

TAKASAGO CORPORATE REPORT 2018



Management Policy and Principles

MANAGEMENT POLICY	Contribution to society through personal harmony and creativity
MANAGEMENT PRINCIPLES	<ol style="list-style-type: none"> 1.To serve society through the development of business activities that focus on the creation of the best product quality 2.To develop technology that serves our customers' needs and utilizes the creativity of all employees 3.To enhance personal character and harmony between people by nurturing talent and promoting mutual respect

Editorial policy

The Takasago Thermal Engineering Group started issuing the Corporate Report (an integrated report) since 2017, and this is the second Report. We have kept in mind that this Report contains useful information for those who are interested in the current situation and medium - to long-term future of the Takasago Thermal Engineering Group. We will continue to improve the quality of the Report based on your feedback and suggestions. Please refer to the materials below for detailed information.

● Target organizations for this Report

Takasago Thermal Engineering Co., Ltd. (all offices both in Japan and overseas) and Takasago Thermal Engineering Group companies
 * The entire Takasago Thermal Engineering Group is referred to as "the Takasago Thermal Engineering Group" or "the Group," and Takasago Thermal Engineering Co., Ltd. alone is referred to as "Takasago Thermal Engineering" or "we."

● Reporting period

● April 1, 2017 to March 31, 2018
 * Some information before/after the period above is included.

● Month of issue

August 2018 (Next issue is planned for August 2019)

● Referenced guidelines

International Integrated Reporting Framework, International Integrated Reporting Council (IIRC)
Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation, Ministry of Economy, Trade and Industry (METI)
G4 Sustainability Reporting Guidelines (4th edition), Global Reporting Initiative (GRI)

Relationship of major reporting materials



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The reform for our innovation is finally coming into the main phase. We will continue to make bold efforts for future growth making use of the good business environment.



Actual results of FY 2017 and forecast of FY 2018

In the fiscal year ended March 31, 2017, the Group's consolidated accounts settlements were 289.9 billion yen (increased by 11.4% from the previous year), operating income of 16.3 billion yen (increased by 32.1% from the previous year), ordinary income of 17.4 billion yen (increased by 30.0% from the previous year), and net income attributable to parent company shareholders of 11.8 billion yen (increased by 36.2% from the previous term), all of which were the record high since the foundation. In addition, orders received were also strong and 288.6 billion yen (increased by 5.6% from the previous year). The background of this good result is the improvement of the business environment. Due to the moderate recovery in the economy in Japan, the movements leading to facility construction demands occurred at the same

time, for example, special demands for construction prior to the Tokyo Olympic and Paralympic Games in 2020, active large redevelopment investment in the Tokyo metropolitan area, and recovery of capital investment by companies. In FY 2018, we anticipate sales of 300 billion yen (3.5% of increase), but we expect the profit to be about the same as the previous year (operating income of 16.5 billion yen, ordinary income of 17.5 billion yen, net income belonging to the parent company shareholder of 11.8 billion yen). This is due to an increase in gross profit thanks to the progress made with our own profitable premises, which are expected better than the previous year, as well as an increase in costs associated with aggressive growth investment. We also forecast orders of 280.0 billion yen (decreased by 3.0%) assuming that we will proceed with selected orders focusing on profitability and planned orders taking the digestive system into consideration.

● Long-term Management Framework and Medium-term Business Plans



Reformed for medium-to long-term growth

The medium- to long-term performance of the Group will depend on how we can proceed with our efforts aiming for future growth while the current good business environment continues. Aiming to continuously raise the corporate value, the Group has been implementing the long-term management framework named GReeN PR!DE 100 towards the 100th anniversary of the establishment, since FY 2014. Spending ten years, we are making every effort for becoming a *company group continuously meeting customers expectation and always relied and trusted by them, an environmental company whose presence is admired in the global market, and environmental solution professional contributing to the global environment.* We are transforming from a *contracted construction company specialized for air conditioning system* into an *integrated engineering company* that builds closer relationships with customers and provides solutions by understanding their needs. We are steadily moving forward in order to globally develop the business leveraged with our technologies and play an important role in the world that pursues a low-carbon and even a decarbonization society. The implementation of the Long-term Management Framework has three steps.

We established the foundations for innovation focusing on on-site capabilities, human resource development, and stable profitability, for the past three years through FY 2016. Based on the outcomes, we implemented the new medium-term business plan named iNnovate on 2019 just move on! with the basic theme of *bold implementation of innovations for growth* as the second step that started in FY 2017. The primary object of the plan is to realize the shift to a hybrid form of business in which we conduct both construction and the provision of solutions, and in such a business, we will provide high value added through environmental engineering utilizing cutting-edge technologies, including the fields of FM (facility management) and PM (property management) as the entire Takasago Thermal Engineering Group. In parallels, the plan also aims to grow the business in Japan and overseas by strengthen on-site capabilities and sales capabilities. The Group plans to invest 35.0 billion yen under five themes, which are mergers and acquisitions (M&A), the acceleration of globalization, the strengthening of IT infrastructure, the promotion of new business creation, and the strengthening of management infrastructure, and examine/implement the plan for three years from FY 2017.

Accelerating a hybrid form of business

The primary services of a hybrid form of business in which we conduct both construction and the provision of solutions is to calculate the optimum lifecycle cost considering the long-term perspectives ranging from the planning and design stage of system and buildings to the maintenance for the following 20 to 30 years, and to support the entire life as a customer's continuing partner.

The hybrid form of business has already been fully developed and has created success stories. We have been successful in the energy services business. This is an integrated service supplying various energies such as heating and cooling, electricity and gas, and operating / improving the related facilities at a fixed service fee. The Group provides one-stop services including financing and facility design/construction so that our customers can reduce costs by introducing highly efficient energy-saving systems, reduce costs by selecting optimized energy sources and introducing operation management / maintenance management / energy management of the facility operation as a whole, and can also make plans for BCP measures that enable independent management in the event of a disaster as well as they can make the capital investment related costs off-balance, allowing us to strongly support the customers' business. This service business has become successful in Japan nationwide, especially at major hospitals,

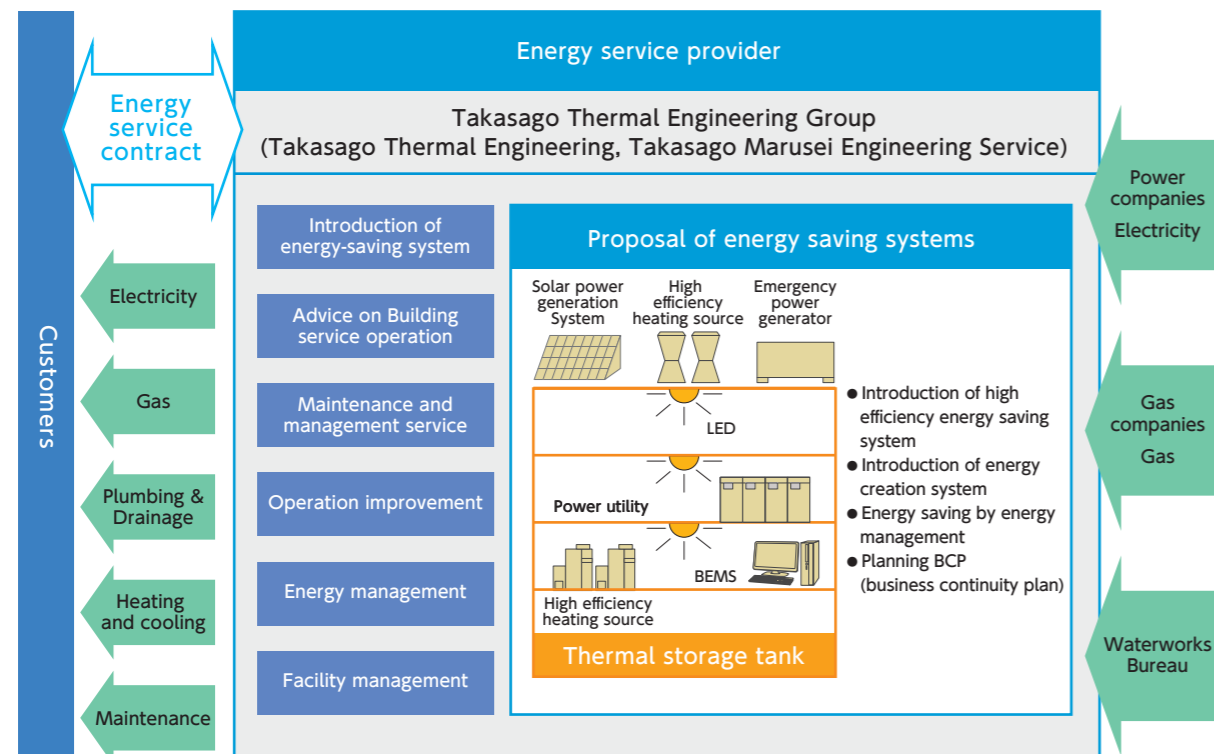
and we plan to activate the service proposals to a wide range of customers including commercial facilities, factories, and universities.

In addition, we are aggressively developing and improving tools to support the hybrid form of business. One example is the GODA® Cloud that flexibly "visualizes" customers' facility data. This tool, which is cloud-based and allows experts to provide their supports remotely, was adopted by the Ministry of the Environment's Eco-Tuning Business Model Establishment Project, and received the Energy Conservation Award 2017. Some of the buildings that adopted the tool realized more than 50% of energy saving throughout the introduction period.

In addition, we are thoroughly reexamining the group IT system as a core of transformation to the hybrid form of business. Through our industry's best construction results, the Group has accumulated a wide range of information assets such as reference materials used at proposal and design stages, drawings and procurement information used for construction, energy data acquired at the operation stage and management data on facility equipment. Managing such data associated with design, construction, and operation of the buildings and facilities in an integrated manner allows us to make better proposals efficiently.

We believe that rebuilding the group IT system, which we are working on at a rapid pace, will have a positive impact on working-style reform through improved productivity.

● Framework of energy service business



Create new services

We take an approach with diverse in making our group's bold efforts for creating our second and third core businesses.

The business and capital alliance with Tsukishima Kikai Co., Ltd. and Yamato Corporation is established to share each other's know-how and work together to create new business models. A new project at a reference site is proceeding with aiming to create an unprecedented, construction business model.

Meanwhile, we are also making efforts to apply existing technologies to other applications. In April 2018, we started full-scale business of SIS-HF® (Super Ice System® for HIGH FRESHNESS), Sherbet-like ice generating technology based of ice thermal storage of air conditioning system for fishery products, which is able to keep freshness in process from catch to transportation. It has been our new business since 2018 after four years of development and demonstration. The product is highly evaluated in the fishery market because of the sales method that takes a series of processes such as proposal, simulation, and on-site demonstration using actual equipment.

In addition, as a part of promoting open innovation, we have launched a program called Takasago Thermal Engineering Accelerator "just move on!" that mixes the ideas and technologies of startup companies and the strengths of the Takasago Thermal Engineering Group to create new businesses and services. We called for participation in the three fields: building space / personal space, communities/infrastructures, and construction sites for the first time in September 2017, assuming that technologies such as AI, AR/VR, IoT, robots, and BIM (Building Information Modeling) would be leveraged. The actual projects with the two companies with which matching was established started in April 2018.

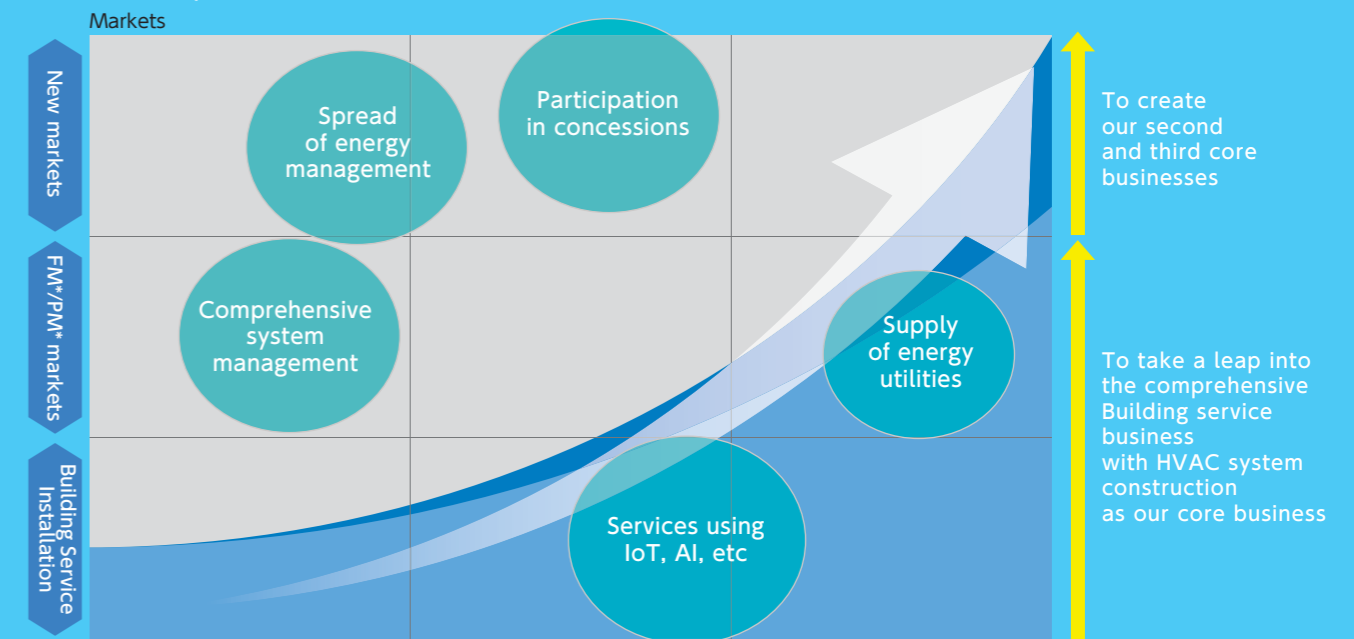
In FY 2020, we will start operating a new research and development base. We consider making it a large-scale facility that will raise the possibilities of new services working as a base with broad range of functions from marketing, advanced technology development through commercialization.

We will continue to proactively exchange knowledge through various opportunities such as industry - academia - government collaboration, expand our view as a company, and at the same time develop a corporate culture in which innovation naturally occurs.

● Growth Strategy Load Map

Starting with our current equipment installation business, our Group aims to evolve into a company contributing more to society, through entry into the FM and PM markets and the development of new markets.

Contribution to the world by pursuing a decarbonized society through environmental engineering



*FM: Facility management. Planning and management of facilities and environments PM: Property management

Strengthening the foundations of management in international business

Although our international business has certain sales in China and Hong Kong, securing profits is challenging due to intensified competition while Southeast Asia is contributing to consolidated results with both sales and profits strong. In Mexico, both sales and profits are still small but solid.

In the future, considering establishment of a joint venture companies and partnerships with local partners as important options, we will make efforts for establishing a local business foundation while focusing on speed.

In November 2017, we made Integrated Cleanroom Technologies Private Limited (ICLEAN), a manufacturer of the equipment and interior material for clean rooms in India, a consolidated subsidiary. The Group will further leverage the agile organizational strength, and the knowledge and expertise in the pharmaceutical field of ICLEAN to proceed with expansion of its business through synergistic effects with the company's business areas and other factors.

In addition, each local corporation promotes further localization by appointing the national staff to the management team so that management based on the regional circumstances can be carried out.

Working-style reform and reform of personnel systems

Working-style reform is an urgent issue also to the Group. The Group defines the purpose of the working-style reform as "improving performance by making employees happy." By developing an environment where employees can work in a comfortable and productive manner, we aim to create a workplace where they can work promptly and efficiently. The Working-Style Reform Committee started its operation in FY2017 and has been conducting activities to consider and realize specific implementation measures.

We are also preparing for the introduction of a new personnel system to further promote working-style reform. The evaluation of individuals in the new system focuses on the degree of improvement of the added value of individuals work. In order to produce greater results, we will also encourage innovative ideas that are not bound by conventional methods. We are also planning to introduce multi-path personnel system allowing employees to demonstrate their capability aiming to have them to achieve their goals, systematizing career paths that allow employees to make use of various experiences, and optional 65 years old retirement system that allows employees to work with no concern with the future.

Returning profit to shareholders

The Group positions the returning of profits to shareholders as one of the most important management challenges. Until now, we have been paying dividends based on 2% of the dividend on equity (consolidated) ratio (DOE) as a basic policy of paying stable dividends over the medium- to long-term. In May 2018, we changed the dividend policy in order to further clarify our positive attitude of returning profits to shareholders and decided that the base of the consolidated dividend payout ratio shall be 30% and that the DOE shall be 2% at minimum. While basically continuing to maintain stable dividends, we consider that we will give our shareholders a great deal of return if our business is doing well.

According to this policy, we declared that the annual dividend per share of common stock for the year ended March 2018 was 50 yen (31.2% of consolidated dividend payout ratio and 3.2% of DOE).

For the time being, we anticipate capital demand for growth and we will not actively acquire treasury stock, but we will continue to promote shareholder returns keeping the total return ration combined with dividends and treasury stock acquisition in mind.

Aiming to realize a sustainable society

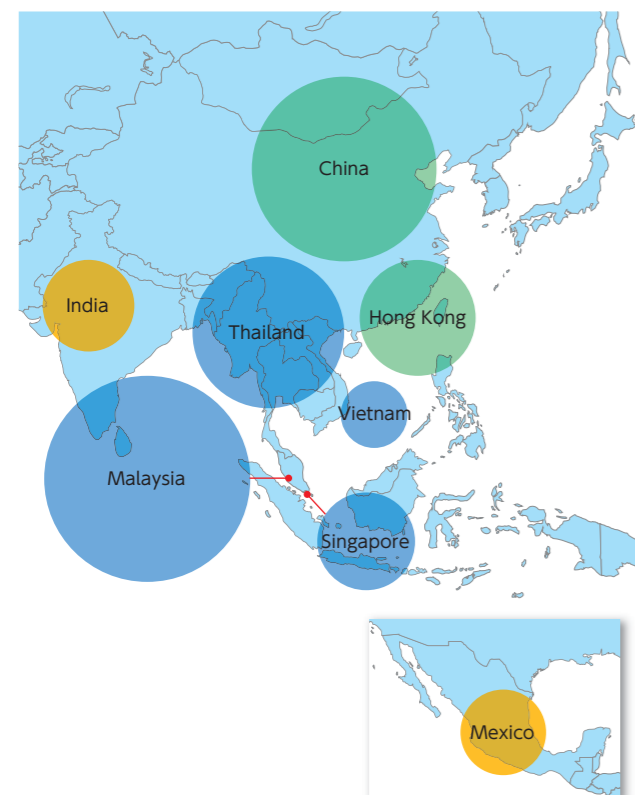
The Group's basic policies are to set CSR as a core element of the management philosophy, pursue communication with society, and contribute to the realization of a sustainable society.

As a part of that, we signed the United Nations Global Compact in July 2018. The United Nations Global Compact is the cornerstone of our Group's global business development as a global framework for realizing the globalization coping with antiglobalization.

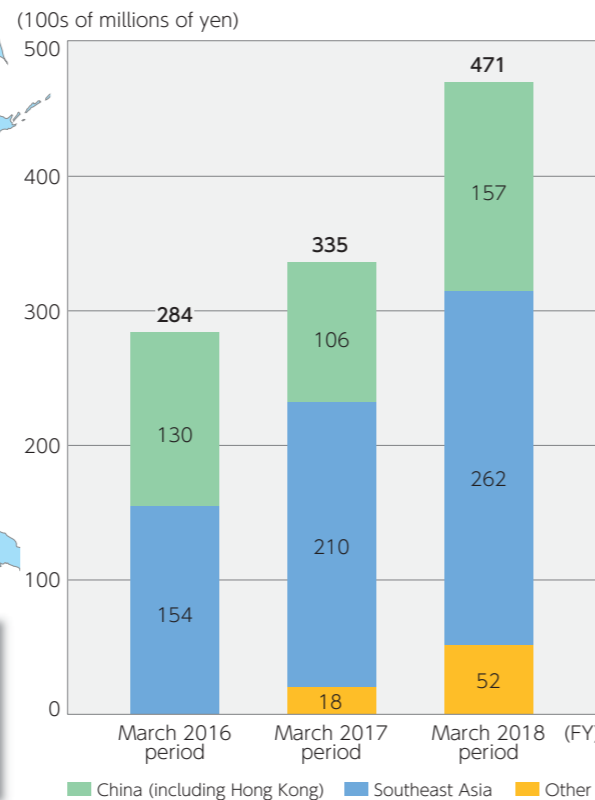
Moreover, we believe that taking the responsibility of playing a proactive role in contributing to the world towards a decarbonized society by environmental engineering for the SDGs (sustainable development goals) that is a common vision for the international community will lead to the lasting development of the Group.

We look forward to your continued support from everyone who got the Report.

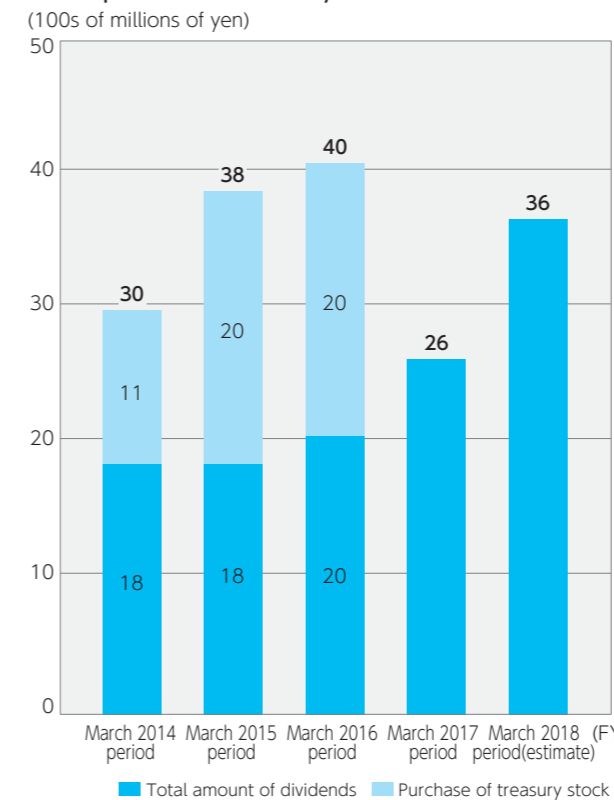
● Revenue of international business



● Revenue of international business (100s of millions of yen)



● Trends in total amount of dividends and purchase of treasury stock



Atsushi Ouchi
Chairman and Representative Director, CEO
Takasago Thermal Engineering Co., Ltd.

