TAKASAGO
CORPORATE
REPORT
2024
Environment-Creator™

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CORPORATE
REPORT
2024
Environment-Creator™

Environment-Creator™
Takasago
Thermal Engineering

Dedicated to the wellbeing of our families, our fellow human beings, and all life on Earth.

Purpose

With our revolutionary environmental innovations, we activate the Earth's future.

Takasago Thermal Engineering synchronizes the air to various spatial environments, creating endless possibilities.
Moreover, each employee is part of a tradition of pride and expertise built over the company's 100-year history, and we continue to expand the spirit of diversity and co-creation through harmonious relationships with others.
We consistently pioneer paradigm-shifting environmental innovations. We are able to create optimized spatial environments not only on this planet, but also in space. Dedicated to the wellbeing of our families, our fellow human beings, and all life on Earth.

Vision

Be an Environment-Creator™

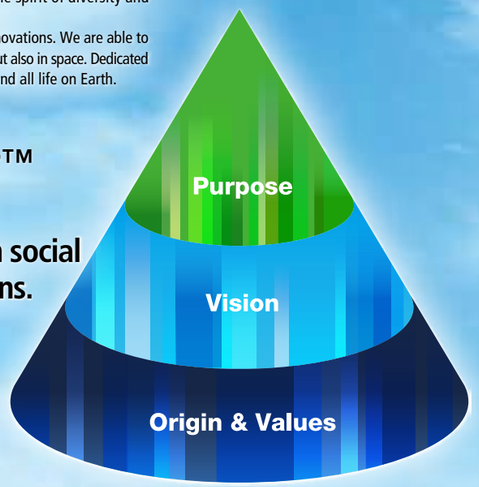
Origin

Contribute to society through social harmony and creative solutions.

Values

TakasagoWay

Beyond : Provide value beyond expectations.
Pride : Act with fairness, confidence, and pride.
Trust : Build trust to create enduring relationships.



New commercials are available to view.

Check out our site to watch the commercials featuring actress Rikako Yagi, who is growing her career with numerous appearances in dramas and movies.

Special commercial site
https://www.tte-net.com/cm2023/

About the Takasago Corporate Report

Relationship of Major Reporting Materials



Corporate Report
(This booklet)



Technology & Services
(website)

https://www.tte-net.com/
english/solution/index.html



Sustainability
(website)

https://www.tte-net.com/
english/sustainability/index.html

●ESG and CSR Activities Report
(including data section)
●Corporate Governance Report



Investor Relations
(website)

https://www.tte-net.com/
english/ir/index.html

<IR library>

●Brief note on the settlement of accounts
●Securities report
●Shareholder newsletter
●Financial results (English)
●Financial results presentation
(reference materials)



https://www.tte-net.com/
solution/pdf/gat.pdf

●Green Air® Tech

For details, see the website of Takasago Thermal Engineering
https://www.tte-net.com/

SUSTAINABLE DEVELOPMENT GOALS

WE SUPPORT UN GLOBAL COMPACT

Editorial Policy

The Takasago Thermal Engineering Group started to issue the Corporate Report (an integrated report) in 2017, and this is the eighth report. We have endeavored to ensure 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.

●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 "our Group," and Takasago Thermal Engineering Co., Ltd. alone is referred to as "Takasago Thermal Engineering" or "we."
●Reporting period
April 1, 2023 to March 31, 2024 *Some information before/after this period is included.
●Date of issue
October 2024
●Referenced guidelines
"International Integrated Reporting Framework," International Integrated Reporting Council (IIRC, now the IFRS Foundation)
"Guidance for Integrated Corporate Disclosure and Company-Investor Dialogues for Collaborative Value Creation," Ministry of Economy, Trade and Industry (METI)
"Sustainability Reporting Guidelines" (standards), Global Reporting Initiative (GRI)

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Message from the President

小島　和人

President and representative director
Kazuhito Kojima

Promoting carbon neutral technologies to spread our Purpose both inside and outside the company

In 2023, as Takasago Thermal Engineering celebrated its 100th anniversary, the company formulated its Group Purpose (referred to as "Purpose" hereafter) for its next century: "With our revolutionary environmental innovations, we activate the Earth's future." Along with this, each employee's vision was defined as "Be an Environment-Creator™." As a pioneer in air conditioning, Takasago Thermal Engineering has long worked on environment creation for buildings where people live and spend time. However, as Japan sets its sights on achieving carbon neutrality by 2050, going forward, we want to not only create building environments, but also environmental technologies that contribute to the global environment. With each of our employees serving as an Environment-Creator™, we will challenge ourselves to achieve "carbon transition for building environments" and "carbon neutrality of the global environment." This sentiment is incorporated in our Purpose. Currently, in addition to internal dissemination, we are actively communicating our Purpose and vision externally through TV commercials and other means. Customers who have viewed these commercials have responded with positive feedback, noting that "the initiatives are easy to understand." For sustainable growth going forward, we believe it is essential to undertake branding efforts to further spread our Purpose both within and outside the company. Internally, we plan to focus on transforming the mindset of every employee to act as an Environment-Creator™, treating our Purpose as their personal responsibility. Externally, we plan to focus on efforts to promote carbon neutral technologies as a concrete manifestation of our Purpose and vision.

In the Takasago Thermal Engineering Group's Long-Term Vision for 2040: Create our PLANET, Create our FUTURE, formulated in May 2023, we state our aim to establish our carbon neutrality business alongside our traditional construction business, and use digital transformation (DX) to link all four of our business domains, which also include equipment maintenance and management business as well as environmental equipment manufacturing and selling business. In our carbon neutrality business, we are focusing on developing new environmentally-friendly technologies, such as providing green hydrogen using renewable energy, with plans to release specific initiatives in a sequential process. Through such initiatives, we will visualize our contributions to the global environment and clearly convey the meaning and objectives of our Purpose both internally and externally.

Targeting consolidated ordinary income of 40 billion yen by 2040 through three phases of our Medium-Term Management Plan

Our Long-Term Vision aims to achieve consolidated ordinary income of 40 billion yen by 2040 through three phases of our Medium-Term Management Plan across our four business domains. The first phase, from 2023 to 2026, is positioned as "four years of foundation-building," during which the company will promote developing environmental technologies and optimizing its existing businesses. In the second phase, from 2027 to 2030, positioned as the "growth phase," the company will expand and achieve monetization for its carbon neutrality business and international business. The third phase, from 2031 to 2040, will be a "period of great

strides," where the company will increase the number of specific projects and strengthen its business expansion both domestically and internationally, establishing new business segments, including the carbon neutrality business, and recovering prior investments to realize its Long-Term Vision.

Currently, the company is advancing its growth strategies in both our core business, centered on the construction business, and growth business, represented by the carbon neutrality business.

Our core business aims for growth while maintaining current levels, improving efficiency, and reducing costs. This business is expected to generate the majority of the 40 billion yen target for consolidated ordinary income. However, the challenge posed by worsening labor shortages due to Japan's declining birth rate and aging population requires advancing business in a planned manner. Specifically, through the operation of T-Base®, a facility that serves as the core of our planning, production, and logistics, we aim to transform the construction process and promote DX, thereby achieving manpower- and labor-saving and productivity improvement in construction while addressing challenges and working toward our goals.

In our growth business, we are focusing on the carbon neutrality business, enhancing the manufacturing, maintenance, and management of environmental equipment by providing green hydrogen and green steam, upgrading district heating and cooling systems, and developing energy management systems (EMS) utilizing AI. Our aim is to achieve



sustainable growth not only in the construction business but also in the environmental equipment manufacturing, maintenance, and management fields. In addition, we are considering business expansion through investment in new technologies and M&A, particularly focusing on growth in overseas markets by strengthening cooperation with local partners. We are also working to establish clear measures and milestones to achieve consolidated ordinary income of 40 billion yen by 2040.

Using our 2026 Medium-Term Management Plan: "Step for the FUTURE" to build a foundation for growth toward the future

Shifting to a market-oriented approach required enhancing competitiveness to expand market share

Amid striking changes in the times and technological innovation, the market is demanding innovations and sustainable provision of technologies and services that meet needs. In this environment, in order for Takasago Thermal Engineering to achieve sustainable growth, we believe it is crucial to shift from a product-oriented approach to a stronger market-oriented mindset, increasing the number of projects involved in design and planning.

This shift aims to enhance employee engagement. Employees gain fulfillment and motivation by working on projects where they are directly appreciated by customers and can feel that they are helping. On the other hand, projects with limited opportunities for direct customer interaction make it difficult to generate this sort of value. I firmly believe that companies cannot grow without improving employee engagement. To make this belief a reality, we need to instill the market-oriented approach and strengthen our projects.

Additionally, as the promotion of carbon neutrality and the expansion into overseas markets increase our business opportunities, it is essential to not only monitor market trends domestically and internationally but also pay attention to various underlying risks that have not yet surfaced.

For example, recently in overseas markets, it is necessary to foresee and take preventive measures against various risks such as recalls when manufacturing and selling machinery with newly introduced technologies, increased costs due to rising raw material and labor expenses, and differences in legal regulations between countries.

On the other hand, in the domestic market, business risks include the increasing fragmentation of social demands and the needs of customers and consumers, as well as the difficulty of passing on the rising costs of materials and equipment to prices.

In other words, the key to achieving our Long-Term Vision for 2040 lies in how well we can grasp the detailed different needs of each market, both domestic and international, and foresee and overcome the latent risks hidden within them.

Based on this recognition of the environment, the Takasago Thermal Engineering Group will address various anticipated risks while advancing the promotion of carbon neutral technologies and spreading and strengthening the market-oriented approach in order to leverage business opportunities.

In addition, we expect to expand environment-related businesses through the provision of sustainable energy solutions, and we believe there are significant growth opportunities in overseas markets, particularly in Southeast Asia. As we shift from a mindset of "creating what we do not have ourselves" to "creating together with everyone," we will strengthen our competitiveness in the global market and expand our market share through collaboration with local partners.

Our connecting (Tsunagu) businesses are essential for establishing the carbon neutrality business

Each of the stages of energy generation, storage, and consumption is involved in establishing our carbon neutrality business, and we also envision an overall concept to connect (Tsunagu) these three stages. Specifically, we are working to optimally meet the demand for green hydrogen by using water electrolysis equipment to convert green electricity generated from sources like solar power into hydrogen and store it. At the same time, we are actively developing the Takasago proprietary energy management system (EMS) to connect the production, storage, and use of green energy.

In addition, various research and development efforts are underway in areas such as technologies for the production and utilization of green hydrogen using renewable energy. These technologies will innovate energy supply in factories and urban areas, and contribute to reducing environmental impact. The demand for green hydrogen in factories is particularly high, and through synergies with our existing businesses, we expect to be able to provide sustainable and efficient solutions.



Our current Medium-Term Management Plan is achieving steady progress Entering a phase of active growth investment expansion

In our current Medium-Term Management Plan, growth in the industrial business is particularly notable, with the consolidated gross profit margin for the fiscal year ended March 31, 2024 reaching 16.5%, significant improvement in productivity, and enhanced company-wide operations leading to greater collaboration between branches and resources optimization. Going forward, we aim to further improve productivity by promoting DX and utilizing AI, while advancing the operation of T-Base® as well as PLANETS, a platform that integrates processes from design to construction and operational management.

In addition, with regard to capital allocation and investment strategies, we plan to make growth investment worth over 71 billion yen over the four-year period from FY2023 to FY2026, in line with rising net income. In addition to investing about 15 billion yen, approximately 1.5 times the initial plan, for hiring and developing employees and transforming systems, we plan to allocate funds to promote DX, further expand the T-Base®



project for construction process reform, establish SPCs for the carbon neutrality business, conduct research and development of advanced water electrolysis equipment, and carry out M&As and global investments. With regard to cross-shareholdings, our Medium-Term Management Plan states our objective to reduce the net asset ratio to 15% or less by FY2026. We will carefully explain our policy to the customers who hold shares and proceed with sales upon gaining their understanding.

Record business results in the fiscal year ended March 2024
Base wages increased by over 5% in April 2024

For the fiscal year ended March 2024, we achieved record highs in various performance indicators and reached our highest profit to date. This result reflects the gradual success of our growth strategies thus far, with surfacing outcomes in performance. In the fiscal year ending March 31, 2025, we plan to enhance corporate value from a long-term perspective by aiming to achieve sustainable growth through continuous improvements and new initiatives.

The main factors behind the improved performance for the fiscal year ended March 31, 2024 are increased productivity due to optimized company-wide order receiving activities and process improvements in the construction structure, as well as the gradual strengthening of such structure. Our site management was previously handled by branches, centered on the site manager. However, since 2020, we have shifted to a style that considers "company-wide optimization," where the main office also monitors the process from order receipt to construction and profit management, primarily for large-scale projects. This has reduced inefficiencies and overburden in staffing and improved the efficiency of on-site management.

In addition, under the principle that "good work creates valuable human resources," we encourage employees to tackle new challenges and are conscious of providing an environment where all employees can do so. We emphasize the pursuit of fulfillment in manufacturing especially in our core business.

In terms of human resource utilization, we are focusing on securing, educating, and retaining core talent. By encouraging employees to take on new challenges, we are creating an environment where each employee can grow and feel fulfilled. Moreover, we are reconsidering our approach to training and development from the ground up. Our Takasago Academy, established to train trusted site agents, is also fundamentally revising its training approach to be more site-oriented.

With regard to our wage system, while maintaining certain disciplines, we design the system with the aim of rewarding employees for their efforts. We are also focusing on improving the working environment, valuing the voices of each employee, and gathering as many opinions as possible to reflect them in our efforts, thereby providing a more comfortable environment. In fact, we implemented an average base wage increase of over 5% in April of this year. We plan to continue communicating with the labor union and reviewing compensation, with a particular focus on mid-level employees in their 30s to early 40s who support the company. Through these initiatives, we aim for sustainable growth and improved employee engagement.

Continued sustainability management ensures highly transparent and efficient corporate operations

Further strengthening the company through enhanced corporate governance and securing a diverse workforce

As part of our efforts to enhance corporate governance, we transitioned to become a company with an Audit & Supervisory Committee following the General Meeting of Shareholders in June 2023, and are working to strengthen oversight of the directors' execution of duties. Among our 12 directors, seven are outside directors. Both the chair of the Board of Directors and the chair of the Governance, Nomination and Compensation Committee are also outside directors. This organizational change aims to ensure legality, transparency, and swiftness of management, while improving management efficiency.

In addition, we began conducting an effectiveness evaluation for the Board in FY2023. This involves interview surveys conducted by employee representatives concerning all directors to evaluate whether the Board is fulfilling its roles and responsibilities. The goal of this evaluation is to enhance management efficiency. The results of the FY2023 evaluation have been published on our website, and we plan to actively disclose results for FY2024 and beyond as well.

