and waste composition, so that we can meet those expectations by delivering waste treatment plants that satisfy customers.

As one example, during FY2018 we conducted a viability study of a project in the Indian state of Telangana by taking advantage of a Ministry of the Environment program. The results of the study, which we carried out along with local governments in Japan as part of a government-industry partnership and with the cooperation of local stakeholders in India, were reported jointly to the local government. By making effective use of a cooperative framework that brought together the Japanese and Indian governments, we were able to build a good relationship with the local government while discovering important information about local needs.

Takuma will continue to work to realize solutions to environmental problems by delivering waste treatment plants.

Waste composition study in Telangana



Main Recent Project (Waste treatment plant)

This section introduces one of the main projects that Takuma has delivered to date.

Lutsao Refuse Incineration Plant

Capacity

Incineration facility:
900 tons per day (450 tons per day × 2 units)
Power output: 28,000 kW

Location

Chiayi, Taiwan



Message



Naoya Akasaki

Sales Section 2, International Department
International Division

Waste issue offers challenges to all countries, but specific needs and conditions vary from country to country. In Asia, there has been a trend away from waste disposal, which has centered on landfill until now, and we believe that this constitutes a field in which Takuma's Energy from Waste technologies and experience can make a contribution. Continuous, stable operation is key to facilities that treat waste such as Energy from Waste plants, for example, as one type of local and environmental infrastructure. To that end, we will continue to work to ensure we can help resolve challenges in this field while deepening our understanding and pursuing cooperation with an array of local entities, companies, and other stakeholders from the "glocal" (think globally, act locally) perspective.

Corporate Governance

Directors



(Back row, from the left)

Minoru Murata Outside Director (Audit & Supervisory Committee Member)	Osamu Iwahashi Outside Director (Audit & Supervisory Committee Member)	Tomomi Fujita Outside Director (Audit & Supervisory Committee Member)	Hiromichi Satake Outside Director (Audit & Supervisory Committee Member)	Yasushi Enomoto Director (Audit & Supervisory Committee Member)
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Hideki Takeguchi Director Senior Managing Executive Officer	Kengo Numata Director Executive Vice President	Takaaki Kato Director Chairman Executive Officer	Hiroaki Nanjo Representative Director President and Chief Executive Officer	Tsuyohito Nishiyama Director Senior Managing Executive Officer	Koji Tanaka Director Executive Officer
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Managing Executive Officer

Takashi Manabe
Ryoji Tani
Norito Uchiyama
Mitsuaki Adachi

Executive Officer

Akira Taguchi
Hidetoshi Tomita
Norio Maeda
Kunio Hamada
Keiji Nakamura

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

• Board of Directors

As of June 26, 2019, 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 26, 2019, there were 15 executive officers (including those who also serve as directors). Moreover, we have also established a Committee of Executive Officers, which is chaired by the president/chief executive officer, as an organization that deliberates matters that are brought up at meetings of the Board of Directors and other important issues related to the execution of our business activities. This committee communicates and provides direction about items decided by the Board of Directors and other important items related to the execution of our business activities appropriately to the divisions that are to execute them.

out appropriately and that officers carry out their operational responsibilities by means of a process that is clear, rational, efficient, and legally compliant. For that reason, we believe that understanding the Corporate Governance Code and putting it into practice in an autonomous and systematic manner are top-priority management issues.

• Audit & Supervisory Committee

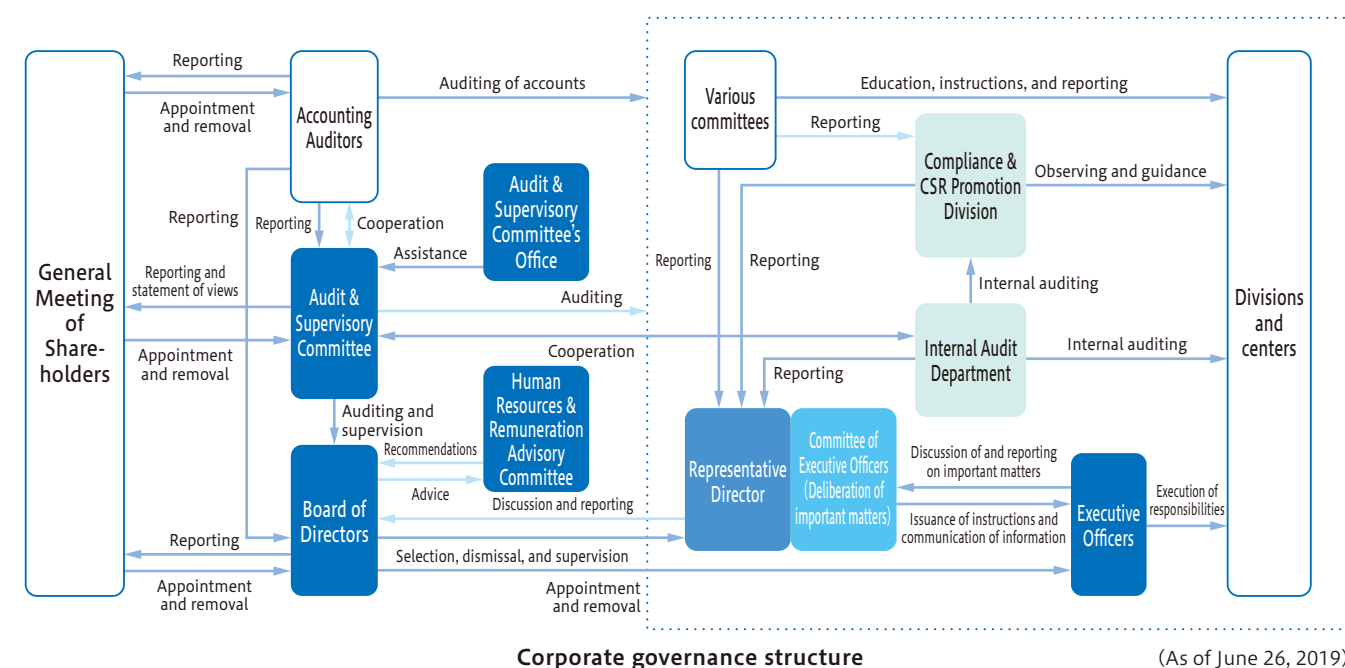
An Audit & Supervisory Committee that consists of five members, of whom four are outside directors, is responsible for accounting and operational audits. Members of the committee attend important meetings, including those of the Board of Directors and the Committee of Executive Officers, and they strive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

• Human Resources & Remuneration Advisory Committee

To augment the above structures, we have established a Human Resources & Remuneration 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 26, 2019)

Corporate Governance

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 that activity through the Compliance & CSR Promotion Organization that 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

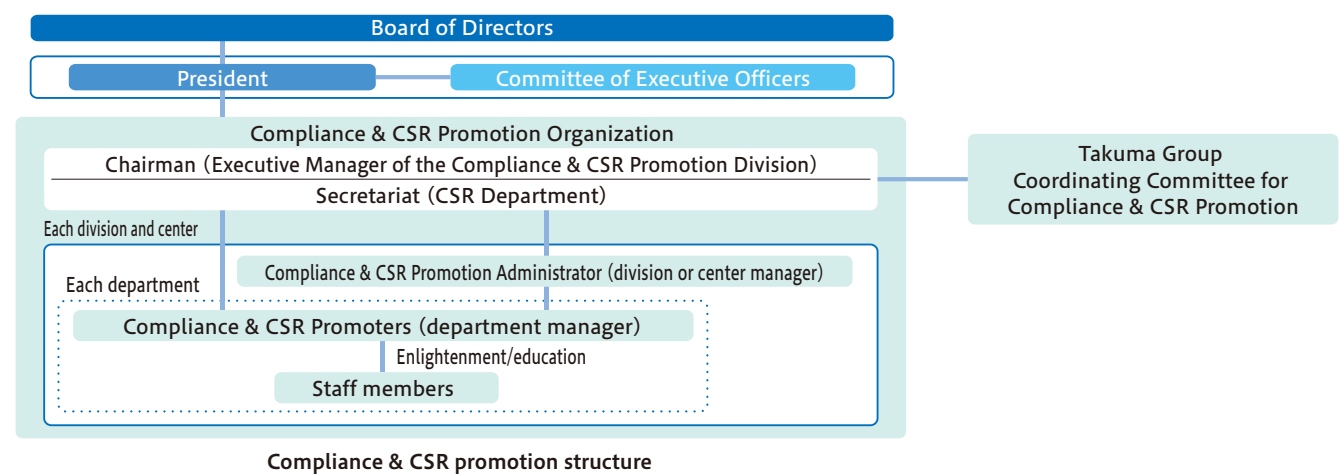
Regular meetings are held once a year. The person in charge of promotion receives reports on the status of compliance and CSR promotion company-wide, as well as on the status of the implementation of compliance and CSR promotion education for the past year, etc., and participants deliberate on a promotion 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 result 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 FY2018, we invited representatives of group companies to participate in two meetings of the committee.



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.

We are also building a risk management organization and constructing a system of risk management and promoting the strengthening of management for group companies as well through our Takuma Group Coordinating Committee for Compliance and CSR Promotion.