大内厚

Directors / corporate auditors

Full time
Corporate Auditors
Yukitoshi Yamamoto

Corporate Auditors
Masahiro Seyama
(Outside Corporate Auditor)

Executive Directors
Kazuo Matsunaga
(Outside Director)

Corporate Auditors
Tetsuo Ito
(Outside Corporate Auditor)

Corporate Auditors
Makio Fujiwara
(Outside Corporate Auditor)

Full time Corporate Auditors
Kunihiro Kondo

Executive Director and
Managing Executive Officer
Yoshiyuki Hara
Chief Executive officer of
Corporate Operations Headquarters

Executive Directors
Kiyoshi Fujimura
(Outside Director)

Executive Director and
Senior Managing
Executive Officer
Takuya Matsuura
Sales & Marketing Management

Chairman and
Representative
Director, CEO
Atsushi Ouchi

Representative Director,
Senior Managing Executive Officer
Choichi Takahara
Chief Executive Officer
of Business in Japan Headquarters

Executive Directors
Mitoji Yabunaka
(Outside Director)

Executive Director
and Managing
Executive Officer
Jun Tabuchi
Chief Executive Officer
of International Business
Headquarters

Executive Director
and Managing
Executive Officer
Hiroshi Yamawake
Chief Executive Officer
of Business Innovation
Headquarters



Executive Officer

Senior Managing Executive Officer
Fumiaki Okano
Deputy Chief Executive Officer
of Business in Japan Headquarters

Managing Executive Officer
Shinji Nishimura
Head of Work Style Reform Office
Toshio Fujimori
In charge of Sales & Marketing
of Business in Japan Headquarters
(in charge of western Japan)
Harutoshi Yasuhara
Nagoya Branch
General Manager
Nobuhiro Mita
Tokyo Head Office
General Manager

Executive Officer
Yoshiyuki Maki
Kyushu Branch General Manager
Masanori Kurata
Special Business
Project Manager of Business
Innovation Headquarters
Toshihiro Mitsui
In charge of Sales & Marketing
of International Business
Headquarters
Kenji Suzuki
Head of Internal Audit Office
Akira Tsukada
In charge of Sales & Marketing
for Business in Japan
(in charge of eastern Japan)

Yukio Enkaku
Nagoya Branch
Deputy General Manager
Takashi Imai
Nagoya Branch
Deputy General Manager
Kazuto Yamamoto
Kan-Shinetsu
Branch General Manager
Shiro Okazaki
Deputy Chief Executive
Officer of Business
in Japan Headquarters

Executive Officer
Hirokazu Tanaka
General Manger
of Environmental Solution
Management Department
Masatoshi Murata
Tokyo Head Office deputy
General Manager
Masato Nakamura
Deputy Chief Executive Officer
of International Business
Headquarters
Norinaga Tsuchiya
Yokohama Branch
General Manger

Kazuhiro Kojima
Osaka branch
General Manger
Masanori Atarashi
General Manager
of Southeast Asia Division
of International Business
Headquarters,
and Managing Director
of Takasago Singapore Pte. Ltd.,
a local subsidiary in Singapore
Toshikazu Yokote
Hiroshima Branch
General Manger

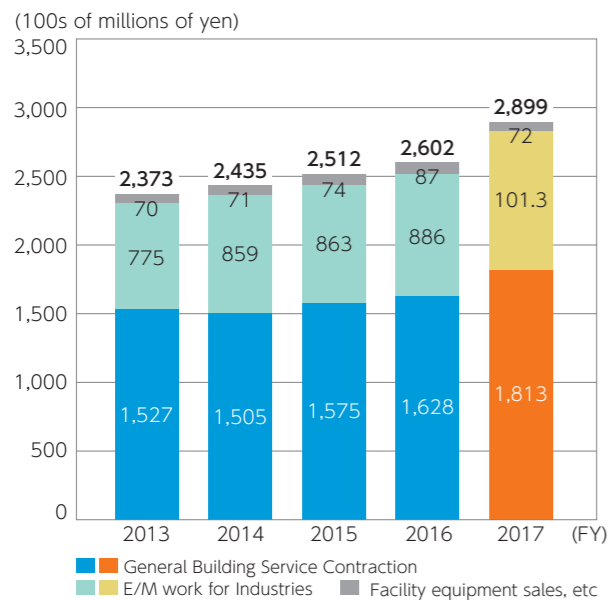
Tadashi Kamiya
General Manger
of Engineering Department
Masato Takayama
President
Nihon Setsubi Kogyo Co., Ltd.

Financial Highlights

*Figures are rounded down to the nearest unit.

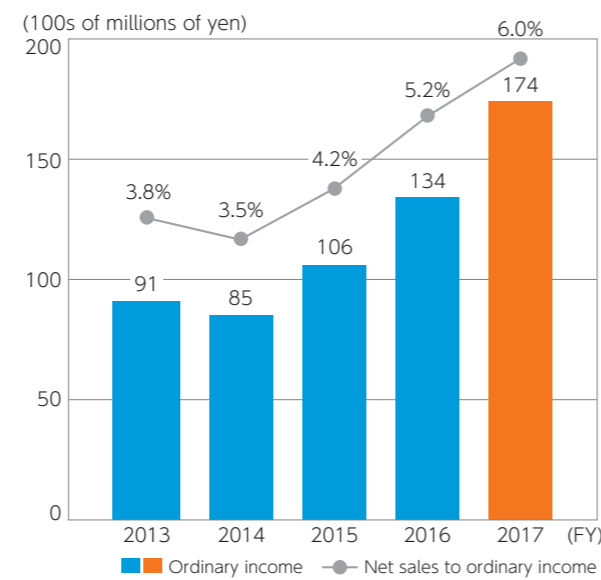
Net Sales

289.9 billion yen



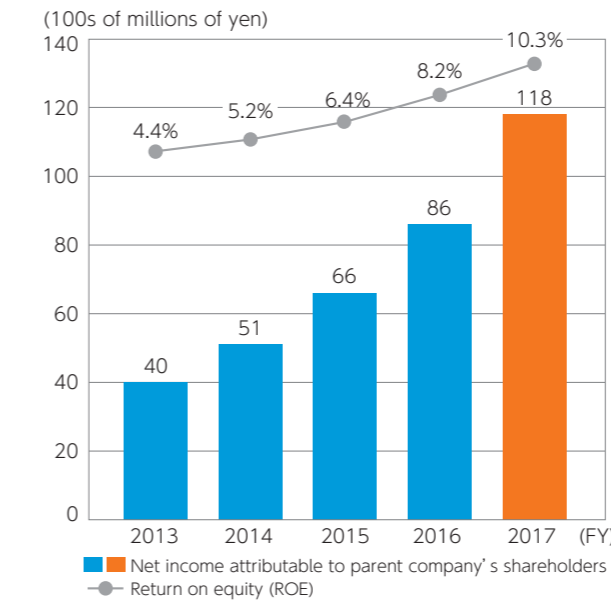
Ordinary Income and Net Sales to Ordinary Income

Ordinary income 174 billion yen



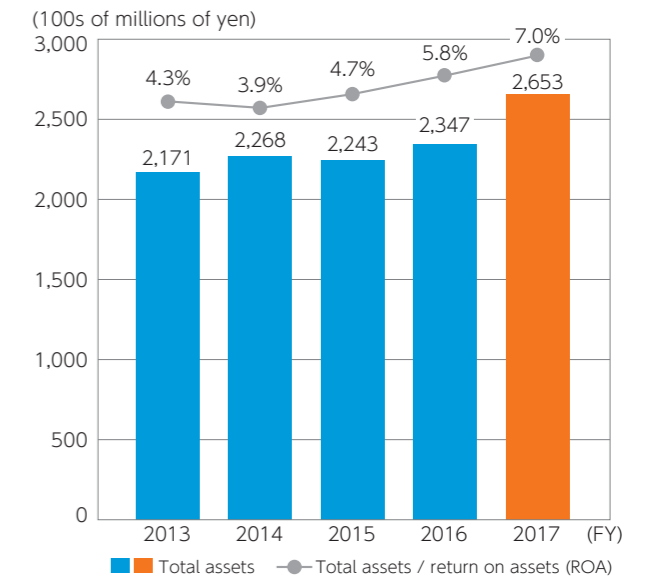
Net income and return on equity (ROE) attributable to parent company's shareholders

Net income attributable to parent company's shareholders 11.8 billion yen



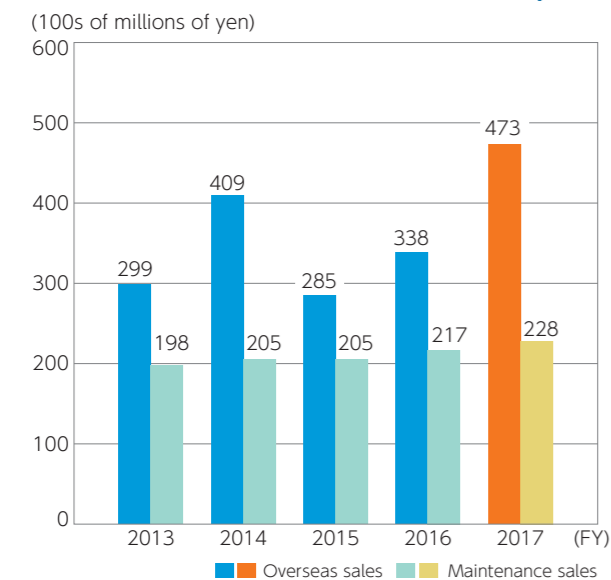
Total assets / return on assets (ROA)

Total assets 265.3 billion yen



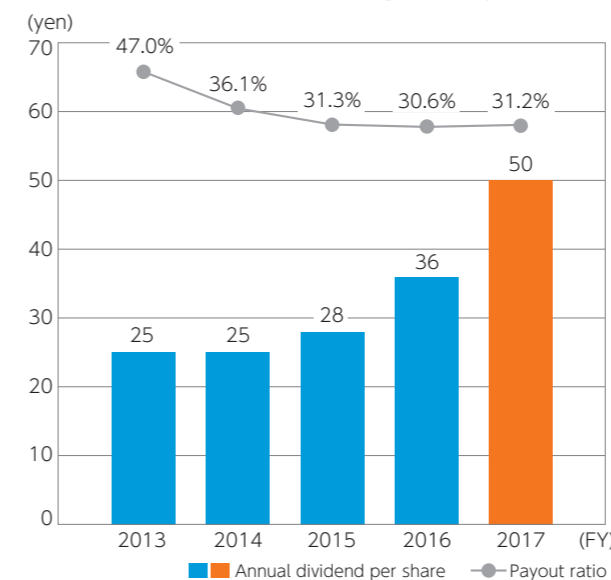
Overseas sales / maintenance sales

Overseas sales 47.3 billion yen



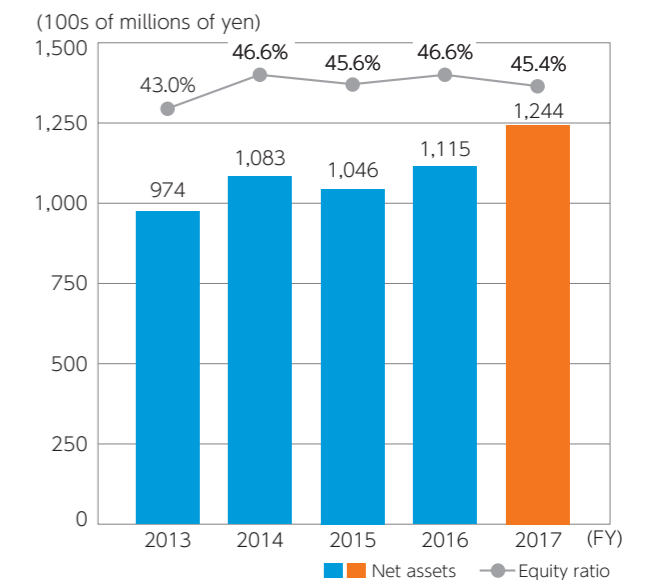
Payout ratio / annual dividend per share

Payout ratio 31.2%



Net Assets and Equity Ratio

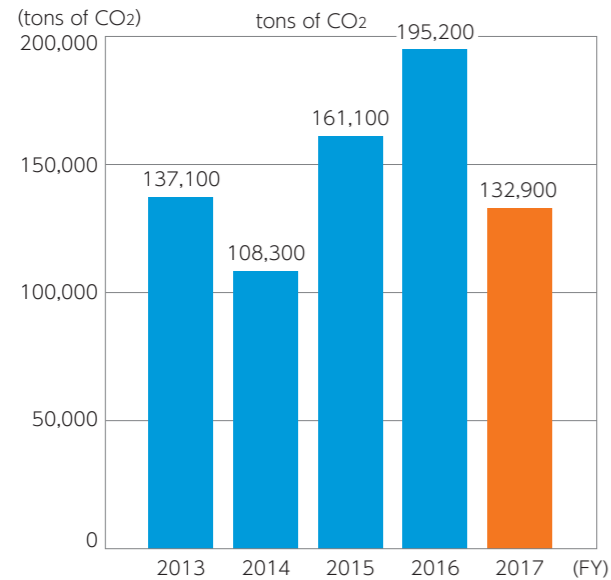
Equity ratio 45.4%



Non-financial Highlights

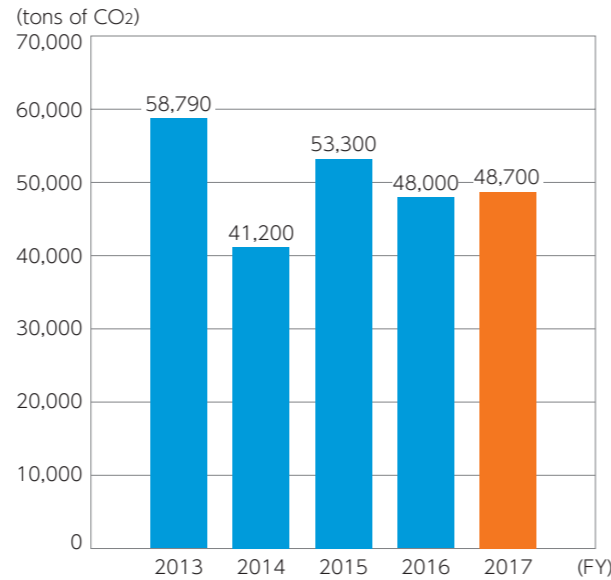
CO₂ emissions reductions from HVAC systems that we deliver to our customers

132,900 tons of CO₂



CO₂ emissions caused by major manufacturing activities

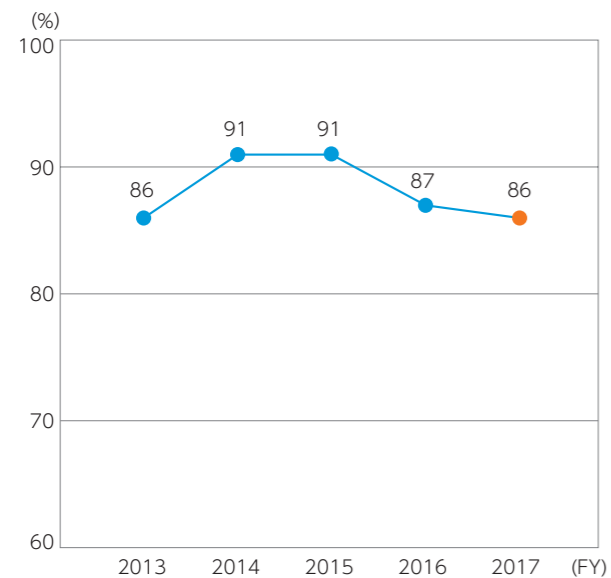
48,700 tons of CO₂



*FY2013: We revised the calculation standard to recalculate.

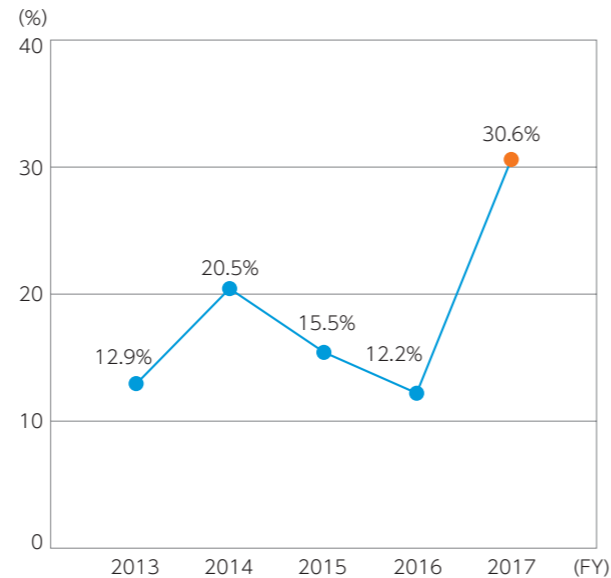
Implementation rate of zero-emissions activities for industrial waste at construction sites

86%



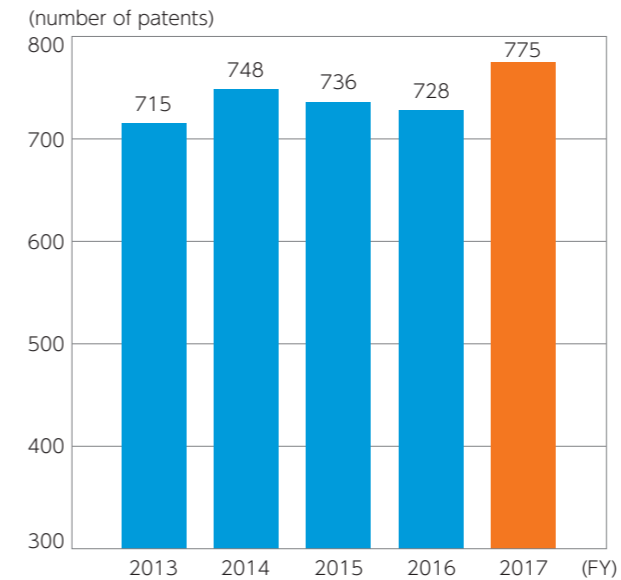
Hiring rate for women as a freshman

30.6%



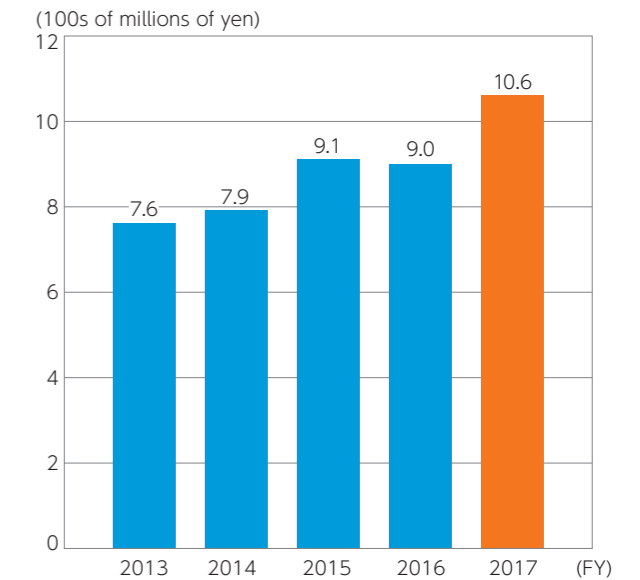
Number of acquired patents

775



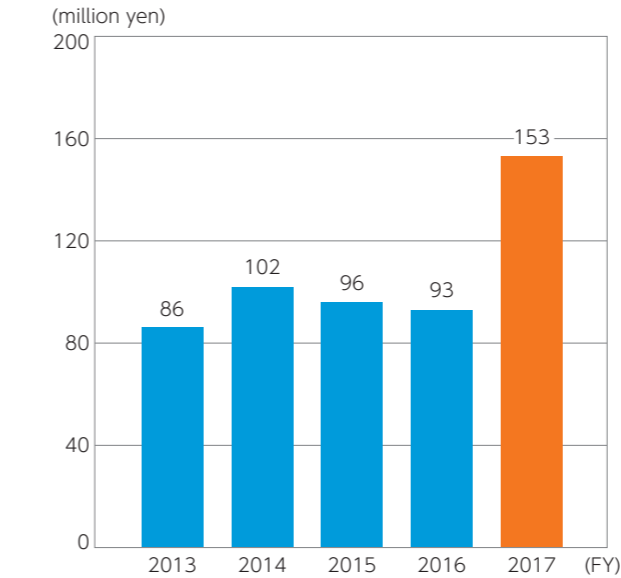
Investment in research and development

1.06 billion yen



Investment in human resource development

153 million yen



Special Feature

1

I T

Innovation
Toward the Next Stage

Strengthening the management infrastructure set forth by the medium-term management plan "iNnovate on 2019 just move on!" The key to that is IT innovation, which we are rapidly proceeding with today. We simultaneously develop three platforms that lead to advancement of business and change of business models to comprehensively prepare the infrastructure so as to move to the next stage.



Business Innovation Headquarters, Takasago Thermal Engineering Co., Ltd.

Takahiro Suzuki
Deputy Manager, BIM Promotion Office, Technology Development Department, Innovation Center
He is in charge of developing sub-tools with which TTE-BIM can be used on sites.

Mamiko Iwai
Deputy Manager IoT/AI Development Department, IT Management Department
She is in charge of developing the Takasago Smart Platform

Daisuke Takahashi
Deputy Manager Information System Department, IT Management Department
He leads a project for renovating the mission-critical system.

(from the left of the photo)

Building three platforms

The IT continues to accelerate the speed of evolution and its way of using the IT is also a factor that determines the productivity and creativity in business. Under the medium-term management plan "iNnovate on 2019 just move on!" the Takasago Thermal Engineering Group has renewed the mission-critical system that supports the entire operation and has established TTE-BIM to manage design and construction data in a consolidated manner, and Takasago Smart Platform to collect operation data of building facilities for optimum control. Its purposes are to accelerate the shift to a hybrid form of business in which we conduct both construction and the provision of solutions and to develop the environment that promotes working-style reform.



Renovating mission-critical system

Renovating the mission-critical system, which in the Information Systems Department is in charge of, is a symbolic effort to demonstrate the Group's intention of evolving the way of work and changing the business models.

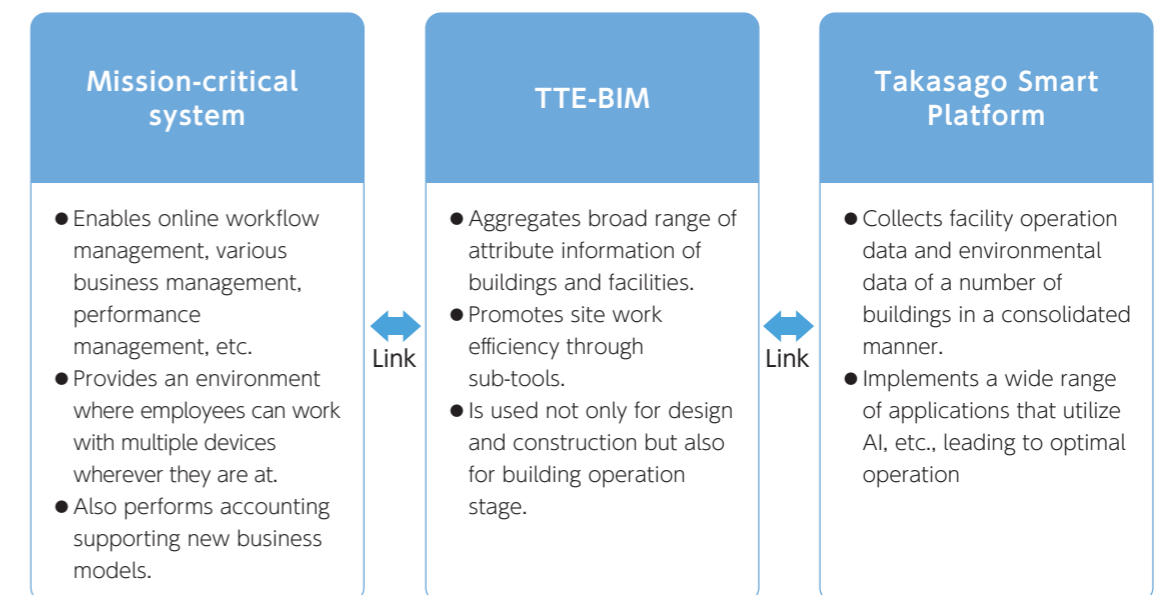
Takahashi "The current system is based on a system built about 40 years ago and makes it difficult to support today's business needs such as workflow management. A drastic review was required also for the purpose of driving work-style reform, which is an important social requirement."

The new mission-critical system will drive the paperless processes in business management to reduce office work. For that purpose, it is necessary to unify the ledger sheet forms that each branch has customized, and we take this opportunity to make a through standardization. In addition, it enables online performance management

that cannot be done with the current system, leading to better management quality. And as a business application, the new system provides an environment where employees can work through a network, that is, they can work using multiple devices wherever they are at. Furthermore, we prepare to support accounting of the second and third businesses in addition to conventional construction accounting, in preparation for conversion of business models and provision of new service, both of which are to be fully implemented in the future. Based on changes in the technical environment and the required speed, we will proceed with this renovation of the mission-critical system using different approach.