The immediate challenge in our sustainability management is securing diverse human resources and promoting the active participation of female employees. Currently, we have a low ratio of female employees and managers, with only one female director, who is an outside director. While it is difficult to change this situation in a short period of time, it is important for the entire industry to work toward transforming construction into a field where women can thrive, and Takasago Thermal Engineering intends to take the lead in promoting this.

Sincerely approaching our business and management while valuing the concepts of the TakasagoWay

Since its founding, Takasago Thermal Engineering has provided quality that goes beyond the specifications as engineers, delivering value that exceeds customer expectations. If the quality we provide contributes to enhancing our clients' corporate value, it will also lead to an increase in our own corporate value. This mindset is encapsulated in the TakasagoWay. Our philosophy system is defined as the values and action guidelines that serve as the foundation for our Purpose and vision. Corporate value, of course, cannot be judged solely by market capitalization related to stocks or financial standing. In addition to investing in our main business, we make sure to invest in human capital. We can only be evaluated when the results and outcomes of these investments are brought to our core and carbon neutrality business sites as well as cutting-edge research sites, allowing us to provide value-added products and services to customers.

The Takasago Thermal Engineering Group will continue to take on new challenges, conduct management in line with our Purpose that states,



"With our revolutionary environmental innovations, we activate the Earth's future" and our vision to be an Environment-Creator™, and sincerely pursue the happiness of our clients. To achieve this, it is essential that each employee feel a sense of happiness in their work. As employees feel fulfilment and continue to grow, we will realize the collective happiness of the organization. This organizational happiness is the source of our value provision and ultimately leads to the happiness of our clients. We are committed to continuing to provide high-quality services and innovative technologies to our customers by enhancing the growth and engagement of our employees. Moreover, our mission as a company is to develop technologies that contribute to the global environment and promote their widespread adoption in society. We are actively promoting the use of renewable energy and offering products with less environmental impact. Furthermore, by having all employees share our Purpose and continue taking on new challenges, we aim to drive the growth and development of the entire company. I hope you will look forward to our future developments.

Our Value Creation Story

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Photo courtesy of TAISEI CORPORATION

History of Our Value Creation

November 2023 marked the 100th anniversary of our founding in 1923.
Since its founding, the company, mainly covering HVAC system construction and its peripheral fields, has engaged in technological advancement through designs and construction living up to customers' trust and the development and operation of optimum systems and devices. Using technologies accumulated so far, we aim to achieve a decarbonized and sustainable society, and will pursue technological advancement.

From 1923

Our founding and development of our first domestic products

On November 16, 1923, our predecessor Takasago Heating Works Co., Ltd. was established. In 1924, the year after the company was founded, it installed a temperature and humidity control system in a residence, which is said to be the first air-conditioned private residence in Japan. In 1927, we constructed Mitsukoshi Hall (currently Mitsukoshi Theater), which attracted attention as the first fully air-conditioned and heated theater in Japan.

Large air conditioners of the day that were needed to create cold air had to be imported, and were very expensive because of transport expenses and engineers' travel expenses added to the price of the main body. Due to this, our first president Masanosuke Yanagimachi traveled to the United States. He developed the first domestically-produced product Takasago Ebara turbo refrigerator after years of research. In addition, we developed Japan's first heat pump heating and cooling system and industrial cooling tower.


First domestically-produced cooling tower


Takasago Ebara turbo refrigerator

From 1945

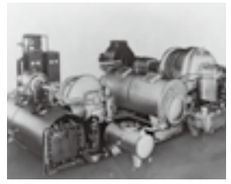
Contributing to the postwar reconstruction and period of high economic growth

In 1943, our company name was changed to the current name, Takasago Thermal Engineering Co., Ltd.

Large-scale construction increased as Japan entered the period of rapid economic growth after WWII. We installed air conditioning systems for numerous buildings, including the Tekko Building No. 1 in Yaesu, Tokyo, Tetsudo Kaikan building at the Yaesu exit of Tokyo Station, and Tokyu Kaikan in Shibuya. Later, our company constructed the World Trade Center Building (40 floors above ground in Hamamatsucho, Tokyo), the second skyscraper ever built in Japan.



1932
Japan's first heat pump heating and cooling system was completed



1940
-75°C ultra-low-temperature equipment and ultra-low-temperature turbo refrigerators were developed and delivered

From 2000

Optimum operations of HVAC and development of energy-saving technologies

In 2005, in response to growing social momentum for energy conservation, we developed the data gathering analysis software GODA® to keep track of the operational state of an HVAC system adequately for its resulting optimum operations. We also developed the Swirling Induction type TAKASAGO HVAC System SWIT® to improve the comfort level of the living environment in large spatial facilities like factories, which also enabled improvement in energy-saving performance and a reduction in system costs. Furthermore, we developed the TCR-SWIT® next-generation cleanroom that enables high-precision control of indoor environments in large-scale cleanrooms, which was previously challenging. In addition to maintaining environments with high precision, this cleanroom also achieves energy efficiency across the entire system and reduces the space required for air conditioning units. Currently, this cleanroom is increasingly being introduced across a wide range of fields, such as semiconductors (including front-end processes) and electronic components.


SWIT®


TCR-SWIT®



Based on the information technology of the time, we developed the world's largest open building automation (BA) system. This was implemented as the central monitoring and control system for Roppongi Hills Mori Tower.

Roppongi Hills Mori Tower

From 2010

Technology made significant advances in the 2010s. The issue of optimizing data center air conditioning systems emerged due to the increased heat generated because of larger amounts of data being processed and the improved performance of ICT equipment. In 2011, as an air conditioning system that fundamentally solves this issue, we jointly developed the IDC-SFLOW® wall outlet type air conditioning system.

1923 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2023

From an environmental engineering company to an Environment-Creator™ company

From 1960

Industrial development and technological advancement (development of cleanrooms, etc.)

In response to the growing demand for clean, contaminant-free air at manufacturing and medical care sites in Japan, Takasago Thermal Engineering quickly entered the cleanroom market right from the start. As exchange with foreign countries resumed after WWII, we took every opportunity to gather knowledge of new technologies and products. With the support of an American company, we constructed our first full-fledged cleanroom, the Nihon Denso cleanroom research building, in 1968.

In the 1990s, with the booming DRAM semiconductor market, mass production of lithium-ion batteries began in Japan. A low-humidity environment is essential for the production of these lithium-ion batteries. In order to generate this unique environment, we developed the low humidity environmental control room known as Dry Room®, which is still used to manufacture lithium-ion batteries.


Takasago laminar flow cleanroom

From 1970

Promoting overseas business for globalization

We started our global business by opening a Singapore resident office, a Macao branch, and a Hong Kong branch in 1974. In order to expand our technology overseas beyond national borders, we established our Overseas Business Headquarters in 1980. In September 2018, we expanded our business to 10 countries, mainly in Asia, spreading our area of contribution across national borders.

From 1980

Development of innovative thermal storage technology

Focusing on the supercooling phenomenon, where a liquid does not solidify even when its temperature falls below the freezing point, we successfully developed a new technology called Super Ice System (SIS®) that continuously generates sherbet-like ice.

This ice thermal storage technology was innovation aimed at energy-saving in air conditioning and reducing running costs.


Super Ice System

From 2020

Tackling social issues as an Environment-Creator™

Since the development of our Super Ice System ice thermal storage in 1988, we realized the need to expand the use of energy resources further in the future, and around 2006, we began developing hydrogen utilization technology. Through now, we have accumulated experience through demonstration projects with the Japan Aerospace Exploration Agency (JAXA), the National Institute of Advanced Industrial Science and Technology, and the Ministry of the Environment. In April 2020, we launched Hydro Creator®, a solid polymer water electrolyzer that generates hydrogen and oxygen gas from electricity.


Hydro Creator®


Takasago Thermal Engineering Innovation Center

The Takasago Thermal Engineering Innovation Center opened in Tsukubamirai City, Ibaraki Prefecture in 2020. We have achieved carbon neutrality in this suburban area by combining solar power, biomass energy, underground water heat utilization, and battery storage. The entire site has attained ZEB Ready status, and the office building has achieved ZEB status.

With the Center serving as a demonstration site for new environmental technologies, operations aim to feed back the results to society while generating open innovation through connections with the local community and external partners.

In 2022, we opened T-Base® with the aim of transforming the way construction is carried out by shifting from on-site one-off production, namely conventional site-by-site "construction management," to standardized and platform-based "production management." Our goals are to reduce manpower and labor in construction, lower environmental impact, and promote the active participation of diverse human resources, contributing to solutions for the various challenges faced by the construction industry.


T-Base®

2023

Thank you for 100 years

On the occasion of our 100th anniversary, we formulated our Group Purpose: "With our revolutionary environmental innovations, we activate the Earth's future." The formulation process incorporated various measures that emphasized proactive employee participation, gathering their thoughts and feelings about the company and society. With a strong emphasis on empathy, we repeatedly examined the company's mission and formulated our Purpose. Going forward, we will continue to tackle various social challenges to solve them through our business.

The Value Creation Process

Achieving environmental creation needed by the Earth and people as an Environment-Creator™.

INPUT

Management resources that support the value creation

Intellectual capital (non-consolidated)

Number of patents **784** (as of the end of March 2024)

Awards given by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan **137**

Number of qualified employees

Professional engineers **31**

Qualified persons for energy management **172**

First-class architects **49**

First-class plumbing work operation and management engineers **1,191**

*Current employees as of March 2024

Financial capital

Total assets **340.1** billion yen

Shareholder's equity **164.3** billion yen

Equity ratio **48.3**% (as of the end of March 2024)

Social capital

Cumulative income from completed construction Approx. **9.5** trillion yen

Number of Kowakai* companies **2,120**

Human and organizational capital

Number of Group employees **5,606** (as of the end of March 2024)

Overseas bases **1** branch **9** overseas subsidiaries

Domestic business sites **57**

Natural capital (non-consolidated)

Energy consumption (crude oil equivalent) **2,096.5 kl**

*Kowakai was organized with our partner companies as the members in 2003 to enhance cooperation with the partner companies working on the construction sites. The organization shares information on quality, health and safety, environmental conservation and other subjects of management with Takasago Thermal Engineering and also gives such information to the members to ensure proper management.

Takasago Thermal Engineering's one-stop services

Research and development → Planning and design → Construction and operational improvement → Maintenance management → Renewal

Strengths of the Takasago Thermal Engineering Group

- Human resources
- Value chain
- Technologies

4 business domains

- Environmental equipment manufacturing and selling business
- Carbon neutrality business
- Construction business
- Equipment maintenance and management business

Materiality

- Climate and nature-related
- Wellbeing
- Business infrastructure

Alignment of business domains through **DX**

Philosophy system	Purpose	Vision	Origin & Values
	With our revolutionary environmental innovations, we activate the Earth's future.	Be an Environment-Creator™.	Contribute to society through social harmony and creative solutions. (corporate mission) TakasagoWay (action guidelines)

OUTPUT

Achievements from business activities

- Provision of comfortable spaces friendly to people
- Environment for the manufacturing of high-quality products
- The most advanced energy-saving operation
- Technologies that contribute to the global environment

Results in FY2023

(as of the fiscal year ended March 31, 2024)

- Consolidated net sales ····· **363.3** billion yen
- Consolidated ordinary income ····· **26.1** billion yen
- ROE ····· **12.8**%
- Consolidated dividend payout ratio ····· **43.6**%
- Dividend per share ····· **129** yen
- Bond rating (JCR) ····· **A**
- CO_2 emissions reduction (from FY2019) ····· **12.3% reduction** (Scopes 1 and 2: Direct emissions, indirect emissions from purchased energy)
  ····· **14.3% increase** (Scope 3: Other indirect emissions)

OUTCOMES

New value creation

Intellectual capital (non-consolidated)

- Improvement in environmental technologies that help realize a decarbonized society or circular economy
- Strengthening of the structure for innovation (open innovation)
- Reform of the construction process

Financial capital

- Enhancement of medium- to long-term shareholder value
- Stock dividends

Social capital

- Strengthening of the relationship of trust with Kowakai and stakeholders
- Contribution to the solution of local communities' challenges

Human and organizational capital

- Development and production of employees with advanced expertise
- Improved job satisfaction

Natural capital

- Reduction in environmental impact **61,931t-CO_2**

Sum of reduction shared as a significant reduction example in the CO_2 subcommittee

Environment-Creator™

Sustainable enhancement of corporate value through a cycle of value creation

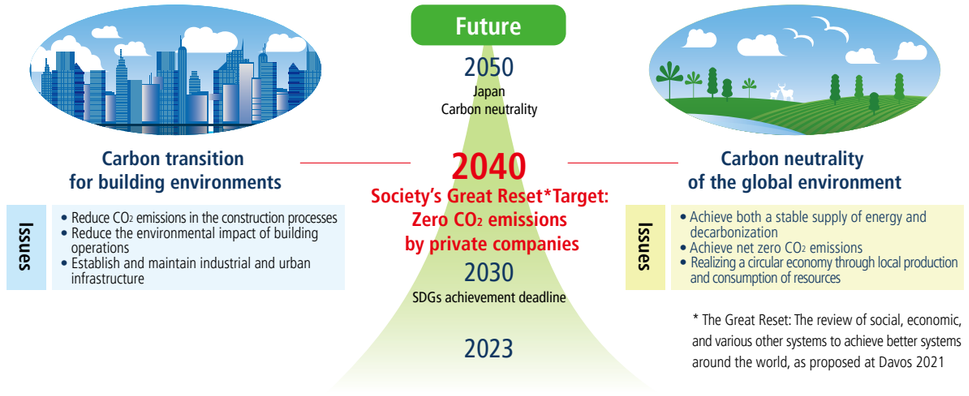
Takasago Thermal Engineering Group's Long-Term Vision for 2040

As the business environment surrounding our company undergoes dramatic changes, from a long-term perspective, we predict that the year 2040 will be a major turning point in terms of the structure of society due to population and climate change issues. With an eye on the changes ahead, the Takasago Thermal Engineering Group has formulated our Purpose and Long-Term Vision for 2040 in order to create sustainable growth and added value by leveraging our diverse values. As Environment-Creators™, each executive and employee of the Takasago Thermal Engineering Group will take on the challenge of solving the issues of society in the future and embody our commitment to shaping the future with our partners.

Takasago Thermal Engineering Group helps resolve future social issues

The Japanese government's "2050 Carbon Neutrality Declaration" has spurred companies to further accelerate their carbon neutrality and ESG initiatives toward realizing a decarbonized society.

In order to solve social issues for the future to come, we are making efforts for "carbon transition for building environments" and "carbon neutrality of the global environment" by leveraging our abundant experience, achievements, technologies, and knowledge we have cultivated through our HVAC business.