Risk Management Policy

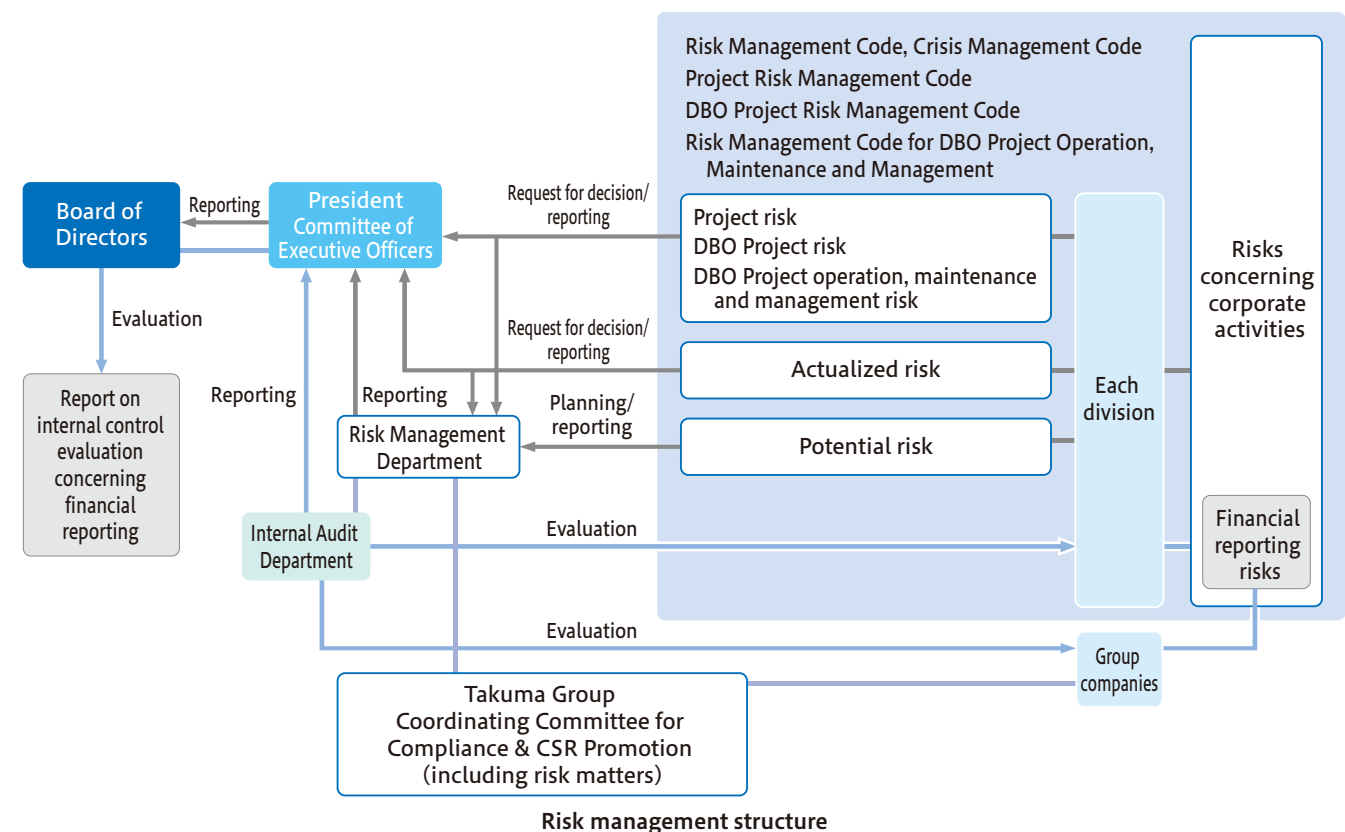
[Basic purpose of risk management]

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.



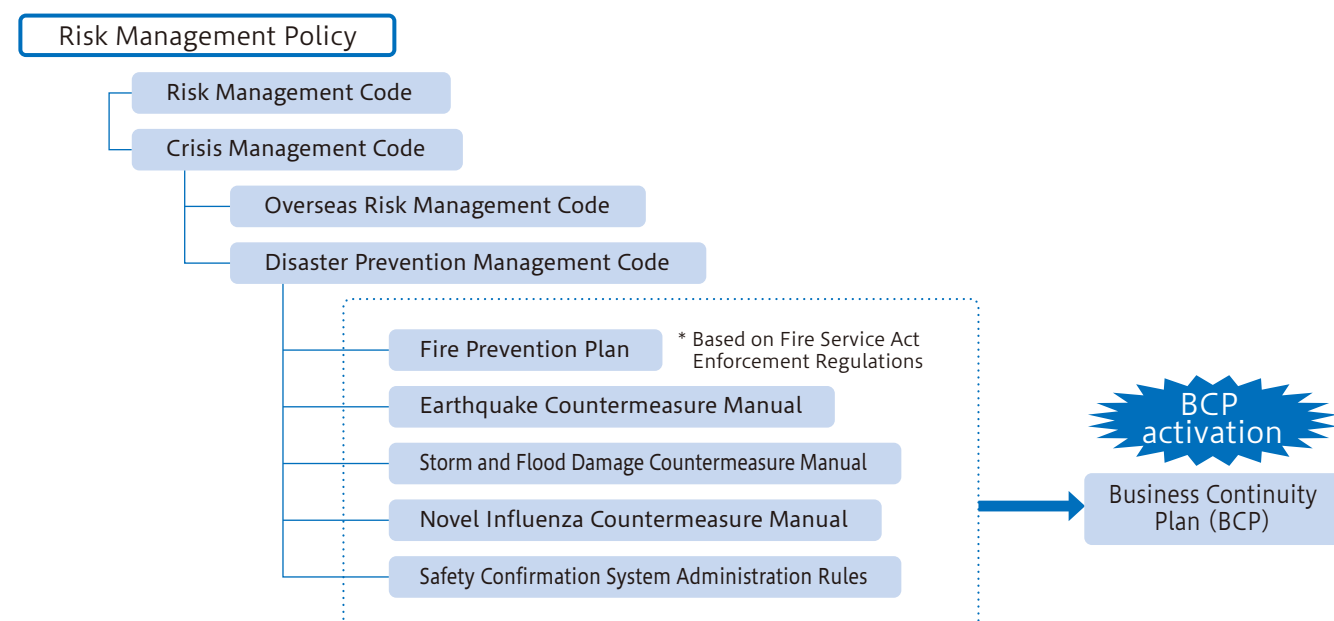
Corporate Governance

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】

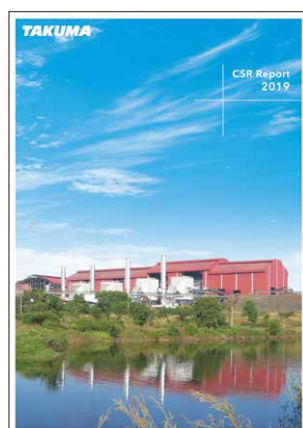


CSR Activities

Please refer to our "CSR Report 2019" for more details on our CSR activities.

[Takuma Website > CSR]

<https://www.takuma.co.jp/english/csr/index.html>



CSR-related Contents:

- CSR Activity Reports and Future Issues
- Human Rights and Labor Practices
- The Environment
- Fair Business Practices
- Activities Involving Product Quality
- Participation in the Community
- Contribution to Society

IR Activities

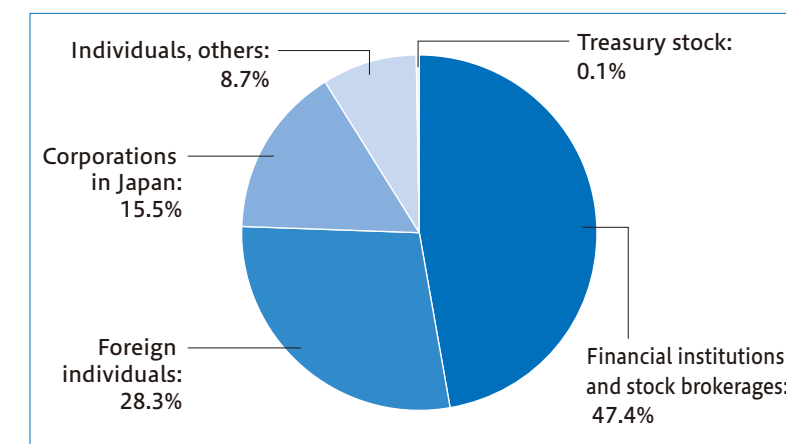
In keeping with the “Takuma Group Code of Conduct,” we provide our shareholders and investors with accurate corporate information in a timely and fair manner. As a part of this, we provide notifications on the convening of General Meetings of Shareholders, balance sheet information, timely disclosure 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>



Shareholders Report



Composition of shareholders (as of March 31, 2019)

Stock Information

1. Total number of authorized shares: 321,840,000
2. Total number of outstanding shares: 83,000,000
3. Total number of shareholders: 4,005 (as of March 31, 2019)
4. Major shareholders (top 10)

(as of March 31, 2019)		
Shareholder	Number of shares	Stake
The Master Trust Bank of Japan, Ltd. (Trust Account)	8,415,000	10.1%
Japan Trustee Services Bank, Ltd. (Trust Account)	7,980,000	9.6%
Mizuho Trust & Banking Co., Ltd. (Retirement Benefits Trust, Mizuho Bank, Ltd. Account)	4,022,000	4.8%
Trust & Custody Services Bank, Ltd. (Re-entrustment)	3,593,000	4.3%
Nippon Life Insurance Company	2,275,000	2.7%
THREADNEEDLE INVESTMENT FUNDS ICVC-JAPAN FUND	1,771,000	2.1%
Japan Trustee Services Bank, Ltd. (Trust Account 9)	1,735,000	2.1%
TAKUMA CO., LTD. Kyoeikai	1,718,000	2.1%
GOVERNMENT OF NORWAY	1,688,000	2.0%
JP MORGAN CHASE BANK 380055	1,621,000	2.0%
Sumitomo Mitsui Banking Corporation		

5. Dividend Policy

Takuma returns profits to investors in line with a comprehensive assessment of business performance and other factors based on a policy of maintaining stable dividends while working to enhance the quality of its business. Our overriding goal is to remain competitive in an increasingly challenging marketplace.

Two dividends are paid each fiscal year: an interim dividend offered by resolution of the Board of Directors and a year-end dividend offered by resolution of the annual meeting of shareholders.

In keeping with this policy, the year-end dividend for the consolidated fiscal year under review was 12 yen per share, which, combined with the interim dividend, brought the annual dividend to 22 yen per share.

We plan to continue to build internal reserves to strengthen our financial foundation and to use funds to increase corporate value through capital investment, R&D investment, and other avenues in order to lay the groundwork for the future growth and expansion of our businesses.

Status of Business Activities

1. Management Analysis of Financial Position, Business Performance, and Cash Flows

This section provides an overview of the Group’s financial position, business performance, and cash flows during the consolidated fiscal year under review, along with explanations of the significance of that information and the Group’s analysis and study of it from the perspective of management.

Forward-looking statements in the text reflect the judgment of management as of the end of the consolidated fiscal year under review.

The Group began applying a series of partial revisions made to the Tax Effect Accounting Standards (Corporate Accounting Standard No. 28, February 16, 2018) and other related changes at the beginning of the consolidated fiscal year under review. Information about the Group’s financial position includes analysis and comparison with the previous consolidated fiscal year based on figures to which the accounting standard in question and other changes have been applied retroactively.

(1) Business Performance

Demand for products such as Energy from Waste plants and biomass power plants remained robust during the fiscal year under review as growth in orders for construction and operation of such facilities led to order volume of 179,829 million yen, up 2,712 million yen from the previous year. In addition, smooth progress in the construction of ordered plants led to sales of 121,951 million yen, an increase of 3,752 million yen. As a result, the backlog rose 57,879 million yen to 330,939 million yen.