Takahashi "We have developed all of the mission-critical systems using our own systems, but as for the new system, we will build the entire system based on the idea of using generic software for common operations and in-house development for our highly unique operations. It is a valuable experience that we can frequently learn a lot by expressing our ideas specifically and proceeding with the project while negotiating with the vendors."

● Three platforms



TTE-BIM: Improving the levels of design, construction and something extra

The Takasago Thermal Engineering Group has been working on improving quality and productivity through computerization of planning and construction since the 1980s. The computerization technology is called BIM (building information modeling), which is a three-dimensional digital modeling that contains information of buildings and equipment and is useful for design and construction.

The BIM Promotion Office, which was established as a specialized team, is developing TTE-BIM, the Group's version of the TTE.

Involvement of human was indispensable for linking various information such as on-site photographs and various kinds of records in two-dimensional construction drawings.

In the TTE-BIM, the information is aggregated into the BIM models. The BIM models can also contain information indicated on the drawings such as the shape and layout of piping and ducts as well as information of material, cost, delivery dates, and even progress of construction. Using such information makes it easier to create quotations, process control, communication such as work instructions and handovers. As one of the sub-tools to realize these benefits, we also develop an application software that manages design and construction information using iPad.

Suzuki "By managing information with the BIM models in a consolidated manner, we will be able to streamline construction management and improve construction quality as well as improve the efficiency of work such as preparing reports. Increase in productivity at construction sites must have good effects on working-style reform also. I am making every effort to make sub-tools, which the utility value of the TTE-BIM heavily depends on, as easy to use on sites as possible, which also contributes to working-style reform."

Design and construction will be the main application of the TTE-BIM for the Takasago Thermal Engineering Group. The planned next step is to provide the FM/PM services* in an optimal form based on the consolidated information.

Suzuki "Using TTE-BIM makes it easier to build long-term, close relationships with customers during the entire building's lifecycle. The more data is accumulated in the BIM models, the higher possibility of offering worthwhile suggestions for customers we can expect."

* In the FM (facility management) service, we will improve the added value of the facility through engineering to improve facilities, consulting on energy conservation, efficient energy supply, and the like. In the PM (property management) service, we make proposals for raising the profitability of real estates to optimize the real estate management as a whole.



Takasago Smart Platform: Realizing the optimized operation of a number of buildings

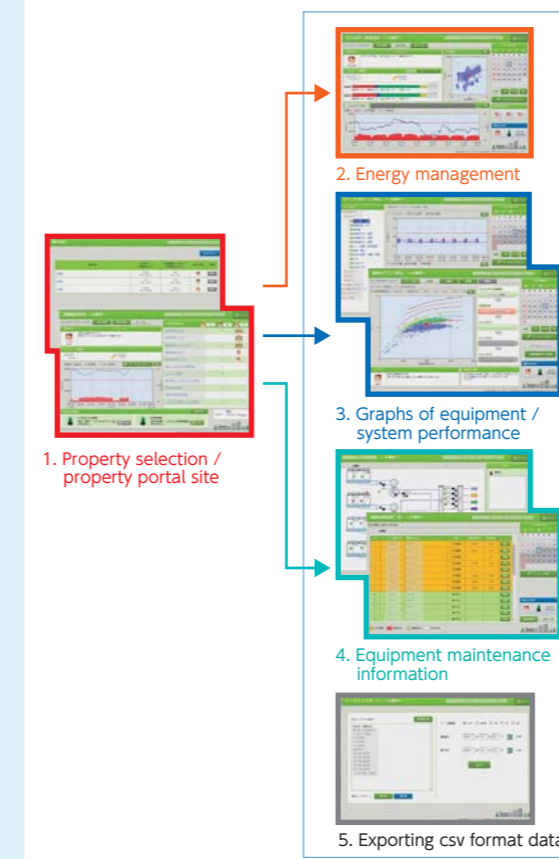
The Takasago Thermal Engineering Group has provided solutions that collect operation data of building facilities, environmental data of indoor spaces and the like with IoT devices such as sensors and perform optimum facility operation based on the analysis results. However, until now, it depends on individual skills of technical staff, which prevented broader deployment. Therefore, the IoT/AI Development Department is developing the Takasago Smart Platform, a platform that stores data collected from many buildings and facilities to be managed on the cloud in a consolidated manner and allows anyone to efficiently use it in various applications including AI.

Iwai "Every building is in a unique environment, and only experienced engineers have been able to analyze the data and optimally operate the facilities. To overcome such an obstacle, in the IoT/AI Development Department, we are also working to comprehensively organize the technologies and know-how of excellent engineers and incorporate them into Rule Engine, which is a kind of AI."

Rule Engine installed in GDoc®(Green Energy Management Doctor, one of the software that runs on the Takasago Smart Platform, determines the optimum control target value according to the operational situation using the systematic logic based on knowledge of equipment operations acquired by the Takasago Thermal Engineering Group over the years.

Our plan about the Takasago Smart Platform is to complete the development of the Platform and some application software and to start the operation as a cloud service in FY2018.

● Energy Management System GDoc®



Iwai "We sorted out issues to be solved, including operational procedures, security assurance, and system establishment and have solved the identified issues one by one consulting with the vendors, aiming to operate our own cloud service at the first time in our Group's history. We have reached the final stage and we are working harder."

Creating added values by linking data

Our future plan is to make the system useful for comprehensive building management by linking the TTE-BIM, which accumulates mainly design and construction information, with the Takasago Smart Platform, which collects data of working facilities for optimum control. Collecting not only operational data and environmental data but also living room condition and vital data (body temperature, blood pressure, heart rate, etc.) of people who are using the space as the data for Takasago Smart Platform would make the linkage further effective.



Iwai "By knowing the number of people in a room with sensors, the required heat can be calculated. Adding such data and vital data to the data of tangible things of the BIM models, more accurate simulation models can be generated and also an ideal indicator of comfortableness might be found."

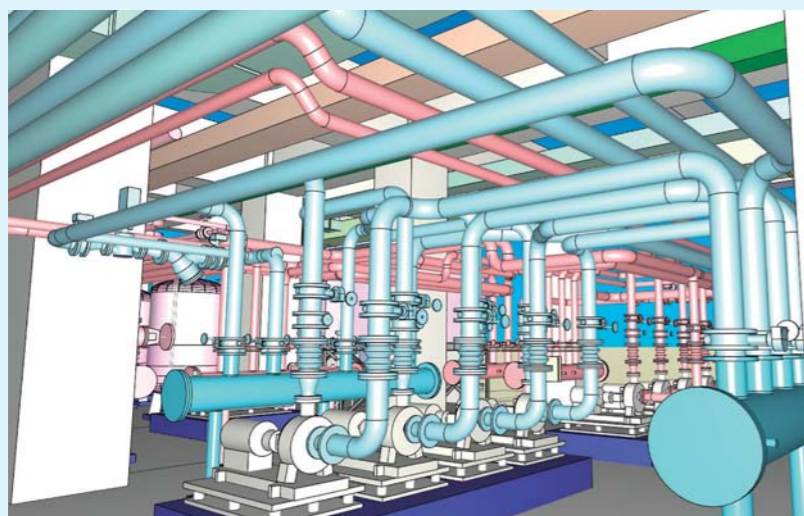
Our future plan is to proceed with the linkage between the TTE-BIM and the mission-critical system. Linking these systems enables placing orders based on the BIM data and connecting customer data independently residing in the mission-critical system and the CRM system.

Takahashi "We expect that we can find ways to create new added value by linking the TTE-BIM with the mission-critical system that is the hub of our internal system."

We will also work on linking with external resources. We plan to provide the sub-tools of the TTE-BIM to the outside of the company. In order for other companies to easily use the tools, not only the ease of use with the tools but also the robustness of the BIM models themselves are required. The more open the platform is, the boarder range of benefits the platform can provide. As for Takasago Smart Platform, we plan to work on linking with various external data such as weather information.

Suzuki "It is said that the construction industry is less productive than other industries. We would like to serve the entire industry by establishing a BIM that will be very well accepted and used."

The usefulness of these three platforms under development is further enhanced by such organic linkage. We will seek a wide range of possibilities to create even greater added value.



An example of BIM model (for visualization purpose)

Special Feature

2

Working-style Reform



1

Our concept of working-style reform

We established the Working-Style Reform Committee in April 2017 (Chair: Shinji Nishimura, Director and Managing Executive Officer and in charge of working-style reform), aiming to balance the enhancement of on-site capabilities and the building of workplace environments that allow a work-life balance, which are priority action items in the medium-term business plan, iNnovate on 2019 just move on!, implemented in FY2017. The Committee established separate working groups (WGs) for productivity improvement, operational efficiency and IT promotion, and the promotion of opportunities for women to flourish, and each WG considers specific implementation measures and carries out activities to realize the reform.

We will seek to achieve a balance between sustainable company growth and improved employee satisfaction by creating a workplace where each employee can work in ways that are healthy and lively and can realize work-life balance that further increases productivity.

Social demand for working-style reform in the construction industry

The Ministry of Land, Infrastructure, Transport and Tourism announced the Program to Accelerate Work Style Reform in March 2018. As a decrease in productive-age population in Japan is expected, the program calls for the review and reform of the conventional working style in order to secure human resources who support high quality in construction sites. The program lays out new measures as a package in response to social demands in the three areas: correction of the long working hours, wages and social insurances, and improvement in productivity.

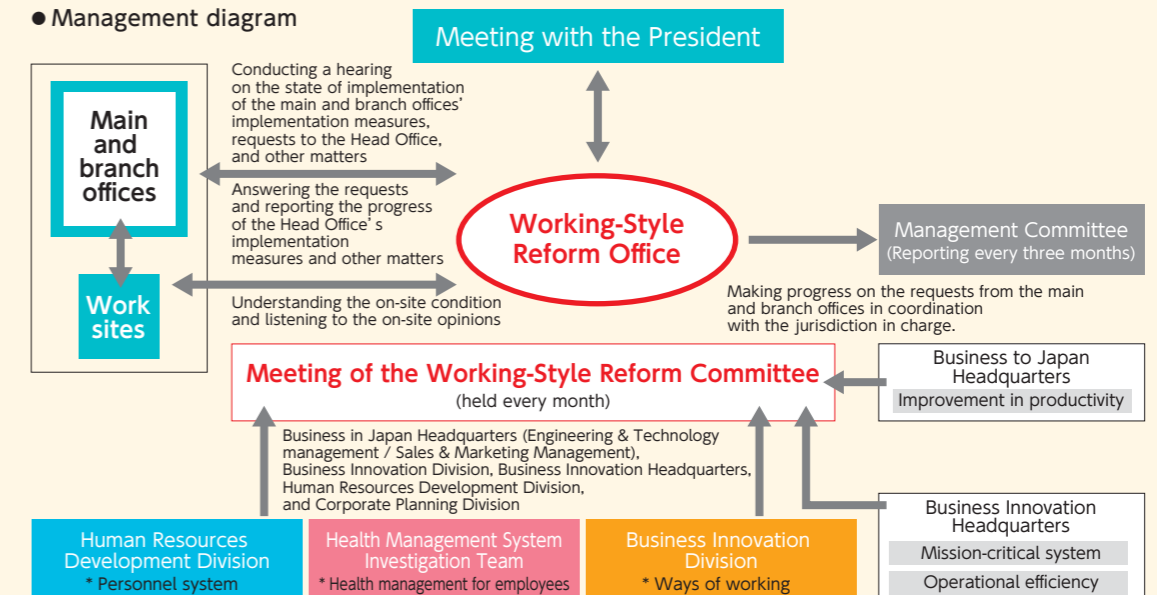
We, as a business operator belonging to the construction industry, also would like to be actively involved in such movement and implement and disseminate a new working style.

2

Management system

The Working-Style Reform Committee and the Working-Style Reform Office, a promotion organization established in September 2017, play central roles in proceeding with the reform activities in coordination with each relevant organization. The Working-Style Reform Committee holds the monthly meeting to coordinate measures for the realization of the reform, in collaboration with Human Resources Development Division, Business Innovation Division, and Business in Japan Headquarters. Meanwhile, the Working-Style Reform Promotion Office considers and coordinates measures so as to fit with each site while keeping in as close touch as possible with branch offices that manage the site and grasping the current condition, and keeps in mind to support the implementation of such measures.

Management diagram



3 Trial of teleworking

As our major effort in FY2017, conducted a trial of a flexible working style without being restricted by location, or *teleworking*, and identifying issues in adopting *teleworking* throughout the company. Works in which many of our employees are engaged tend to be specialized in on-site work, and seem not to match with the teleworking that is assumed that employees are working from home. Most employees have so far considered as follows: "Teleworking is not adaptable for us." or "It will cover only limited part of our work, even if teleworking is introduced." However, taking into consideration the diversification of human resources, the need for evolution to account for the promotion of opportunities for women to flourish, and the importance of response to problems for increasing nursing care leave, we concluded that we need to explore flexible working styles with no area off limits. We collected questionnaires from workers who actually worked from home and their supervisors, resulting in extremely positive responses. We are now preparing for the introduction of the teleworking system in FY2019.

Steps towards the introduction of teleworking system



Results evaluated by workers who have done a teleworking trial and their supervisors

	Item	average	Item	average
Worker who did the trial	Satisfaction level for work	4.3	Communication	4.0
	Satisfaction level for working style	4.6	Quality of work and productivity	4.6
	Satisfaction level for working environment at home	4.2	Reputation from concerned people	4.3
	Separation between private and working time	4.5	Overall score	4.3
	Overall score	4.4		
			Scored out of 5 points based on the results of the questionnaires from workers who tried a teleworking.	

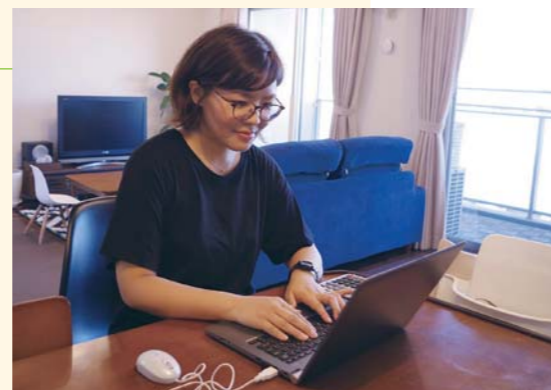
VOICE

To be a system that anyone can use regardless of gender and position

Hiroko Shigihara

Accounting and Finance Division, Corporate Operations Headquarters

As my child was very young, I thought that if I could save myself two hours of commuting time every day, it could bring significant advantages to me; therefore, I desired to participate in this trial program. As a teleworker, I am working on the preparation of consolidated accounts and summary/analysis documents, review of accounting processes, and other similar tasks, using cloud systems. As for tasks that can be completed alone, I feel that I can concentrate at home much more than in the office. In addition, being free from commuting time, I can spend more time with my child before and after work and have received favorable comments from my family. In order for the entire company to improve work-life balance, I hope that this will become a system that anyone can use regardless of gender and position.



4 Introduction of Apple Watches into construction sites

For the purpose of improving productivity and operational efficiency, strengthening safety management, and even promoting health at construction sites, 400 units of Apple Watches have been introduced sequentially since November 2017. This is to respond to opinions arisen from the sites, saying: "Since my hands are often full, it's hard for me to quickly handle and respond to the smartphone." and "I also often fail to get important calls." Receiving calls, messages, notifications, and other important information with the Apple Watch worn on the employees' wrist will make it easier for them to respond even during work.

In addition, at particular sites serving as models, the trial of lending the Apple Watch to those who concerned inside and outside of our company, including ranging from the line manager, on-site representative, and personnel of our company, to the foreman and workers of our partner companies, is running in order to improve the quality and speed of information sharing.

In the future, we plan to carry out an on-site questionnaire survey on the usefulness of the Apple Watch and validate its effectiveness. In terms of how to make use of various functions offered by the Apple Watch, we also plan to call for ideas including safety and health aspects, which should lead to the improvement in productivity.



Examples how we use the Apple Watch



Trial of Health Management Application software, CiRQLE*1

A health management application software on the Apple Watch, CiRQLE, has been introduced in Japan for the first time and its trial is running. CiRQLE is for users to compete for awareness of sports while communicating to each other, just like playing on-line games as a team, aiming to improve individual health and encourage active communication within the company.

By utilizing CiRQLE, we also aim to improve presenteeism*2, which is recommended by the Ministry of Economy, Trade and Industry.

This pilot trial got good response from employees and there are some voices saying: "I feel that atmosphere of our company has changed because we enjoy ourselves while becoming aware of physical activity regularly and encouraging each other within the team."

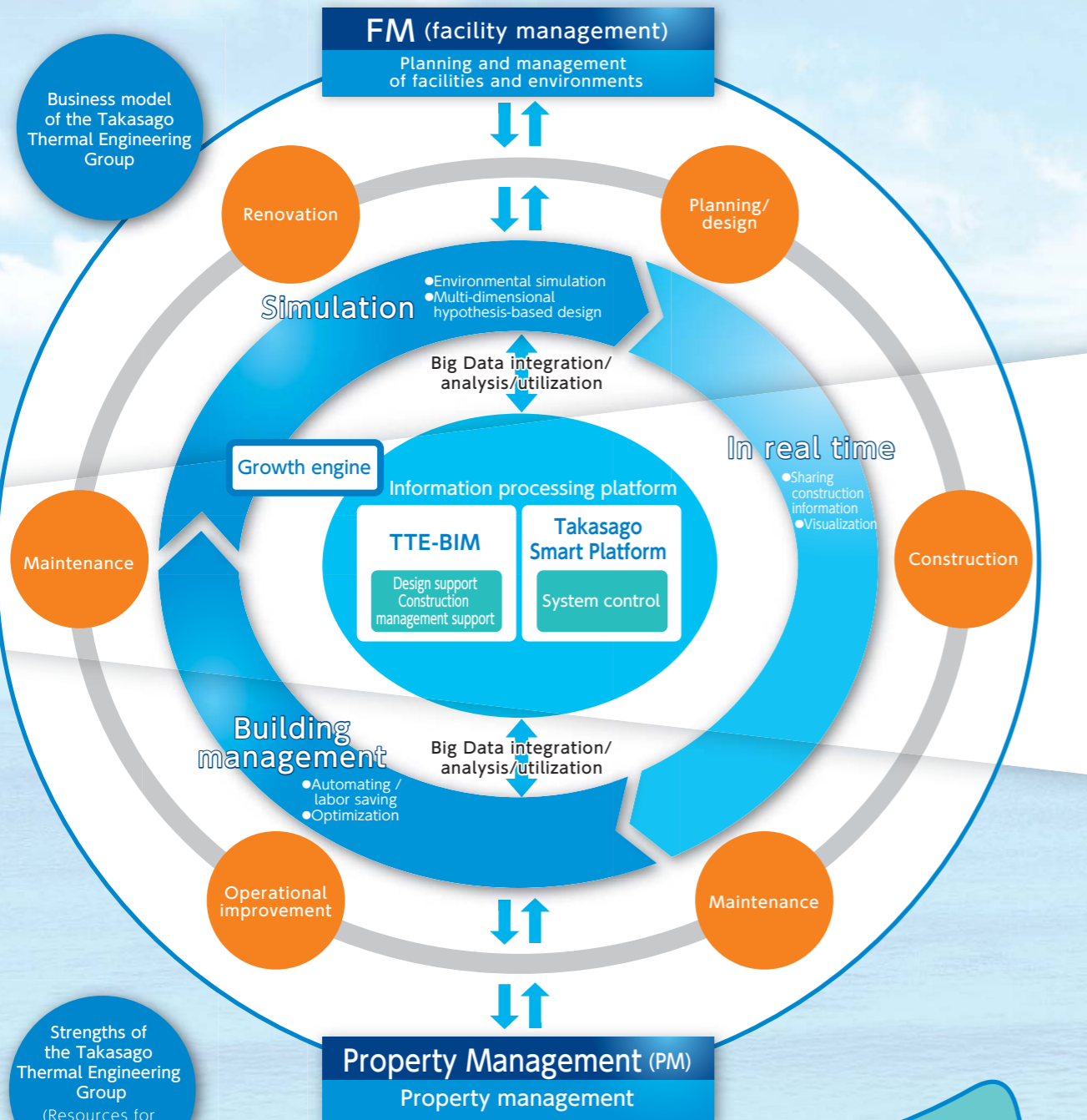
*1 CiRQLE is a solution jointly developed by Phone Appli Inc. and jena co. ltd.

*2 Presenteeism refers to the situation where people keep working while having health problems, resulting in a decline in performance and decreases in productivity.

* Apple Watch and Siri are trademark trademarks of Apple Inc, registered in the U.S. and other countries.

Creation of value by the Takasago Thermal Engineering Group

The Takasago Thermal Engineering Group provides solutions for the entire lifecycle of buildings, factories and facilities for all purposes, while always improving our strengths including our technological capabilities and product development capabilities as *Takasago, a leading technology-oriented company*. We create social value by means such as creating comfortable spaces friendly to people, environments for the manufacturing of high-quality products and the most advanced energy-saving operation aiming to contribute to the establishment of a decarbonized society.



Business model of the Takasago Thermal Engineering Group

Strengths of the Takasago Thermal Engineering Group
(Resources for the creation of value)

Intellectual capital	Human and organizational capital	Social capital	Financial capital
Number of intellectual properties we own 775 (As of the end of February 2018)	Number of Group's employees 5,714 (As of the end of March 2018)	Cumulative income from completed construction Approximately 7.7 trillion yen (As of the end of March 2018)	Equity ratio 45.40% (As of the end of March 2018)
Number of patents we own 495 (As of the end of February 2018)	Global network 25 companies in 11 countries (As of the end of March 2018)	Kowakai* Member companies 1,463 companies (As of the end of April 2018) *Partner company organization	Amount of growth investment 35 billion yen (During the current medium-term business plan)

Main kinds of social value that the Takasago Thermal Engineering Group creates through its business



Comfortable spaces friendly to people

Air conditioning aiming to realize preservation of people's health and comfortable living environment in spaces such as office buildings, skyscrapers, commercial facilities, hotels, leisure facilities, and underground malls.



Environments for the manufacturing of high-quality products

Air conditioning aiming to provide highly controlled production process environment whose cleanliness, temperature and humidity are precisely controlled such as clean rooms and dry rooms.

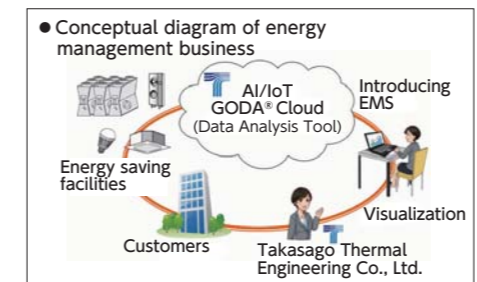


Job Reference of TCR-SWIT®

The most advanced energy-saving operation

We provide optimum total facility management and solutions to solve customers' problems by leveraging the equipment management technologies we have been fostering and the rich experiences we have been acquiring while achieving various accomplishments.

- Eco-Tuning / energy saving consultations
- Energy service (heat source contract)
- Optimizing facility operation



Solving social challenges in new areas

We use the technologies we have acquired in new areas and create solutions that contribute to solving social challenges.

- Hydrogen energy applications / solar thermal applications
- Solution for highly fresh fishery distribution using seawater sherbet-like (SIS-HF®)
- Biomass, Thermal strage system



Seawater sherbet-like ice (SIS-HF®)

In December 2015, the Paris Agreement was adopted at the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21), and a shift to a low-carbon society began to be further promoted on a global scale. Supporting this trend is the social mission of the Takasago Thermal Engineering Group, which has been providing air environments friendly to *humans, products, and nature* for various kinds of buildings including office buildings, hotels, hospitals, and factories, and the specific outcomes of getting closer to a low-carbon society will be the core of the social value that we will create in the future.