Four business domains aimed for in the Takasago Thermal Engineering Group's Long-Term Vision for 2040

Toward resolving the issues of society in the future, we will aim to be a company that creates environmental value by improving our business efficiency with our existing air conditioning technology at the core, expanding our environmental creation business areas, and having each of our employees continue to take on challenges as Environment-Creators™, our Group's vision, together with diverse human resources inside and outside the company.

To this end, we have established four business domains based on future social changes. By aligning them through digital transformation (DX), we will transform ourselves into a corporate group that can realize solutions to the issues of society in the future.

4 business domains

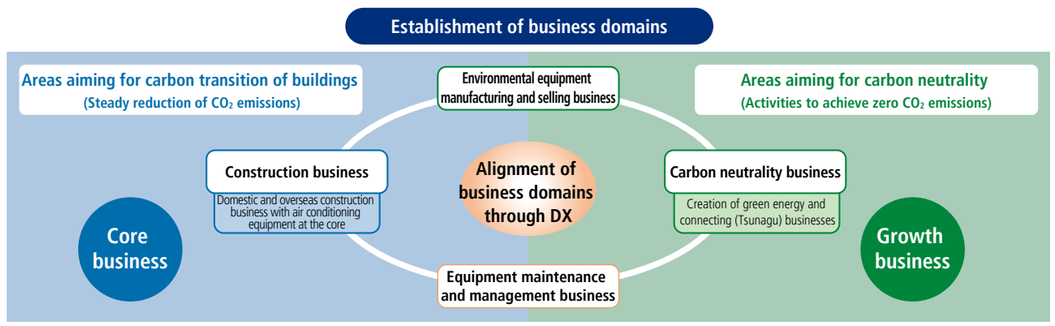
1 **Construction business:** Based on the technology we have cultivated for 100 years in Japan and overseas, with air conditioning equipment at the core, we will realize carbon neutrality in building environments while constructing building environments that are optimal for our customers.

2 **Equipment maintenance and management business:** As the Takasago Thermal Engineering Group has expertise in building equipment, we will implement activities toward achieving carbon neutrality in the operational phase of buildings, which accounts for the majority of environmental impact.

3 **Environmental equipment manufacturing and selling business:** In order to reduce environmental impacts, we will manufacture and sell products used in air conditioning equipment and industrial air conditioning, as well as develop, manufacture, and sell products that optimally design air conditioning units suited to customers' facilities and that achieve green energy and energy conservation.

4 **Carbon neutrality business:** We will optimize each of the stages of energy generation, storage, and consumption for customers who aim to become carbon neutral.

We will develop businesses that contribute to the global environment by combining air conditioning technology with carbon neutral technology.



Three phases toward realizing our Long-Term Vision for 2040

We will advance toward 2040 in the following three phases.

During the first four years (2023-2026), we will use our construction business revenue base as a foundation and utilize the funds we gain from it for investment aimed at building up our business domains toward resolving issues in society in the future.

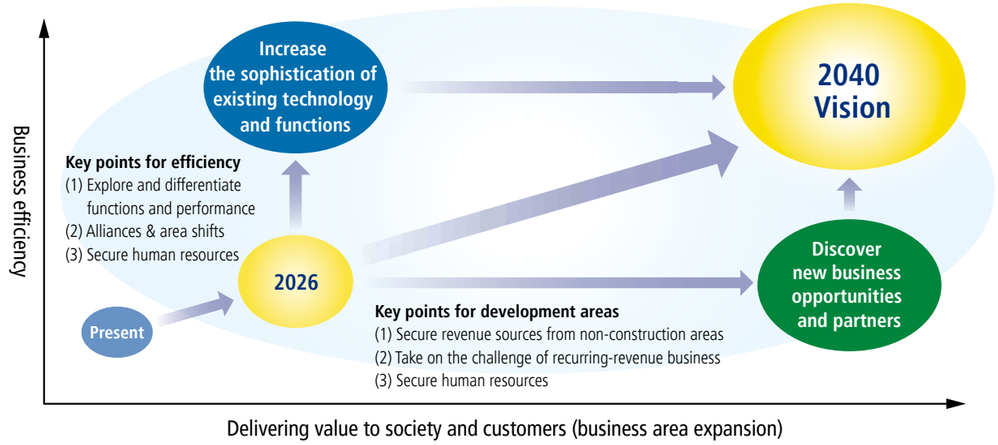
The following four years (2027–2030) will be positioned as four years to achieve growth. While we see growth in our construction business overseas, for which growth is expected, we will confirm the effects of business investment toward carbon neutrality and the monetization of environmental technologies and products we have developed using our technology.

The final 10 years (2031–2040) will be positioned as 10 years to make rapid progress. We will establish business segments that contribute to carbon neutrality and make them new pillars of earnings as future businesses.

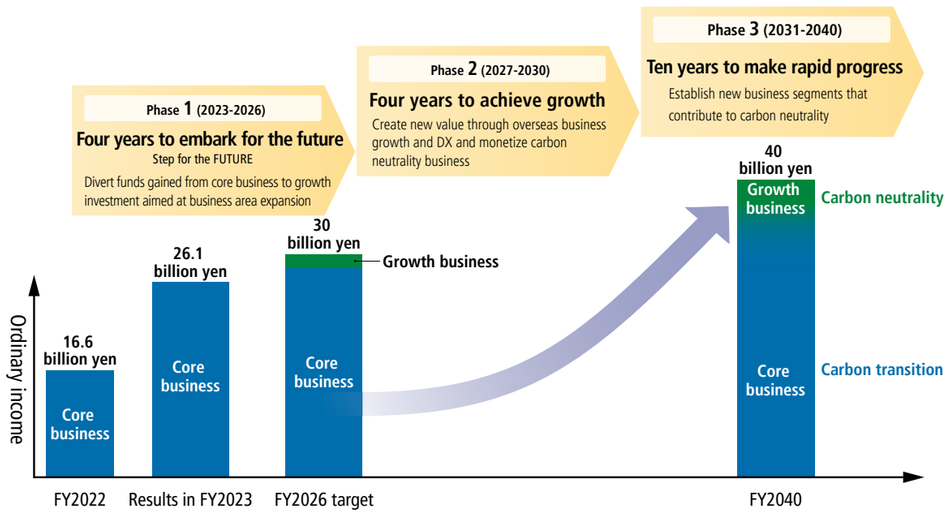
Through the three phases, we aim to achieve ordinary income of 30 billion yen* in the first phase that ends in FY2026. (*Upwardly revised KGI value as of May 2024)

Then, we will aim to become a corporate group that envisions ordinary income of 40 billion yen in FY2040.

Roadmap to achieve our Long-Term Vision for 2040



Takasago Thermal Engineering Group's Long-Term Vision for 2040: Create our PLANET, Create our FUTURE



2026 Medium-Term Management Plan

The Group will proceed with its efforts to achieve its Long-Term Vision for 2040 in three phases. The first four years of the first phase are positioned as "Step for the FUTURE: Four years to embark for the future." During this time, we will use our revenue base from our core business, which is supported by T-Base® (p. 21) and DX (p. 23), as a foundation and utilize the funds and data we gain from it for continuing investment aimed at building up our future business.

Basic policies and strategies of the 2026 Medium-Term Management Plan

Basic policies of the 2026 Medium-Term Management Plan: Step for the FUTURE-Four years to embark for the future-

Takasago Thermal Engineering Group's Long-Term Vision for 2040

Phase 1 (2023-2026)	Phase 2 (2027-2030)	Phase 3 (2031-2040)
Four years to embark for the future	Four years to achieve growth	Ten years to make rapid progress

Basic policies

Business model transformation

We aim to secure stable earnings by strengthening our earning power in the construction business, which is the backbone of our Group.

We will then invest the earnings generated by the construction business to build businesses that will lead to long-term added value.

Company and human resource transformation

The source of our Group's value creation is the executives and employees working for Takasago Thermal Engineering. We will develop human resources to transform our business model and encourage them to put this business model into practice.

01 Enhance earning power based on our construction business	Strengthen on-site capabilities to improve earning power
02 Establish business that will lead to long-term added value	Promote carbon neutrality with environmental technologies
03 Invest in human capital, the source of our value creation	Invest in human resources to achieve business model transformation

Under the basic policies of the 2026 Medium-Term Management Plan, we will focus on 1. Enhance earning power based on our construction business, 2. Establish business that will lead to long-term added value, and 3. Invest in human capital, the source of our value creation. The Takasago Thermal Engineering Group will transform itself to be an Environment-Creator™ company. We will also invest in human resources and provide organizational support so that each executive and employee who implements these policies will become an Environment-Creator™.

Partial (upward) revision of target management indicators in the 2026 Medium-Term Management Plan

Initially, in FY2026, the final year of the Medium-Term Management Plan, our KGIs were to achieve consolidated ordinary income of 20 billion yen and consolidated ROE of approximately 10.0%. In terms of our non-financial indicators, we aimed for Scopes 1 and 2 CO_2 emissions reduction of 16.8% compared to FY2022 in order to realize a decarbonized society, which should be a priority for our Group. To achieve this goal, we set KPIs and have been working on them.

In the first fiscal year of the plan, FY2023 (for the period ended March 31, 2024), our performance exceeded some of the originally set final fiscal year numerical targets due to the successful implementation of the optimized company-order receiving strategy and measures to enhance our earning power at the construction phase.

As a result, we have revised upward some of the numerical targets for FY2026, comprehensively taking into account the future business environment and the progress of our measures.

Numerical targets for the Medium-Term Management Plan (2023-2026) (the figures in red are the revised targets; those in parentheses were the original target figures as of May 2023)

KGIs (FY2026)

Enhance earning power	Improve capital efficiency	Contribute to the global environment
Consolidated ordinary income: 30 billion yen (20 billion yen)	Consolidated ROE: Approximately 12% (approximately 10%)	Reduce CO_2 emissions (compared to FY2022) Scopes 1 and 2: -16.8%*1 Scope 3: -10.0%*2

KPIs

01 Enhance earning power based on our construction business	02 Establish business that will lead to long-term added value	03 Invest in human capital, the source of our value creation
Achieve a consolidated gross profit margin of 17.0% (15.0%) or more by improving our received-order profit margin and enhancing cost management	Achieve the social implementation of green energy supply equipment (equivalent to a total of 5,000 kW*3) Propose a carbon transition of -15,000 t-CO_2 per year	Increase of 220-250 employees (200 employees)*4 Develop professional human resources Reform our personnel management system Increase investment by 15 billion yen (10 billion yen)*3 through the above measures

*1 The reduction rate necessary to achieve the 1.5°C target *2 The reduction rate for Scope 3 in accordance with the target of *1 above *3 The total for the period covered by the Medium-Term Management Plan *4 Compared to FY2022 as of the end of FY2026

2026 Medium-Term Management Plan: Background of the partial review of target management indicators (KGIs and KPIs)

2023 KGI and KPI results for the 2026 Medium-Term Management Plan → Some of the targets for the plan's final fiscal year, FY2026, were achieved ahead of schedule

- Progress of the optimized company-wide order receiving strategy and measures to enhance earning power at the construction phase
- Strong construction demand in both manufacturing and non-manufacturing sectors
- Further investment in "human capital as a source of value co-creation" and "establishment of the four business domains."

	Item	Start of FY2023 plan	Results in FY2023	FY2026 initial plan	FY2026 plan (after revision)
KGIs	Consolidated ordinary income	17 billion yen	26.1 billion yen	20 billion yen	30 billion yen
	Consolidated ROE	Approximately 9.0%	12.8%	Approximately 10%	Approximately 12%
KPIs	Consolidated gross profit margin	13.7%	16.5%	15% or more	17% or more
	Investment in human capital	—	—	10 billion yen increase	15 billion yen increase

Progress and review of the first fiscal year (FY2023) of the Medium-Term Management Plan

01 Enhance earning power based on our construction business

- Assessed that a substantial improvement in profitability was achieved through budget improvements for carried-over construction projects and a reduction in large, low-profit projects.
- Predicted that the favorable market conditions will continue throughout the Medium-Term Plan period.

We aim to achieve a consolidated gross profit margin of 17.0% or more (before revision: 15.0%) by improving the profit margin on orders received and increasing productivity of construction work (T-Base® (p. 21), etc.).

02 Establish business that will lead to long-term added value

- The development of "large-scale water electrolysis equipment" and "EMS (for water electrolysis equipment)," which are key to creating the carbon neutrality business, is progressing toward a market launch in FY2025.
- Aiming to achieve 100 million yen in ordinary income from the carbon neutrality business by FY2026, concrete projects (including in Hokkaido) are currently being planned and developed. Priority is also being given to the business in terms of allocating human resources.

Aiming to build our carbon neutrality business (p. 25), a future growth business, we will implement in society green energy supply equipment equivalent to a total of 5,000 kW during the period of the Medium-Term Management Plan.

In addition, to contribute to the carbon neutrality of our customers, which is directly related to Scope 3, we will implement activities for reduction of 15,000 t-CO_2 per year.

03 Invest in human capital, the source of our value creation

- Regarding the training curriculum for employees, establishment of the training system and partial implementation began in FY2024.
- We are continuing to review the policies and framework of the evaluation system for the proposed personnel system changes, which are under consideration for implementation starting in FY2025.

We aim to have a net increase in the number of non-consolidated employees of 220-250 (before revision: 200) or more during the period of the Medium-Term Management Plan. In addition, in order to promote investment in human capital to realize these measures, we will increase the amount of investment in human capital by 15 billion yen (before revision: 10 billion yen) during the period of the Medium-Term Management Plan.

▶ See p. 63 for more information on strengthening human capital



Special Feature 01

Enhance Earning Power Based on Our Construction Business: Reform of Our Construction Process with T-Base®

The Environment Surrounding Our Core Business of Construction and Our Work Toward Resolving Challenges

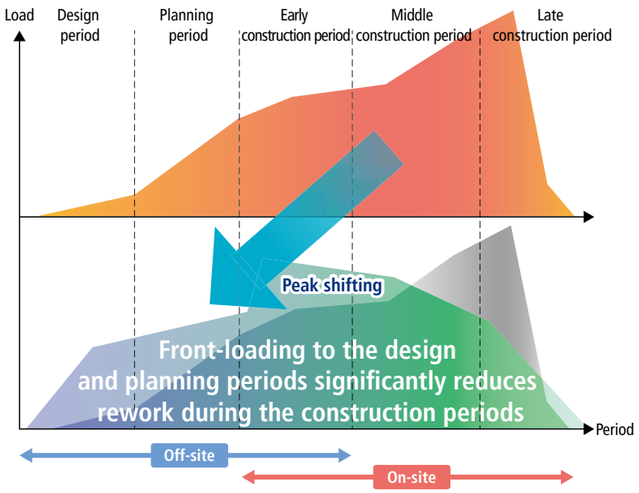
The T-Base® Project, now entering its fifth year in 2024 since its start in 2020, aims to address challenges in the construction industry such as the decline in the working-age population, work style reforms, and contributions to the environment. In this project, as our reform of the construction process, we are building new systems that leverage technical expertise, conducting front-loading before construction, and reviewing processes from the order receipt and design stages. This approach aims to resolve various challenges related to on-site human resources, quality, safety, and environmental contributions, with the goal of contributing to the creation of an appealing future for the construction industry.