As growth in sales was augmented by improved profitability thanks to progress in efforts to cut costs, operating income rose 1,574 million yen to 11,604 million yen, ordinary profit rose 1,664 million yen to 12,334 million yen, and profit attributable to owners of parent rose 1,007 million yen to 8,854 million yen.

Results by Business Segment

(millions of yen)

Segment	Consolidated fiscal year under review				Change from previous consolidated fiscal year		
	Orders received	Sales amount	Operating income	Backlog	Orders received	Sales amount	Operating income
Domestic Environment and Energy Business	153,628	93,724	12,405	322,292	4,735	3,649	1,917
Overseas Environment and Energy Business	799	3,057	163	525	(3,073)	(343)	85
Package Boiler Business	17,476	16,954	904	3,872	(219)	(366)	(110)
Equipment and Systems Business	8,567	8,836	361	4,502	1,426	1,139	133
Subtotal	180,472	122,572	13,835	331,192	2,869	4,078	2,026
Adjustments	(642)	(621)	(2,231)	(252)	(156)	(326)	(452)
Total	179,829	121,951	11,604	330,939	2,712	3,752	1,574

The Group’s operating segments consist of the following four businesses, of which the flagship Domestic Environment and Energy Plant segment accounts for most net sales: Domestic Environment and Energy Plant, Overseas Environment and Energy Plant, Package Boiler, and Equipment and Systems business. (During the consolidated fiscal year under review, Domestic Environment and Energy Plant segment accounted for 76% of total net sales before excluding inter-segment sales and 90% of total operating income before excluding adjustments.)

Domestic Environment and Energy Business

The Domestic Environment and Energy segment’s principal business consists of construction of Energy from Waste plants for local government, sewage treatment plants, biomass power plants for private-sector companies, and other facilities (as part of the EPC business) as well as after-sales service for those facilities, including maintenance, operational management, and operation.

Demand in the EPC business tends to fluctuate significantly over the medium and long term because it is susceptible to factors such as government policy, for example in the form of environmental regulations and other laws and subsidies for local government and private-sector businesses, as well as trends in public and private-sector investment. By contrast, demand for after-sales businesses such as maintenance is forecast to remain stable over the 20 to 30 year life cycle following the start of plant operation.

Current robust demand in the EPC business is expected to continue in the near future, with Energy from Waste plants generating update and service life extension demand due to superannuation, with sewage treatment driving demand for transition to energy-saving and -creating equipment during updates to sludge incineration plants, and with private industry fueling demand for construction of new biomass power plants utilizing feed-in tariff programs for power. Demand is expected to grow in the future in the after-sales service business due to factors such as increased turnkey outsourcing of Energy from Waste plant management, a trend toward turnkey outsourcing of sewage projects, and an increase in the number of plants covered by after-sales service agreements and operational outsourcing needs due to growth in the number of plants delivered by the company to private industry.

Status of Business Activities

During the consolidated fiscal year under review, we received two new construction orders, including a DBO contract (construction and operations) for an Energy from Waste plant; three primary improvement orders; one equipment update order; eight construction orders for biomass power plants and other projects for private-sector customers; and one O&M order. As a result, order volume rose 4,735 million yen from the previous year to 153,628 million yen. Thanks to steady progress in construction of previously ordered plants, sales rose 3,649 million yen from the previous year to 93,724 million yen as sales growth and increased profitability due to cost-cutting drove operating income up 1,917 million yen to 12,405 million yen.

In addition to pursuing initiatives to secure sustained growth, for example by earning new orders for biomass power plants and strengthening the competitiveness of our sewage sludge incineration and power generation systems, we will work to strengthen and expand our revenue base by enhancing the after-sales service business, for example by strengthening the profitability of our Energy from Waste plant operation business, applying operational expertise horizontally to water treatment and biomass facilities, and strengthening maintenance structures.

Overseas Environment and Energy Business

The Overseas Environment and Energy segment's principal business consists of building and maintaining biomass power plants and Energy from Waste plants overseas. Overseas bases are located in Thailand and Taiwan, where we have local subsidiaries and from which we are expanding our business with a focus on Southeast Asia.

Demand for biomass power plants is expected to continue to grow against the backdrop of the region's rich endowment of biomass resources, and the market exhibits a high level of potential over the medium and long term; however, the environment will remain highly competitive due to intense rivalry with Indian and Chinese manufacturers for orders for the bagasse-fired plants that are Takuma's flagship product in the region. In addition, although demand for Energy from Waste facilities is growing due to urbanization, a stable market has not yet developed due to the lack of programs and standards as well as fund shortages being experienced by governments.

Order volume for the consolidated fiscal year under review fell 3,073 million yen to 799 million yen as an intensely competitive business environment prevented the Group from securing any new plant orders. Although sales fell 343 million yen to 3,057 million yen, operating income rose 85 million yen to 163 million yen due primarily to cost-cutting in plant construction.

In addition to pursuing initiatives to strengthen our competitiveness and create competitive advantages so that we can capture biomass power plant orders on an ongoing basis, we will work to build structures for capturing orders for Energy from Waste plants.

Package Boiler Business

The Package Boiler segment's principal business consists of the manufacture, sale, and maintenance of general-purpose boilers such as small steam boilers, which are used as heat sources in commercial and manufacturing facilities, and vacuum-type water heaters.

Although the domestic general-purpose boiler market has already matured, it is expected to yield a certain level of primarily replacement demand going forward, and demand is expected to grow overseas, primarily in Southeast Asia.

Although the Group continued its efforts to tap update demand and expand maintenance orders during the consolidated fiscal year under review, order volume slipped 219 million yen from the previous year, during which a number of large maintenance order were received, to 17,476 million yen as sales edged down 366 million yen to 16,954 million yen. Factors including the decline in sales and rising materials prices drove operating income down 110 million yen to 904 million yen.

We will continue to maintain and expand the domestic business with a focus on replacement demand and maintenance while striving to expand the overseas business through efforts centered on our local subsidiary in Thailand.

Equipment and Systems Business

The Equipment and Systems segment's principal business consists of the design and installation of building equipment such as air-conditioning equipment and water and sewage equipment as well as the manufacture, sale, and maintenance of equipment like clean devices and cleaning systems for the semiconductor industry.

Construction demand remained strong in the run-up to the Olympic Games Tokyo 2020 and the Paralympic Games Tokyo 2020, and the semiconductor manufacturing equipment market continued to expand. Based on the outlook for construction demand and the electronic device market, we expect strong demand to continue in the immediate future.

Order volume during the consolidated fiscal year under review rose 1,426 million yen from the previous year to 8,567 million yen thanks primarily to growth in the construction equipment business, while sales rose 1,139 million yen to 8,836 million yen, and operating income rose 133 million yen to 361 million yen.

Going forward, we will continue to work to secure stable profits by working steadily to capture robust demand.

Last April, the Group launched its 12th Medium-Term Business Plan, which covers FY2018 to FY2020 and sets forth cumulative consolidated ordinary profit of 33 billion yen over the three-year period covered by the plan as a numerical target. Ordinary profit of 12.3 billion yen and order volume of 330.9 billion yen during the consolidated fiscal year under review, which is the Plan's first year, indicate that we are making generally smooth progress toward achieving that target.

Going forward, we will continue to work diligently to achieve the Plan's target.

(2) Financial Position

Total assets at the end of the consolidated fiscal year under review increased 4,500 million yen from the end of the previous consolidated fiscal year to 155,988 million yen thanks primarily to an increase of 2,728 million yen in deferred tax assets.

Liabilities fell 1,861 million yen from the end of the previous consolidated fiscal year to 72,901 million yen as a decrease of 7,383 million yen in short-term loans payable offset growth of 3,347 million yen in unpaid corporate taxes and 2,761 million in notes and accounts payable.

Net assets rose 6,361 million yen from the end of the previous consolidated fiscal year to 83,087 million yen as an increase of 8,853 million yen in retained earnings due to the posting of profit attributable to owners of parent offset a decrease of 1,570 million yen in retained earnings due to the payments of cash dividends.

As a result, the capital adequacy ratio rose 2.6 points from the end of the previous consolidated fiscal year to 53.0%, and net assets per share rose 76.09 yen from the end of the previous consolidated fiscal year to 1,000.34 yen.

(3) Status of Cash Flow

Cash and cash equivalents at the end of the consolidated fiscal year under review rose 743 million yen from the previous consolidated fiscal year to 61,027 million yen.

Cash Flows from Operating Activities

Net cash provided by operating activities totaled 10,817 million yen (compared to net cash provided by operating activities of 5,140 million yen during the previous consolidated fiscal year). Principal factors included income before income taxes of 11,139 million yen and an increase of 1,864 million yen from accounts payable and advance money, which offset a decrease of 2,228 million yen from accounts receivable and advances received.

Cash Flows from Investing Activities

Net cash used in investing activities totaled 1,382 million yen (compared to net cash used in investing activities of 328 million yen during the previous consolidated fiscal year). Principal factors included expenditures of 801 million yen on the purchase of investment securities and of 482 million yen on the purchase of property, plant and equipment.

Cash Flows from Financing Activities

Net cash used in financing activities totaled 9,119 million yen (compared to net cash used in financing activities of 1,670 million yen during the previous consolidated fiscal year). Principal factors included a net decrease in short-term bank loans payable of 7,030 million yen and payment of 1,570 million yen on cash dividends.

The Takuma Group obtains working capital as well as funds for use in capital investment and research and development to expand its businesses in the future from group funds, advances from customers, and lending from financial institutions. Going forward, we do not expect to encounter difficulty in procuring the funds necessary to pursue our business activities. Additionally, we have entered into commitment line agreements with multiple financial institutions to supplement liquidity.

(4) Production Output, Orders Received and Sales

① Production Results

The following table summarizes the Group's production results during the consolidated fiscal year under review by business segment:

Segment	Production output (millions of yen)	Year-on-year (%)
Domestic Environment and Energy Business	63,021	0.7
Overseas Environment and Energy Business	2,005	(27.4)
Package Boiler Business	11,166	(1.5)
Equipment and Systems Business	7,406	16.0
Subtotal	83,599	0.7
Inter-segment transactions	(592)	134.4
Total	83,007	0.2

Notes:
1. Amounts are expressed as total manufacturing expenses.
2. Amounts do not include consumption tax or other taxes.