History of Takasago Thermal Engineering

Takasago Thermal Engineering was founded under the company name of Takasago Heating Works Co., Ltd. sponsored by Kunizo Hara on November 16, 1923. Starting with air conditioning construction business, we have continued to make bold efforts for advancement of technologies as a designer/constructor trusted by customers and as a developer of optimum systems and equipment. Today, as the world moves towards decarbonization, we will respond to society's demands towards the 100th anniversary of our foundation, aiming to become an environmental solution professional company while further improving our technical capabilities.

From *focusing on technologies* to harmonization, the capability of individuals was thoroughly demonstrated through the company-wide cooperation and we received a technical reputation in the industry and has built the foundation of future development.

Early days

- 1923 Takasago Heating Works Co., Ltd. established
- 1943 Company renamed Takasago Thermal Engineering Co., Ltd.
- 1949 Completed registration pursuant to the Construction Industry Act

Growing years

- 1969 Listed on stock exchange
- 1972 Established NIPPON PMAC CO., LTD. and Nihon Kaihatsu Kosan Co., Ltd.
- 1974 Started entering overseas market from Singapore
- 1980 Established T.T.E. Engineering (Malaysia) Sdn. Bhd.
- 1984 Established Thai Takasago Co., Ltd.
- 1994 Established Takasago Thermal Engineering (Hong Kong) Co., Ltd.
- 2003 Established Takasago Constructors & Engineers (Beijing) Co., Ltd.
- 2005 Established Takasago Singapore Pte. Ltd.
- 2007 Established Takasago Vietnam Co., Ltd.

Period of change

- 2012 Made Nihon Setsubi Kogyo Co., Ltd. an affiliate accounted for by the equity method
- 2013 Established PT. Takasago Thermal Engineering
- 2014 Established the Myanmar office (current Myanmar Branch) and Takasago Marusei Engineering Service Co., Ltd.
Engaged in a business and capital alliance with Tsukishima Kikai Co., Ltd
- 2015 Established Takasago Engineering Mexico, S.A. de C.V.
- 2017 Engaged in a business and capital alliance with Yamato Corporation
Made Integrated Cleanroom Technologies Pvt. Ltd. in India a consolidated subsidiary



1930 Takasago and Ebara-type centrifugal refrigerating machines, which was Japan's first refrigerating machine



1978 Sunshine 60



1927 Japan's first Precised temperature and humidity Control System (Iwakuni Plant of Teikoku Rayon Co., Ltd. (current Teijin Limited))



1973 The New Building of the Head Office of the Bank of Japan



1920 Heating and Ventilation Vol. 1 and 2, written by Masanosuke Yanagimachi, the first president (Building Mechanical and Electrical Engineering Heritage No. 2)



1970 Expo '70 was held in Osaka. Introduced Japan's first District cooling facilities



1993 Yokohama Landmark Tower



2001 Sapporo Dome

1988 Developed a supercooled water base ice thermal storage system: Super Ice System (SIS®)

2005 Developed a swirling induction type HVAC system, SWIT®

1980

1990



1980 Main building of the Tokyo Metropolitan Police Department



1996 Head office building of Fuji Television Network, inc.



1988 Tokyo Dome The first air-conditioning for an air-dome

Courtesy of Tokyo Dome Corporation



2003 Roppongi Hills Mori Tower



2017 GINZA SIX



2012 Shibuya Hikarie



2012 Kabukiza Theatre
Courtesy of SHOCHIKU Co., Ltd. and Kabukiza Theatrical Corporation



2012 Tokyo Station, Marunouchi frontage

2018

Business in Japan

The Business in Japan Headquarters will manage Business in Japan with customer-oriented management, strengthening profitability, and evolution of management as the basic policy.



Tokyo Midtown Hibiya

New roles of the Business in Japan Headquarters

In FY2018, we newly established the Facility Solution Sales & Marketing Management Office, the Market Cultivation Management Office and the Industry Field Sales & Marketing Management Office in the Sales Marketing Management Division, and transferred the Facility & Property Management Promotion Division and the Japanese Group Companies Support Division from the Business Innovation Headquarters to the Domestic Business Headquarters.

We will work on expanding our business by fully leveraging the entire Group's potential, specifically by strengthening the capability of supporting main / branch office through focused efforts made for solution activities / prospecting for new customer activities / industrial sales promotion activities, strengthening the domestic business operation, and promoting FM/PM business.

Quality, Environment & Safety Control Division

The division will make efforts for strengthening safety, quality control and problem-solving capabilities together with the main/branch offices and will support the Group companies to improve quality environmental safety level.

General Sales Management Division

The department will realize the implementation and promotion of the business strategy with a sense of speed with each department headquarters, main/branch offices, and the Group companies.

Sales & Marketing Management Division

The department will strengthen our basic earning power, for example, by strengthening ability to solve customers' problems through deepening organizational sales, strengthening marketing functions through collaboration with different industries, and promoting orders in the industrial field and promising and growing fields.

Engineering & Technology Management Division

The department will strengthen the promotion of working-style reform and the system for prosperous coexistence with partner companies and build an optimum construction system for the next generation.

Procurement Management Division

The department will expand the procurement at all branches in addition to realizing leveling and sophistication of purchasing skills.

Facility & Property Management Promotion Division

The department will expand the FM/PM business adding values to facilities in the entire life cycle of buildings.

Japanese Group Companies Support Division

The department will build a mechanism that can fully demonstrate group synergies by expressing the future vision of the Group in cooperation with domestic group companies.

Efforts made for realizing the medium-term management plan

1.Reinforcement of Group management in Japan

We are making efforts for promoting the development and sales of sellable products through the collaboration with the Group and creating new businesses and new products, by establishing a mechanism to increase sales outside of the Group and taking advantage of synergy. We aim to evolve into a company that contributes more to society by getting a foothold into new business areas such as FM/PM domains and non-construction fields while leveraging our advanced environmental engineering technologies centered on the abundant completed properties / customer base and energy conservation, and the Group's integrated capability that can support the entire building lifecycle.

2.Improving work efficiency / working-style reform

We will consider establishing and operating the systems for work sharing and outsourcing tailored to the characteristics of business with the purpose of reducing the total work volume and improving operational efficiency. We will continue making efforts for developing skilled craftsmen and transferring skills/know-hows by leveraging educational organizations such as the Takasago Technical School, strengthening the system for prosperous coexistence with partners optimized in each region, and accelerating in building a one-stop system for electricity, hygiene, interior and communication. In addition, we will work on development of next-generation salespersons by establishing a systematic career plan for sales persons and evolving sales engineering education.

Case study in FY2017

We worked on enhancing on-site construction capabilities such as promoting the establishment of a planned construction system to support the increase in demand prior to the Tokyo Olympic Games and the Paralympic Games, improving safety and quality control abilities by systematic improvement activities, promoting computerization of technological information, and improving the environment around the workers on sites. We also made efforts for improving our technological capabilities and promoting technology transfer supported by Takasago Meister, an excellent technician certified by our company at the Takasago Technical School, a human resources development organization of partner companies, etc.

As a part of strengthening sales force capabilities, we could secure stable earning by promoting the introduction of Customer Relationship Management (CRM) companywide, strengthening order receiving activities with emphasis on profitability and strengthening cost management. Such efforts resulted in achievements to some extent in terms of the strategy achievement status in the first year of the medium-term management plan.



Hotel Orion Motobu Resort & Spa:Received the 32nd Promotion Award (Technology Promotion Award) given by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan and the 6th Carbon Neutral Award



The 34th Takasago Thermal Engineering Group Technical Presentation Fair



Technology training for new employees

International Business

The International Business Headquarters will establish international businesses demonstrating a sense of presence and stability within the Takasago Thermal Engineering Group by boldly implementing innovations.



Challenge and evolution for special plant construction

In China where we have over 30 years of construction experience with mainly Building Service constructions, we challenged a plant construction as a big step to develop new fields. In order to complete the project in a limited construction period, civil engineering work which was dependent on the weather was carried out

ahead of the schedule, 3-dimensional CAD was used for labor-saving in piping work, and the construction was completed as planned. The outcome of this project, which was carried out mainly by employees of local subsidiaries in China, will be a major step forward for international business in the future.

New roles of the International Business Headquarters

To maintain the stable management of international businesses based on existing overseas subsidiaries, it is necessary to challenge new markets and new business development on top of the expansion and growth of core businesses, which may increase risks. It is important

to further strengthen risk management to prevent the occurrence of loss, to accurately understand changes in regional markets, and to implement flexible strategies, and therefore the policy of FY2018 is defined as follows.

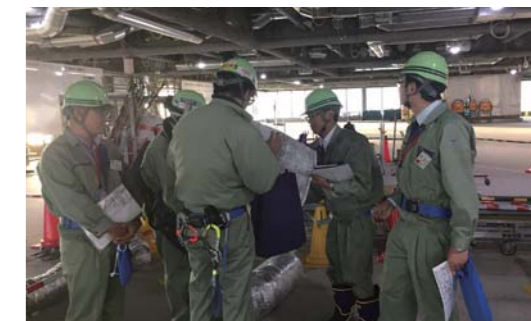
Efforts made for realizing medium-term management plan

<p>1. Independence of local subsidiaries</p>	<p>1. Strengthen internal control through compliance and operation of business processes at local subsidiaries 2. Strengthen governance system and compliance at local subsidiaries (reviewing company rules/systems, etc.)</p>
<p>2. Stabilizing of revenues of local subsidiaries</p>	<p>1. Continued prospecting for new clients in Indonesia, Vietnam, and other countries by sales representatives residing in Southeast Asia 2. Investment on human resources (for Japanese employees) and employment and education of national staff so as to strengthen the production systems in the regions mentioned above 3. Reexamining of the business strategies in Singapore and Malaysia 4. Keeping an eye on the Mexican market to respond as necessary</p>
<p>3. Reestablishment of local partnership and discovery of new partners</p>	<p>1. Continued activities to create synergies with ICLEAN 2. Investigation on business/capital alliances and mergers and acquisitions</p>

Examples in FY2017

Technical training for national staff (local employees)

Since two years ago, we have held one-week technical training in Japan for our international affiliates' employees who worked for three to five years in the Group for the purpose of strengthening the technical strength of national staff. The training is planned with focus on not only learning in a classroom but also seeing and feeling the actual Japanese site management and the latest technologies. The training contains practical contents such as going on field trips to construction sites, visiting our Research & Development Center, visiting the factory of NIPPON PMAC as well as visiting other places such as sanitary ceramic manufacture's showroom and piping processing company. In addition, the training is also a good opportunity for the participants to recognize they are a member of Takasago Group through participation in Takasago Family Festival and the company-wide Technical conference.



Technical Presentation Fair at the International Business Headquarters

Since two years ago, we have held Technical conference, at which representatives from local subsidiaries give a presentation about their achievements in terms of business they investigated and implemented in their country, at the International Business Headquarters. The conference were held in Japan and the language used was English. They gave the presentations taking advantage of individual nations' characteristics and the judges seriously examined them. The best group of the presentation is to be qualified for participating in the Group Technical conference which is a serious goal for national staff.



Promotion of Technical Administration work

Based on the FY2018 management policy of the International Business Headquarters, we have established a Technical Administration work (function) in all local subsidiaries, and clearly defined construction management functions and roles in accordance with the actual circumstances of each local subsidiary. In addition, the headquarters and the Southeast Asia Management Department cooperate to hold a meeting twice a year and visit each local subsidiary to check and manage the progress of activities.



Project introduction

TTE Engineering (Malaysia) Sdn. Bnd., a local subsidiary of the Group, received an order for a turnkey project of a set of construction and facilities from Opto Semiconductors, a subsidiary of OSRAM (head office: Germany), which manufactures and sells optical semiconductors such as LEDs, fluorescent lamps, and Discharge headlight, and completed the construction last year. Since the 1980s, the local subsidiary in Malaysia has carried out a number of projects centered on electronic devices and equipment, and this order was the result of evaluating its achievements and high engineering capabilities.



OSRAM : A turkey project was completed.

Group of the Business in Japan

Takasago Marusei Engineering Service Co., Ltd.

● Analyzing and using customers' voices to strengthen the comprehensive facility management solution

We are working on branding a new solution-based business model called "comprehensive facility management" that strongly supports the reduction of equipment life cycle cost. In FY2018, as a part of expansion of the adjacent fields of the maintenance business area, we established a contact center that manages customer complaints and various requests in a consolidated manner, improves the customer satisfaction by linking such information with CTI* to improve customer satisfaction, and provides solutions based on CRM* data analysis. Using this mechanism, we will realize working-style reform and improvement of employee satisfaction by reducing the customer support work that is the burden on our customer service staff and also promoting support of internal work.



*CTI: Computer Telephony Integration of computer and telephone functions
*CRM: Customer Relationship Management Method to integrate and manage customer information

NIPPON PMAC CO., LTD.

● Focusing on expanding sales of PAFMAC in the United States

We have formulated the medium-term management plan PMAC LEGEND 2019 and aim for sales of 10 billion yen (including overseas sales of 1 billion yen) in FY2022 (50th anniversary of foundation). In particular, as we work on expanding our business to new markets, we have considered the United States as the most important base for overseas expansion, among which New York is where we actually delivered our PAFMAC and we expect significant growth of PAFMAC sales in the future due to regional characteristics and building renewal demands. In 2017, we established Nippon PMAC USA Inc. in Manhattan, and started full-fledged marketing activities in July 2018.



NIHON SETSUBI KOGYO CO., LTD.

● Expand ubitask construction throughout the company to improve the level of work

The ubitask construction is a watchword generically referring to our activities and efforts aiming to make the construction work streamlined and efficient using ICT*. It is a coined word mixing the words ubiquitous, ubi (finger), task and tasukeru (support), meaning to unburden workers and support their tasks by allowing them to effectively use iPad and other devices with fingers anywhere anytime (ubiquitous). We will develop this ubitask construction throughout the company, and we will made efforts for improving the quality of our work and working-style.



* ICT: Information and Communication Technology

Group of the International Business

Takasago Vietnam Co., Ltd.

● Working on industry-academia collaborative activities

As a part of collaborative project, we are working on the industry-academia collaborative activities with Nagaoka University of Technology and Hanoi University of Science and Technology. The theme is "Advancement of CFD analysis technology of space air conditioning with SWIT®," by comparing pre-examination results with CFD analysis and actual measurements after the construction and re-examine the current modeling methods aiming to develop more accurate CFD analysis. We will proceed with verification the pre-examination/actual results together with the students of Hanoi University of Science and Technology in the Vietnam's SWIT® implementation project.



Thai Takasago Co., Ltd.

● Training Center for young engineers

The construction of Training Center was completed in 2017 as a place for young national staff by senior engineers. The facility was designed and built in creative way enabling more practical technical trainings. We are convinced that the outcomes of this educational facility and drawing/design training aiming to develop true engineers will raise the technical level of all engineers of Thai Takasago and will greatly contribute to the performance of Thai Takasago in the future.



PT. Takasago Thermal Engineering

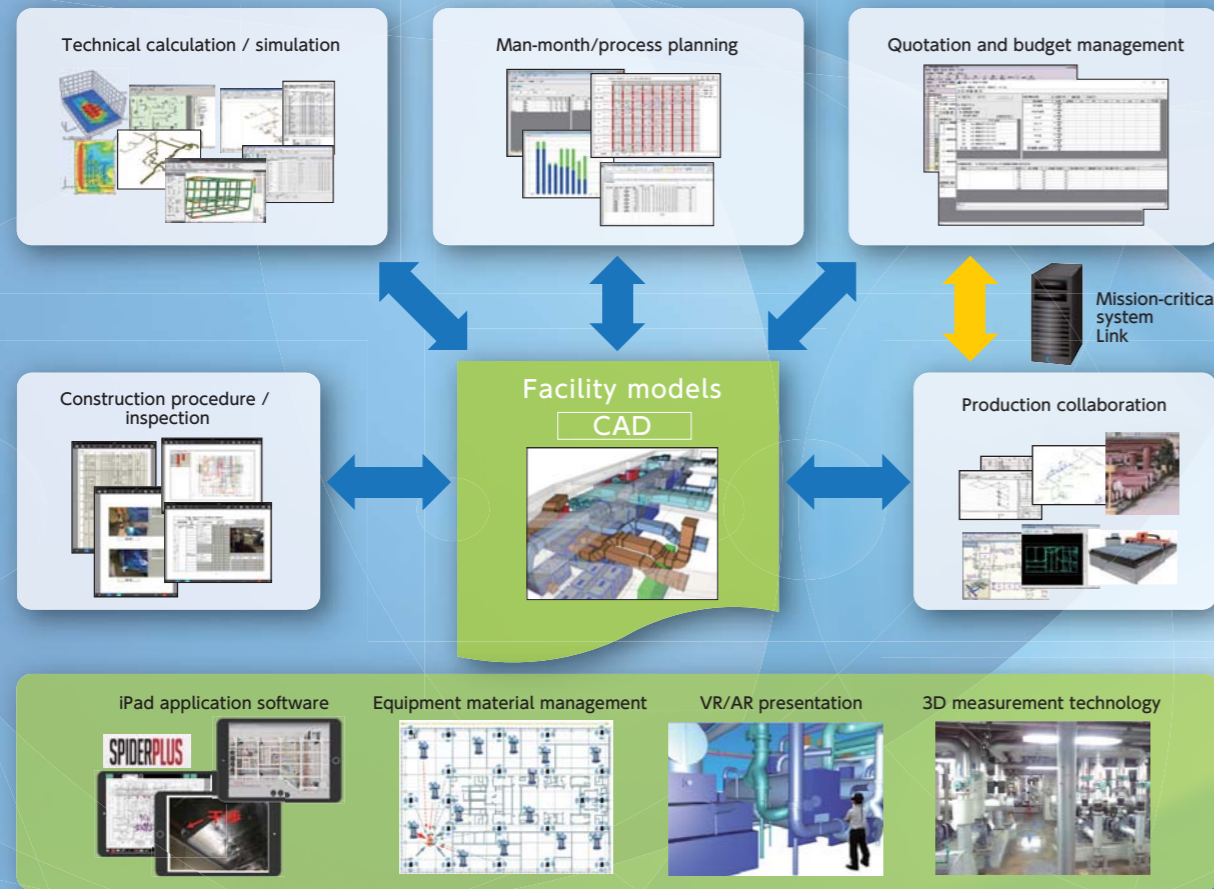
● Developing GODA® Cloud in Indonesia

The GODA®Cloud service is a tool for collecting and accumulating operation data from the building's central monitoring system and analyzing operation status in a diversified manner, and it can perform energy saving tuning free from geographical restrictions. In addition, it can be used also for managing the operation data of factories and business offices, which are scattered at various places, at the head office in a consolidated manner. We already started activities to expand the solution with GODA® Cloud, which is well accepted in Japan, to overseas. We have already completed the localization of the user interface, and as the first overseas case, we have decided to provide the services to a factory in Indonesia.



Business Innovation

The Business Innovation Headquarters will promote value creation to realize a decarbonizing society / sustainable society by improving the quality and speed of technology development through open innovation that connects knowledge and technologies available inside and outside the company.



Innovation of work for working-style reform

Toward the innovation of work, we are renovating our mission-critical system and are working on building Takasago Smart Platform as the foundation of FM/PM services. Furthermore, with the aim of transforming to a way of work that can be free from pressure, we are

trying to automate and improve work making full use of BIM (building information modeling), IoT (Internet of things), AI (artificial intelligence) as well as working on development of advanced construction technology.

New roles of the Business Innovation Headquarters

In line with the medium-term management plan, the Business Innovation Headquarters was established in FY2017 in order for us to keep growing as a corporate group relied upon and trusted by customers by meeting their expectations. At the same time, in order to accelerate the creation of new businesses, the Innovation Center, a new organization that integrates functions related

to marketing, research and development, and incubation, was established in the Business Innovation Headquarters. The Business Innovation Headquarters will cooperate with a diverse range of people/organizations from industry, academia, and government to promote value creation toward the realization of a decarbonized, sustainable society.

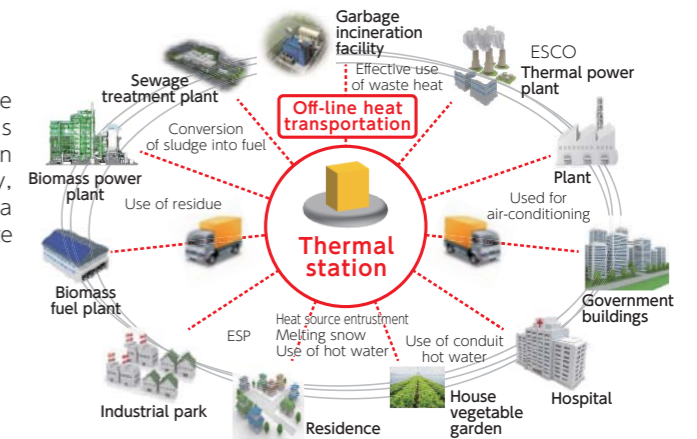
● Innovation Center (organization for creating new businesses and new services)

Developing marketing functions	Establishment of a mechanism and system to uncover market and customer needs that have never been identified before
Strengthening research and development functions related to leading-edge technologies	Promotion of open innovation for creation of new services and prompt development of technologies
Development of incubation functions	Establishment of a mechanism and system to promote commercialization
Cooperation with FM/PM businesses	Establishment of a hybrid form of business in which construction and the provision of solutions are integrated

Examples in FY2017

Development of new businesses

We are proceeding with the development towards the establishment of Smart Thermal Network business leveraging our energy application technologies. It is an initiative to make effective use of renewable energy, unutilized energy and waste heat, secure energy as a distributed energy sources for the area and to sophisticate the energy management in the area.



Open innovation

We are working on the creation of innovation by establishing and strengthening diverse collaborative networks such as industry-academia-government collaboration and collaboration with start-up companies. We are actively making efforts for creating new collaborative partnerships through the creation of community-based projects to solve issues in communities and technical interactions with those at universities and research institutions, based on our unique technologies and businesses. Also, since the last fiscal year, we have implemented an *accelerator program* to accelerate the creation of new businesses by integrating the ideas and technologies of start-up companies with our resources.



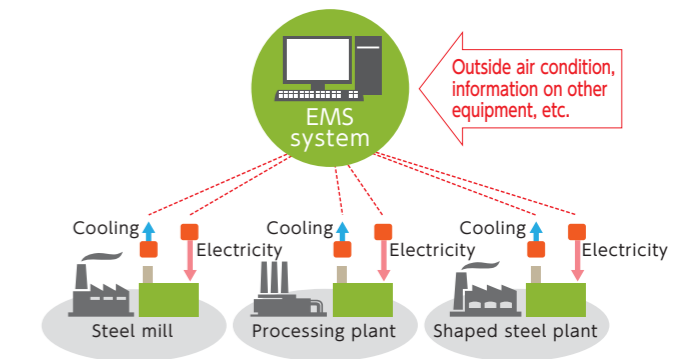
Project introduction

Energy management business

This is the business to organize constructions for saving energy at facilities, factories, and other kinds of buildings, according to the medium- and long-term plan, make them visible with the energy management system (EMS) and carry out more effective energy conservation measures in collaboration with business operators.

EMS functions

The EMS controls energy saving and peak consumption by preferentially stopping equipment (facilities) that can be stopped or relaxed in the setting conditions if there is a possibility that the demand for energy exceeds the supply capacity based on the measurement of the energy consumption of the entire facility.



Energy management business at the Oyama Plant of Tokyo Kohtetsu co., ltd.