Challenges surrounding the construction industry and our initiatives

"Reform of the construction process" is an initiative to shift the construction approach from on-site one-off production unique to the construction industry, namely site-by-site "construction management," to platform-based "production management."

Through these efforts, we aim to reduce manpower and labor in construction, as well as reduce the environmental impact of construction activities, thereby contributing to the resolution of industry challenges.

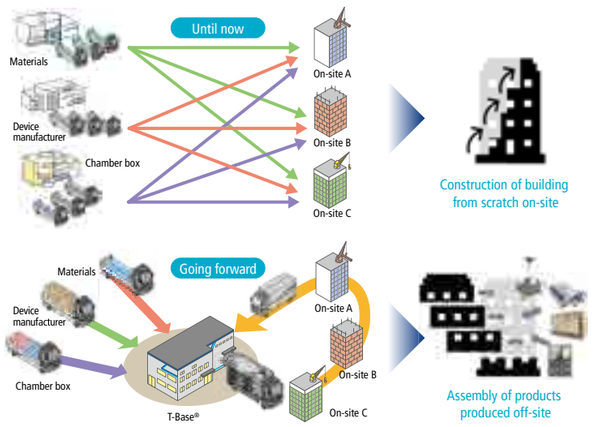
In May 2022, we opened T-Base®, a facility that serves as the core of our planning, production, and logistics. Centered on this facility, we have been developing and manufacturing standardized products and new unit construction methods, as well as developing a central production system linking our partner companies, suppliers, and worksites.

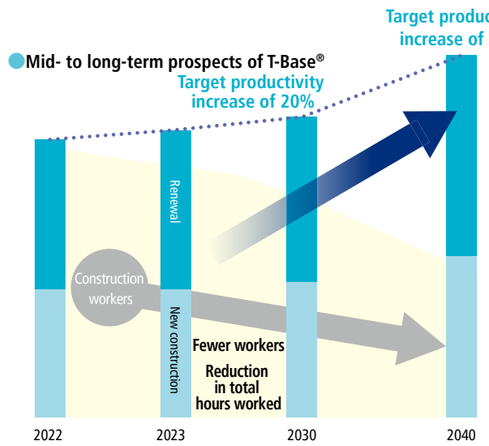


Functions and effects of T-Base®

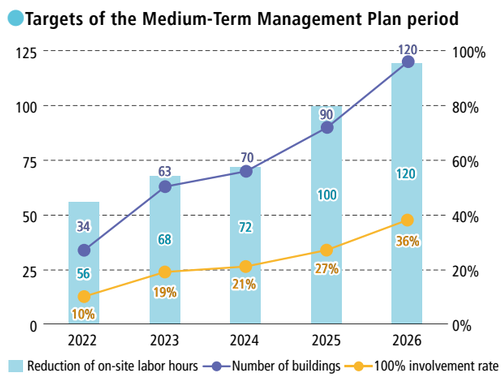
T-Base® is a platform aimed at reform of the construction process. Until now, construction sites (on-site) involved creating individual blueprints for each project, resulting in one-off construction for each site. Going forward, by utilizing T-Base®, we will standardize common and repetitive areas and tasks regardless of the site and handle production and supply off-site away from the construction sites.

This approach will reduce on-site labor, level out on-site process schedules, and improve construction quality. This will also create job opportunities at off-site facilities for human resources who have not previously worked in the construction industry, contributing to the promotion of active engagement of diverse talent.





By developing the options brought about through T-Base®, which can be used for both new construction and renovation projects, we aim to improve productivity and thereby address the anticipated decline in the construction workforce due to the projected decrease in the working-age population.



FY2024 KPIs

- Number of buildings involved: 70
- Reduction of on-site labor hours: 72,000
- Number of units produced: 6,000

FY2023 initiatives and FY2024 plans

Implementation measures	Item	Details
Formation of explicit knowledge of construction technologies Improvement of construction management capabilities	Practical construction blueprint and construction management education	●Formation and dissemination of explicit knowledge of construction blueprint know-how adapted to building use: 382 average monthly users (Q1-Q2) ●Dissemination of consolidated know-how through construction blueprint and construction management training: Monthly online education for all offices ●Promotion of human resources development, skill enhancement, and spread of T-Base® options through construction management exercises focused on new employees  
Quality improvement through standardization, modularization, and off-site production	Enhancement of production efficiency of T-Base® options	●Consideration of design automation to reduce lead times in order to promote implementation and deployment at sites ●Data development to support collaboration in the production stage with Kowakai
	Development of linked sites and schemes	●Development of system to meet demand through gradual expansion of collaboration sites with Kowakai, in addition to T-Base® serving as the mother factory ●FY2024: Three locations under development
Digitalization of construction sites through the introduction of a central production system	Expansion of the introduction of the central production system	●Promotion of internal development centered on medium-scale and larger projects ●Continuing optimization of the system through introduction and feedback ●Start of discussions on introduction schemes with manufacturers and agencies (Q1 results: 42 projects; 195 manufacturers and agencies) ●Continuing verification of mutual data integration with BIM
Initiatives for the future of the construction industry, including environmental contributions and DEI	Achievement of sustainability in the construction industry	●Ongoing material recycling project for waste plastic under the FY2023 Innovative Technology and Business Promotion Project of the Tokyo Metropolitan Government Bureau of Environment ●Ongoing development of returnable packaging derived from recycled plastic in collaboration with manufacturers ●50% of production workforce involving personnel outside of the construction industry, including women and seniors

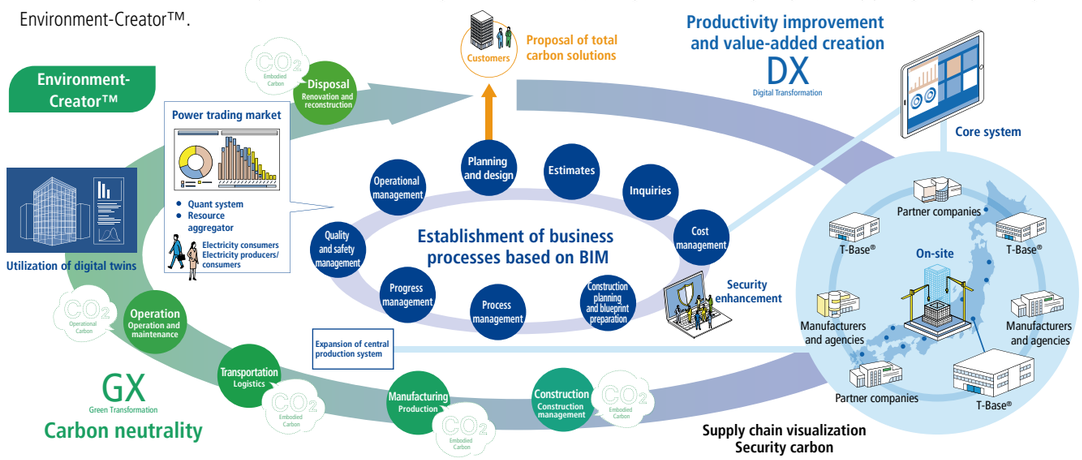
Special Feature 02

Reforming Our Core Business Based on BIM and Establishing/Utilizing Our Digital Foundation

Promotion of Equipment BIM to Simultaneously Achieve Digital Transformation and Green Transformation

Overview of our DX strategy

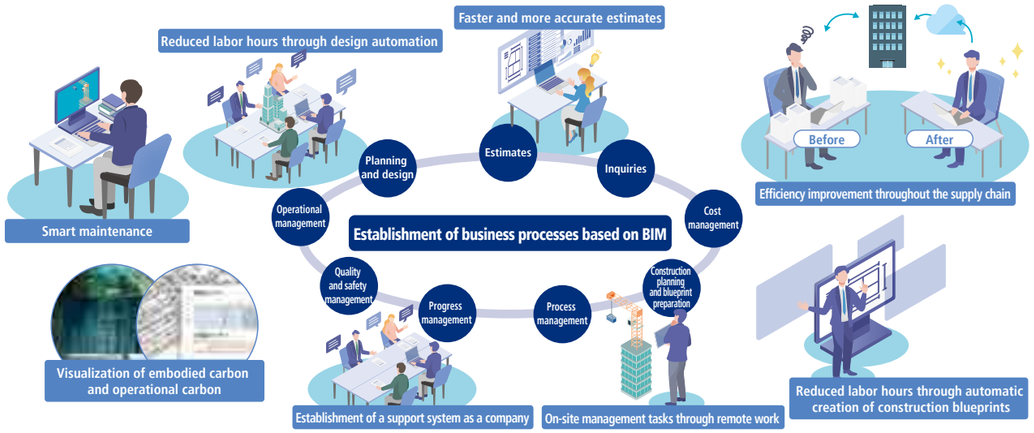
Under our Long-Term Vision for 2040, we aim to address carbon transition for building environments and carbon neutrality of the global environment. Through co-creation with many business partners, we will build up our four business domains, linking each domain with DX. While accelerating the DX initiatives that have been underway, we will also realize GX (green transformation) throughout the building lifecycle, clearly paving the way to being an Environment-Creator™.



Core business reform and DX-driven work style reform by establishing/utilizing our digital foundation based on BIM

By implementing BIM at an early stage, we aim to bring about a fundamental transformation of business processes throughout the entire building lifecycle, from planning and proposal to design, construction, and operational management, while enhancing productivity through the use of digital technology.

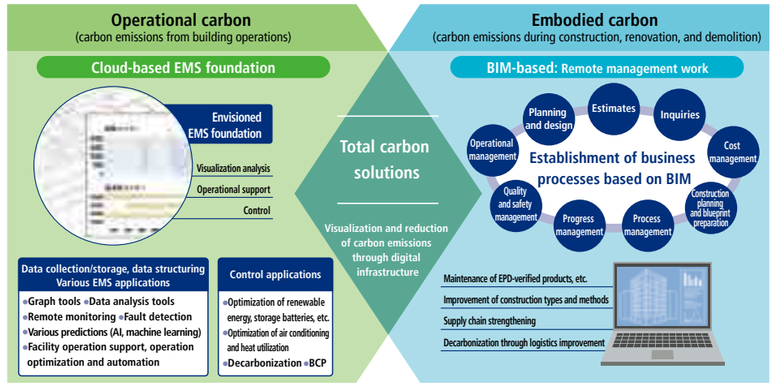
We are beginning to utilize various digital platforms, including our core system and SaaS groups linked with BIM. This will allow us to consolidate and centralize tasks that were previously handled individually by each branch, office, or construction site, as well as to provide remote operational support, thereby improving productivity, advancing operations, and diversifying work styles.



Achieving green transformation using data generated from BIM, EMS, and other sources

Carbon emissions occur at various stages of a building's life cycle, including during construction, renovation, demolition, and after building operation starts.

By utilizing building data and operational data based on BIM, we aim to strengthen our ability to propose total carbon solutions for carbon optimization throughout the building's lifecycle. Through this, we will work together with our customers to achieve GX.



Topics

Joint development and launch of the BIM-based SaaS platform PLANETS (development code name) to reform construction industry work processes

Press release >>>

https://www.tte-net.com/article_source/data/news/detail/2024/677.html

We have developed and partially launched PLANETS (development code name), a platform linking nine SaaS products centered on BIM, by integrating a series of construction industry work processes. PLANETS is a system designed to unify and digitalize previously fragmented work processes in the construction industry, comprising design, estimates, blueprint creation, process management, quality management, and building operation. By utilizing this system, we will improve productivity, achieve thorough cost reduction, and minimize the environmental impact at construction sites, contributing to optimal resource utilization and waste reduction.



Signing of a new memorandum of understanding on strategic partnership (MOU 2.0) with Autodesk

Press release >>>

https://www.tte-net.com/article_source/data/news/detail/2024/684.html

In the memorandum of understanding on strategic partnership (MOU 1.0) signed with Autodesk in 2022, we advanced the standardization of BIM for construction work and the establishment of a Revit-based environment. Now, with the signing of the MOU 2.0, we will continue our efforts to enhance productivity and create added value through the utilization of BIM-related data, including Revit. In addition, by leveraging the digital platform, we will collaborate with Autodesk to establish a total carbon solution throughout the entire building lifecycle (including visualization and reduction of carbon emissions), an initiative led by Takasago Thermal Engineering.





Special Feature 03

Promote Carbon Neutrality with Environmental Technologies

Building a Track Record with the Tsunagu (Connect) Project for Energy Generation, Storage, and Consumption

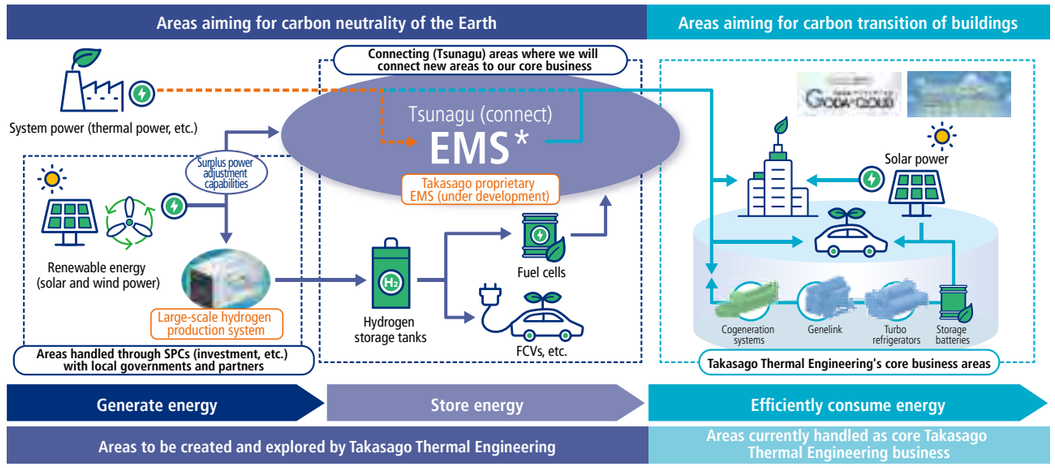
Our carbon neutrality business initiatives and overview

In our Long-Term Vision for 2040, we position the carbon neutrality business as a future growth area, aiming to provide environmentally optimal energy systems demanded by customers and society by generating, storing, and connecting (Tsunagu) energy.