Status of Business Activities

② Orders Received

The following table summarizes orders received by the Group during the consolidated fiscal year under review by business segment:

Segment	Orders received (millions of yen)	Year-on-year (%)	Backlog (millions of yen)	Year-on-year (%)
Domestic Environment and Energy Business	153,628	3.2	322,292	22.8
Overseas Environment and Energy Business	799	(79.4)	525	(81.1)
Package Boiler Business	17,476	(1.2)	3,872	15.6
Equipment and Systems Business	8,567	20.0	4,502	(5.6)
Subtotal	180,472	1.6	331,192	21.2
Inter-segment transactions	(642)	32.2	(252)	9.0
Total	179,829	1.5	330,939	21.2

Notes:

- Amounts do not include consumption tax or other taxes.
- Package Boiler Business figures include some speculative production. In addition to order-driven production, the orders received and the backlog figures in the above table include that portion of speculative production for which delivery to a specific customer has been finalized.

③ Sales

The following table summarizes the Group's sales results during the consolidated fiscal year under review by business segment:

Segment	Sales amount (millions of yen)	Year-on-year (%)
Domestic Environment and Energy Business	93,724	4.1
Overseas Environment and Energy Business	3,057	(10.1)
Package Boiler Business	16,954	(2.1)
Equipment and Systems Business	8,836	14.8
Subtotal	122,572	3.4
Inter-segment transactions	(621)	110.4
Total	121,950	3.2

Note:

Amounts do not include consumption tax or other taxes.

2. Contracts of Major Importance in the Group's Business

(1) Technology In-licensing Contracts

Contractee	Contract target	Contract date	Name of other party	Contract term
Takuma Co., Ltd.	Continuous bed filtration of liquids	April 1979	Nordic Water Products AB (Sweden)	Until December 2038 (See Note 2.)
Takuma Co., Ltd.	Process for the organic and anaerobic treatment of waste	December 2011	Hitachi Zosen Inova AG (Switzerland)	For 10 years, then automatically renewed every year

Notes:

- Most of the above contracts entail payment of a fixed percentage of sales in addition to a one-time payment at the time the contract was entered into.
- The contract was renewed, extending its term to December 2038.

(2) Technology Out-licensing Contracts

Contractee	Contract target	Contract date	Name of other party	Contract term
Takuma Co., Ltd.	N-type palm wastes fired water-tube boiler	September 1982	P.T. Super Andalas Steel (Indonesia)	For 15 years, then automatically renewed every year
Takuma Co., Ltd.	Auxiliary agent for filter-type dust collector	July 1993	MITSUI MINING & SMELTING CO., LTD. (Japan)	For 10 years, then automatically renewed every year
Takuma Co., Ltd.	Dust elimination technology in exhaust gas treatment systems using impulse waves	November 2005	Nihon Spindle Manufacturing Co., Ltd. (Japan)	For 10 years, then automatically renewed every year

Note:

Most of the above contracts entail receipt of payment of a fixed percentage of sales in addition to a one-time payment at the time the contract was entered into.

3. Research and Development Activities

Having identified the fields of environmental protection and renewable energy utilization as its principal business domains in an effort to achieve a sustainable, recycling-oriented society that is not excessively dependent on nuclear power or fossil fuels, the Takuma Group is focusing its management resources on business in these domains as it pursues research and development in keeping with the corporate vision it has set forth of being an indispensable presence in society as a leading company.

The Takuma Group has consolidated its technology-related departments into the Engineering Group, through which it is actively working to strengthen and pass on its technological capabilities and develop new technologies, products, and services through collaboration between the Takuma Group companies and joint research with outside research institutions, universities, and private-sector companies.

Expenditures on research and development during the consolidated fiscal year under review totaled 960 million yen. Principal research and development activities by business segment were as follows:

(1) Environment and Energy Business

- In the area of waste treatment, we continue to utilize a demonstration incinerator with a next-generation stoker at one of our plants to develop such aspects of equipment operation as the reduction of harmful substances (e.g., nitrogen oxides, acidic gases, dioxins, and mercury) through combustion improvements and increases in power generation efficiency with the principal goal of developing proprietary technology to aid in reducing life cycle cost and boosting energy recovery. In addition, we continue to pursue a project known as “Development of a Next-generation Low-carbon High-efficiency Biogas Power System and Combined System Using CO₂ Separation Membranes,” which was adopted as an Evaluation and Demonstration Project for Advanced Waste Treatment Systems at Small and Medium-size Waste Treatment Facilities by the Ministry of the Environment. We are working to stabilize combustion and to develop technologies for remote monitoring using AI and IoT, for example by utilizing POCSYS, a comprehensive support system for operation, maintenance, and management that enables integrated use of a range of data that facilities previously managed and evaluated independently. In FY2019, we created Solution Lab to further expand POCSYS's functionality and service, and we will strive to utilize AI and IoT going forward to contribute to safer, more efficient facility operation that inspires peace of mind.
- In the area of energy, we continue to develop constituent technologies for burning a variety of biomass fuels including unutilized wood biomass to generate power, an area in which we are receiving many inquiries in connection with Japan's feed-in tariff program for power generated from renewable sources.
- In the area of water treatment, we continue to develop a sewage sludge incineration and power generation system as well as technologies related to a new system for eliminating nitrogen by means of the anammox process. For sewage sludge incineration and power generation, we continue to develop combustion and generation technology to allow stable incineration of sludge with varying water content. We also continue to develop technologies for expanding the range of wastewater with which the anammox process can be used.

The research and development budget for this segment of our business was 845 million yen.

(2) Package Boiler Business

We developed and launched the Super EQOS EQi(H)-6001KM/AM oil-fired steam boiler as a high-end model in the Super EQOS series of high-efficiency, multifunctional boilers. The product uses an oil burner that can control output as desired down to a lower minimum level than previous models to reduce the number of combustion starts and stops, improve operating efficiency during low-load operation, and control combustion in response to the load for more efficient operation.

We also developed the Super EQOS EQO-2000KMR/AMR oil-fired, EQS-402/502NS/NM/LS/LM gas-fired, and EQS-402/502KS/KM/AS/AM oil-fired steam boilers as well as the GSAN-201 to -301 gas-fired and KSAN-201 to -301 oil-fired vacuum-type water heaters. These products use burners that can control output through multiple stages to boost efficiency through such means as reducing the number of combustion starts and stops and improving operating efficiency during low-load operation. They were launched in April 2019.

The research and development budget for this segment of our business was 43 million yen.

(3) Equipment and Systems Business

In washing systems for semiconductor plants, we launched a joint research project with a university to develop products that utilize micro-bubble washing technology that boosts washing effectiveness with fine bubbles while reducing cleaning agent use. This development program includes assessing basic properties and using the university's facilities to conduct detailed analysis and evaluation.

In the area of chemical filters for clean rooms at semiconductor plants, we are developing filters that will deliver advanced functionality and longer service life.

Going forward, we will continue to improve our washing systems and chemical filters as we work to develop products that meet customer needs.

The research and development budget for this segment of our business was 72 million yen.

Financial Statement

Consolidated Balance Sheets

TAKUMA CO., LTD. and Consolidated Subsidiaries
As of March 31, 2019 and 2018

ASSETS	Millions of yen		Thousands of U.S. dollars (Note 1)
	2019	2018	2019
Current assets:			
Cash and time deposits (Notes 4, 6 and 8)	¥ 61,769	¥ 60,864	\$ 556,529
Notes and accounts receivable (Note 6):			
Trade	49,046	50,049	441,899
Unconsolidated subsidiaries and affiliated companies	764	380	6,884
Other	281	381	2,526
Less allowance for doubtful accounts	(28)	(38)	(252)
Total	50,063	50,772	451,057
Inventories (Note 5)	4,356	4,307	39,246
Other	1,732	1,372	15,606
Total current assets	117,920	117,315	1,062,438
Property, plant and equipment:			
Land (Note 8)	3,013	3,011	27,145
Buildings and structures (Note 8)	11,905	12,287	107,267
Machinery, equipment, lease assets and construction in progress	8,969	10,653	80,805
(Note 8)	23,887	25,951	215,217
Less accumulated depreciation	(15,593)	(17,450)	(140,491)
Total property, plant and equipment	8,294	8,501	74,726
Investments and other assets:			
Investment securities (Notes 6, 7 and 8)	15,138	16,885	136,387
Investments in:			
Unconsolidated subsidiaries and affiliated companies	4,163	5,015	37,506
Other	5,460	1,823	49,201
Less allowance for doubtful accounts	(109)	(471)	(986)
Total	9,514	6,367	85,721
Deferred tax assets (Note 15)	4,810	2,081	43,335
Other	313	340	2,824
Total investments and other assets	29,775	25,673	268,267
Total assets	¥ 155,989	¥ 151,489	\$ 1,405,431
LIABILITIES AND NET ASSETS	Millions of yen		Thousands of U.S. dollars (Note 1)
	2019	2018	2019
Current liabilities:			
Short-term loans payable (Notes 6 and 9)	¥ 645	¥ 7,675	\$ 5,811
Current portion of long-term debt (Notes 6 and 9)	117	470	1,052
Notes and accounts payable (Note 6):			
Trade	37,587	34,913	338,651
Unconsolidated subsidiaries and affiliated companies	334	234	3,006
Other	1,227	979	11,057
Total	39,148	36,126	352,714
Accrued income taxes	3,628	281	32,690
Advances received	9,798	13,592	88,276
Allowance for guarantees on completed work	149	86	1,344
Allowance for losses on sales contracts	1,739	373	15,672
Provision for loss on liquidation of subsidiaries and associates	999	-	9,001
Other	6,023	5,709	54,265
Total current liabilities	62,246	64,312	560,825
Long-term liabilities:			
Long-term debt (Notes 6 and 9)	342	459	3,083
Allowance for directors' and executive officers' retirement benefits	185	183	1,664
Net defined benefit liability (Note 10)	9,746	9,406	87,808
Other	382	403	3,448
Total long-term liabilities	10,655	10,451	96,003
Total liabilities	72,901	74,763	656,828
Contingent liabilities (Note 11)			
Net assets (Note 12):			
Common stock	13,367	13,367	120,438
Authorized: 321,840,000 shares			
Issued: 83,000,000 shares			
Capital surplus	3,768	3,768	33,951
Retained earnings	60,866	52,949	548,390
Treasury stock, at cost	(235)	(235)	(2,122)
331,644 shares in 2019 and 331,385 shares in 2018			
Total shareholders' equity	77,766	69,849	700,657
Unrealized gains on securities	5,390	7,161	48,558
Deferred gains and losses on hedges	8	(46)	75
Foreign currency translation adjustments	(4)	2	(37)
Remeasurements of defined benefit plans	(463)	(559)	(4,170)
Total accumulated other comprehensive income	4,931	6,558	44,426
Non-controlling interests in consolidated subsidiaries	391	319	3,520
Total net assets	83,088	76,726	748,603
Total liabilities and net assets	¥ 155,989	¥ 151,489	\$ 1,405,431

See accompanying notes.