The energy management business at the Oyama Plant of Tokyo Kohtetsu co., ltd. is the project to visualize the energy consumption in the facility through GODA® Cloud and EMS by making use of subsidies provided by Energy Efficiency Rationalization Business Operator Support Project of the Ministry of Economy, Trade and Industry. Takasago Thermal Engineering will contribute to the optimization of the lifecycle costs borne by the customer by conducting a series of tasks for three years after the installation of the facilities such as power demand countermeasures, confirmation of the effect due to introduction of energy-saving equipment with EMS system, and consulting on operation.



The Oyama Plant, Tokyo Kohtetsu co., ltd.

Research and development

Based on one of our management principles “to develop technology that serves our customers’ needs and utilizes the creativity of all employees,” the Takasago Thermal Engineering Group proceeds with its research and development in accordance with the following policies:

1. To provide an optimized environment for low energy consumption;
2. To pursue environmental technologies to improve productivity; and
3. To develop building construction technologies to contribute to high quality and labor savings.

Contributing to realization of a sustainable society

Our Group creates technologies and products to contribute to a decarbonized/sustainable society as an *environmental solution professional contributing to the global environment* and spreads/deploys them. While ensuring our activities can contribute to the achievement of the SDGs, we will aim to achieve the goal of 2030 together with society.

Regarding energy use, we are concentrating on the development of the system and framework aiming for optimization as a one-stop service in the building lifecycle, and also working on the commercialization of storage and transportation systems of low temperature waste heat, which we had abandoned in the past. Regarding minimization of environmental impacts, we are also developing technologies such as water purification and organic solvent recovery in addition to energy saving technologies that contribute to CO₂ reduction. Regarding the productivity improvement, we are focusing not only on BIM technology applied for construction sites, which also leads to working-style reform, but also on research and development that contribute to the improvement of the intellectual productivity at offices.

We recognize that making use of AI/IoT is indispensable for attaining these objectives and we are strongly promoting it. We will promote these business creation initiatives through the functions of marketing, research and development, incubation available at the Innovation Center along with the integration with the Group.



Towards further innovation

We plan to build a new research and development base that dramatically strengthens the functions of promotion of new business processes, co-creation centered on open innovation, and dissemination, with the current Research & Development Center as its core in the Tsukubamirai City and start its operation in the spring of 2020.

Intellectual property management

As of the end of April 2018, the number of patents we have acquired is 784 (including patents, utility models, designs, and trademarks), which is the best in the industry. Among these, the number of patents is 501, which account for two thirds of the total, comprising 479 domestic patents and 22 overseas patents. We not only apply these patents to our solutions, but also proceed with efforts made to offer such technologies to others through the licensing of our patents.

Number of acquired patents (FY2018) **784**

Research and development activities and outcomes

Next Generation Energy Management System



We have developed a cloud service-based energy management system (GDoc®), which visualizes the operation of facilities in buildings over their entire life cycle to support and optimize operations, and are proceeding with its introduction for demonstration/verification purposes.

In addition, we will proceed with the development of a system which realizes totally optimized operations by strengthening the evaluation of operations in terms of energy consumption and heat sources and diagnosis functions for detecting errors/deterioration in multiple buildings by managing facility operations data in an integrated manner, as well as expanding the coverage of the application through the advancement of functions such as heat exchange between heat sources.



An example of a GDoc® control screen

Low-temperature waste heat storage system using adsorptive material



Development was done through collaboration with the New Energy and Industrial Technology Development Organization (NEDO) and a few companies based on the technologies of the National Institute of Advanced Industrial Science and Technology and we were able to realize much higher performance of adsorptive materials and establish a technology for its mass production, and now it is possible to store waste heat that is 100°C or lower, which used to be difficult to practically use, in a high-density manner and use the heat when necessary. In addition to the use of waste heat at fixed places, a compact and portable thermal storage system enables off-line heat transportation. We plan to commercialize the technology after it goes through its introduction for demonstrations.



External view of a heat storage system loaded on a truck

Hydrogen energy system



We started to supply hydrogen to mobile hydrogen stations operated by a gas company in Fukushima Prefecture using that hydrogen production system that we are studying jointly with the National Institute of Advanced Industrial Science and Technology. This system can supply CO₂-free hydrogen by directly supplying the power originated from photovoltaic power with the *water electrolyzer-fuel cell unitized reversible cell*. From now on, by proceeding with the introduction of demonstrations with non-commercial buildings, we will contribute to the realization of a coming hydrogen-based society.

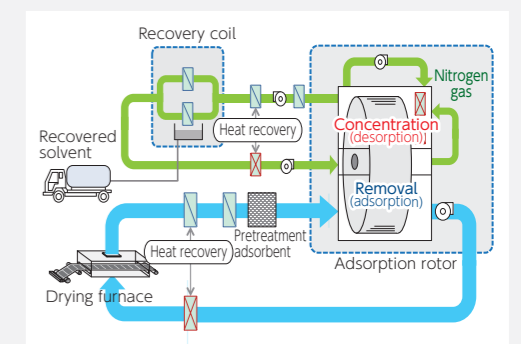


Mobile hydrogen stations

Closed solvent recovery system



We are developing a system that recovers solvent from adhesive tape and organic solvent exhaust gas discharged from printing factories. Cyclically recycling (treating it in a closed loop) the air adsorbed by the rotor to the air supply of the drying furnace enables drastic reduction of organic solvent related to the various environmental problems and efficient heat recovery, leading to saving energy in the drying furnace. Moreover, because it is a no water discharge flushing method with nitrogen desorption method, waste water treatment cost can be drastically reduced compared with steam desorption method. We aim to provide the gentlest exhaust gas treatment systems for people, the earth, and the future.



Basic configuration of closed solvent recovery system

FY2017 Highlights

Takasago Thermal Engineering that is engaged in conservation of the global environment including saving energy and reducing CO₂ emissions, and contributing to realization of a decarbonized society globally by environmental engineering activities through business as an expert in heat and energy trusted by stakeholders and society. We will introduce the highlights of a year's initiative from both the management and product perspectives.

Management topics

April 5, 2017

Issued VISION BOOK Shared medium-term management plan with all group members



May 12, 2017

Engaged in a business and capital alliance with Yamato Corporation



July 11, 2017

Fully updated the new employee training. Conducted in-service training at Fuji Education Training Center.

Making use of the Fuji Education and Training Center (Fujinomiya City, Shizuoka Prefecture), we conducted in-service training as our first attempt. The purpose was for participants to refine the knowledge on safety and quality as a construction manager by experiencing piping work and other practices done at an actual construction site.



September 11, 2017

Started calling for participation in the joint program with startup companies program called Takasago Thermal Engineering Accelerator "just move on!"



September 25, 2017

Acquired additional shares of a cleanroom equipment manufacturer in India

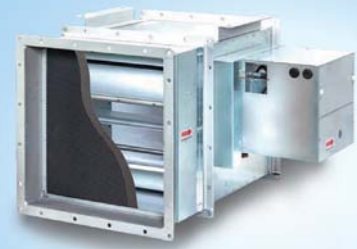
As a part of "strengthening the foundations of management in international business" and "expanding our business domains in overseas countries," we acquired additional 27.46% share of common stock outstanding of Integrated Cleanroom Technologies Private Limited (ICLEAN).



November 24, 2017

Held the 34th Takasago Thermal Engineering Group Technical Presentation Fair

Held Thermal Engineering Group Technical Presentation Fair, which provided opportunities to present the technical achievements by the Takasago Thermal Engineering Group and mutual training and interaction among engineers, at Hankyu Umeda Hall in the Kita Ward, Osaka City.



June 13, 2017

Developed i-Fume mini and cube-shape high-speed VAV for fume hoods



September 11, 2017

Developed the エルブレイズ® (el-brazed) that reduced oxidation prevention work in refrigerant piping by about 80%

Developed the El-brazing method (local nitrogen replacement method) which partially replaces nitrogen and brazes for the prevention of oxidation on the inner surface of the pipe of the refrigerant piping at the construction site of buildings. The method improves work efficiency when it is difficult to replace bulk nitrogen throughout the refrigerant piping system.



October 4, 2017

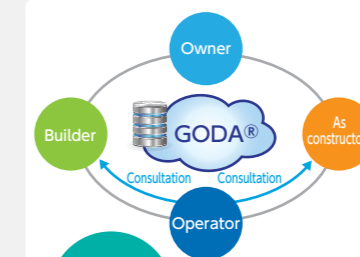
Co-developed a mechanical fitting for aluminum piping named "Alumi-Ozzonkun" to spread aluminum refrigerant piping method



January 23, 2018

Received the Energy Conservation Award 2017

GODA® Cloud / SatTool Cloud received the Energy Conservation Center President Award jointly with Panasonic Corporation at the Energy Conservation Award 2017 (Product / business model section).



February 5, 2018

Fully deployed the GODA® loud service. Supported promotion of energy conservation managed by corporate/facility energy managers



February 5, 2018

Started full-brown sales of seawater Sherbet-like ice production equipment

The SIS management Division under the Environmental Solution management Department was newly established, and started full-brown sales of seawater sherbet-like ice production equipment that enabled highly fresh fishery distribution.



Product related Topics

Social responsibility (CSR)

We consider CSR management, which means management fulfilling social responsibilities, as a core element of our management philosophy which cannot be separated from our business activities, we aim to realize a sustainable society.
We believe that it is our mission to respond to society's demands while the social and economic environment surrounding us is changing and continue to actively contribute to society.

CSR Management in the Takasago Thermal Engineering Group

The Takasago Thermal Engineering Group has defined the CSR basic policy. We will fulfill our responsibilities as a member of society by contributing to the sustainable development of society and also deepening communication with all our stakeholders. In addition, our group's CSR management is well aligned with the UN's SDGs (sustainable development targets)

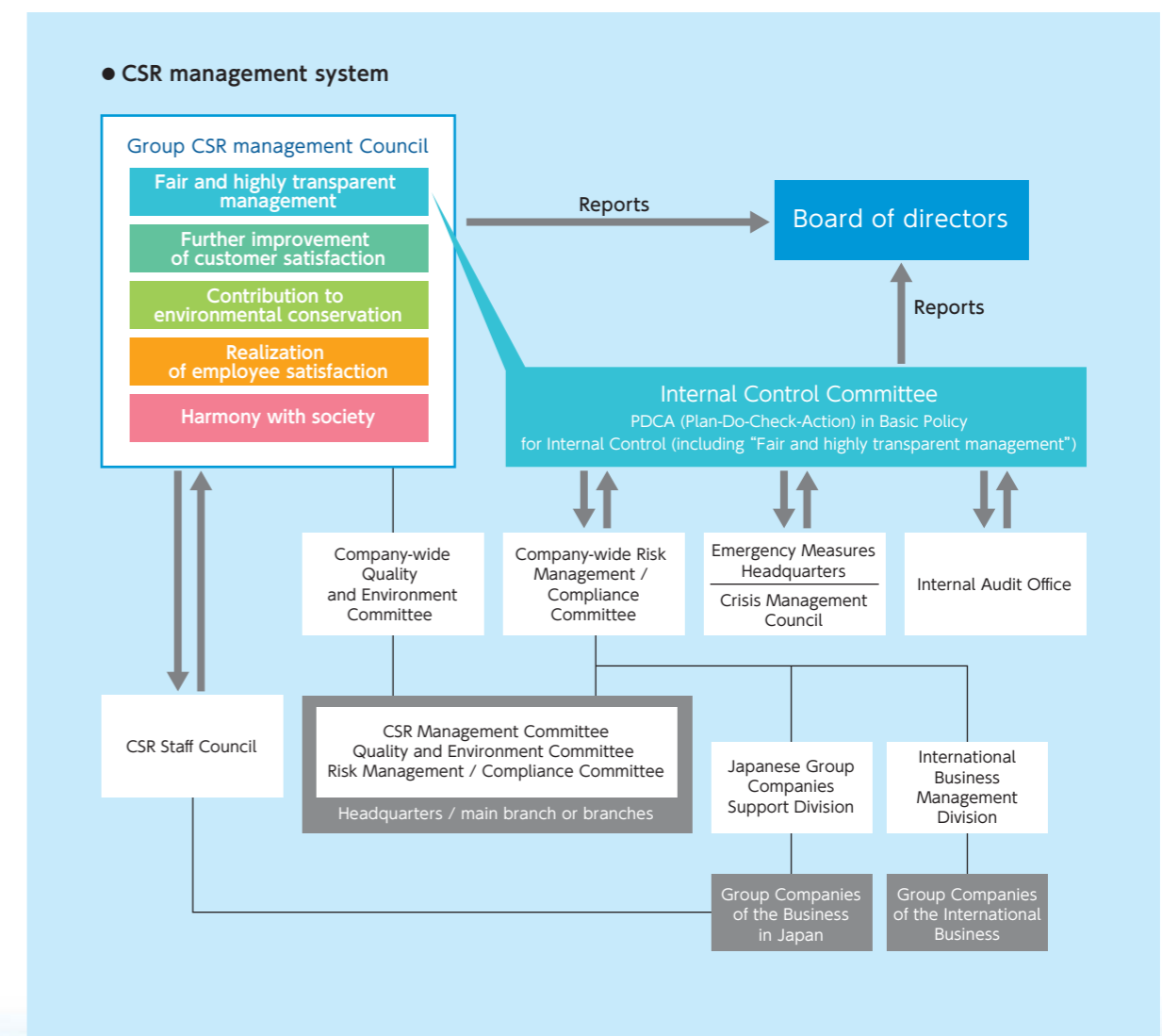
and ESG (environment, society, and corporate governance) initiatives, and we will practice the management taking these into consideration and strive to continuously and sustainably improve the medium - and long-term growth of business and corporate value, and consequently the common interests of shareholders.
(The CSR basic policy is posted on the website <https://www.tte-net.com/csr/policy.html>)



CSR promotion system

In order to promote CSR activities, we have established the CSR Promotion Office in the Corporate Planning Division, as well as review the implementation status of and issues concerning our CSR activities through the CSR Promotion Committees established at the head office and the CSR Staff Committee, where intercompany matters are discussed, and implement PDCA cycles. At the Group CSR Promotion Committee chaired by CEO, we deliberate basic policies, review the activities'

status, and discuss matters that need to be improved. In the future, we will proceed with activities which we should conduct to fulfill our social responsibilities as an enterprise, such as environmental engineering as our main business and forest conservation activities and enhancement of working environment such as ensuring occupational safety and realizing work-life balance, besides risk management / compliance matters which we obviously should work on.





The Takasago Thermal Engineering Group formulates a CSR activity plan every fiscal year. We thoroughly implement the CSR management through the PDCA cycle that is to develop activity targets based on five activity items, regularly review the activities, clarify issues, and make use of them in subsequent activities.

List of major CSR activities

Theme	Description of Activity	SDGs	FY2017			Evaluation	FY2018
			Goals of activities	Outline of activities	Implementation status of activities		Outline of activities
Efforts made on environmental issues	Further improvement of customer satisfaction	 	Provision of new solutions in the FM/PM domains	Creation of businesses taking advantage of Takasago's strengths in the FM/PM domains and provision of values exceeding customers' expectations	Holding in-house seminars Hosting seminars for customers Participating in FM related exhibition	○	Nationwide development of measures to prevent recurrence of serious troubles/complaints
			Provision of Takasago's unique solution services in the FM/PM domains with "energy" as a keyword	Provision of new solution services in the FM/PM domains with advanced technologies making full use of Takasago's strengths	Customer visits and presentations Specific proposals and presentation activities	△ Number of orders received: 1 (target: 3)	
			Provision of the quality with which we can gain customers' satisfaction and their trust	Nationwide development of measures to prevent recurrence of serious troubles/complaints	No serious troubles/claims occurrence	○	
			Analysis of and countermeasures against the true causes of initial failures and leakage accidents	Implementation rate : 100%	○		
			Prompt development of corrective/preventive measures against troubles and complaints	Planning rate and implementation rate : 90% or more	○		
			Promotion of research and development	Labor saving in operating customer facilities with energy management system, GDoc®	Field demonstration : 3 cases	△ The number of field demonstrations was one, but there are many proposals in progress.	
			Contribution to environmental conservation	 	Establishment of a low-carbon society	Proposals for energy-saving measures at building design and construction phases	
	Reducing amount of construction materials	Reduction of power consumption at offices			Reduction rate : 10%	○	Reducing amount of construction materials
	Shifting company cars to fuel efficient vehicles	Company-wide development of participation in corporate forestation			270 kwh per person 70% or more	○	Reduction of power consumption at offices
	Contribution to a society harmonized with nature	 	Dissemination and deployment of our own environmental conservation technologies	Reduction of CO2 emissions by effective utilization of waste heat in adsorbent thermal storage system	Field demonstration	○	Dissemination and deployment of our own environmental conservation technologies
Promotion and development of natural environmental preservation technologies (Spread and deployment of the no water discharge flushing method)			Proposals for and implementation of green procurement	More than 40 applications adopted	○	Reduction of CO2 emissions by effective utilization of waste heat in adsorbent thermal storage system	
Proposals for and implementation of green procurement			Zero-emissions activities at building construction sites	Procurement rate : 90% or more	○	Proposals for and implementation of green procurement	
Reduction of ordinary waste at offices			Reduction of ordinary waste at offices	85% or more	○	Zero - emissions activities at building construction sites	
Efforts made on social issues	Realization of employee satisfaction	 	Through occupational safety	Eradication of accidental falls, disasters due to heavy objects, and disasters by unskilled persons	Safety and hygiene management, safety and hygiene education evaluation rate: 90% or more	○	Eradication of accidental falls, disasters due to heavy objects, and disasters by unskilled persons
			Improvement of work-life balance	Promotion of acquisition of various leaves	Increase annual leave acquisition rate by 10% or more Various leave acquisition rate:100% Encouraging acquisition of Kurumin Mark	△ We achieved the annual leave acquisition rate goal, but goals of Kurumin Mark and 100% of various leave acquisition rate were not achieved.	Promotion of planned paid leave. Investigation/implementation of new measures to leave for vacation
			Respect for human rights and diversity	Promotion of opportunities for women to flourish	Training female managerial candidates	○	Expansion of measures to support childcare and nursing care
				Promotion of employment of people with disabilities	Increase in employment of people with disabilities	○	
	Development of human resources and promotion of opportunities for them to flourish	Improvement of employee training system	Development plan of administrative staff	○	Technical training of administrative staff		
		Harmony with society		Efforts for social contribution activities, proactive information disclosure	Installation of vending machine with which employees can make donation	Promotion of use	○
Promotion of understanding through aggressive dissemination of various kinds of information	IR event Information dissemination from the website			○	Starting IR distribution service for individual investors		
Efforts made on corporate governance	Fair and highly transparent management		Enhancement of Corporate Governance	Support of the Corporate Governance Code	Periodic verification of the implementation status of the 73 items	○	Support of the Corporate Governance Code
			Appropriate operation by running internal control system	Operation monitoring of the internal control system by the Internal Control Committee and report of the Board of Directors	Regular holding of the committee and report of the Board of Directors	○	Operation monitoring of the internal control system by the Internal Control Committee and report of the Board of Directors
			Thorough compliance	PDCA management by Risk Management / Compliance Committee	PDCA by Risk Management / Compliance Committee	○	PDCA management by Risk Management / Compliance Committee
			Strengthening of risk management	Promotion of the activities to reduce selective control risks and prevention of risk elicitation with PDCA management by the Risk Management / Compliance Committee	Prevention of risk elicitation	○	Promotion of the activities to reduce selective control risks and prevention of risk elicitation with PDCA management by the Risk Management / Compliance Committee
			Promotion of appropriate procurement transactions	Verification of implementation status of the Procurement Basic Policy practiced by suppliers and improvement guidance	Implementation of the Procurement Basic Policy practiced by supplier	○	Verification of implementation status of the Procurement Basic Policy practiced by suppliers and improvement guidance

Further improvement of customer satisfaction

We make efforts to always deliver building facilities and services which are high quality and superior in their safety and performance, and to gain our customers' satisfaction and trust. As a part of such activities, we focus on activities which enable both energy-saving at customers' sites and the creation of the best-quality air.

Provision of the quality with which we can gain customers' satisfaction and their trust

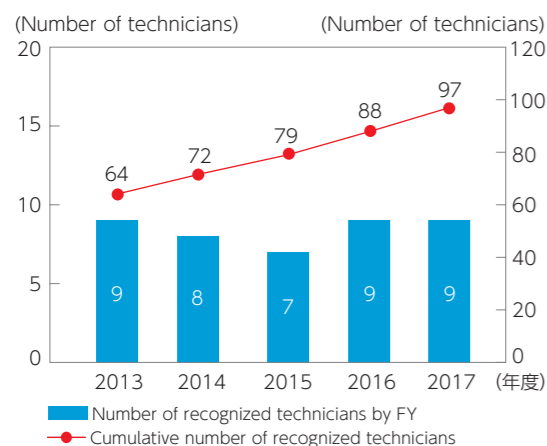
Quality management system

We are certified under the Quality Management System (ISO 9001:2015), and continue improving our quality management system. We carry out high-quality, quick-delivery construction / construction management, and operational support based on our management system, leading to customer satisfaction. Also, as an effort made to strengthen quality control, we have established the Safety/Quality Management Group within the Business in Japan Headquarters to consolidate quality control systems. We evaluate the results of our activities to achieve focused targets every quarter, plan and manage measures related to the shared securement of quality for all offices, and understand and provide instructions on the status of the management of construction sites by patrolling the sites of each office. We will continue to try to enhance our quality control system so as to precisely respond to customers' needs, and contribute to the business activities of our customers.

Quality secured together with partner companies

We try to secure quality at construction sites, working together with approximately 10,000 technicians from partner companies, and therefore advanced skills and teamwork at the construction sites are essential. Thus, in FY2007, we launched the Takasago Meister System, through which we recognize excellent technicians who are superior in technical skills and leadership as top-notch technicians (Takasago Meisters), targeting technicians from partner companies, who are the main force at construction sites. In addition, we established the Takasago Senior Meister: *Koki* (Brilliance) in 2017, through which we recognize technicians who conduce to transfer of technologies with high pride.

Number of those who are recognized as Takasago Meisters



FY2017 Excellent Company Award commendation / Takasago Meister recognition ceremony

Promotion of Green Air® activities and sending associated information out

The Group improves customer satisfaction and promotes Green Air® Activities as a contribution to environmental preservation. Information about these activities, which enable energy-saving / reduction of environmental loads at customers' sites is sent out from the integrated showroom named Takasago Thermal Engineering Group's Green Air Plaza, which opened in Kyobashi, Tokyo, which is the place where we founded our business. Green Air Plaza contributes to the optimization of the operation of customers' facilities through bi-directional communication between us and the customers to understand

customers' issues and passions about facilities, and also leverages the collected information for purposes including technological development.

Number of visitors to Green Air Plaza

9,254

(July, 2013 to March, 2018)

Provision of energy saving infrastructure tools to society

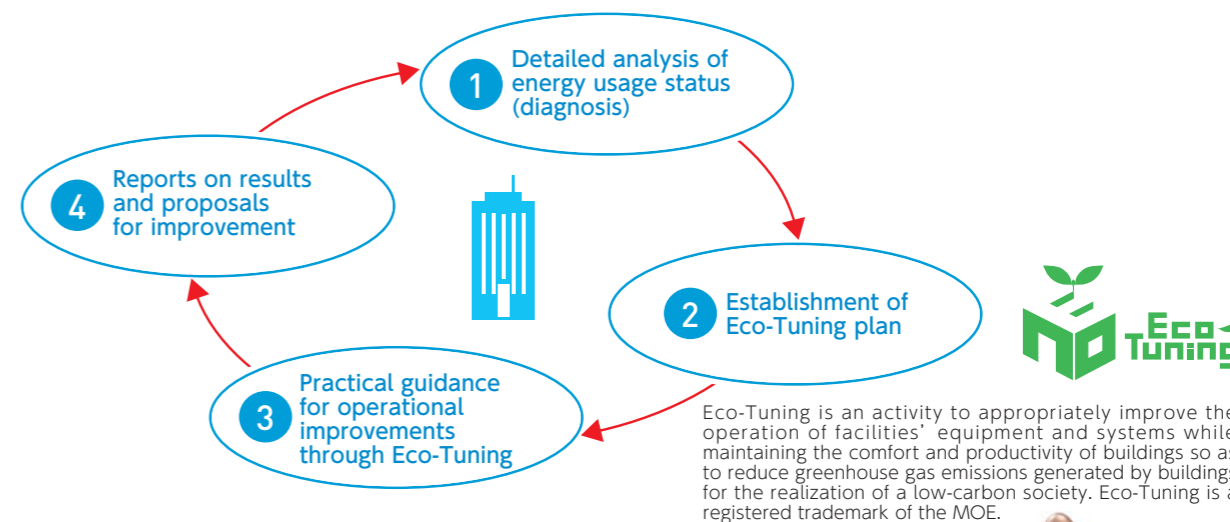
Cloud-Based Data Analysis Tool, GODA Cloud

GODA® Cloud is an energy analysis tool, which flexibly "visualizes" the data from customers' facilities using data from central control devices. It was adopted as a tool for Eco-Tuning for the MOE Eco-Tuning Business Model Establishment Project from FY2014 through 2016.