Specifically, we plan to establish a special-purpose company with our business as the main driver, focusing on building an energy supply business that includes green hydrogen.

Since the 1980s, we have been conducting research on thermal storage using water and ice. Leveraging the high-purity hydrogen generation technology developed through this research, in 2020 we launched the Hydro Creator® water electrolysis equipment, which generates hydrogen.

In response to increasing needs to shift from gray hydrogen to green hydrogen, we will strengthen our carbon neutrality business centered around hydrogen generation technology.



*EMS: Energy management system

Progress in the areas of generating, storing, and connecting (Tsunagu) energy

Development of larger-scale hydrogen production equipment for energy generation

Our water electrolysis equipment is a PEM style utilizing a solid polymer membrane, making it well-suited for water electrolysis powered by renewable energy sources. In the future, the use of hydrogen generated from renewable energy is expected to meet demand for absorbing surplus electricity, providing emergency power through fuel cells during outages, and serving as a carbon-free fuel.

We have completed development to increase production capacity from 5 normal cubic meters per hour to 100 normal cubic meters per hour. The equipment is currently in the performance evaluation and commercialization phase, with the goal to launch it to the market in 2025.

We aim to establish a locally-produced, locally-consumed green hydrogen supply system in specific regions, such as municipalities and industrial parks. In April 2022, we established Ishikari Atsuta Green Energy Co., Ltd. in Ishikari City, Hokkaido, where we are involved in operating a microgrid system utilizing hydrogen derived from renewable energy.

●Skeleton model of the large-scale hydrogen production equipment



●Exterior of the Ishikari City Atsuta microgrid system (Photo courtesy of Ishikari City)



Progress in storage technology and the connecting (Tsunagu) field

Building on our air conditioning technology through now, we have supported energy conservation and decarbonization in customer facilities. One example of our storage technology is the practical application of utilizing low-temperature exhaust heat, much of which is currently discarded (Mega Stock® → See p. 57).

We are developing our Takasago proprietary energy management system (EMS) for the connecting (Tsunagu) area.

We aim to produce hydrogen and establish an optimal control system for energy supply and demand within buildings and areas by connecting our core business areas such as building heat sources and storage batteries.



●Exhaust heat recovery and transportation

Topics

Tackling the world's first hydrogen and oxygen production on the Moon: Our Moon water electrolysis equipment was completed and handed over to ispace, inc., which is responsible for its transportation to the Moon

Press release >>>

https://www.tte-net.com/article_source/data/news/detail/2024/681.html

We have completed the development of the flight model (FM) for the Moon water electrolysis equipment and handed it over to ispace, inc., a space startup that handles lunar transportation services. In December 2019, we signed a corporate partnership agreement for the private sector Moon exploration program HAKUTO-R, beginning our collaboration with ispace. The water electrolysis equipment is planned to be launched as early as December 2024, mounted on a lander. Upon landing, we will attempt the world's first hydrogen and oxygen production on the Moon. Going forward, the handed-over water electrolysis equipment will be mounted onto the lander, and final adjustments for the launch, including communication checks, will be conducted.

*The launch timing is based on the projection as of September 2024.



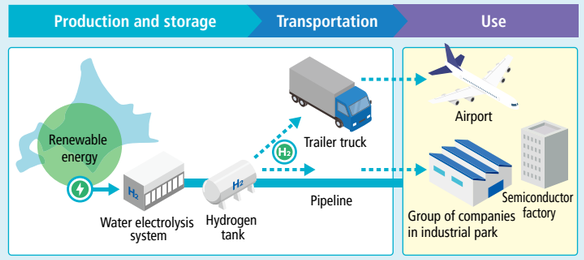
Agreement signed for joint exploration of green hydrogen supply in the Chitose Area of Hokkaido

Press release >>>

https://www.tte-net.com/article_source/data/news/detail/2024/692.html

We have signed an agreement with Mitsubishi Corporation, Hokkaido Electric Power Co., Inc., and Air Water Hokkaido Inc. on a joint study for the supply of green hydrogen in the Chitose area of Hokkaido.

Going forward, based on the agreement, toward the supply of locally produced and consumed green hydrogen and taking into account consumer needs, we will study candidate sites for hydrogen production and storage as well as optimal supply methods including transportation means, with the aim of realizing a green hydrogen supply chain.



Financial and Capital Strategy

We will allocate the generated cash to growth investments and shareholder returns with a focus on outcomes, while maximizing financial soundness and capital efficiency, aiming for the sustainable enhancement of corporate value.

Basic policy on financial strategy

To achieve the Group's Long-Term Vision for 2040 announced in May 2023, the current Medium-Term Management Plan period is positioned as a phase for strengthening the construction business and investing the generated cash into growth areas (with a partial revision of KPIs and KGIs in May 2024).

While adhering to the basic policy on financial strategy outlined on the right, we will continue to make efforts to sustainably enhance corporate value by keeping a close eye on capital efficiency, financial soundness, and shareholder returns.

Basic policy on financial strategy

Enhance earning power	Consolidated gross profit margin of 17% or more* Consolidated ordinary income of 30 billion yen*
Enhancement of human capital and growth investment	Increase of 220-250 employees, reform of personnel system, and implementation of education and training* Carbon neutrality business initiatives, research and development activities
Capital efficiency improvement and financial soundness	Consolidated ROE of approximately 12%* Maintain a rating of A (Japan Credit Rating Agency (JCR), long-term issuer/bond rating)
Shareholder returns	Payout ratio 40%, progressive dividend policy Flexibly acquire treasury stock

*KGIs and KPIs revised in May 2024

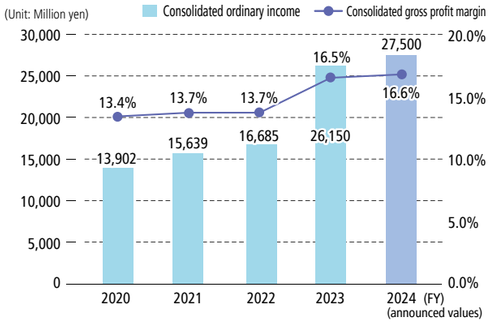
Strengthening earning power and business transformation

With regard to the enhancement of earning power in our core business, we flexibly respond to demand through our optimized company-wide order receiving system. At the same time, our various productivity improvement measures, such as T-Base®, have been successful, leading to a record-high consolidated ordinary income for the fiscal year ended March 31, 2024, marking the fourth consecutive year of profit growth.

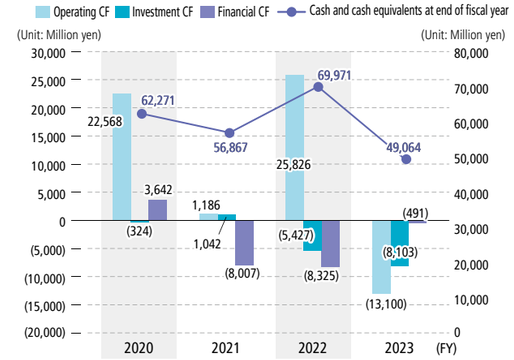
In terms of cash flow, as construction projects have increased in scale recently, there is sometimes a time lag between payments and receipt thereof due to seasonality, specific contract payment terms, and other such reasons. We are working to maximize operating cash flow through measures such as the early collection of accounts receivable, while also making use of flexible borrowing as needed.

In our Medium-Term Management Plan, one of the key goals is strengthening human capital, meaning our human resources who support our corporate growth. This includes not only increasing personnel numbers but also reforming the personnel management system and enhancing training and education. We are assigning diverse human resources developed through these efforts to the four business domains outlined in our long-term management plan and making forward-looking investments in research and development activities to drive business transformation.

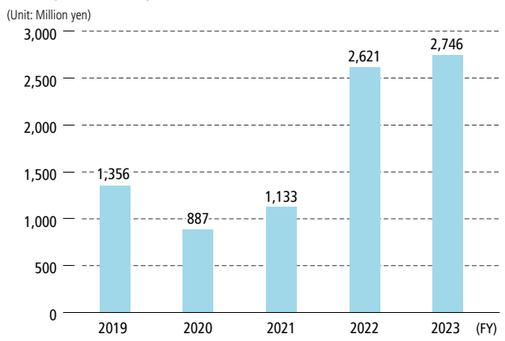
Changes in consolidated ordinary income and gross profit margin



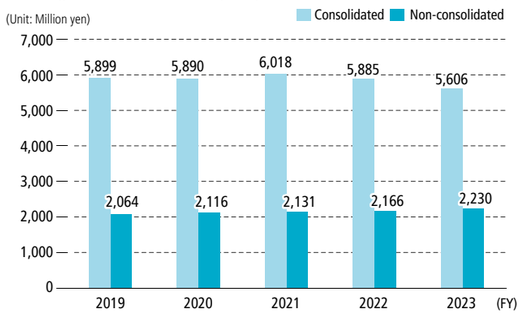
Changes in cash flow



Changes in R&D expenses



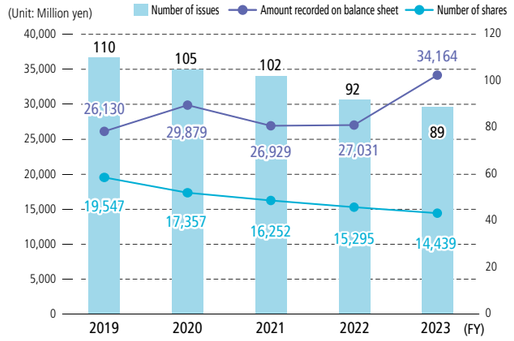
Changes in number of employees (consolidated and non-consolidated)



Reduction of cross-shareholdings

With regard to investment shares held for purposes other than net investment, our policy in principle is to not hold such shares, with the exception of cases where the maintenance and development of strategically important collaborations and business relationships are recognized as a means to sustainably enhance corporate value. With regard to shares already held, we conduct periodic and ongoing assessment of the appropriateness of holding these shares, and the Board of Directors reviews the assessment results. Our policy is to consider basically reducing our holdings of shares that are no longer deemed significant, and will reduce the net asset ratio to 15% or less during the period of the current Medium-Term Management Plan.

Changes in investment shares held for purposes other than net investment



Changes in net asset ratio of investment shares held for purposes other than net investment

FY	2019	2020	2021	2022	2023
Net asset ratio	20.8%	22.0%	19.7%	18.4%	20.4%
Net assets	125,861	135,849	136,897	147,165	167,231

(Unit: Million yen)

Capital allocation

During the period of the current Medium-Term Management Plan, we expect cash inflows of 111 billion yen from business activities over four years, and an additional cash inflow of 10 billion yen from the sale of cross-shareholdings. When we reviewed the Medium-Term Management Plan in May 2024, cash inflow was increased from a total of 81 billion yen to 121 billion yen. With regard to cash outflow for the increase, while considering financial soundness and capital efficiency, it is our policy to balance growth investments and shareholder returns to sustainably enhance corporate value. Due to this, growth investments have been increased from 51 billion yen to over 71 billion yen, and shareholder returns from 30 billion yen to over 45 billion yen.

Cash inflow	Cash outflow
4 years: Total of 121 billion yen	**4 years: Total of 121 billion yen**
Created by business **111 billion yen**	Growth investment **Over 71 billion yen** Investment in human capital Carbon neutrality business Reform of the construction process DX M&A, etc.
Sale of cross-shareholdings **10 billion yen**	Shareholder returns **Over 45 billion yen** (Payout ratio approximately 40%, including treasury stock acquisition)

Financial soundness

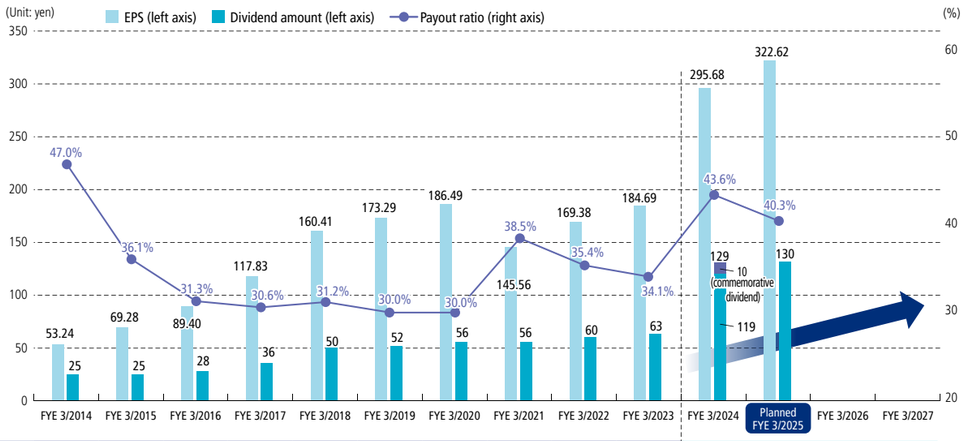
This comprehensive evaluation was not only based on our financial situation, market environment, and technological capabilities, but also took into account our shareholder return policy. Going forward, we will continue to have a good balance between business growth, financial soundness, and shareholder returns, aiming to further improve our ratings.

Ratings (as of March 31, 2024) Rating agency: JCR (Japan Credit Rating Agency)

Long-term issuer rating	Bond rating
A	A

Shareholder returns

With regard to shareholder returns, our dividend policy is based on a target payout ratio of 40%, with progressive dividend increases in line with sustainable profit growth. Our policy on treasury stock acquisition is to flexibly implement acquisition based on a comprehensive assessment of performance trends, growth investment opportunities, capital efficiency, and other factors.