Financial Statement

Consolidated Statements of Operations

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2019	2018	2019
Net sales (Note 17)	¥ 121,951	¥ 118,199	\$ 1,098,753
Cost of sales (Notes 10, 13, 14 and 17)	94,491	93,372	851,340
Gross profit	27,460	24,827	247,413
Selling, general and administrative expenses (Notes 10, 14 and 17)	15,856	14,797	142,862
Operating income (Note 17)	11,604	10,030	104,551
Other income (expenses):			
Interest and dividend income	419	367	3,776
Interest expense	(59)	(66)	(535)
Foreign currency exchange loss	(57)	(157)	(509)
Gain on sales of investment securities (Note 7)	-	111	-
Gain on liquidation of subsidiaries and associates	-	90	-
Provision for loss on liquidation of subsidiaries and associates	(999)	-	(9,001)
Loss on valuation of investment securities	(155)	(60)	(1,396)
Loss on disposal of property, plant and equipment	(58)	(44)	(527)
Provision for doubtful accounts	(49)	-	(446)
Equity in earnings of affiliated companies	473	461	4,265
Other, net	21	79	189
Other income (expenses), net	(464)	781	(4,184)
Income before income taxes	11,140	10,811	100,367
Income taxes (Note 15):			
Current	4,179	1,352	37,649
Deferred	(1,991)	1,581	(17,936)
Total income taxes	2,188	2,933	19,713
Profit	8,952	7,878	80,654
Profit attributable to non-controlling interests in consolidated subsidiaries	98	31	882
Profit attributable to owners of parent	¥ 8,854	¥ 7,847	\$ 79,772
Per share:			
	Yen		U.S. dollars (Note 1)
Net income	¥ 107.10	¥ 94.93	\$ 0.96
Diluted net income	-	-	-
Cash dividends applicable to the year	22.00	16.00	0.20

See accompanying notes.

Consolidated Statements of Comprehensive Income

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2019	2018	2019
Profit	¥ 8,952	¥ 7,878	\$ 80,654
Other comprehensive income:			
Unrealized gains (losses) on securities	(1,772)	2,275	(15,966)
Deferred gains and losses on hedges	58	(3)	519
Foreign currency translation adjustments	(9)	(4)	(77)
Remeasurements of defined benefit plans	96	31	870
Total other comprehensive income	(1,627)	2,299	(14,654)
Comprehensive income (Note 16)	¥ 7,325	¥ 10,177	\$ 66,000
Comprehensive income attributed to:			
Owners of the parent	¥ 7,227	¥ 10,125	\$ 65,114
Non-controlling interests	98	52	886

Consolidated Statements of Changes in Net Assets

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2019 and 2018

	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 year ended March 31, 2019	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 year ended March 31, 2018	Millions of yen											
Balance at the beginning of current period	¥ 13,367	¥ 3,768	¥ 46,258	¥ (234)	¥ 63,159	¥ 4,886	¥ (21)	¥ 6	¥ (591)	¥ 4,280	¥ 288	¥ 67,727
Cash dividends (¥14.00 per share)	-	-	(1,156)	-	(1,156)	-	-	-	-	-	-	(1,156)
Profit attributable to owners of parent	-	-	7,847	-	7,847	-	-	-	-	-	-	7,847
Purchase of treasury stock	-	-	-	(1)	(1)	-	-	-	-	-	-	(1)
Other changes during the year, net	-	-	-	-	-	2,275	(25)	(4)	32	2,278	31	2,309
Balance at the end of current period	¥ 13,367	¥ 3,768	¥ 52,949	¥ (235)	¥ 69,849	¥ 7,161	¥ (46)	¥ 2	¥ (559)	¥ 6,558	¥ 319	¥ 76,726
For the year ended March 31, 2019	Thousands of U.S. dollars (Note 1)											
Balance at the beginning of current period	\$ 120,438	\$ 33,951	\$ 477,057	\$ (2,119)	\$ 629,327	\$ 64,523	\$ (419)	\$ 21	\$ (5,040)	\$ 59,085	\$ 2,874	\$ 691,286
Cash dividends (\$0.17 per share)	-	-	(14,152)	-	(14,152)	-	-	-	-	-	-	(14,152)
Profit attributable to owners of parent	-	-	79,772	-	79,772	-	-	-	-	-	-	79,772
Change in scope of consolidation	-	-	5,919	-	5,919	-	-	-	-	-	-	5,919
Change in scope of equity method	-	-	(206)	-	(206)	-	-	-	-	-	-	(206)
Purchase of treasury stock	-	-	-	(3)	(3)	-	-	-	-	-	-	(3)
Other changes during the year, net	-	-	-	-	-	(15,965)	494	(58)	870	(14,659)	646	(14,013)
Balance at the end of current period	\$ 120,438	\$ 33,951	\$ 548,390	\$ (2,122)	\$ 700,657	\$ 48,558	\$ 75	\$ (37)	\$ (4,170)	\$ 44,426	\$ 3,520	\$ 748,603

Financial Statement

Consolidated Statements of Cash Flows

TAKUMA CO., LTD. and Consolidated Subsidiaries
For the years ended March 31, 2019 and 2018

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2019	2018	2019
Cash flows from operating activities:			
Income before income taxes	¥ 11,140	¥ 10,811	\$ 100,367
Adjustments to reconcile income before income taxes to net cash provided by operating activities:			
Depreciation	798	790	7,187
Impairment loss	40	-	364
Loss (gain) on sales of investment securities	7	(111)	67
Loss (gain) on liquidation of subsidiaries and associates	-	(90)	-
Loss (gain) on valuation of investment securities	155	60	1,396
Increase (decrease) in allowance for doubtful accounts	(5)	20	(45)
Increase (decrease) in allowance for bonuses	4	307	33
Increase (decrease) in allowance for losses on sales contracts	1,367	(3,205)	12,315
Increase (decrease) in provision for loss on liquidation of subsidiaries and associates	999	-	9,001
Increase (decrease) in net defined benefit liability	470	441	4,235
Interest and dividend income	(419)	(367)	(3,776)
Interest expense	59	66	535
Equity in losses (earnings) of affiliated companies	(473)	(461)	(4,265)
Net decrease (increase) in notes and accounts receivable and advances received	(2,229)	200	(20,083)
Decrease (increase) in inventories	3	(387)	25
Decrease (increase) in other current assets	(27)	(305)	(243)
Net increase (decrease) in notes and accounts payable and advance money	1,865	1,959	16,801
Increase (decrease) in other current liabilities	431	(426)	3,888
Other	(3,192)	(798)	(28,761)
Subtotal	10,993	8,504	99,040
Interest and dividend received	647	456	5,832
Interest paid	(60)	(66)	(541)
Income taxes received (paid)	(763)	(3,753)	(6,871)
Net cash provided by operating activities	10,817	5,141	97,460
Cash flows from investing activities:			
Net decrease (increase) in time deposits	(14)	4	(126)
Purchase of property, plant and equipment	(482)	(343)	(4,347)
Purchase of intangible fixed assets	(51)	(125)	(462)
Purchase of investment securities	(802)	(561)	(7,221)
Sale of investment securities	105	230	944
Disbursement for loans receivable	-	(151)	-
Collection of loans receivable	112	550	1,011
Other	(250)	68	(2,252)
Net cash used in investing activities	(1,382)	(328)	(12,453)
Cash flows from financing activities:			
Net increase (decrease) in short-term bank loans	(7,030)	-	(63,339)
Payment of long-term debt	(470)	(468)	(4,233)
Purchase of treasury stock	(0)	(1)	(3)
Payment of cash dividends	(1,571)	(1,157)	(14,152)
Dividends paid to non-controlling interests	(28)	(21)	(250)
Other	(21)	(23)	(187)
Net cash used in financing activities	(9,120)	(1,670)	(82,164)
Effect of exchange rate changes on cash and cash equivalents	(11)	8	(103)
Net increase in cash and cash equivalents	304	3,151	2,740
Cash and cash equivalents at beginning of year	60,283	57,132	543,141
Increase (decrease) in cash and cash equivalents resulting from change in scope of consolidation	440	-	3,963
Cash and cash equivalents at end of year (Note 4)	¥ 61,027	¥ 60,283	\$ 549,844

See accompanying notes.

Notes to Consolidated Financial Statements

TAKUMA CO., LTD. and Consolidated Subsidiaries

1. Basis of presenting financial statements

The accompanying consolidated financial statements have been prepared in accordance with the provisions set forth in the Japanese Financial Instruments and Exchange Law and its related accounting regulations and in conformity with accounting principles generally accepted in Japan, which are different in certain respects as to application and disclosure requirements from International Financial Reporting Standards.

The accounts of overseas subsidiaries are based on their accounting records maintained in conformity with generally accepted accounting principles prevailing in the respective countries of domicile. However, necessary adjustments are made upon consolidation. The accompanying consolidated financial statements have been restructured and translated into English from the consolidated financial statements of TAKUMA CO., LTD. (the “Company”) prepared in accordance with Japanese GAAP and filed with the appropriate Local Finance Bureau of the Ministry of Finance as required by the Japanese Financial Instruments and Exchange Law. Some supplementary information included in the statutory Japanese language consolidated financial statements, but not required for fair presentation, is not presented in the accompanying consolidated financial statements.

The translations of the Japanese yen amounts into U.S. dollar amounts are included solely for the convenience of readers outside Japan, using the prevailing exchange rate at March 31, 2019, which was ¥110.99 to U.S.\$1.00. The translations should not be construed as representations that the Japanese yen amounts have been, could have been or could in the future be converted into U.S. dollars at this or any other rate of exchange.

2. Summary of significant accounting policies

- Principles of consolidation
The consolidated financial statements include the accounts of the Company and its 25 significant subsidiaries (the “Companies”). Takuma Plant Service Co., Ltd., Imabari High Trust Co., Ltd. and Machida High Trust Co., Ltd., which were unconsolidated subsidiaries, have been included in the consolidation from the consolidated fiscal year ended March 31, 2019 because of their increased significance. Suminoe High Trust Co., Ltd., which was a newly established subsidiary, has been included in the consolidation from the consolidated fiscal year ended March 31, 2019. In addition, Campo Recycle Plaza Co., Ltd. has been excluded from the consolidation because of its decreased significance in the current consolidated fiscal year. All significant intercompany transactions and unrealized profits among the Companies have been eliminated in consolidation. Investments in certain significant affiliates over which the Company and/or its subsidiaries are able to exert influence to a material degree with regard to financial and operating decision making, other than consolidated subsidiaries, are accounted for by the equity method after the elimination of unrealized intercompany profits.