Number of sites at which Eco-Tuning Remote Support has been implemented and its efficacy has been verified

28

facilities



GODA® Cloud received the Good Design Award 2017 (Social Infrastructure System / Infrastructure) and the Energy Conservation Award 2017 (Product / Business Model section). We will provide GODA® Cloud as a tool to contribute to society by solving social problems in energy saving and reduction of environmental loads such as ① shortage of energy analysts, ② unused data, as an infrastructure for energy analysis.



For more information, please visit our website. <https://www.tte-net.com/csr/activities/index.html>



Contribution to environmental conservation

We work on our contributions to the realization of a decarbonized society, a society harmonized with nature, and the establishment of a recycling-oriented society by proactively using environmental conservation technologies. We support the efforts made by our customers for environment conservation, as well as continuing to reduce the environmental load generated by our own business activities.

Realization of a decarbonized society

●Basic Policy for the Environment and management system

We have defined the Basic Policy for the Environment as a basic philosophy on environmental conservation in order to standardize our promotion system. In our business activities, we strive to proactively develop technologies that save energy and reduce CO₂ emissions, optimize equipment operations in collaboration with our customers, and help to create a low-carbon society through our core business. We also comply thoroughly with all environmental laws and regulations and seek to prevent environmental pollution. In 2015, we consolidated our Environmental Management System (ISO 14001) certifications into a company-wide certification. In 2016, we completed to obtain transitional certification following the revision of the ISO International Standard. We continue to work to improve our system and raise the level of our environmental conservation activities.

●Efforts made for realizing a decarbonized society

As one of the environmental goals, setting out the key theme of "Contribution to establishment of a decarbonized society," we are more actively working on the reduction of CO₂ emissions shifting from a low carbon society to a decarbonized society. We will contribute to energy saving of customers' facilities by "dissemination and deployment of our own environmental conservation technologies," "proposals for energy-saving measures at building design and construction phase," and "reduction of building construction materials." In our offices, we are promoting daily energy-saving activities by *reducing power consumption of offices* and *implementing green purchasing*.

Total amount of CO₂ emissions reductions from HVAC systems that we deliver to our customers

132,900 tons of CO₂
(FY2017)

Amount of CO₂ emissions reductions due to resource conservation activities at building construction phase

3,100 tons of CO₂
(FY2017)

Realization of a society harmonized with nature

We have made various efforts regarding biodiversity and consideration of the ecosystem.

●Dissemination and deployment of our own environmental conservation technologies

In order to reduce the environmental load due to wastewater from production sites, we are developing a no water discharge flushing method, which is one of our proprietary environmental protection technologies and generates no wastewater to purify wastewater.

●Proposals for and implementation of green procurement

We propose low environmental impact products to our customers (green procurement) and promote the adoption of eco-friendly products.

●Company-wide development of participation in corporate forestation

Based on its relevance to our business, we will promote the maintenance and improvement of the public functions of forests, such as carbon dioxide absorption, and contribute to global environmental conservation. Supporting *corporate forestation* as promoted by the national government / prefectures, we continue various activities in various parts of the country such as the activities at a natural forest called the Takasago Thermology Forest in Gunma Prefecture. Furthermore, as the first overseas activity of our company, we began working on the Rainforest Regeneration Program to be held at the Universiti Malaysia Sarawak in Sarawak,

Malaysia. Out of the 20 ha of Sarawak University's preliminary tropical rainforest to be regenerated, we will plant in the area of 10 ha, which is named Takasago no Mori (Woods of Takasago). The purposes are to make use of the woods for research and research on forest regeneration by the university as well as for greening in Malaysia and preservation/regeneration of rainforests.



Ceremony for conclusion of a support agreement



Tree-planting activity

Establishment of a recycling-oriented society

We make the following efforts to treat waste as a precious domestic resource, collect useful resources from it, and effectively utilize them.

●Reduction of ordinary waste at offices

We make use of computers to promote reduction of photocopy papers, which accounts for the greatest proportion of waste from our offices, and make efforts to reduce the amount of paper used.

●Zero-emissions activities at building construction sites

We make efforts to improve our recycling rate by promoting the sorted collection of waste and the adoption of recyclable items at our building construction sites.

●Goals and results of environmental activities in FY 2017

Goals of activities	Description of Activity	Control Items	Control Standard	Actual result	Evaluation
Contributing to the realization of a low carbon society	Proposing energy savings at design and construction stages	new construction Amount of energy saved*1 / Baseline** energy consumption	10%	27%	✓
		refurbishment Amount of energy saved*1 / Baseline** energy consumption	30%	32%	✓
	Reducing equipment capacity in construction	Amount of energy saved*3 / Energy consumption in original design	10%	11%	✓
	Saving energy at offices	Reduce energy usage at head office, mainbranches, sales branches, and R&D center 1- Amount of energy consumed in current FY / Amount of energy consumed in previous FY	270 kwh or less per person, per month	100%	✓
Reducing amount of construction materials	Reducing volume of piping, ductwork, and equipment scaffolding in construction	1- Reduced volume of materials / Materials used for ductwork, piping, and scaffolding in original design	10%	16%	✓
Contributing to a society harmonized with nature	Implementing and proposing green procurement**	Number of sites at which proposals were made / Number of potential sites	90%	98%	✓
	Participating in local environmental activities	One or more activities per branch	100%	100%	✓
	Commercializing and deploying technologies that contribute to biodiversity	Testing deployment of the no water discharge flushing method	40件	49件	✓
Contributing to the building of a recycling-oriented society	Implementing zero-emissions activities*5 for industrial waste at construction sites	1- Recycling rate / Final disposal volume / Total waste volume	85%	87%	✓
	Thoroughly managing industrial waste manifests	Number of implementing sites / Total number of contracting sites	100%	100%	✓
	Thoroughly managing CFC collection process manifests	Number of sites at which CFC collection process manifests are managed / Total number of sites at which CFC collection is implemented	100%	100%	✓

*1 New buildings designed by the Company of a certain scale.

*2 The baseline value is the energy consumption for the year or the amount defined for a specific project, equivalent to the baseline in the Act on the Rational Use of Energy.

*3 Contracts of a certain scale (new construction and refurbishment)

*4 Prime contracts of a certain scale (new construction and refurbishment)

*5 All prime contracts

For more information, please visit our website. <https://www.tte-net.com/csr/activities/index.html>

Realization of Employee Satisfaction

In accordance with the management policy "Contribution to society through personal harmony and creativity," we make efforts for systematic and organized human resource development and strive to create an environment in which employees can work actively.

Development of human resources and promotion of opportunities for them to flourish

Educational Programs Based on Individual Career Stages

As a pioneer of heating, ventilation and air conditioning (HVAC) systems, we set our mission to create value, and place importance on our corporate culture where we try out something new without preconception. And, in order to develop human resources who will create Takasago's future, we have established the Takasago Academy, at which we offer practical and multifaceted educational programs that develop human resources through the combination of various trainings (Off-JT: off the job training) and various experiences (OJT: on the job training).

At the Takasago Academy, individual employees seek to acquire the necessary capabilities and business skills and foster ethics so that they can flourish at all stages, from the time of joining the company through retirement.

Since FY2018, we have reformed educational programs for new employees, under which new employees experience on-site OJT until the second year, regardless of whether they are technology-related employees or administrative employees. After the period, we promote various career development by assigning them to each department.

As for training programs by hierarchy, focusing on management skills, we offer opportunities to acquire MBA degree and implement Young Board Project to train the next-generation leaders, Transformative Manager Seminars for management candidates, Transformative Leader Seminars for young employees, and other programs, thereby continuously developing human resources who will be responsible for management in the future.



New employee hands-on training program at Fuji Education Training Center



New employee orientation



Tomoki Narita
Third Operation Site
Tokyo Main Office

Enjoying and enriching my work through trainings and OJT

Employees seek to improve their capabilities necessary for their works, such as *skills, dialog, and compliance.*

Our company's development/training systems are based on training curriculum that takes the perspective of employees into account and based on OJT experience and these seem to be upgraded every year. I'm now in my 13th year with the company. When I was a new employee, my supervisor taught me the work thoroughly and carefully under the OJT system, and now I am passing down what I learned to my subordinates. By moving from learning position to teaching position, I found myself grown and it brought about significant impact on my self-formation later on. In addition, taking the opportunity of in-house training programs, I formed connection with senior and subordinates in other divisions and I sometimes ask them questions and advice about routine work. Through training and OJT, I find myself enjoy and enrich working more.



Respect for human rights and diversity

Employee satisfaction survey

In order for employees to be motivated and carry out their jobs vigorously, it is important to provide an environment to support these. We conduct our Employee Satisfaction Survey every year, and we analyze the results of the survey to understand the outcomes and issues and to make the working environment more comfortable based on such results.



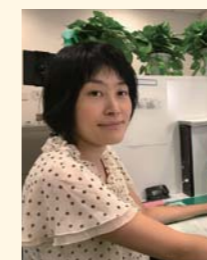
Promotion of opportunities for women to flourish

We promote various efforts to develop environments that employees can flourish at all workplaces, including construction sites, regardless of gender, in addition to working on improving in-house systems so that employees can balance childcare and work.

Aiming for career-building of female employees, we also develop employees' abilities of men and women to the same degree, including career training.

Hiring rate for women (FY2017)

30.6%



Tomomi Sako
Accounting Section
Tokyo Main Office

Participating in career support training

This program, under the theme of "contribution to maximize the team capability" to produce a synergy effect, was not passive, lecture-style learning, but practice-based learning which allowed us to learn through practice while cooperating in a team; I found it was a very enriched program. After taking the program, being required to improve work efficiency and added-value, I came to think that I want to be a human resource who can produce a synergy effect as a team member, not just to do the work that is assigned to me. From now on, I will do my job while always keeping in mind *assertive self-expression that allows both me and the other person to be convinced not on my assumption and sharing a common goal in a team,* which I have learnt through the program.



Promotion of work-life balance

Leave systems

In order to promote employees' work-life balance, we have established various leave/vacation systems, such as the refreshing vacation system after the receipt of awards for long-time service (for 20 years / 30 years / 40 years) and the summer vacation system under which employees can take three days of vacation between July and September, in addition to promoting the use of annual paid leave.

If employees should leave due to non-work related injury or illness, we have established a system with which we grant them the annual paid leave that had been expired for the last ten years or less so that they can concentrate on their treatment.

Besides, we have established the volunteer leave system so as to promote employees' participation in social contribution activities, and we actively support social contribution activities, by means such as providing financial support for such activities.

Proportion of paid leave actually taken (FY2017)

45.7%

For more information, please visit our website. <https://www.tte-net.com/csr/activities/index.html>

Through the company's basic policy on social contribution, "to fulfill our social responsibility as a 'good corporate citizen' by engaging voluntarily in social contribution activities" we have been actively involved in initiatives to improve the local environment and to support cultural and artistic activities among others.

Initiatives for activities that contribute to society

We, under the cooperation of partner companies, conduct regional cleanup activities in various parts of Japan. We call on our executives and employees to participate the activities for making it as a continuous efforts. The activity is also becoming a valuable opportunity to communicate with local people.

Each business office calls on employees to put used caps of PET beverage bottles into collection boxes. The collected used caps by FY2017 were 221,889 (equivalent to 1,627 kg of CO2 emission reduction). Also, since FY2016 we have introduced vending machines with donation function. The total annual amount of 'green funds' used for greenery movement and international green contribution (FY2017) was 627,090 yen.

> Cumulative number of people who have participated in community cleanup activities (FY2017) : 467



Clean Shinjuku! Cleanup Campaign



"Green fund" Receiving Ceremony

Sponsorship and support for cultural and artistic activities

To promote culture and art, we are sponsoring and supporting festivals, celebrations and activist groups. In FY2017, we co-sponsored and supported various activities with focus on classical music and performing arts,

including co-sponsorship for Tokyu Bunkamura opera "Otello", and support for the NHK Symphony Orchestra. In addition, we continue to sponsor the light festival Tokyo Michi Terrace in the area around the Tokyo Station.

> Number of culture/art programs/associations we supported : 9



Tokyu Bunkamura Opera "Otello" © Takafumi Ueno

For more information, please visit our website. <https://www.tte-net.com/csr/activities/index.html>

Enhancement of childcare and nursing care system

Having in mind harmony between work and life, we have established systems concerning *childcare* and *nursing care* so that employees can motivate themselves to work.

We have established the Work Time Shortening Measures System for childcare and nursing care, and extended the applicable period, making the system more convenient for employees who need to provide childcare or nursing care. In addition, we have established a system of nursing leave and nursing care leave for children, and we have developed

a system that can respond to changes in the family environment of our employees.

Rate of return to work after childcare leave (FY2017)

100%

Occupational health and safety

Identification of risks and countermeasures

We have introduced risk assessment for safety and health management.

At building construction sites, we thoroughly prepare and observe safety and health work procedures. In response to serious accidental falls that have been occurring in recent years, we have made the slogan "eradication of accidents involving falling objects" as the goal of our activities, and we are implementing countermeasures, such as the confirmation and instruction of the implementation of safety and health countermeasures by effectively patrolling the site, the instruction on countermeasures against risks using safety and health work procedures manual and other method, and education and instruction on safety and health for visitors to construction sites, including unskilled persons.

The Safety/Quality Management Group, which was established for the purpose of strengthening safety and health activities, evaluates the results of our activities to achieve focused targets every quarter, plans and manages measures related to the shared securement of quality for all offices, and understands and provides instructions on the status of the management of construction sites by patrolling the sites managed by each office.

In addition, we raise awareness of safety and health activities through the Company-wide Safety and Health Conference held every spring.

Education and follow-up

The implementation rate for the safety and health management items listed among the safety priority targets set by the Safety/Quality Management Group (who evaluates the quality of safety management at the site by company-wide unified standard patrolling) in FY2017 exceeded our target of 90%.

We aim to achieve an implementation rate of 100%, and we will intensively check the status of the daily safety management particularly at the site and implement follow-up.

Trends in safety performance and eradicating accidents

In FY2017, we were able to achieve the priority targets of the Safety/Quality Management Group for the full fiscal year. However, 36 cases of accidents occurred (5 lost-time injuries and 31 non-lost-time injuries), and unfortunately our frequency targets and intensity targets have not been achieved. Having the FY2018 safety activity goals, which are *the eradication of accidents involving falling objects* and *the eradication of accidents involving heavy objects*, both of which would directly lead to serious disasters, *the eradication of accidents caused by unskilled persons*, which has been increasing recent years, and in addition, and *the eradication of accidents involving overturning objects*, which has increased in the last fiscal year, we will work to prevent such accidents.



Fair and highly transparent management

We make efforts for thorough consciousness and *practice*, with a recognition that compliance is an essential element of CSR management. In addition, we are making efforts for measures to prevent management risks from arising, and minimizing the impact of crises.

Compliance

Based on the recognition that securement of compliance is the foundation of our CSR management, we are continuing to make efforts to be thorough in daily practice and in our consciousness. In addition, we, as our group, have established the "Ten Group Action Guidelines." We distribute each executive and employee a portable booklet "Group Corporate Code of Ethics" which is used for daily business, in-house training, etc.

● Ten Group Action Guidelines

1. Act in compliance with laws and regulations and internal rules and according to ethical standards.
2. Ensure appropriate accounting and safeguard company property.
3. Promote a fair, safe, and healthy working environment.
4. Secure safety at construction sites and maintain/improve the quality of work
5. Promote appropriate management/disclosure of information.
6. Maintain ethically appropriate relationships with customers.
7. Maintain fair competition with competitors.
8. Establish ethically appropriate relationships with subcontractors.
9. Consider social responsibility, social contributions, and the global environment.
10. Break relationships with anti-social forces and organizations.

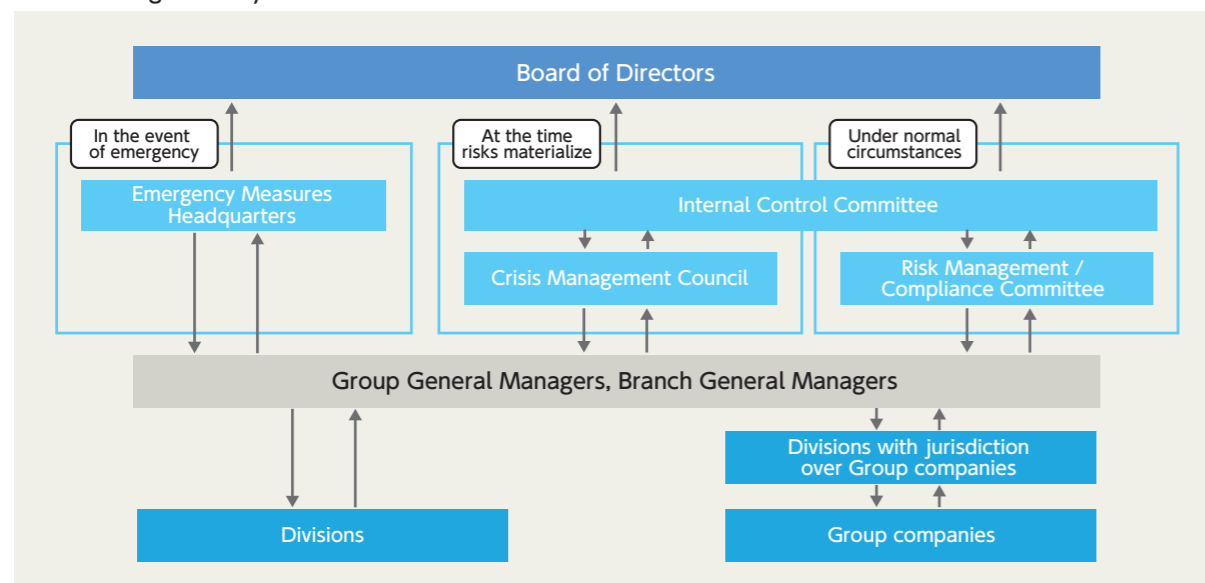


Risk management

The Company conducts risk management in order to prevent all risks that relate to our business from materializing and, if risks do materialize, when crises occur, to minimize losses from such risks. To prevent various risks from materializing, we, in accordance with the "Risk Management Regulations," established the "Risk Compliance Committee" which is chaired by the Group General Manager of Corporate Management Group and in which the CEO is positioned as chief officer in charge. The committee is responsible for the determination of risk management policy, identification of risks, and assessment of such risks based on the probability of occurrence as well as impact to management along with developing risk mitigation measures

and their progress management all in an effort to ensure risk management effectiveness. Meanwhile, a system working against the possible materialization of risks, that is, when crises do occur, has been developed to minimize damage and loss in such an event in accordance with the Crisis Management Regulations. In addition, we make efforts to mitigate the risks that we give first priority to as focused key risks, which are defined as risks that have a severe impact on management and have a high probability of materializing, and strengthen the PDCA cycle with which we review our progress and the issues, to use them as feedback to modify our risk mitigation activities every quarter.

● Risk management system



● Major risks and countermeasures

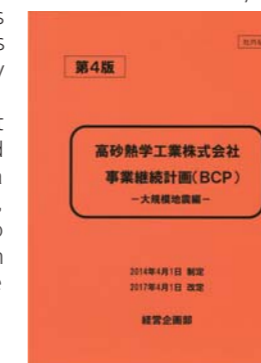
Risk	Description	Countermeasures
Risk of accidents and disasters during construction	• Risks of compensation for damages, defect liability, and other obligations due to disasters or accidents during construction	• Ensure preparation and observance of procedures for safety and health. • Plan and manage measures related to the securement of company-wide general safety through on-site patrols. • Understand site management status and review/summarize actual cases of guidance on-site.
Risks of overseas business	• Risks such as unexpected legal restrictions and changes in areas where we develop overseas business, political instability, fluctuations in market conditions and exchange rates	• Establish risk management documents, and broadly implement the contents of the documents. • Make the details of risks broadly known, and share case studies of risks throughout the entire group.
Risk of natural disaster	• Risks associated with the occurrence of large-scale natural disasters such as earthquakes	• Formulate a business continuity plan (BCP) in case of large-scale disaster, and conduct relevant training. • Stockpile necessary supplies. • Introduce safety confirmation system for executives and staff.
Risk of legal restrictions	• Risks arising from revision, abolition, and introduction of legal restrictions, and changes in application of standards, etc.	• Distribute the Group Enterprise Ethics Grand Plan and proactively use the plan in daily work, in-house training, etc. • Provide training through a compliance program, and manage related measures with the PDCA cycle.
Risk of information leakage	• Risk of leakage of confidential information / personal information	• Implement <i>information security education</i> aiming to raise awareness about information management, and issue the Information Security Brochure. • Encrypt all personal computers installed at on-site offices. • Introduce a cyber-terrorism countermeasure system.

Strengthening our capacity to respond to disasters in accordance with the Business Continuity Plan (BCP)

In April 2014, the Business Continuity Plan (BCP) in preparation for the event of a large-scale earthquake was established. We have developed a system to fulfill our social responsibility as a building constructor if a disaster occurs, for example, assistance for the recovery of hospitals and other facilities with a highly public nature as well as our customers' supply chains. In FY2017, we carried out initial training at the head office and the Yokohama branch (Yokohama city, Kanagawa prefecture) to train initial response when the capital earthquake occurred.

We are working on so-called BCM* to enhance the effectiveness of BCP.

* BCM means a plan to continue operations when there is a disaster whereas BCM (Business Continuity Management) means activities that enhance the effectiveness of BCP such as implementing training and strengthening necessary business resources.



BCP booklet



Initial training at the Yokohama Branch

For more information, please visit our website. <https://www.tte-net.com/csr/activities/index.html>

Enhancement of Corporate Governance

Our basic policy on corporate governance shall be to ensure the legitimacy, transparency, and promptness of management, and increase management efficiency in order to earn the trust of society and raise our mid- to long-term corporate value.

Corporate governance system

We have established the Board of Directors and the Board of Auditors.

Also, in addition to adjusting number of directors and shortening their term, we have introduced an executive officer system to clarify management decision-making and supervisory functions as well as business execution functions for prompt and flexible management.

Specifically, we set up the Management Committee consisting of directors excluding Chairman, CEO, Vice President, General Manager at head office and Outside Directors, to enhance deliberations on important matters concerning management and to make prompt decisions on allocation of management resources.

Also, we set up the Internal Control Committee, consisting of Chairman, CEO, Director in charge of compliance, and Group General Managers at head office to promote intersectional improvement and operation of internal control systems among the Company and its group companies; the Nomination Compensation Committee consisting of Representative Directors, Chairman, CEO, Vice President, and External Directors to discuss the appointment / dismissal and remuneration of directors, corporate auditors and executive officers of the Company and its subsidiaries.