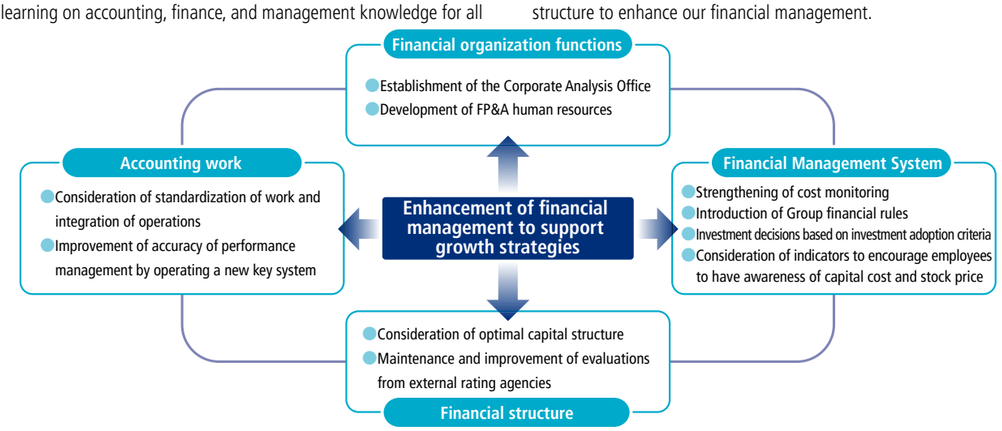


	FYE 3/2014	FYE 3/2015	FYE 3/2016	FYE 3/2017	FYE 3/2018	FYE 3/2019	FYE 3/2020	FYE 3/2021	FYE 3/2022	FYE 3/2023	FYE 3/2024	Planned FYE 3/2025	FYE 3/2026	FYE 3/2027
Total payout ratio	75.3%	74.7%	61.4%	30.6%	31.2%	54.0%	60.3%	38.5%	87.6%	34.1%	2026 Medium-Term Management Plan: Step for the FUTURE -Four years to embark for the future-			
Treasury stock acquisition amount (Million yen)	1,146	1,877	2,009	—	—	3,000	4,000	—	6,000	—				

Enhancement of financial management

We will continue to approach the advancement of financial management supporting our growth strategies from four perspectives: financial organization functions, financial management system, financial structure, and accounting work.

From the perspective of financial organizational functions, we have established our Corporate Analysis Office and promote the analysis of various data and its internal utilization from a managerial accounting standpoint. With regard to employees' acquisition of specialized knowledge, we provide opportunities to participate in external training and implement e-learning on accounting, finance, and management knowledge for all executives and employees, aiming to enhance accounting and financial literacy across the company. For our financial management system, we are strengthening our risk management efforts by introducing group financial rules targeting both domestic and international Group companies, as well as conducting business risk assessments in the company-wide Risk Management Committee led by the main office Risk Management Division. With regard to accounting work, we are promoting operational efficiency by utilizing accumulated data through use of the core system and other means. We will also achieve a good balance of progress on our financial structure to enhance our financial management.



Toward realizing management with awareness of cost of capital and stock price

With regard to capital efficiency, we remain aware of the cost of capital and strive to improve return on capital. We also pay attention to PBR and leverage the opinions, issues, and opportunities obtained through dialogue with shareholders and investors in the formulation of management plans to enhance corporate value.

In FY2023, with an ROE of 12.8%, we maintained and improved levels above capital costs, while we had a PBR of 2.0. To further elevate these levels, we will undertake measures to enhance our earning power, including reform of the construction process as represented by T-Base®, the promotion of optimized company-wide order receiving activities, and advancing of DX.

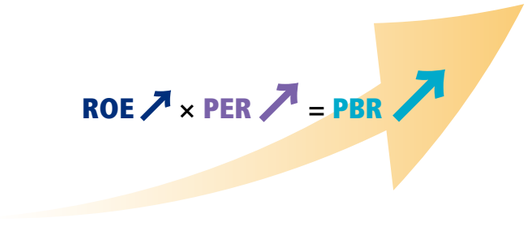
In addition, from the perspective of improving capital efficiency, we will continue to reduce cross-shareholdings.

We will also work to strengthen IR activities and enhance the content of constructive dialogues with shareholders and investors at our own facilities and construction sites regarding explanations of our business and introduction of our growth strategies. We believe that these activities will contribute to a diminishing cost of capital as well, and we will work to further increase our corporate value.

We position IR activities as some of the most important activities to enhance our corporate value. We actively engage in IR activities by providing various opportunities for dialogue other than financial results briefings, such as individual meetings with numerous domestic and foreign institutional investors and analysts, and "IR days" held at our facilities such as the Innovation Center. Through these opportunities, we will strive to promote understanding of our business, strategy, intellectual capital, and other non-financial values. We will also conduct careful internal consideration of the opinions and knowledge gained and leverage them for future actions. We will go on promoting two-way communication with an emphasis on transparency and fairness, and your candid comments would be appreciated.

Present
ROE > Cost of capital
PBR ≈ 2.0x level

Goal
Further expansion of equity spread
Raise ROE to about 12%



Results in FY2023

- Financial results briefing sessions for institutional investors and securities analysts (twice per year)
- Individual IR interviews (156 times per year)
- IR small meetings
- Overseas IR activities (Hong Kong, Singapore)
- Participation in conferences organized by securities companies
- Site tours for institutional investors and securities analysts, tours of the Takasago Thermal Engineering Innovation Center and T-Base®
- Interview with the President published by Entrepreneur, an overseas business magazine

A financial results briefing session



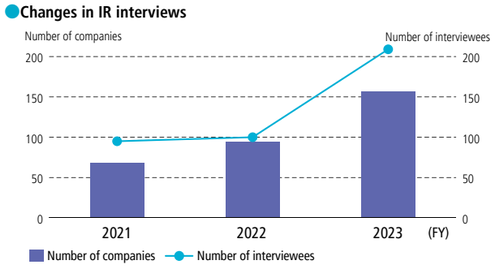
A site tour





Director and Executive Officer
General Manager of Finance & Investor Relations Department
In charge of Risk & Compliance, and Corporate Operation sector
Masatoshi Morino

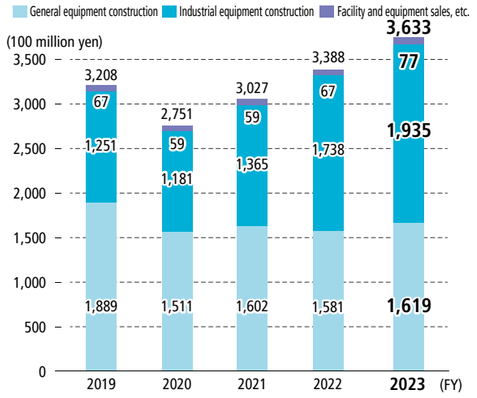
Changes in IR interviews



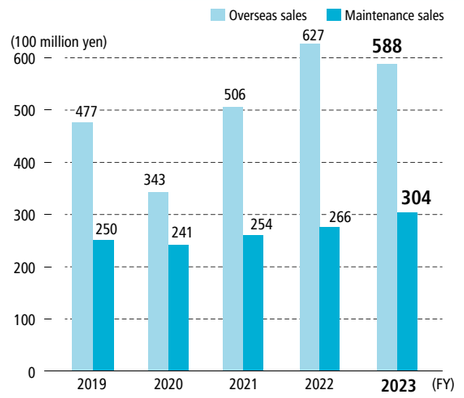
Financial and Non-Financial Performance

Financial performance

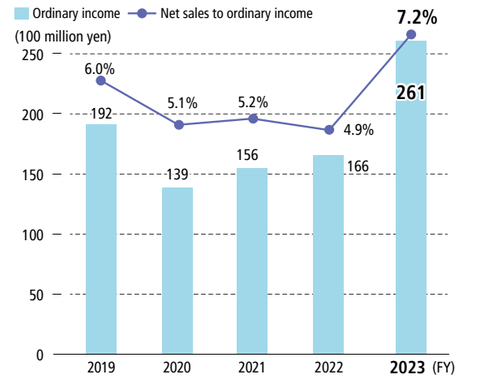
Net sales



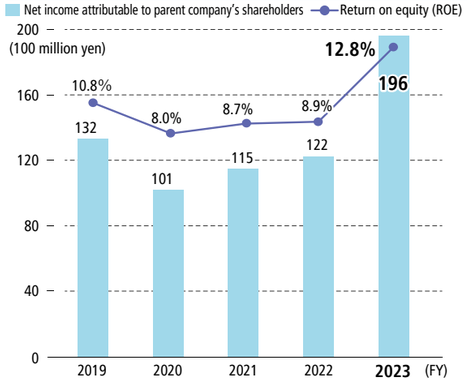
Overseas sales and maintenance sales



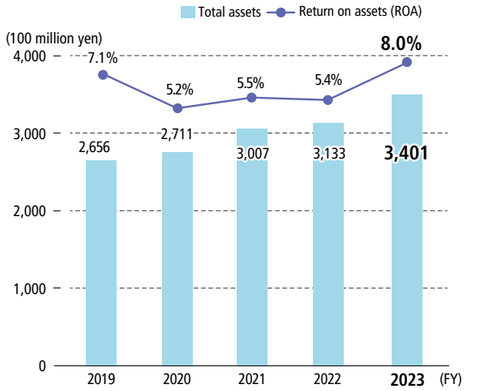
Ordinary income and net sales to ordinary income



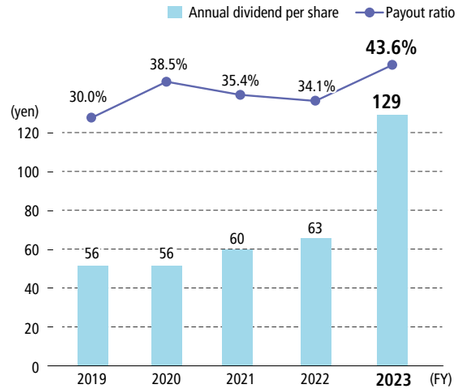
Net income attributable to parent company's shareholders and return on equity (ROE)



Total assets and Return : ordinary income



Annual dividend per share and payout ratio



Non-financial performance

* Figures are rounded down to the nearest unit.

CO_2 emissions and reduction rate (Targets for applying for SBT and results in FY2023)

	Results in 2019 (t-CO_2)	Annual reduction rate	Results in 2023 (t-CO_2)	From the 2019 level	Targets for 2030 (t-CO_2)	From the 2019 level
Scope 1	1,244	(2.5%)	2,564	22.6%	901	(27.5%)
Scope 2	3,110		2,775		2,254	
Scope 3	4.96 million	(1.23%)	4.89 million	(1.4%)	4.29 million	(13.5%)

* The emissions and reduction targets mentioned above are on a non-consolidated basis (Takasago Thermal Engineering alone).

Engagement of employees (work style reform, work-life balance and health and productivity management are on a non-consolidated basis, FY2023 results)

Number of employees

Non-consolidated	2,230
Consolidated	5,606

Work style reform

Total annual working hours per person (unit: hours)	2,196.6

Work-life balance

Percentage of annual paid holidays taken		74.2%
Number of persons who took childcare leave	Total	64
	Women	13
	Men	51*
Rate of return to work after childcare leave		100%

* Among them, 16 people took leave of one week or less.

Health and productivity management

Percentage of those who had a health checkup	100%
Comprehensive health risk (Note)	89

(Note) The comprehensive health risk is calculated by Hokendohjin-Frontier Inc., a company that implements stress checks. The average is 100 and a lower value indicates that the risk is lower.

Diversity

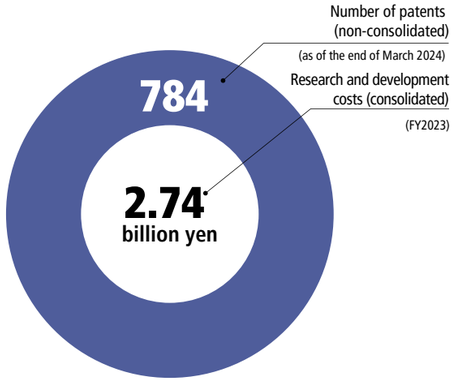
Number*1 and ratio of female employees (excluding fixed-term employees)	401 (19.2%)
Number and ratio of newly employed female employees	31 (41.3%)
Number and ratio of female employees who are candidates for managers*2	27 (7.3%)
Number of managers appointed from among local staff	371
Employment rate of people with disabilities	2.50%

*1 On a non-consolidated basis except for the number of managers appointed from among local staff

*2 Ratio of deputy managers to all individual employees

As of the end of March 2024

Reasearch and development



Evaluations by external organizations

(as of September 30, 2024)

- Long-term issuer ····· A (JCR)
- Bonds ····· A (JCR)
- ESG ····· AA (MSCI)
- ····· 2.8 (FTSE)
- ····· A- (CDP)

FTSE Blossom Japan Sector Relative Index

Business Overview

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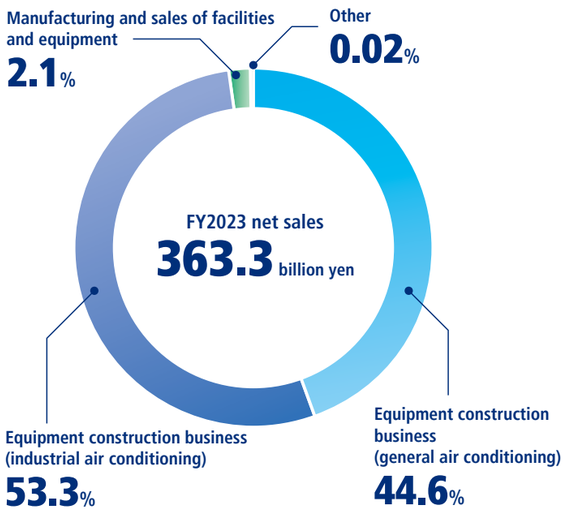
Air-Conditioning and Sanitary Engineers of Japan ····· 41



Business Overview

We will work to build a solid earnings foundation in the equipment maintenance and management business as well as the air conditioning equipment manufacturing and selling business with the air conditioning equipment business at the center, and to build a foundation for our carbon neutrality business going forward.

Sales by segment



Equipment construction business (general air conditioning)
161.9 billion yen



Equipment construction business (industrial air conditioning)
193.5 billion yen



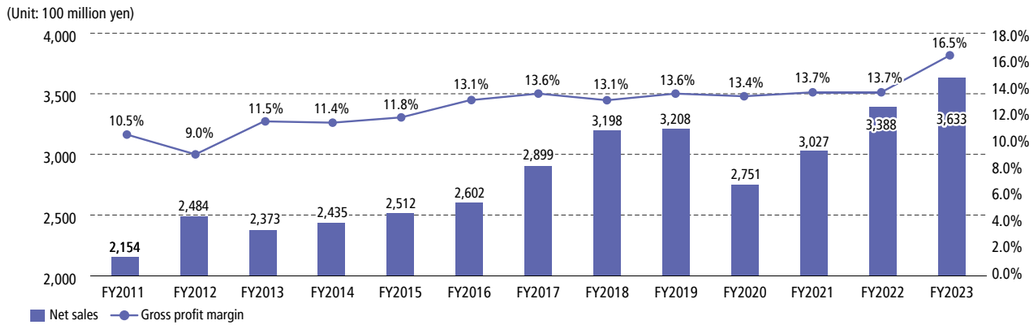
Manufacturing and sales of facilities and equipment
7.7 billion yen



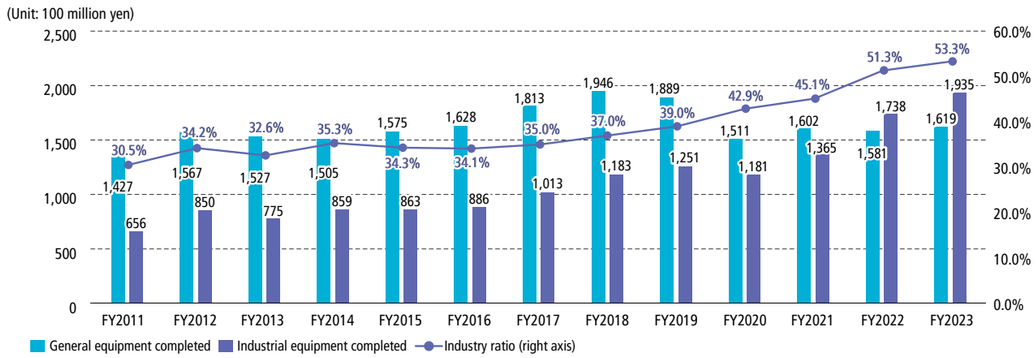
Other
90 million yen



Changes in consolidated net sales and gross profit margin



Changes in completed equipment (by industrial and general types) and ratio of completed industrial air conditioning equipment



Equipment Construction Business

Order-receiving environment

Demand for construction in the industrial air conditioning field, particularly related to semiconductors, and large-scale urban redevelopment is likely to remain steady, while there is expected to be further increasing demand for a decarbonized society.