Investments in the remaining unconsolidated subsidiaries and affiliated companies are not accounted for by the equity method because of the immaterial effect on the consolidated financial statements. Therefore, such investments are carried at cost, adjusted for any substantial and non-recoverable decline in value. Income from those unconsolidated subsidiaries and affiliated companies is recognized only when the Companies receive dividends therefrom.

- Foreign currency translation
Revenue and expense are translated at the rates of exchange prevailing on the transaction date. Assets and liabilities denominated in foreign currencies are generally translated at the rate of exchange prevailing at the balance sheet date, and the resulting translation gains and losses are included in earnings.

The financial statements of a consolidated overseas subsidiary are translated into Japanese yen at the year-end rate, except that net asset accounts are translated at historical rates and income statement items resulting from transactions with the Company are translated at rates used by the Company. The resulting translation adjustments are shown as “Foreign currency translation adjustments,” a separate component of net assets.

- Cash and cash equivalents
In preparing the consolidated statements of cash flows, cash and cash equivalents include cash on hand, readily available deposits and short-term investments with maturities not exceeding three months from the date of acquisition and which have high liquidity and low risk of price fluctuation.

- Securities
Equity securities issued by subsidiaries and affiliated companies which are not consolidated or accounted for using the equity method are stated at cost determined by moving average cost. Available-for-sale securities with available fair market value are stated at fair market value, and unrealized gains and losses on these securities are reported net of applicable income taxes as a separate component of net assets. Realized gains and losses on the sale of such securities are computed at cost using moving average cost. Available-for-sale securities with no available fair market value are stated at cost determined by moving average cost.

If the market value of equity securities issued by unconsolidated subsidiaries and affiliated companies or available-for-sale securities declines significantly, such securities are stated at fair market value and the difference between fair market value and the carrying amount is recognized as loss in the period of the decline. If the fair market value of such securities is not readily available, such securities should be written down to net asset value with a corresponding charge in the income statement in the event the net asset value declines significantly. In these cases, the fair market value or the net asset value will be the carrying amount of the securities at the beginning of the next year.

- Allowance for doubtful accounts
The Companies provide an allowance for doubtful accounts by estimating the uncollectible amounts of certain individual accounts and by applying a percentage based on collection experience to the remaining receivables.

Financial Statement

- (6) Inventories

Merchandise and finished goods are stated at cost using the moving average method. Work-in-process is stated at cost determined by the identified cost method. Materials and supplies are stated at cost using the average method. For these inventories, the carrying amounts on the balance sheet are written down to reflect decreases in profitability.
- (7) Property, plant and equipment

Property, plant and equipment are depreciated principally using the declining balance method over the estimated useful life of the asset. However, buildings acquired after March 31, 1998 and facilities attached to buildings and structures acquired after March 31, 2016 are depreciated using the straight-line method. The range of useful lives is principally from 3 to 60 years for buildings and structures and from 2 to 20 years for machinery, equipment and other. Maintenance and repairs, including minor renewals and improvements, are charged to income as incurred.

Lease assets under finance leases in which the ownership of the lease assets is not transferred to the lessee are depreciated using the straight-line method over the lease term with an assumption of no residual value.
- (8) Allowance for losses on sales contracts

For sales orders on hand at the balance sheet date for projects in which the estimated cost is expected to exceed the price of the order by a wide margin, an allowance for losses on sales contracts is recognized at the estimated aggregate amount.
- (9) Allowance for guarantees on completed work

Allowance for guarantees on completed work is based on estimated amounts of expenditure in the warranty period after products are delivered.
- (10) Provision for loss on liquidation of subsidiaries and associates

To prepare for the loss on liquidation of subsidiaries and associates, a provision is made based on the estimated amounts.
- (11) Allowance for directors' and executive officers' retirement benefits

Directors and executive officers are generally entitled to receive retirement benefits based on the Companies' internal rules. The Companies provide an allowance for directors' and executive officers' retirement benefits based on the amount that would be required if all directors and executive officers retired at the balance sheet date.
- (12) Net defined benefit liability

In calculating retirement benefit obligations, the method of attributing expected benefits to periods employs principally a benefit formula basis. Actuarial gains and losses are recognized in expenses using the straight-line method principally over 10 years commencing with the following period. Prior service costs are recognized in expenses using the straight-line method principally over 10 years.
- (13) Revenue recognition

When the outcome of an individual contract can be estimated reliably, the domestic companies apply the percentage-of-completion method to work performed during the year, otherwise, the completed contract method is applied. The degree of completion, or the percentage of the contract performed during the period under review, is measured by the proportion of the cost incurred during the period to the estimated total cost.
- (14) Income taxes

The Companies are subject to corporation tax, inhabitants tax and enterprise tax based on taxable income. The Companies recognize the tax effects of the temporary differences between the carrying amounts of assets and liabilities for tax and financial reporting. The provision for income taxes is computed based on the pretax income of each of the Companies, with certain required adjustments. The asset-liability approach is used to recognize deferred tax assets and liabilities for the expected future tax consequences of temporary differences.

The Companies have adopted the consolidated tax return system.
- (15) Net income and cash dividends per share

Net income per share is computed based on the weighted average number of shares of common stock outstanding during each period. Diluted net income per share is computed with the assumption that all convertible bonds were converted into common stock at the beginning of each period. Cash dividends per share represent interim dividends declared by the Board of Directors in each year and year-end dividends approved by the shareholders at the annual meeting held subsequent to the end of the fiscal year.
- (16) Derivatives and hedge accounting

The Companies generally state derivative financial instruments at fair value and recognize changes in the fair value as gains or losses unless the derivative financial instruments are used for hedging purposes. If derivative financial instruments are used as hedges and meet certain hedging criteria, the Companies generally defer recognition of gain or loss resulting from a change in the fair value of the derivative financial instrument until the related loss or gain on the hedged item is recognized.

The Companies use currency forward contracts to hedge accounts receivable and payable denominated in foreign currencies (mainly U.S. dollars) against the risk of fluctuation in exchange rates that comes from foreign currency transactions. Certain foreign exchange contracts are subject to appropriation if they satisfy the requirements of appropriation treatment. Interest rate swaps that qualify for hedge accounting and meet specific matching criteria are not re-measured at market value.
- (17) Reclassifications

Certain prior year amounts have been reclassified to conform to the 2019 presentation.

3. Accounting standards issued but not yet adopted

- “Accounting Standard for Revenue Recognition” (Accounting Standards Board of Japan Statement No. 29, March 30, 2018)
 - “Implementation Guidance on Accounting Standard for Revenue Recognition” (Accounting Standards Board of Japan Guidance No. 30, March 30, 2018)
- (1) Overview

This is a comprehensive accounting standard for revenue recognition. Revenue is recognized using the following five steps.
Step 1: Identify the contract with a customer.
Step 2: Identify the performance obligations in the contract.
Step 3: Determine the transaction price.
Step 4: Allocate the transaction price to the performance obligations in the contract.
Step 5: Recognize revenue when (or as) the reporting organization satisfies a performance obligation.
- (2) Effective date

Effective from the beginning of the fiscal year ending March 31, 2022.
- (3) Effects of application of the standard and guidance

The Company and its consolidated domestic subsidiaries are currently in the process of determining the effects of the standard and guidance on the consolidated financial statements.

4. Cash and cash equivalents

Amounts of cash and cash equivalents as of March 31, 2019 and 2018 were reconciled with cash and time deposits as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Cash and time deposits	¥ 61,769	¥ 60,864	\$ 556,529
Time deposits with maturities exceeding three months from the date of acquisition	(742)	(581)	(6,685)
Total cash and cash equivalents	¥ 61,027	¥ 60,283	\$ 549,844

5. Inventories

Inventories were summarized as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Merchandise and finished goods	¥ 816	¥ 733	\$ 7,355
Work-in-process	2,087	1,887	18,800
Materials and supplies	1,453	1,687	13,091
Total inventories	¥ 4,356	¥ 4,307	\$ 39,246

6. Financial instruments

- (1) Status of financial instruments

(a) Financial instruments policy

Under Group policy, investment in financial instruments is limited primarily to short-term deposits and bank loans for raising funds. Derivative transactions are used to hedge risks of fluctuations in foreign exchange and interest rates.

(b) Financial instruments, risks and risk management structure

The Companies are working to reduce customer credit risk associated with notes and accounts receivable and operating receivables through customer based due dates and other balance controls in accordance with the Companies' regulations. Investment securities consists mainly of stocks and are periodically checked for the fair value of the listed shares. Notes and accounts payables, or operating payables, are due within one year. Short-term financing is primarily for operating funds while long-term debt is for capital investment.

With floating rate loans, which are exposed to interest rate fluctuation risk, Group companies use derivative transactions (interest rate swaps) as a part of their long-term loans to hedge the risk of interest rate fluctuation on bank loans and to fix interest payments.

To cope with operating receivables and loans exposed to liquidity risk, each Group company prepares monthly cash-flow plans and enters into loan commitment agreements with several financial institutions for raising working capital flexibly and stably.

(c) Supplementary remarks on fair values of financial instruments

The fair values of financial instruments do not reflect the market risks concerning the derivative trading.