In addition to the above, corporate auditors coordinate with accounting auditors and the Internal Audit Office in an effort to enhance corporate governance through effective audit brought by the active communication.

Board of Directors

The Board of Directors consists of nine members (three of whom are Outside Directors) currently, and its meeting is held once a month in principle and also may be held when needed. The term of directors is one year, and management responsibility is clarified.

External directors and outside corporate auditors attend the board of directors' meeting and strive to fulfill the role expected to outside officers, including the former to say useful points and opinions from an independent standpoint, while the latter to point out useful points and opinions from objective and professional points of view.

The Board of Directors make decisions on important business execution and supervise directors' execution of duties to enhance management efficiency while ensuring legitimacy and adequacy in business execution.

Board of Auditors

We have five corporate auditors including three outside corporate auditors. The corporate auditors, in accordance with the audit policy and audit plan set by the Board of Corporate Auditors, monitor the implementation status of governance, attend the Board of Directors' meetings and other important meetings, as well as inspect important approval documents and visit the business offices for on-site audit. Also corporate auditors coordinate with accounting auditors and the Internal Audit Office and are striving to audit the execution

of duties by the directors through an effective audit. As for subsidiaries, they exchange information with the directors and corporate auditors of subsidiaries at the Group Management Meeting, Group Auditor Board, etc. and are working together. External corporate auditors including one who also is a lawyer, obtain and provide information from an independent standpoint, and each of them strives to monitor from the outside perspective. On the other hand, full-time corporate auditors monitor from a standpoint of being familiar with our operations based on their extensive experience at the Company. The auditors are enhancing the effectiveness of audits from their respective positions.

Internal Audit Office

Regarding internal audits, the Internal Audit Office (six staff members) is established as a department under the direct control of CEO to conduct, based on the internal audit regulations, a systematic audit on the appropriateness and efficiency of business operations from an independent standpoint. As for subsidiaries, it exchanges information with them as necessary. The Internal Audit Office reports the results of the audit to Chairman, Representative Director, CEO and also confirms the necessary measures and the implementation status of improvements. It also evaluates the operational status of internal control over financial reporting of the company and important consolidated subsidiaries. While work closely with corporate auditors and accounting auditors, the office strives for conducting effective internal audits.

Accounting auditors

Certified public accountants who are executing our accounting audit work are Mr. Atsuki Kanazuka and Mr. Junichi Kimura and they are belong to KPMG AZSA LLC. The years of continuous auditing is one year for Mr. Kanazuka and two years for Mr. Junichi Kimura. Also they have seven certified public accountants as their assistants plus seven other assistants.



Policy and Procedures on Appointment of Executives

As the nomination standard of candidate for director, the company judges comprehensively the following abilities of the person. Having insight on business management and excel in foresight, insight, objective judgment etc.; to be able to demonstrate leadership for sustainable growth of the group and corporate value; expected to positively contribute to foster the next generation executives; excellent in dignity, in high demand by colleagues, have a high ethical sense and gallant power; healthy with both mind and body thus no obstacles to carrying out duties; and have no special problems such as having special interested parties, etc. In addition to the above standard, with regard to directors (executive directors) who are not outside directors, they should meet requirements of having abundant experience and insight in the field they are in charge of, along with having a balance sense and leadership that can execute business from the viewpoint of overall optimization.

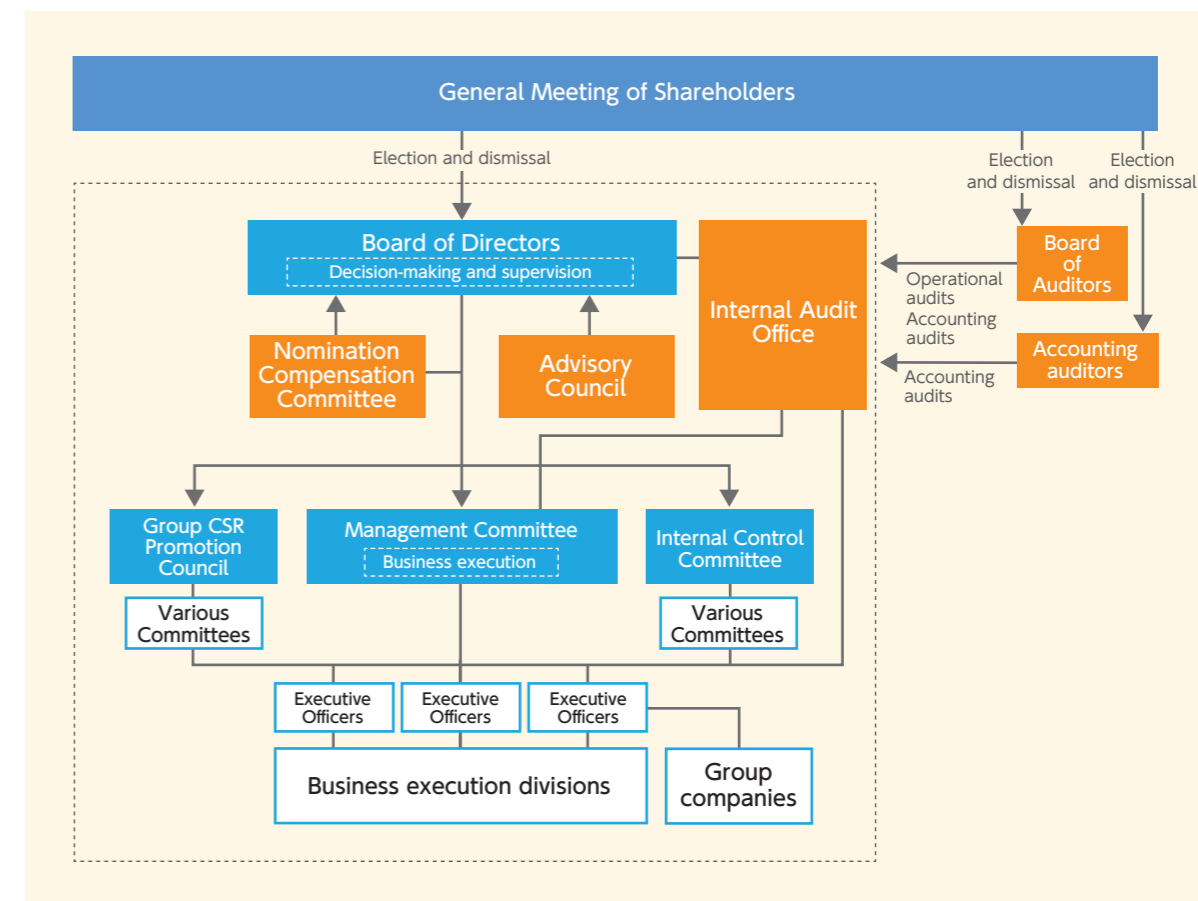
Also, as for outside directors, we set additional requirements for them to oversee management and to provide check function from an independent position utilizing their extensive experience and insight on specialized fields and corporate management.

As the nomination standard of the candidate for the auditor, he/she should have qualities to fulfill the responsibilities

of corporate auditors, a high level of ethical standards, being both physically and mentally healthy, has no special problems such as having special interested parties, etc. We comprehensively judge them based on the standard. In addition to the above criteria, with regard to corporate auditors who are not outside corporate auditors, they should have extensive experience and insight concerning our business and must be able to conduct appropriate audits. Also, as for outside corporate auditors, we require that the person can conduct appropriate audits from an independent standpoint, utilizing their extensive experience and knowledge on professional points of view and corporate management.

As a standard for appointing executive officers, we judge comprehensively the following abilities of them. Having high expertise and achievements and be able to carry out important management in management strategy; can demonstrate leadership or sustainable growth of the group and corporate value; expected to positively contribute to foster the next generation executives; excellent in dignity, in high demand by colleagues, have a high ethical sense and gallant power; healthy with both mind and body thus no obstacles to carrying out duties; and have no special problems such as having special interested parties, etc.

● Corporate governance system



Executive remuneration

Regarding remuneration of directors, the maximum amount of remuneration and other compensation of all directors is decided by resolution of the general shareholders meeting.

To enhance the objectivity and transparency of remuneration for executives, we have established the Nomination Compensation Committee that comprises representative director, Chairman, CEO, Vice Presidents and outside directors as an arbitrary advisory body. After deliberation by the committee, the remuneration and other compensation of directors are determined by resolution of the Board of Directors. Meanwhile, at the time of submission of this report, the Nomination Compensation Committee is composed of five members including three outside directors.

Regarding remuneration of directors, with the aim of growing our business over the medium to long term and continuously and sustainably improving the corporate value of the company and thus the common interests of shareholders, we decided to adopt a policy of setting a compensation system that functions as one of sound incentives (motivation), while taking into consideration trends in corporate governance, survey data by external specialized agencies, and compensation levels of other companies, etc.

The composition of remuneration is set to the percentage composition taking this policy into consideration, which comprises basic remuneration, bonus as short-term (annual) incentive, and stock-based - type stock option* as medium- to long - term incentive. It should be noted that for outside directors, only basic remuneration is taken.

The amount of basic remuneration is determined according to the position of each director and the basic remuneration of directors excluding outside directors is taken into consideration for the acquisition of the company's shares based on internal rules. Directors excluding outside directors should make efforts to acquire the company's shares by contributing part of the basic remuneration to the Official Shareholding Association.

Bonus is aimed at improving morale toward achievement of single-year performance targets, etc. and stock - based - type stock option* is aimed at further enhancing the willingness to contribute to improving medium - to - long term performance and corporate value.

As for the remuneration of executive officers, as well as directors, it consists of basic remuneration, bonus as short-term (annual) incentive, and stock-based-type stock option* as medium- to long-term incentive, and it will be determined by a resolution of the Board of Directors' meeting after deliberation by the Nomination Compensation Committee.

* At the general shareholders' meeting of June 2018, it was resolved to introduce a new share-based compensation system instead of share-based-type stock options to further enhance contribution awareness for the mid- to long-term performance improvement and corporate value.

Executive remuneration (FY2017)

- Amount of remuneration and other compensation for directors (excluding outside directors)
9 persons 367 million yen
- Amount of remuneration and other compensation for outside directors
3 persons 36 million yen
- Amount of remuneration and other compensation for corporate auditors (excluding outside auditors)
3 persons 45 million yen
- Amount of remuneration and other compensation for outside corporate auditors
3 persons 38 million yen

Ensure the effectiveness of the Board of Directors

Advisory Council

As an advisory body to the Board of Directors, we have established an "Advisory Council" that has representative directors, outside directors and outside corporate auditors as its members. The council discusses the balance of composition of the overall board of directors, analyzes and evaluates effectiveness, and confirms training policies of directors and corporate auditors, as well as information provision, etc. every year as a general rule, to contribute to the revitalization of the Board of Directors.

Evaluation of effectiveness

We, in order for the Board of Directors to fulfill its role and responsibilities effectively, check whether the entire Board of Directors functions properly. We analyze and evaluate the effectiveness of the Board of Directors as a whole based on the self-assessment of each director and corporate auditor periodically, and at the same time, we receive suggestions and opinions directly about the content from outside directors and outside corporate auditors to take appropriate measures such as remedy of the problems.

We use the analysis results of this evaluation to improve the decision-making function and supervisory function of the Board of Directors and also disclose the outline of the analysis results in the Corporate Governance Report.

Information Disclosure and Dialogue with Shareholders and Investors

We are recognizing that promoting constructive dialogue with shareholders and investors through appropriate information disclosure and proactive and fair IR activities will lead to sustainable growth as well as improve medium- and long-term corporate value. Therefore, we make full use of opportunities for explanation to and constructive dialogue with shareholders and investors to promote their understanding about the company's management.

Information disclosure system

We constitute the "Information Disclosure Team" with Representative Director, CEO as its representative, General manager of Corporate Management Headquarters in charge of information handling, Head of Public Relations Division in charge of timely information disclosure and Head of Accounting Finance Division in charge of annual securities reports etc. The Information Disclosure Team deliberates and decides on company information disclosure, receives advice and guidance from internal and external experts as necessary, and deliberates at and reports to the Board of Directors accordingly.



The Business Result Meeting for the fiscal year ended March 31st 2018

Enhancement of Dialogue

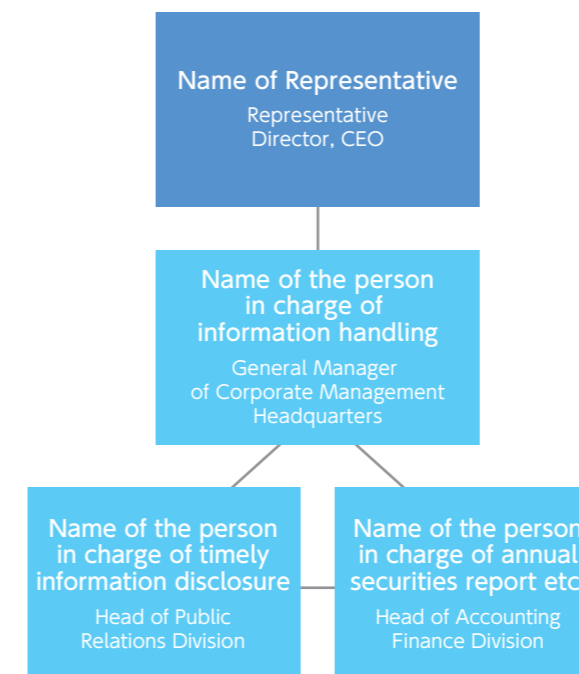
In addition to the biannual financial results briefing sessions*, we have provided opportunities for dialogue such as individual interviews when appropriate. Directors and senior executives are expected to obtain information directly though attendance at investor briefing meetings and analyst reports, as well as to receive feedback of opinions and request obtained by dialogue from the public relations department regularly and as needed. They also participate in events for external investors.

* In May and November of each year, Chairman and Representative Director, CEO explains the summary of the financial results, implementation situation of the management plan, future prospects etc. About 50 people including securities analysts and fund managers are attend in each event.

Information management and ensuring transparency

From the viewpoint of prevention of insider trading, we strictly adheres to the "Insider Trading Management Rules" which stipulates regulations with regard to the Financial Instruments and Exchange Act and other related laws as well as internal information management. Also, in accordance with the "Disclosure Policy (Information Disclosure Regulations)" announced on our website, we disclose information while ensuring its timeliness, legality, accuracy and fairness.

Also, the company's website contains information on short financial results, securities reports, timely disclosure materials, financial results reference data materials, medium-term management plan, etc., along with the "IR information mail distribution service" that delivers up-to-date information to individual investors.



We distribute IR information e-mails that connect the company and investors
Mitsubishi UFJ Trust and Banking Corporation

Company Outline (as of March 31, 2018)

Company name	Takasago Thermal Engineering Co., Ltd.	Stock listing	First Section of the Tokyo Stock Exchange
Established	November 16, 1923	Head Office	6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022
Number of employees	5,714 (the company alone 2,025)	Phone (main)	: +81-3-6369-8212
Capital	13,134 million yen	Fax (main)	: +81-3-6369-9103
End of accounting period	March		

Business Description

- Air conditioning systems
- Clean rooms, and associated systems
- District heating and cooling (DHC) facilities
- Plumbing and Drainage systems
- Co-generation systems
- Electrical systems, Automatic control system and communication systems
- Equipment diagnosis
- Equipment diagnosis / failure diagnosis systems
- Dehumidifying/drying systems
- HVAC systems for nuclear energy facilities
- High-precision HVAC systems
- Waste vacuum transfer facility
- Construction work
- Discharged-heat recovery systems
- Heating/cooling systems
- Refrigerating/freezing systems
- Design, construction, production, installation and maintenance of other various environmental control and thermal engineering system
- Design, manufacture, import, export, sale and mediation of machinery, equipment and various materials
- Consulting and services concerning energy saving and environmental measures
- Business related to greenhouse gas emissions rights trading
- Purchase and sale, brokerage, lease, and management of real estate
- Labor dispatch business
- Security business
- Cleaning business
- Energy supply business
- Power generation business
- Water treatment business

License under the provisions of Article 3, paragraph (1) of the Construction Business Act

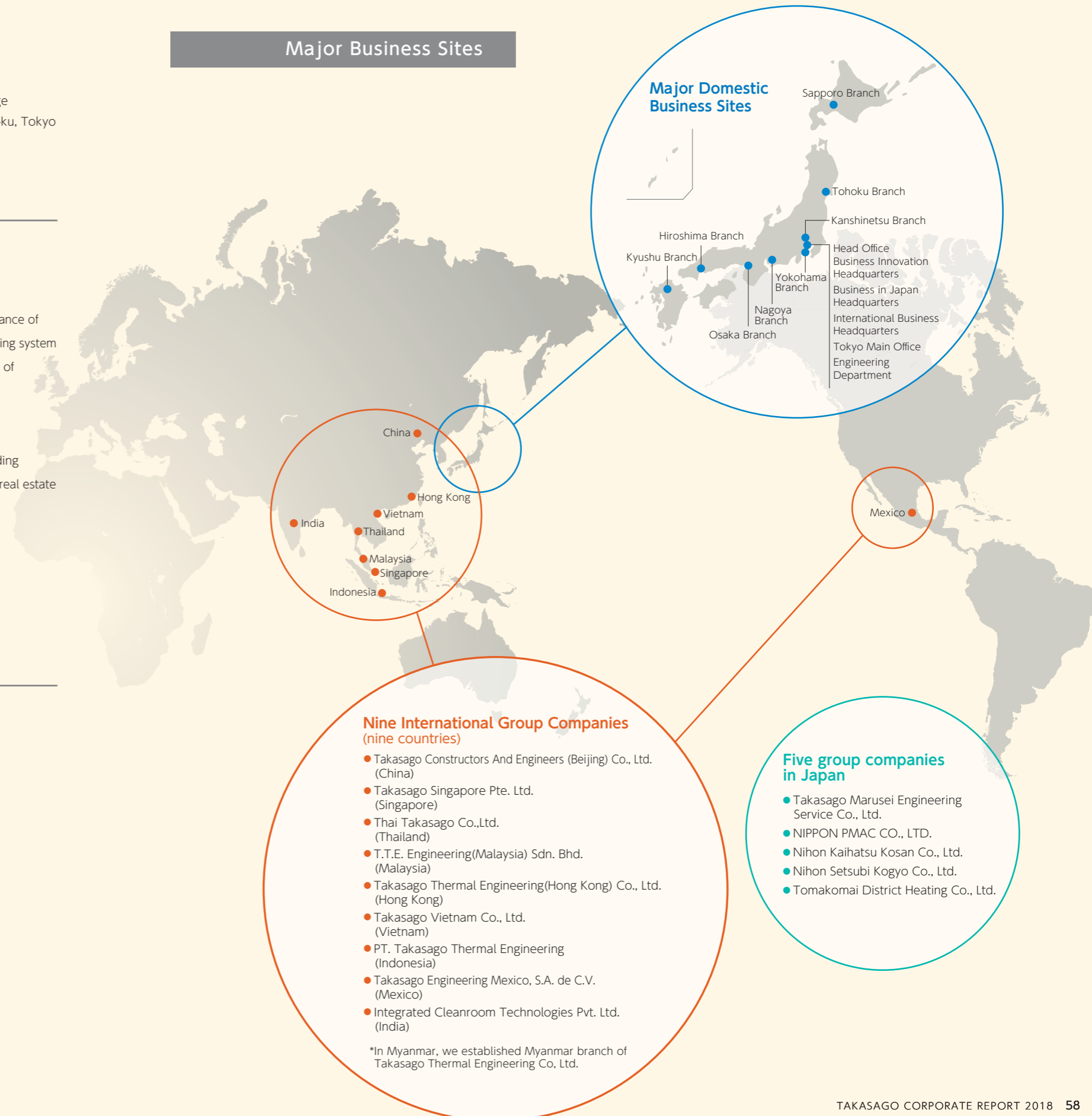
[Special Construction Business]

License No. : (TOKU-27) No. 5708 issued by the Minister of Land, Infrastructure, Transport and Tourism
License Date : December 4, 2015
Duration of License Validity :
 From December 4, 2015 to December 3, 2020
Licensed Fields of Construction Work :
 Plumbing, Machine and Equipment Installation, Electrical, Telecommunication, and General Building

[Ordinary Construction Business]

License No. : (HAN-27) No. 5708 issued by the Minister of Land, Infrastructure, Transport and Tourism
License Date : December 4, 2015
Duration of License Validity :
 From December 4, 2015 to December 3, 2020
Licensed Field of Construction Work :
 Fire Protection Facilities

Major Business Sites



Major Domestic Business Sites

- Sapporo Branch
- Tohoku Branch
- Kanshinetsu Branch
- Head Office
- Business Innovation Headquarters
- Business in Japan Headquarters
- International Business Headquarters
- Tokyo Main Office
- Engineering Department
- Hiroshima Branch
- Kyushu Branch
- Nagoya Branch
- Osaka Branch
- Yokohama Branch

Nine International Group Companies (nine countries)

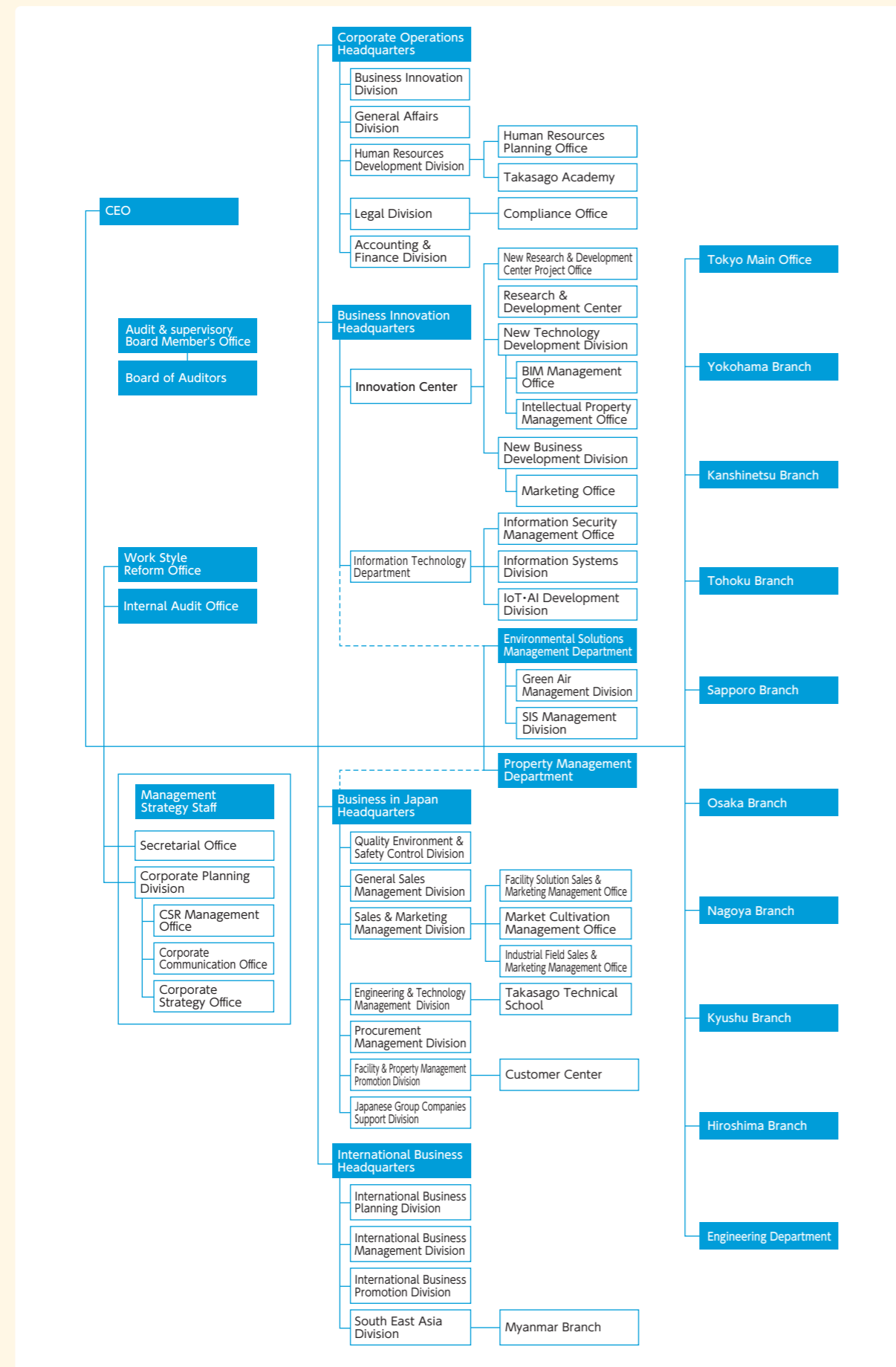
- Takasago Constructors And Engineers (Beijing) Co., Ltd. (China)
- Takasago Singapore Pte. Ltd. (Singapore)
- Thai Takasago Co.,Ltd. (Thailand)
- T.T.E. Engineering(Malaysia) Sdn. Bhd. (Malaysia)
- Takasago Thermal Engineering(Hong Kong) Co., Ltd. (Hong Kong)
- Takasago Vietnam Co., Ltd. (Vietnam)
- PT. Takasago Thermal Engineering (Indonesia)
- Takasago Engineering Mexico, S.A. de C.V. (Mexico)
- Integrated Cleanroom Technologies Pvt. Ltd. (India)

*In Myanmar, we established Myanmar branch of Takasago Thermal Engineering Co., Ltd.