We will strive to meet growing demand and new needs of our customers by promoting our optimized company-wide order receiving activities.



Director and Executive Vice President
Chief Executive Officer of Sales & Marketing Headquarters
In charge of Research and Development Headquarters
Hiroshi Kubota

Business environment

We will strive to enhance the value we provide based on our accumulated technological capabilities and know-how in order to respond to the increasing scale of construction and to contribute to the reduction of environmental impact from the field of air conditioning equipment. In addition, we will reform our production processes and utilize BIM and IOT technologies to enhance resilience of our earnings foundation.



Director and Senior Managing Executive Officer
Chief Executive Officer of Technical Engineering Headquarters
In charge of Group Companies Management, DX Management sector, and Business Strategy Management Department
Tadashi Kamiya

Strengths

>Design and proposal capabilities related to energy conservation, environmental technologies and know-how
>Development of one-stop services
>Track record of construction for existing customers
>Partnerships with partner companies

Risks

>Skyrocketing costs for materials, equipment, and labor; delays in delivery of materials and equipment; and delays in processes
>Shortage of construction technicians due to the increase in the size of construction projects
>Decrease in existing workforce due to the application of overtime caps

Opportunities

>Increase in construction demand, centered on factories and large-scale redevelopment projects
>Increasing demand for energy conservation and decarbonization
>Increasing demand for renewal construction work

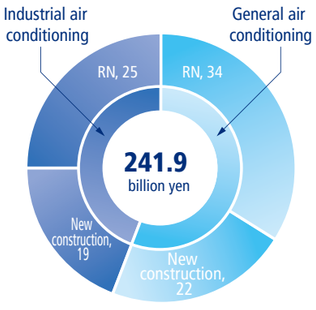
Optimized company-wide order receiving activities

With the recent notable trend of construction projects growing larger in scale, we are planning and executing an order receiving plan that takes into account the construction system from a company-wide perspective in order to respond to the abundant amount of sales information in both the general and industrial air conditioning fields.

With regard to semiconductors, where capital investment has been active, we will work to capture construction demand by leveraging our proprietary technologies, as well as to win orders at a high level in the general air-conditioning field and to increase the ratio of orders for renewal work.

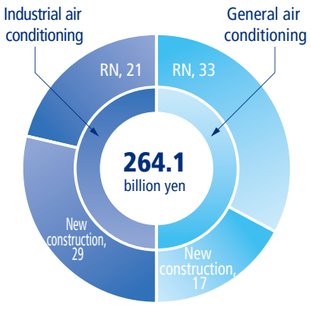
Construction work orders by construction type (individual)

Fiscal year ended March 31, 2022



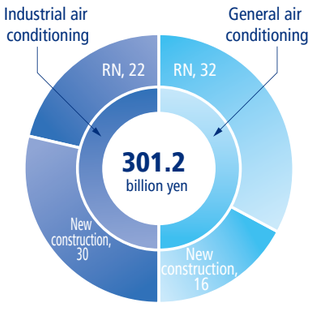
Industrial air conditioning Order ratio: 44%
Renewal work Order ratio: 59%

Fiscal year ended March 31, 2023



Industrial air conditioning Order ratio: 50%
Renewal work Order ratio: 55%

Fiscal year ended March 31, 2024



Industrial air conditioning Order ratio: 52%
Renewal work Order ratio: 54%

Breakdown of Orders Received by Field in the Equipment Construction Business

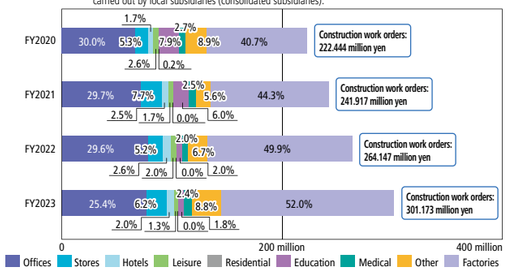
General air conditioning

While we have abundant sales information on redevelopment projects in regions centered on the Tokyo metropolitan area, the orders we receive include a variety of building applications. We categorize data centers as part of the general air conditioning field.

Breakdown of orders received for construction (non-consolidated)

By use

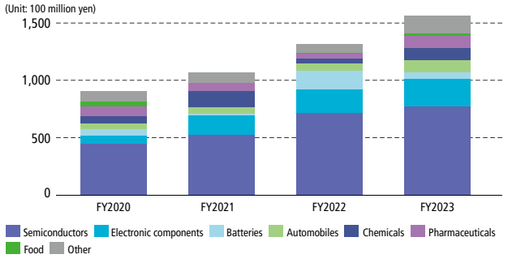
Note: Figures are only for the company's International Business Headquarters; overseas operations are mainly carried out by local subsidiaries (consolidated subsidiaries).



Industrial air conditioning

Semiconductors and electronic devices require production process environments, such as cleanrooms and dry rooms, with highly controlled cleanliness, temperature, and humidity, and orders received are increasing based on our abundant sales information. Going forward, we will take on the challenge of constructing large-scale pharmaceutical plants and strive to accumulate technical capabilities and know-how.

Breakdown of industry categories for orders received in the non-consolidated and industrial air-conditioning fields



Topics | Introduction of Takasago Thermal Engineering's proprietary technologies

TCR-SWIT® Swirling Induction Type TAKASAGO HVAC System for cleanrooms

TCR-SWIT® is our proprietary technology that makes it possible to construct cleanrooms, which are vital for industrial air conditioning, in a very short construction period while reducing energy use, CO_2 emissions, and costs. To confirm the functionality of this new technology, we have established an experiment and demonstration facility in the Takasago Thermal Engineering Innovation Center where temperature distribution, airflow, and cleanliness can be visualized.



Initiatives for work-style reform at construction sites

We are making efforts to improve the work-life balance of employees and partner company personnel working on construction sites through various measures. In addition to the application of the overtime caps from FY2024, as the number of construction workers is expected to decrease in the future and it will be increasingly difficult to secure them, we are advancing initiatives to improve the work-life balance at construction sites, which are the frontlines of the construction industry.

Reform of the construction process	●Front-loading through off-site construction ●Central production system ●Enhancement of logistics, etc.
Utilization of digital tools	●Utilization of construction management support tools (improvement of work efficiency with paperless operations)
Strengthening relationships with the supply chain and Kowakai	●Establishment of "Excellent Company" system ●Change of payment conditions
Review of on-site work	●Work support for internal employees (Kizuna Project) ●Work outsourcing
Flexible work styles	●Staggered work hours and turn-based system for morning meetings ●More efficient education for dispatched workers and new entrants to construction sites ●Layout of on-site offices to suit each style, etc.
Optimized company-wide order receiving activities	●Flexible allocation system for technical staff on a nationwide scale ●Rollout of planned order receiving activities in consideration of the construction system

Equipment Maintenance and Management Business

Equipment maintenance and management business

TMES株式会社

TMES is developing its maintenance business with a focus on facility equipment. The applications of target buildings have diversified over time, and facilities continue to undergo major changes.

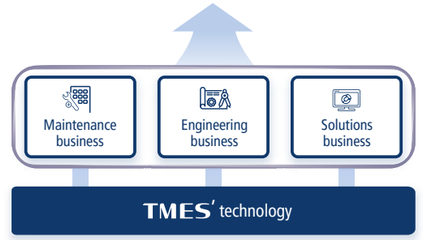
In addition to short-term maintenance and preservation of facilities, TMES proposes cost-effective solutions that reduce costs while utilizing facilities.

As the workforce continues to shrink due to the declining birthrate and aging population in Japan, it is becoming significantly more difficult to secure expert engineers in facility management, due in part to the increasing sophistication of facilities and the shift of human resources to core business of the company. We have created and provided unique value by building a new business model known as "optimum total facility management," which combines operations that ensure the safe and stable running of facilities with solutions that minimize life cycle cost (LCC), such as energy conservation.

In addition, the Takasago Thermal Engineering Group is developing advanced one-stop services for facilities through the use of cutting-edge technologies and communication technologies, including development of business tools that leverage the IoT, AI, and other technologies, as well as products that contribute to the realization of a decarbonized society.

SUSTAINABLE DEVELOPMENT GOALS

We are implementing efforts for the SDGs through stable operation of facilities and LCC minimization.



Supporting facilities with technology

Make it SMART, this is TMES.

TMES company site >>>
https://www.tm-es.co.jp/

Environmental equipment manufacturing and selling business

日本ピーマック株式会社

NIPPON PMAC is a pioneer of individual air conditioning systems, and has been proposing a wide variety of highly functional air conditioning systems for half a century, which have been used in various buildings. Based on individual heat pump systems that use water and air heat sources, NIPPON PMAC has earned a solid reputation by planning, proposing, and developing products for compact air conditioning units that meet the needs of customers' buildings, as well as offering responsible products and services through the company's direct, integrated system, from a flawless inspection system to post-delivery maintenance.

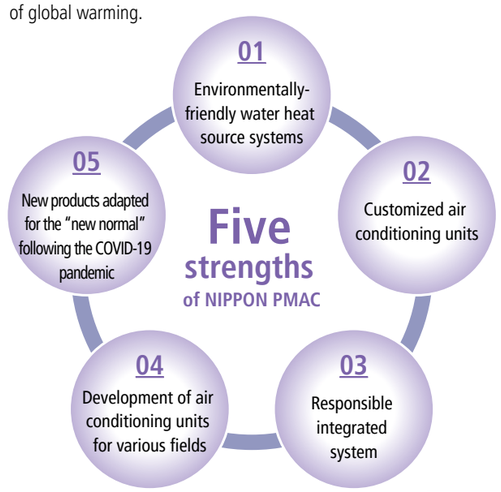
Our strength is our ability to solve problems through our one-stop system.

Five strengths of NIPPON PMAC

- Environmentally-friendly water heat source systems
- Customized air conditioning units
- Responsible integrated system
- Development of air conditioning units for various fields
- New products adapted for the "new normal" following the COVID-19 pandemic

Thus far, we developed products specialized for building air conditioning. But going forward, we will actively take on the challenge of pioneering new markets, including products for large spaces such as factories and gymnasiums, as well as products for overseas markets.

We will continue to refine our technologies, develop products that contribute to carbon neutrality which is a customer need as well as a social issue, and utilize new refrigerants that can contribute to the prevention of global warming.



NIPPON PMAC company site >>>
https://www.pmac.co.jp/eng/

International Business

1 overseas branch & 9 overseas subsidiaries

See p. 102 for details »»

Based on more than 50 years of history and experience, we aim to make this the core business of the Takasago Group. We will achieve further growth by realizing independent management of each local subsidiary and tackle the challenge of new businesses as an Environment-Creator™ based on stable revenue sources.

Business environment and strategies

Since the recovery from the COVID-19 pandemic, our International Business has been growing steadily in response to demand due to active investment in the semiconductor and other electronic component industries in various countries, and our presence has been increasing in the countries where we operate.

In FY2022, both orders received and sales improved at each of our local subsidiaries due to the impact of investments related to electronic devices and semiconductors, which recovered from FY2021. In FY2023, both orders received and sales saw a shift to good results, although differences in investment power were beginning to be seen in various countries where we operate.

In addition, to strengthen our efforts in new businesses for further growth, we have established the Carbon Neutrality Group and the Business Strategy Group (to consider new businesses mainly for the promotion of environmental equipment manufacturing and sales) starting in FY2024. With new dedicated leaders and members, the International Group will grow to become the core of our business.

Construction business

With air conditioning technology at the center, we will further expand our core business in the construction business area by leveraging our technology and experience in the design and construction of buildings, electrical equipment, and utility equipment.

We will also contribute to carbon transition (low carbon emissions and decarbonization) toward carbon neutrality.

01 | Strengthening earning power
Toward more stable management and independence

Promotion of TAW activities
TAW: Technical administration work (construction management work)

- FY2026 target: **Stable management and independence of local subsidiaries**
- FY2024 target: **Strengthen relationships with sales, engineering, and design ➡ Achieve results**
- Implementation measures: **Quality management, safety management, cost management, human resources development, and productivity improvement**

- Setting and promotion of goals that match the actual situation of each local subsidiary
- Holding of regular meetings (led by NS* and have them take the initiative in their own activities) ➡ Avoid waste by sharing information

Utilization of BIM
Promotion of BIM utilization and anticipation of 10D BIM

Overseas version of T-Base®
Consideration of realization in Thailand

Collaboration with Japan
Strengthening of collaboration with the Quality, Environment & Safety Control Division

Strengthening of cooperation among Group companies
1. Sharing information on battery and semiconductor customers
2. Collaboration on projects in Europe and the U.S.
3. Strengthening human resource exchanges between Japan and overseas

02 | Expansion of business fields
Leveraging 50 years of history and moving to the stage of value-added creation

Collaboration with carbon neutral business and new business
Collaboration with new businesses by leveraging advantages as a pioneer

Core business ↔ Carbon neutrality business / New business

Strengthening of general construction business*
Take our unique strengths from China to other countries

Rollout locations
❶ Thailand ❷ Malaysia ❸ Vietnam

Goal
We will support our customers' business plans for a longer period of time.

Organizational revitalization and tackling new things

03 | Strengthening human capital
Revitalization of the organization for continuous business development

Short-term training for young employees
- Short-term international business training program for young Japanese employees started in 2023.
- In April 2024, some of the trainees were assigned to the International Business Headquarters.