Financial Statement

(2) Fair value of financial instruments

Amounts recognized on the consolidated balance sheets, fair values and differences as of March 31, 2019 and 2018, except items for which no fair value was obtainable, were as follows:

(Cash and time deposits)

The fair value of cash and time deposits is based on relevant book value because they are mostly settled within a short period of time and the fair value is nearly equal to the book value.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 61,769	¥ 60,864	\$ 556,529
Fair value	61,769	60,864	556,529
Difference	¥ -	¥ -	\$ -

(Notes and accounts receivable)

The fair value of notes and accounts receivable is based on the relevant book value because they are mostly settled within a short period of time and the fair value is nearly equal to the book value.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 49,507	¥ 50,355	\$ 446,051
Fair value	49,507	50,355	446,051
Difference	¥ -	¥ -	\$ -

(Investment securities)

The fair value of stocks is based on stock exchange prices, and the fair values of bonds are based on stock exchange prices or prices provided by financial institutions.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 14,943	¥ 16,795	\$ 134,634
Fair value	14,943	16,795	134,634
Difference	¥ -	¥ -	\$ -

(Notes and accounts payable)

The fair value of notes and accounts payable is based on the relevant book value because they are mostly settled within a short period of time and the fair value is nearly equal to the book value.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 37,869	¥ 35,107	\$ 341,193
Fair value	37,869	35,107	341,193
Difference	¥ -	¥ -	\$ -

(Accrued income taxes)

The fair value of accrued income taxes is based on the relevant book value because they are settled within a short period of time and the fair value is nearly equal to the book value.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 3,628	¥ 7,675	\$ 32,690
Fair value	3,628	7,675	32,690
Difference	¥ -	¥ -	\$ -

(Short-term loans payable)

The fair value of short-term loans payable is based on the relevant book value because they are settled within a short period of time and the fair value is nearly equal to the book value.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 645	¥ 7,675	\$ 5,811
Fair value	645	7,675	5,811
Difference	¥ -	¥ -	\$ -

(Long-term debt)

The fair value of long-term debt is calculated by a method that discounts total principal plus interest by an assumed interest rate for a similar new loan. Short-term financing is primarily for operating funds, while long-term debt is for capital investment.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets	¥ 459	¥ 929	\$ 4,135
Fair value	462	934	4,160
Difference	¥ 3	¥ 5	\$ 25

Items for which no fair value was obtainable
(Non-listed equity securities)

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Amounts recognized on the consolidated balance sheets			
Equity securities issued by affiliates	¥ 3,811	¥ 4,333	\$ 34,333
Other	195	90	1,754

(3) Redemption schedule of monetary assets with contractual maturities and repayment schedule of short-term loans payable and long-term debt

	Millions of yen					
As of March 31, 2019	Less than 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years
Cash and time deposits	¥ 61,769	¥ -	¥ -	¥ -	¥ -	¥ -
Notes and accounts receivable	40,827	8,670	10	-	-	-
Investment securities	-	-	-	-	-	-
Total	¥ 102,596	¥ 8,670	¥ 10	¥ -	¥ -	¥ -
Short-term loans payable	¥ 645	¥ -	¥ -	¥ -	¥ -	¥ -
Long-term debt	117	80	182	80	-	-
Total	¥ 762	¥ 80	¥ 182	¥ 80	¥ -	¥ -

	Millions of yen					
As of March 31, 2018	Less than 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years
Cash and time deposits	¥ 60,864	¥ -	¥ -	¥ -	¥ -	¥ -
Notes and accounts receivable	47,648	2,177	530	-	-	-
Investment securities	-	-	-	-	-	-
Total	¥ 108,512	¥ 2,177	¥ 530	¥ -	¥ -	¥ -
Short-term loans payable	¥ 7,675	¥ -	¥ -	¥ -	¥ -	¥ -
Long-term debt	470	117	80	182	80	-
Total	¥ 8,145	¥ 117	¥ 80	¥ 182	¥ 80	¥ -

	Thousands of U.S. dollars					
As of March 31, 2019	Less than 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	More than 5 years
Cash and time deposits	\$ 556,529	\$ -	\$ -	\$ -	\$ -	\$ -
Notes and accounts receivable	367,843	78,121	87	-	-	-
Investment securities	-	-	-	-	-	-
Total	\$ 924,372	\$ 78,121	\$ 87	\$ -	\$ -	\$ -
Short-term loans payable	\$ 5,811	\$ -	\$ -	\$ -	\$ -	\$ -
Long-term debt	1,052	721	1,641	721	-	-
Total	\$ 6,863	\$ 721	\$ 1,641	\$ 721	\$ -	\$ -

7. Securities

(1) Acquisition costs and book values of available-for-sale securities with available fair values as of March 31, 2019 and 2018 were as follows:

	Millions of yen		
As of March 31, 2019	Acquisition cost	Book value	Difference
Securities with book values exceeding acquisition costs:			
Equity securities	¥ 6,417	¥ 14,319	¥ 7,902
Subtotal	6,417	14,319	7,902
Securities with book values not exceeding acquisition costs:			
Equity securities	759	624	(135)
Subtotal	759	624	(135)
Total	¥ 7,176	¥ 14,943	¥ 7,767
As of March 31, 2018	Millions of yen		
	Acquisition cost	Book value	Difference
Securities with book values exceeding acquisition costs:			
Equity securities	¥ 5,923	¥ 16,324	¥ 10,401
Subtotal	5,923	16,324	10,401
Securities with book values not exceeding acquisition costs:			
Equity securities	551	471	(80)
Subtotal	551	471	(80)
Total	¥ 6,474	¥ 16,795	¥ 10,321

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As of March 31, 2019	Thousands of U.S. dollars		
	Acquisition cost	Book value	Difference
Securities with book values exceeding acquisition costs:			
Equity securities	\$ 57,813	\$ 129,007	\$ 71,194
Subtotal	57,813	129,007	71,194
Securities with book values not exceeding acquisition costs:			
Equity securities	6,839	5,626	(1,213)
Subtotal	6,839	5,626	(1,213)
Total	\$ 64,652	\$ 134,633	\$ 69,981

(2) Available-for-sale securities sold for the years ended March 31, 2019 and 2018 were as follows:

Information on the available-for-sale securities sold for the year ended March 31, 2019 is not provided because there was no significant gain.

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Total sales amount	¥ -	¥ 230	\$ -
Gains	-	111	-

8. Pledged assets

The following assets were pledged to secure short-term loans payable, long-term debt, and contingent liabilities under guarantees for bank loans of affiliated companies and fulfillment of contracts as of March 31, 2019 and 2018:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Buildings and structures	¥ 129	¥ 193	\$ 1,158
Machinery and equipment	24	36	218
Investment securities	150	450	1,351
Cash and time deposits	274	256	2,467
Time deposits as construction contract guarantees	86	102	779
Total	¥ 663	¥ 1,037	\$ 5,973

9. Short-term loans payable and long-term debt

Short-term loans payable as of March 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Secured	¥ -	¥ -	\$ -
Unsecured	645	7,675	5,811
	¥ 645	¥ 7,675	\$ 5,811

Current portion of long-term debt as of March 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Secured	¥ 37	¥ 72	\$ 331
Unsecured	80	398	721
	¥ 117	¥ 470	\$ 1,052

Long-term debt as of March 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Secured	¥ -	¥ 37	\$ -
Unsecured	342	422	3,083
	¥ 342	¥ 459	\$ 3,083

The annual average interest rate applicable to bank loans at March 31, 2019 and 2018 was as follows:

	2019	2018
Short-term loans payable	0.6%	0.6%
Current portion of long-term debt	2.0%	1.5%
Long-term debt	2.6%	2.4%

10. Employees' retirement benefits

(1) Outline of adopted retirement benefit scheme

The Companies provide three types of post-employment benefit plans, unfunded lump-sum payment plans, funded non-contributory pension plans and defined contribution plans, under which all eligible employees are entitled to benefits based on the level of wages and salary at the time of retirement or termination, length of service and certain other factors.

(2) Defined benefit plans

Movement in retirement benefit obligations (except plan applied simplified method) for the years ended March 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Balance at April 1, 2018 and 2017	¥ 8,826	¥ 8,446	\$ 79,521
Service cost	600	576	5,403
Interest cost	48	46	430
Actuarial loss (gain)	(4)	62	(34)
Benefits paid	(360)	(304)	(3,241)
Balance at March 31, 2019 and 2018	¥ 9,110	¥ 8,826	\$ 82,079

Movement in net defined benefit liability of plan applied simplified method for the years ended March 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Balance at April 1, 2018 and 2017	¥ 580	¥ 565	\$ 5,226
Retirement benefit costs	102	99	917
Contributions paid by the employer	(22)	(29)	(195)
Benefits paid	(35)	(54)	(317)
Other	11	(1)	98
Balance at March 31, 2019 and 2018	¥ 636	¥ 580	\$ 5,729

Reconciliation from retirement benefit obligations and plan assets to net defined benefit liability as of March 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Funded retirement benefit obligations	¥ 589	¥ 571	\$ 5,306
Plan assets	(414)	(415)	(3,726)
	175	156	1,580
Unfunded retirement benefit obligations	9,571	9,250	86,228
Total net defined benefit liability (asset) at March 31, 2019 and 2018	9,746	9,406	87,808
Net defined benefit liability	9,746	9,406	87,808
Total net defined benefit liability (asset) at March 31, 2019 and 2018	¥ 9,746	¥ 9,406	\$ 87,808

Retirement benefit costs for the years ended March 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Service cost	¥ 600	¥ 576	\$ 5,403
Interest cost	48	46	430
Amortization of actuarial differences	139	157	1,254
Amortization of prior service cost	(4)	(49)	(35)
Retirement benefit costs based on the simplified method	102	99	918
Total retirement benefit costs for the fiscal years ended March 31, 2019 and 2018	¥ 885	¥ 829	\$ 7,970

Remeasurements of defined benefit plans for the years ended March 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Prior service costs	¥ (4)	¥ (49)	\$ (35)
Actuarial gains and losses	143	94	1,288
Total remeasurements of defined benefit plans for the fiscal years ended March 31, 2019 and 2018	¥ 139	¥ 45	\$ 1,253

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Accumulated remeasurements of defined benefit plans as of March 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Prior service costs yet to be recognized	¥ 6	¥ 10	\$ 52
Actuarial gains and losses yet to be recognized	(673)	(816)	(6,059)
Total balance at March 31, 2019 and 2018	¥ (667)	¥ (806)	\$ (6,007)

The principal actuarial assumptions at March 31, 2019 and 2018 were as follows:

	2019	2018
Discount rate	principally 0.64%	principally 0.64%
Expected rate of salary increase	principally 6.7%	principally 6.6%

(3) Defined contribution plan

The amount of contribution required for the defined contribution plans of the Companies for the years ended March 31, 2019 and 2018 was ¥135 million (\$1,213 thousand) and ¥132 million, respectively.

11. Contingent liabilities

The Companies were contingently liable under guarantees for bank loans of affiliated companies and other companies as of March 31, 2019 and 2018 as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Unsecured	¥ 209	¥ 239	\$ 1,881

12. Net assets

Under Japanese laws and regulations, the entire amount paid for new shares is required to be designated as common stock. However, a company may, by a resolution of the Board of Directors, designate an amount not exceeding one half of the price of the new shares as additional paid-in capital, which is included in capital surplus.

Under the Japanese Corporate Law (the “Law”), in cases in which a dividend distribution of surplus is made, the smaller of an amount equal to 10% of the dividend or the excess, if any, of 25% of common stock over the total of additional paid-in capital and legal earnings reserve must be set aside as additional paid-in capital or legal earnings reserve. Legal earnings reserve is included in retained earnings in the accompanying consolidated balance sheets.