Five group companies in Japan

- Takasago Marusei Engineering Service Co., Ltd.
- NIPPON PMAC CO., LTD.
- Nihon Kaihatsu Kosan Co., Ltd.
- Nihon Setsubi Kogyo Co., Ltd.
- Tomakomai District Heating Co., Ltd.

● Organization Chart (as of April 1, 2018)



● Stock information

Large shareholders (top 10) (as of March 31, 2018)

Names of shareholders	Number of shares held (1,000 shares)	Salient ratio (%)
Nippon Life Insurance Company	4,560	6.17
Dai-ichi Life Insurance Company, Limited.	4,231	5.73
Employee stock ownership of Takasago Thermal Engineering Co., Ltd.	3,377	4.57
Japan Trustee Services Bank (Trust Account)	3,252	4.40
The Master Trust Bank of Japan, Ltd. (Trust Account)	3,241	4.39
Bank of Tokyo-Mitsubishi UFJ, Ltd.	2,346	3.18
Takasago Kyoeikai	2,334	3.16
Mizuho Bank, Ltd.	2,177	2.95
Japan Trustee Services Bank (Trust Account 5)	2,178	1.60
Japan Trustee Services Bank (Trust Account 9)	1,023	1.39

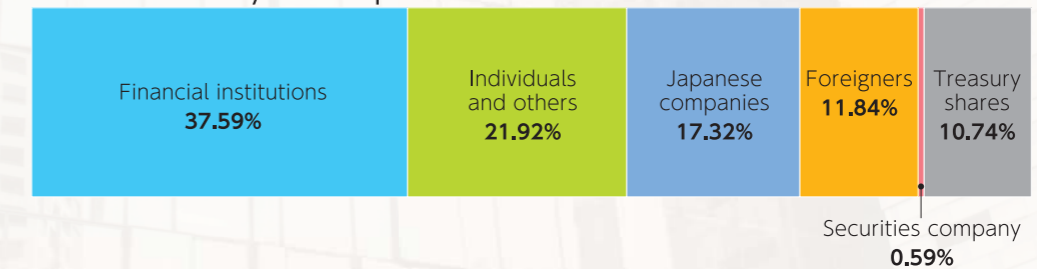
(Note)

1. The number of shares held is shown by rounding down to the nearest thousand shares.
2. The shareholding percentage is calculated based on the total number of the issued shares excluding the number of treasury stock (8,890,000 shares).
3. The shareholding percentage is indicated by rounding off to two decimal places.

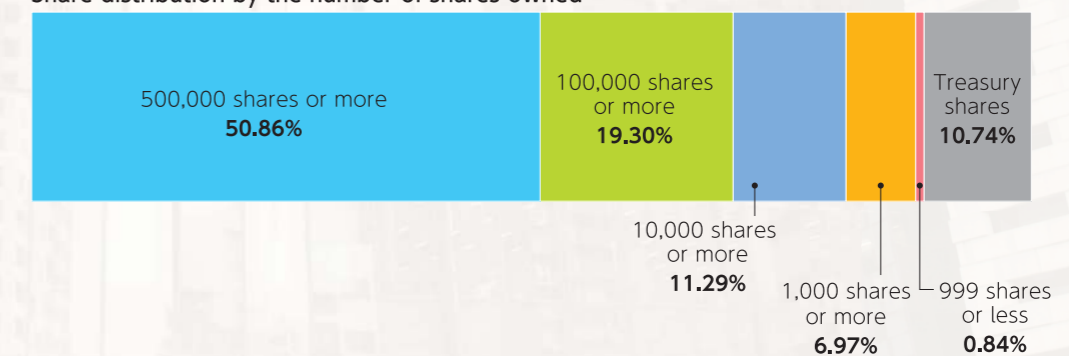
Situation of shares

- Total number of authorized shares 200,000,000 shares
- Total number of issued shares 73,874,773 shares (excluding 8,890,995 shares of treasury stock)
- Number of shareholders 5,812 (Y-o-Y Comparison at the end of the fiscal year -)

Share Distribution by Ownership



Share distribution by the number of shares owned



© Financial Information (consolidated)

* Rounded down to less than one million yen

(FY)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Business Results										
Orders Received (million yen)	236,642	206,016	207,283	221,431	253,918	264,280	255,648	265,301	273,464	288,646
Net sales (million yen)	214,215	209,298	213,175	215,464	248,430	237,389	243,582	251,291	260,204	289,933
Operating income (million yen)	7,681	5,751	5,205	5,214	3,570	7,780	7,727	9,289	12,383	16,362
Ordinary income (million yen)	8,161	6,438	5,910	6,695	4,760	9,109	8,582	10,602	13,427	17,461
Profit attributable to owners of parent (million yen)	2,805	4,341	3,003	4,269	2,186	4,011	5,196	6,650	8,665	11,804
Net income per share (yen)	34.27	54.03	38.72	55.23	28.74	53.24	69.28	89.40	117.83	160.41
Return on equity (%)	3.3	5.3	3.7	5.2	2.5	4.4	5.2	6.4	8.2	10.3
Return on Asset(ROA) (%)	4.0	3.3	3.3	3.6	2.4	4.3	3.9	4.7	5.8	7.0
Operating profit on sales (%)	3.6	2.7	2.4	2.4	1.4	3.3	3.2	3.7	4.8	5.6
R & D expenses (million yen)	923	916	935	996	843	768	791	918	903	1,064
Capital investment (million yen)	809	791	446	481	1209	962	2,019	2,325	862	3,303
Financial Condition										
Total assets (million yen)	196,879	188,151	175,166	197,434	207,465	217,132	226,878	224,367	234,716	265,326
Net assets (million yen)	81,218	82,713	81,786	85,771	93,932	97,416	108,362	104,613	111,574	124,484
Net assets per share (yen)	1,004.87	1,064.33	1,052.62	1,105.66	1,186.44	1,248.38	1,413.59	1,392.30	1,487.29	1,637.63
Net worth equity capital (million yen)	80,985	82,565	81,655	84,075	90,371	93,415	105,725	102,325	109,382	120,546
Equity ratio (%)	41.1	43.9	46.6	42.6	43.6	43.0	46.6	45.6	46.6	45.4
Cash flow										
Cash flows from operating activities (million yen)	2,430	8,604	△5,939	569	13,054	13,575	△3,423	△1,272	23,528	6,170
Cash flows from investing activities (million yen)	1,260	472	1,443	△556	△870	1,455	△4,921	△5,398	2,329	△5,685
Cash flows from financing activities (million yen)	△5,289	△4,783	△2,273	△1,157	△2,801	△3,285	△837	△2,215	△6,079	7,107
Dividend Situation										
Dividend per share (yen)	25	25	25	25	25	25	25	28	36	50
Payout ratio (%)	73.0	46.3	64.6	45.3	87.0	47.0	36.1	31.3	30.6	31.2
Dividend on equity ratio (DOE) (%)	2.4	2.4	2.4	2.3	2.2	2.1	1.9	2.0	2.5	3.2
© Non-financial Information										
Number of employees (number of persons)	2,461	2,562	2,617	4,085	4,312	4,405	4,471	4,576	4,831	5,714
The company alone (number of persons)	1,678	1,770	1,817	1,845	1,859	1,850	1,858	1,885	1,950	2,025
Domestic consolidated subsidiaries (number of persons)	444	481	524	1,909	1,908	1,938	1,940	1,999	2,040	2,120
Overseas consolidated subsidiaries (number of persons)	339	311	276	331	545	617	673	692	841	1,569
CO ₂ emissions caused by major manufacturing activities (t-CO ₂)	—	—	29,000	72,100	43,700	58,790	41,200	53,300	48,000	48,700
Final disposal rate of construction waste (excluding sludge) (%)	—	—	14	19	10	14	9	9	13	14

Head Office and Branches

● Head Office and Corporate Operation Headquarters	12F Shinjuku East Side Square, 6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022 Research & Development Center 3150, Iiyama, Atsugi City, Kanagawa 243-0213	TEL: +81-3-6369-8212 TEL: +81-46-248-2752
● Business Innovation Headquarters	12F Shinjuku East Side Square, 6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022	TEL: +81-3-6369-8203
● Business in Japan Headquarters	12F Shinjuku East Side Square, 6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022	TEL: +81-3-6369-8234
● International Business Headquarters	12F Shinjuku East Side Square, 6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022	TEL: +81-3-6369-8233
● Tokyo Main Office	12F Shinjuku East Side Square, 6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022	TEL: +81-3-6369-8221
Tokyo First Area Office	6F Marunouchi Nakadori Building, 2-2-3, Marunouchi, Chiyoda-ku, Tokyo 100-0005	TEL: +81-3-3211-4986
Tokyo Second Area Office	7F Shibuya Nichiei Building, 2-20-12, Shibuya, Shibuya-ku, Tokyo 150-0002	TEL: +81-3-5467-4777
Chiba Office	11F Makuhari Techno Garden Building D, 1-3, Nakase, Mihama-ku, Chiba City, Chiba 261-8501	TEL: +81-43-212-8780
Tama Office	10F Tachikawa Business Center Building, 2-38-5, Akebonocho, Tachikawa City, Tokyo 190-0012	TEL: +81-42-522-8131
● Yokohama Branch	26F Landmark Tower, 2-2-1, Minatomirai, Nishi-ku, Yokohama City, Kanagawa 220-8126	TEL: +81-45-224-1570
● Kanshinetsu Branch	17F Sino Omiya North Wing, 1-10-16, Sakuragicho Omiya-ku, Saitama City, Saitama 330-0854	TEL: +81-48-637-3500
Ibaraki Office	7F Kanyu Tsukuba Building, 15-4, Higashiarai, Tsukuba City, Ibaraki 305-0033	TEL: +81-29-863-7430
Niigata Office	6F Niigata Ekinan Center Building, 1-24 Yoneyama, Chuo-ku, Niigata City, Niigata 950-0916	TEL: +81-25-243-4881
Nagano Office	3F Odori Showa Building, 1403-3, Tsuruga Nabeyata, Nagano City, Nagano 380-0813	TEL: +81-26-234-7117
Tochigi Office	3F Utsunomiya TD Building, 1-1-11, Babadori, Utsunomiya City, Tochigi 320-0026	TEL: +81-28-622-0395
Gunma Office	5F Takasaki Peyoung Building, 22-29, Sakaecho, Takasaki City, Gunma 370-0841	TEL: +81-27-327-7082
Yamanashi Office	317-13, Otsumachi, Kofu City, Yamanashi 400-0055	TEL: +81-55-243-3381
Saitama Office	17F Sino Omiya North Wing, 1-10-16, Sakuragicho, Omiya-ku, Saitama City, Saitama 330-0854	TEL: +81-48-650-1202
● Tohoku Branch	5F Kowa Bldg., 2-4-1, Ichibancho, Aoba-ku, Sendai City, Miyagi 980-0811	TEL: +81-22-227-9552
Fukushima Office	6F Koriyama Daiichi Building, 2-13-23, Shimizudai, Koriyama City, Fukushima 963-8005	TEL: +81-24-934-8521
Yamagata Office	2F Kajo Central, 1-1-1, Jonanmachi, Yamagata City, Yamagata 990-8580	TEL: +81-23-608-5211
Kitatohoku Office	3F Iwate Seikei Building, 3-7-1, Chuodori, Morioka City, Iwate 020-0021	TEL: +81-19-624-6273
Aomori Office	Aomori Honcho Daiichi Seimei Building, 1-2-15, Honcho, Aomori City, Aomori 030-0802	TEL: +81-17-777-3702
Akita Office	4F Taiyo Seimei Akita Building, 3-1-12, Sanno, Akita City, Akita 010-0951	TEL: +81-18-863-0860
● Sapporo Branch	6F Nippon Life Insurance Sapporo Bldg., 4-1-1, Kita 3-jo Nishi, Chuo-ku, Sapporo City, Hokkaido 060-0003	TEL: +81-11-261-2531
Asahikawa Office	6F Dogin Building, 9, 2-jo, Asahikawa City, Hokkaido 070-0032	TEL: +81-166-24-2918
Kushiro Office	8F Shin-Kushiro Dogin Building, 10-2-1, Kitaodori, Kushiro City, Hokkaido 085-0015	TEL: +81-154-25-5421
Obihiro Office	5F TRAD Tokachi Building, 11-18-1, Odoriminami, Obihiro City, Hokkaido 080-0010	TEL: +81-155-23-5981
Hakodate Office	10-34, Kitahamacho, Hakodate City, Hokkaido 040-0078	TEL: +81-138-43-5280
Chitose Office	2F Terminal Annex Building New Chitose Airport, 987-22, Bibi, Chitose City, Hokkaido 066-0012	TEL: +81-123-46-3000
● Osaka Branch	20F Applause Tower, 19-19, Chayamachi, Kita-ku, Osaka City, Osaka 530-0013	TEL: +81-6-6377-2800
Kyoto Office	7F Kyoto Asahi Building, 65, Yanagihachimancho, Yanaginobamba, Okedori-sagaru, Nakagyo-ku, Kyoto City, Kyoto 604-8101	TEL: +81-75-255-4602
Kobe Office	5F Sannomiya Building Southern Building, 7-1-15, Gokodori, Chuo-ku, Kobe City, Hyogo 651-0087	TEL: +81-78-251-6771
Shiga Office	1-20-27, Kitano, Yasu City, Shiga 520-2361	TEL: +81-77-586-3788
Himeji Office	108, Saishoko, Himeji City, Hyogo 670-0981	TEL: +81-79-291-2141
Wakayama Office	4-4-21, Fukiage, Wakayama City, Wakayama 640-8137	TEL: +81-73-432-6501
Nara Office	3F JR Nara Denpo Building, 9-21, Sanjohonmachi, Nara City, Nara 630-8122	TEL: +81-742-34-7522
● Nagoya Branch	37F JR Central Towers, 1-1-4, Naeki, Nakamura-ku, Nagoya City, Aichi 450-6037	TEL: +81-52-582-8400
Shizuoka Office	8F Aoi Tower, 17-1, Koyamachi, Aoi-ku, Shizuoka, Shizuoka 420-0852	TEL: +81-54-252-1195
Hamamatsu Office	17F Hamamatsu Act Tower, 111-2, Itayamachi, Naka-ku, Hamamatsu City, Shizuoka 430-7717	TEL: +81-53-454-0090
Hokuriku Office	6F Sumitomo Seimei Kanazawa Kamitsutsumicho Building, 1-18, Kamitsutsumicho, Kanazawa City, Ishikawa 920-0869	TEL: +81-76-232-1381
Toyama Office	9F Toyama Kogin Building, 5-13, Sakurabashidori, Toyama City, Toyama 930-0004	TEL: +81-76-442-1121
Fukui Office	5F Senkyo Building, 3-7-1, Ote, Fukui City, Fukui 910-0005	TEL: +81-776-22-6522
Mikawa Office	1-19, Wakamatsucho, Kariya City, Aichi 448-0858	TEL: +81-566-21-1830
Toyota Office	3F Kyoya Building, 1-192, Miyukihonmachi, Toyota City, Aichi 473-0901	TEL: +81-565-26-1107
Mie Office	4F Tsusakaemachi Sanko Building, 4-255 Sakaemachi, Tsu City, Mie 514-0004	TEL: +81-59-225-6683
Gifu Office	681-1, Kawashimakodamachi, Kakamigahara City, Gifu 501-6025	TEL: +81-58-689-3954
● Kyushu Branch	9F Taihaku Center Bldg., 2-19-24, Hakataekimae, Hakata-ku, Fukuoka City, Fukuoka 812-0011	TEL: +81-92-431-8050
Kumamoto Office	7F Asahi Shimbun Daiichi Seimei Building, 4-7, Hanabatacho, Chuo-ku, Kumamoto City, Kumamoto 860-0806	TEL: +81-96-355-7031
Oita Office	15F Nissei Oita Ekimae Building, 1-1-18, Suehiromachi, Oita City, Oita 870-0027	TEL: +81-97-532-5947
Nagasaki Office	11F Sumitomo Seimei Nagasaki Building, 7-1, Manzaimachi, Nagasaki City, Nagasaki 850-0033	TEL: +81-95-823-2785
Kagoshima Office	7F Kagoshima Chuo Building, 1-10, Yamanokuchicho, Kagoshima City, Kagoshima 892-0844	TEL: +81-99-226-8222
Kitakyushu Office	2F Yamazaki Building, 2-1-22, Daimon, Kokurakita-ku, Kitakyushu City, Fukuoka 803-0811	TEL: +81-93-562-9505
Miyazaki Office	2F Uemura Building, 1-12-3, Hiroshima, Miyazaki City, Miyazaki 880-0806	TEL: +81-985-24-0599
Okinawa Office	4F Naha Kume Building, 1-32-7, Matsuyama, Naha City, Okinawa 900-0032	TEL: +81-98-868-9146

● Hiroshima Branch	7 & 8F Hiroshima Teppouchu Bldg, 10-12, Teppouchu, Naka-ku, Hiroshima City, Hiroshima 730-0017	TEL: +81-82-221-2871
Okayama Office	8F Okayama New City Building, 3-10, Togyachou, Kita-ku, Okayama City, Okayama 700-0826	TEL: +81-86-222-3313
Tottori Office	Yoshikata Kotani Tenant, 127-2, Yoshikata, Tottori City, Tottori 680-0842	TEL: +81-857-21-1145
Shikoku Office	3F Nihon Seimei Takamatsu Ekimae Building, 1-1-8, Kotobukicho, Takamatsu City, Kagawa 760-0023	TEL: +81-87-851-0820
Matsuyama Office	Shirasagi Heights, 515-4-102, Ikushimachi, Matsuyama City, Ehime 790-0051	TEL: +81-89-933-3443
Kochi Office	4-32, Minamishintacho, Kochi City, Kochi 780-8005	TEL: +81-88-831-4042
Tokushima Office	8F Tokushima JA Kaikan, 5-12, Kitasakoichibancho, Tokushima City, Tokushima 770-0011	TEL: +81-88-632-6404
Yamaguchi Office	4F MY Ogori Building, 1-8, Ogoritakasagomachi, Yamaguchi City, Yamaguchi 754-0014	TEL: +81-83-972-6489
Shimane Office	2F Nishimura Kanamonoten Building, 5-31-1, Higashihommachi, Matsue City, Shimane 690-0842	TEL: +81-852-67-6341
● Engineering Department	12F Shinjuku East Side Square, 6-27-30, Shinjuku, Shinjuku-ku, Tokyo 160-0022	TEL: +81-3-6369-8230

Group Companies of the Business in Japan

Takasago Marusei Engineering Service Co., Ltd.	MS Shibaura Bldg., 4-13-23, Shibaura, Minato-ku, Tokyo 108-0023	TEL: +81-3-3455-3600
NIPPON PMAC CO., LTD.	3150, Iiyama, Atsugi City, Kanagawa 243-0213	TEL: +81-46-247-1611
Nihon Kaihatsu Kosan Co., Ltd.	Higashi-Ote Bldg., 1-1-7 Uchi-Kanda, Chiyoda-ku, Tokyo 101-0047	TEL: +81-3-3292-6680
Nihon Setsubi Kogyo Co., Ltd.	Tokyo Sankei Bldg. 1-7-2, Otemachi, Chiyoda-ku, Tokyo 100-0004	TEL: +81-3-3279-1731
Tomakomai District Heating Co., Ltd.	1-11-25 Taiseicho, Tomakomai City, Hokkaido 053-0806	TEL: +81-144-74-3141

Group Companies of the International Business

Takasago Constructors & Engineers (Beijing) Co., Ltd. (China)	19M Oriental Kenzo Plaza, 48 Dongzhimenwai Ave. Beijing 100027, P.R. of CHINA	TEL: +86-10-8454-9488
Takasago Singapore Pte. Ltd. (Singapore)	1 Jalan Kilang Timor #08-01, Pacific Tech Centre Singapore 159303	TEL: +65-6737-3312
Thai Takasago Co., Ltd. (Thailand)	Bangna Towers C 16th Fl., 40/14 Moo 12, Bangna-Trad Rd., K. M. 6. 5, Bangkaew, Bangplee, Samutprakarn 10540 Thailand	TEL: +66-2-751-9695
T.T.E. Engineering (Malaysia) Sdn. Bhd. (Malaysia)	13th Floor, Menara Choy Fook On, No. 1B, Jalan Yong Shook Lin, Section 7, 46050 Petaling Jaya, Selangor Malaysia	TEL: +60-3-7955-5972
Takasago Thermal Engineering (Hong Kong) Co., Ltd. (Hong Kong)	17th Floor, Hong Kong and Macau Building, 156-157 Connaught Road, Central, Hong Kong	TEL: +852-2520-2403
Takasago Vietnam Co., Ltd. 6-1 Hanoi Office (Vietnam)	3rd Floor, AC Office Building, Lot A1A, Handicraft & Manufacturing Industrial Zone, Dich Vong Hau Ward, Cau Giay District, Hanoi, Vietnam	TEL: +84-24-6275-1932
6-2 Ho Chi Minh Office (Vietnam)	5th Floor, Vista Somerset Tower, 628C Ha Noi Highway, An Phu Ward, Dist. 2, HCMC, Vietnam	TEL: +84-28-6281-4475
PT. Takasago Thermal Engineering (Indonesia)	Gedung Mugi Griya, Jl. MT. Haryono, 4th Floor, Unit 406, Tebet, Jakarta Selatan 12810, Indonesia	TEL: +62-21-8370-8518
Takasago Thermal Engineering Co., Ltd. Myanmar Branch Office (Myanmar)	Room No. 810, Level-8, No. 37, La Pyi Wun Plaza, Alanpya Pagoda Road, Dagon Township, Yangon, Myanmar	TEL: +95-9-457-598-770
Takasago Engineering Mexico, S.A. de C.V. (Mexico)	Anillo Vial 2 Fray Junipero Serra, Pabellon Santa Fe #2601 Piso 4, Residencial Juriquilla Santa Fe, Queratro, QRO., Mexico	TEL: +52-1-442-325-4545 TEL: +52-1-442-217-1054
Integrated Cleanroom Technologies Pvt. Ltd. (ICLEAN) (India)	Integrated Cleanroom Technologies Private Limited, 3rd Floor, Ratna Arcade, Sy. No. 126-128, Kompally, Hydenabad - 500014 Telangana, India	TEL: +91-40-2716-5311 TEL: +91-40-2716-5316