Under the Law, legal earnings reserve and additional paid-in capital can be used to eliminate or reduce a deficit or be capitalized by a resolution of the shareholders' meeting.

Additional paid-in capital and legal earnings reserve may not be distributed as dividends. Under the Law, all additional paid-in capital and all legal earnings reserve may be transferred to other capital surplus and retained earnings, respectively, which are potentially available for dividends.

The maximum amount that the Company can distribute as dividends is calculated based on the nonconsolidated financial statements of the Company in accordance with Japanese laws and regulations.

The appropriation of retained earnings with respect to a given financial year is made by resolution of the shareholders at a general meeting held subsequent to the close of such financial year. The accounts for that year do not, therefore, reflect such appropriations.

13. Provision for losses on sales contracts

Provision for losses on sales contracts included in cost of sales for the years ended March 31, 2019 and 2018 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
	¥ 1,400	¥ 373	\$ 12,613

14. Research and development expenses

Research and development expenses are charged to income as incurred. Such expenses included in cost of sales and selling, general and administrative expenses for the years ended March 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
	¥ 961	¥ 929	\$ 8,656

15. Income taxes

The Companies are subject to a number of taxes based on income, which, in the aggregate, indicated a statutory rate in Japan of approximately 30.6% and 30.8% for the years ended March 31, 2019 and 2018, respectively.

The significant differences between the statutory tax rate and the Companies' effective tax rate for financial statement purposes were set forth in the table below.

	2019	2018
Statutory tax rate	30.6%	30.8%
Nondeductible expenses	1.7	1.1
Dividend income	(0.5)	(0.2)
Equity in earnings of affiliated companies	(1.3)	(1.3)
Council tax	0.7	0.6
Tax credits	(2.3)	(2.0)
Valuation allowance	(1.7)	(1.3)
Change in scope of consolidation	(10.0)	-
Other	2.4	(0.6)
The Companies' effective tax rate	19.6%	27.1%

Components of the Companies' deferred tax assets and liabilities as of March 31, 2019 and 2018 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Deferred tax assets:			
Net defined benefit liability	¥ 2,985	¥ 2,876	\$ 26,893
Allowance for doubtful accounts	1,844	140	16,610
Accrued cost of sales	1,553	1,483	13,996
Other	4,736	4,843	42,673
Total deferred tax assets	11,118	9,342	100,172
Valuation allowance	(3,788)	(3,975)	(34,132)
Net deferred tax assets	¥ 7,330	¥ 5,367	\$ 66,040
Deferred tax liabilities:			
Unrealized gains on securities	¥ (2,363)	¥ (3,143)	\$ (21,292)
Valuation difference in land of consolidated subsidiary	(140)	(152)	(1,259)
Other	(180)	(168)	(1,623)
Total deferred tax liabilities	(2,683)	(3,463)	(24,174)
Net deferred tax assets	¥ 4,647	¥ 1,904	\$ 41,866

Financial Statement

16. Comprehensive income

Amounts reclassified to net income in the current period that were recognized in other comprehensive income in the current or previous periods and the tax effects for each component of other comprehensive income were as follows:

	Millions of yen		Thousands of U.S. dollars
	2019	2018	2019
Unrealized gains on securities			
Increase (decrease) during the year	¥ (2,552)	¥ 3,395	\$ (22,994)
Reclassification adjustments	(0)	(111)	(0)
Subtotal, before tax	(2,552)	3,284	(22,994)
Tax (expense) or benefit	780	(1,009)	7,028
Subtotal, net of tax	¥ (1,772)	¥ 2,275	\$ (15,966)
Deferred gains and losses on hedges			
Increase (decrease) during the year	¥ 82	¥ (13)	\$ 738
Reclassification adjustments	-	-	-
Subtotal, before tax	82	(13)	738
Tax (expense) or benefit	(24)	10	(219)
Subtotal, net of tax	¥ 58	¥ (3)	\$ 519
Foreign currency translation adjustments			
Increase (decrease) during the year	¥ (9)	¥ (4)	\$ (77)
Reclassification adjustments	-	-	-
Subtotal, before tax	(9)	(4)	(77)
Tax (expense) or benefit	-	-	-
Subtotal, net of tax	¥ (9)	¥ (4)	\$ (77)
Remeasurements of defined benefit plans			
Increase (decrease) during the year	¥ 4	¥ (63)	\$ 34
Reclassification adjustments	135	108	1,219
Subtotal, before tax	139	45	1,253
Tax (expense) or benefit	(43)	(14)	(383)
Subtotal, net of tax	¥ 96	¥ 31	\$ 870
Total other comprehensive income	¥ (1,627)	¥ 2,299	\$ (14,654)

17. Segment information

(Supplemental information - Accounting Standard for Disclosures about Segments of an Enterprise and Related Information)

(1) General information about reportable segments

In the Group, businesses for which separate financial information is available are grouped into the following four reporting segments in accordance with the similarity of products and services of the respective business. The results of each reporting segment are reviewed periodically by the Board of Directors to assess the segment's business performance.

Domestic Environment and Energy

General waste treatment plants, industrial waste treatment plants, waste recycling plants, wastewater treatment plants, sludge combustion plants, biomass power plants and gas-turbine cogeneration systems

Overseas Environment and Energy

Waste combusting power plants and biomass power plants

Package Boiler

Compact through-flow boilers and vacuum water heating systems

Equipment and System Business

Construction equipment, equipment for semi-conductor industry and cleaning systems

(2) Basis of measurement about reported segment profit or loss and other material items

Accounting methods used for reporting segments are the same those explained in the Note 2, "Summary of significant accounting policies."

Profits of reporting units are operating income. Internal revenue and transfers between reporting segments are recorded using prevailing market prices.

(3) Information about reported segment profit or loss and other material items

Reportable segment information for the years ended March 31, 2019 and 2018 was as follows:

Year ended March 31, 2019	Millions of yen						
	Domestic Environment and Energy	Overseas Environment and Energy	Package Boiler	Equipment and System Business	Total	Adjustment	Consolidated
Sales:							
Outside customers	¥ 93,558	¥ 3,057	¥ 16,868	¥ 8,468	¥ 121,951	¥ -	¥ 121,951
Intersegment	166	-	87	368	621	(621)	-
Total	93,724	3,057	16,955	8,836	122,572	(621)	121,951
Reportable segment income	¥ 12,405	¥ 164	¥ 905	¥ 362	¥ 13,836	¥ (2,232)	¥ 11,604
Others:							
Depreciation	¥ 574	¥ 10	¥ 159	¥ 20	¥ 763	¥ 35	¥ 798
Year ended March 31, 2018	Millions of yen						
	Domestic Environment and Energy	Overseas Environment and Energy	Package Boiler	Equipment and System Business	Total	Adjustment	Consolidated
Sales:							
Outside customers	¥ 89,850	¥ 3,401	¥ 17,267	¥ 7,681	¥ 118,199	¥ -	¥ 118,199
Intersegment	225	-	54	16	295	(295)	-
Total	90,075	3,401	17,321	7,697	118,494	(295)	118,199
Reportable segment income	¥ 10,488	¥ 78	¥ 1,015	¥ 229	¥ 11,810	¥ (1,780)	¥ 10,030
Others:							
Depreciation	¥ 559	¥ 12	¥ 170	¥ 19	¥ 760	¥ 30	¥ 790
Year ended March 31, 2019	Thousands of U.S. dollars						
	Domestic Environment and Energy	Overseas Environment and Energy	Package Boiler	Equipment and System Business	Total	Adjustment	Consolidated
Sales:							
Outside customers	\$ 842,938	\$ 27,545	\$ 151,975	\$ 76,295	\$ 1,098,753	\$ -	\$ 1,098,753
Intersegment	1,503	-	785	3,317	5,605	(5,605)	-
Total	844,441	27,545	152,760	79,612	1,104,358	(5,605)	1,098,753
Reportable segment income	\$ 111,769	\$ 1,475	\$ 8,153	\$ 3,260	\$ 124,657	\$ (20,106)	\$ 104,551
Others:							
Depreciation	\$ 5,168	\$ 95	\$ 1,429	\$ 184	\$ 6,876	\$ 311	\$ 7,187

Adjustments in reportable segment income include eliminations of transactions between segments and corporate expenses not allocated to reportable segment expenses, including selling, general and administrative expenses not attributable to reportable segments.

Total reportable segment income is adjusted with operating income reported on the Consolidated Statements of Operations.

Disclosure of information relating to segment assets is omitted since assets are not allocated to business segments.

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(Related information)

Reportable segment information for the years ended March 31, 2019 and 2018 was as follows:

- (1) Information about products and services
Disclosure of this information is omitted since similar information is disclosed in Note 17, “Segment information.”
- (2) Information about geographic areas
Revenues
Since over 90% of net sales reported on the Consolidated Statements of Operations were sales to outside customers within Japan, disclosure of this information is omitted.
Tangible fixed assets
Since 90% of tangible noncurrent assets reported on the consolidated balance sheet (in terms of values) were located within Japan, disclosure of this information is omitted.
- (3) Information about major customers
Since no outside customer accounted for 10% or more of net sales reported on the income statement, disclosure of this information is omitted.

(Information related to noncurrent asset impairment loss by reporting segment)
The note is omitted because it is not important.

(Information related to amortization and unamortized balance of goodwill)
Not applicable

(Information related to gain on negative goodwill by reporting segment)
Not applicable



Independent Auditor’s Report

To the Board of Directors of TAKUMA CO., LTD.:

We have audited the accompanying consolidated financial statements of TAKUMA CO., LTD. and its consolidated subsidiaries, which comprise the consolidated balance sheets as at March 31, 2019 and 2018, and the consolidated statements of operations, statements of comprehensive income, statements of changes in net assets and statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management’s Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor’s Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in Japan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity’s preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, while the objective of the financial statement audit is not for the purpose of expressing an opinion on the effectiveness of the entity’s internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of TAKUMA CO., LTD. and its consolidated subsidiaries as at March 31, 2019 and 2018, and their financial performance and cash flows for the years then ended in accordance with accounting principles generally accepted in Japan.

Convenience Translation

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended March 31, 2019 are presented solely for convenience. Our audit also included the translation of yen amounts into U.S. dollar amounts and, in our opinion, such translation has been made on the basis described in Note 1 to the consolidated financial statements.

KPMG AZSA LLC

June 26, 2019
Osaka, Japan

KPMG AZSA LLC, a limited liability audit corporation incorporated under the Japanese Certified Public Accountants Law and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity.

TAKUMA CO., LTD.

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