Strengthening of NS

Trainees from China
- In 2023, we invited two Chinese trainees to Japan for one year of classroom and on-site training in Japan.
- In July 2024, the second group of trainees was invited.

ONE TEAM

Establishment of association of international building engineers
Building a group of specialists and providing support to Japan as well as overseas

*NS: National staff (locally hired employees) *General construction business: Design and construction based on air conditioning technology

Equipment maintenance and management business

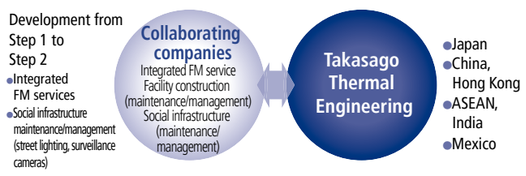
In the overseas equipment maintenance and management business, where our Group currently has no presence, we plan to stabilize operations by capturing stock business and build a foundation for future overseas carbon neutrality business.

Step 1
Energy conservation proposals to overseas government projects through collaborating companies

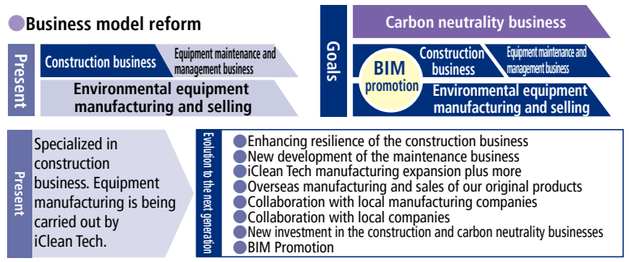


Targeting air conditioning construction orders from new customers such as government agencies, using the equipment maintenance and management business as a point of contact

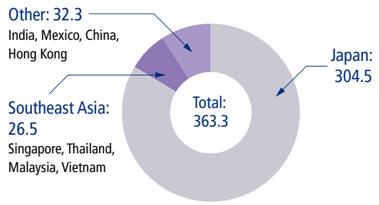
Step 2
Business expansion of collaborating companies **in Southeast Asia / Collaboration through local subsidiaries in various countries**



Business model reform



Net sales by region (Unit: Billion yen)



Environmental equipment manufacturing and selling

We will promote the commercialization of manufacturing and sales of environmental equipment and devices at iClean Tech. In addition to our products, we aim to commercialize the manufacturing and sales of equipment in new areas.

01 Manufacturing dry room dehumidifiers in the Indian market and securing battery industry customers

Outlook for LiB demand growth in the Indian market

Aiming for no. 1 share for Dry Room®
(Including addressing Dry Room® environments that are increasing in size)

	Production volume	Market forecast
2027	43.1 GWh	410 billion INR (697 billion yen)
2030	116.0 GWh	1107.0 billion INR (1,881.9 billion yen)

Environmental equipment manufacturing
Overseas deployment of Takasago's proprietary technologies

❶ ODM and OEM* production	With high priority, **we are promoting ODM and OEM production of Takasago Thermal Engineering's proprietary technology products** through interactions and meetings with companies whose main business is the manufacture and sale of air conditioning-related equipment
❷ Strengthening of collaboration with domestic Group companies	● **Future overseas expansion and manufacturing** of domestic Group companies ● **Search for partner companies that can serve as recipients**

*ODM: Original design manufacturing
OEM: Original equipment manufacturing

02 Manufacturing and sales of materials and equipment for the Takasago Thermal Engineering Group at IC and expansion in Southeast Asia

Takasago Thermal Engineering's unique product group → Development and manufacturing at IC → Sales in India → Sales in Southeast Asia

While maintaining the business currently being promoted by iClean Tech, we will promote prototyping, commercialization, and sales of new commercial products (dehumidifiers, SWIT® and SWIT® air conditioners, and other medical and pharmaceutical-related equipment). In addition, outside of India, we will also consider overseas expansion of PMAC (water-heat source separate air conditioning system), which is a domestic Group company product.

Carbon neutrality business

In addition to our core business, we provide Takasago Thermal Engineering's unique services by incorporating new elements such as green hydrogen and connecting the (Tsunagu) generation, storage, and consumption of energy. By doing so, we will contribute to carbon neutrality as demanded by our customers and society.

Carbon neutrality business in international business
- Establishment of new areas for generating and storing energy, and strengthening of core business for consuming energy
- Establishment of an energy management system (EMS) that connects (Tsunagu) generation, storage, and consumption of energy
- Activities underway for EPC contracts and energy service provider (ESP) contracts

Promotion methods
Reduction of CO_2 emissions (energy conservation), which is a waypoint toward carbon neutrality, is handled by each site with current resources.
For energy creation, energy storage, and EMS, the Carbon Neutral Business Development Division collaborates with local subsidiaries to promote business development.

❶ Identification of collaboration and investment models
Expansion and acceleration of business scope and regions
1. (Joint) investment in and collaboration with ESCO and ESP companies
2. Collaboration with and development of municipal FM business
3. Identification of models for each region (country)

❷ Development of hydrogen-linked business model
Development of Hydro Creator® and hydrogen technology
1. Development of green hydrogen supply model
2. Development of green hydrogen + fuel cell model
3. Development of hydrogen utilization business model

❸ Human capital and organizational strengthening
Building a future system through training and collaboration
1. Recruitment and development of specialized human resources
2. Collaboration with Carbon Neutral Business Development Division
3. Establishment of SPC management company



About the Society Awards

The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan Awards (hereinafter referred to as "Society Awards") are presented for particularly outstanding achievements among those that are comprehensively outstanding, with the aim of promoting the progress of air conditioning and sanitary engineering and industry. This year, we received both the Paper Award in the Academic Paper Division and the Technical Award in the Construction and Equipment Division.

- Society Awards
  - Paper Awards
    - Academic Paper Division
    - Technical Paper Division
    - Articles & Reports Division
  - Technical Awards
    - Construction and Equipment Division
    - Technical Development Division

[Special Feature] Awards in FY2023 from the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan

Takasago Thermal Engineering received awards in seven divisions in the 2023 Awards from the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan (SHASE). This was the first time in our history that we simultaneously won awards in seven divisions. We can say this is the result of our sincere efforts toward new technologies and steady research activities. The award details are introduced here.

01 62nd Society Awards Paper Award, Academic Paper Division: Development of an Open System Adsorbent Thermal Storage Heat Pump System Using HASClay

Reason for winning the award: The subject paper, "Development of an Open System Adsorbent Thermal Storage Heat Pump System Using HASClay" (sixth report), published in the collected papers of the SHASE, clarified the fundamental properties, such as heat of hydration, of HASClay as a thermal storage material and provided a mathematical model to enable the design of thermal storage systems using this material. The paper also demonstrated the effectiveness of both stationary thermal storage systems and offline thermal transport systems through empirical testing in actual facilities, including multiple factories and sports centers. The series of research outcomes in the subject paper was evaluated as promoting the effective use of low-temperature, unused exhaust heat, and as making a substantial contribution to wide-area heat exchange.



02 62nd Society Awards Technical Award, Construction and Equipment Division: Overall Planning and Operational Verification of the Shirai Data Center Campus

The Construction and Equipment Division covers achievements related to the planning, design, construction, and operation of equipment or facilities in buildings completed during the previous three years and in use at the time of the Society's evaluation.

Reason for winning the award: The Shirai Data Center Campus project was awarded to us as a full turnkey contract, covering both building and equipment. By planning, designing, constructing, operating, verifying, and fine-tuning with the four themes of 1) equipment-first architectural planning, 2) consolidation of highly-efficient air conditioning equipment, 3) AI-driven operation control, and 4) airflow control of ICT equipment, we achieved an optimal balance between temperature management and energy conservation, setting a domestic record high level with a PUE of 1.2 for our energy-efficient data center. This achievement was recognized as a significant contribution to making society carbon neutral, as an example of an optimal solution to the problem of high energy consumption in data centers, which are indispensable for our digital society.



03 62nd Society Award Technical Award, Encouragement Award: Environmental and Facility Planning and Performance Verification for Toranomon Hills Business Tower

Among the candidates for the Society's Technical Award, this award is presented to achievements that have technology that deserves recognition among the main points of the award and that are recognized as excellent technologies that should be introduced to society. Our work was the first to be conferred this newly-established award.

Reason for winning the award: Toranomon Hills is a redevelopment project adjacent to the new Toranomon Hills Station. We built an energy-saving management system that takes into consideration BCP, energy conservation, environmental friendliness, and comfort, consisting of three parts: the building, energy center, and tenants. In particular, the AI-driven energy management system was raised as the reason for us winning the award. The system achieved high energy conservation and CO_2 emissions reduction performance by forecasting electricity and thermal loads, creating operational plans for heat source equipment and the CGS, and reviewing plans in real-time for district heating and cooling facilities as well as specified electricity transmission and distribution facilities. Developed with Takasago's technical capabilities and cutting-edge technology, this system was recognized through receiving the award for its exceptional practical value and its high ripple effect for next-generation energy centers.




Osaka Station


Makuhari New Urban Center High-Tech Business District

04 24th Junen (10-Year) Award: Continuous High-Efficiency Operations Undertaken by Osaka Energy Service Plant No.2 Heat Supplier

The Special Award aims to promote operation and management technology for the long-term healthy maintenance of air conditioning and sanitary equipment, as well as the development and advancement of renovation and renewal technology. The Junen (10-Year) Award is given for equipment or facilities that have been maintained for over ten years post-construction through appropriate surveys and improvements during that period.

Reason for winning the award: This award recognizes the heat supply facility built within the new station building of JR West's flagship station, Osaka Station, which had its grand opening in May 2011 as part of its redevelopment project. The facility serves as the second plant for Osaka Energy Service. Over the decade since plant operations began, there have been societal changes affecting heat demand, such as the Great East Japan Earthquake and the COVID-19 pandemic. In response to these changes, the heat supply operator, in collaboration with the work management operator, continued to maintain an exceptionally high coefficient of performance (COP) by trialing new operating patterns and implementing numerous incremental small ideas and efforts that went beyond standard energy-saving improvements. This initiative was highly evaluated, leading to the receipt of this award.

05 12th Special Award Renovation Award: System Restructuring and Verification for Maximizing Plant Efficiency in the Heat Source Renovation of the Heat Supply Center in the Makuhari New Urban Center High-Tech Business District

This award is given to especially outstanding achievements, with the aim of promoting the development and advancement of operation and maintenance technology, along with renovation and renewal technology, to ensure the long-term health of building equipment.

Reason for winning the award: This construction began supplying heat in 1990 as Japan's first heat supply facility to fully utilize the temperature-differential energy of treated wastewater. After more than 20 years following the start of supply, operational issues and equipment deterioration became apparent, leading to a comprehensive renewal of the heat supply system between 2016 and 2022. The plan focused on maximizing plant efficiency by implementing the following: restructuring of the heat supply system based on operational results analysis, expanding the use of unutilized energy through improvements in the treated wastewater utilization system, optimizing heat recovery operations and increasing efficiency through the use of heat pumps for thermal sources, and practicing continuous energy management to achieve energy savings and reduce environmental impact. This resulted in a substantial 41% increase in primary energy efficiency from 1.19 to 1.68.

06 38th Technology Promotion Award: Optimal Airflow Control Air Conditioning System with Distributed Fans

This award is given for particularly outstanding technical achievements by members, aimed at advancing air conditioning, sanitary engineering, and industry as well as fostering up-and-coming researchers and engineers.

Reason for winning the award: Our system was developed to minimize air conveyance power by placing fan-equipped airflow control units in each control zone and coordinating them with the air conditioning unit fans. Compared to conventional VAV systems, our system achieves a significant reduction in conveyance power. Targeted for large office buildings, the design and standardization of this system's equipment have been verified through its implementation on standard office floors of Yokohama Gate Tower in Yokohama City, and it was recognized for being a highly versatile system in responding to the socially demanded shift toward ZEB (Net Zero Energy Building).



07 1st Commissioning Award: Commissioning for the Construction of a Next-Generation Electric Heat Supply Energy Plant Using AI Technology in the Toranomon and Azabudai Areas

With the goal of promoting the proper spread of commissioning, this award is given to especially outstanding achievements in the field of commissioning in order to improve the quality of building equipment systems and regional energy systems and to enhance energy-saving performance and environmental conservation performance. Our work was the first to be conferred this newly-established award.

Reason for winning the award: The award-winning Azabudai Hills project is a large-scale urban redevelopment in the Toranomon and Azabudai area. The area symbolizes a new era of Tokyo centered around expansive green spaces and including offices, commercial facilities, hotels, residences, schools, galleries, temples, and more. In the energy center supplying electricity and heat throughout this entire area, commissioning was implemented to build a pioneering energy-saving model aimed at securing environmental performance that contributes to urban decarbonization and constructing a system with superior BCP capabilities. For the AI-driven EMS and more developed and introduced by the company, we clarified the OPR (owner's project requirement), established the commissioning process and commissioning framework, and appropriately executed commissioning at each phase of planning, design, and construction in collaboration with external experts. We were conferred the award because these achievements were evaluated as "achievements contributing to the appropriate spread and expansion of commissioning for the realization of energy saving and carbon neutrality in the future."



Value Creation Infrastructure

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Material Issues (Materiality) and Sustainability Promotion System

Basic policies

In response to the social issues raised in ISO 26000 and the SDGs, we have identified material issues (materiality) that we should address through our business activities as a company with the Group Purpose, "With our revolutionary environmental innovations, we activate the Earth's future."

In May 2023, we announced our Long-Term Vision for 2040, which includes the resolution of materiality as an Environment-Creator™. In our 2026 Medium-Term Management Plan announced around the same time, we set materiality as a non-financial KGI and KPI to be addressed.

A Dialogue Between an Outside Director and the Head of the Sustainability Promotion Office
See p. 85 for details »»



Philosophy system



Purpose
With our revolutionary environmental innovations, we activate the Earth's future.

Takasago Thermal Engineering synchronizes the air to various spatial environments, creating endless possibilities.
Moreover, each employee is part of a tradition of pride and expertise built over the company's 100-year history, and we continue to expand the spirit of diversity and co-creation through harmonious relationships with others.
We consistently pioneer paradigm-shifting environmental innovations. We are able to create optimized spatial environments not only on this planet, but also in space. Dedicated to the wellbeing of our families, our fellow human beings, and all life on Earth.

Vision
Be an Environment-Creator™

Origin
Contribute to society through social harmony and creative solutions.

Values
TakasagoWay
Beyond : Provide value beyond expectations.
Pride : Act with fairness, confidence, and pride.
Trust : Build trust to create enduring relationships.

ISO 26000 / Social issues such as the SDGs

Common around the world

Poverty issues, food issues, medical disparities, education issues, child labor, refugee issues, gender equality, energy issues, climate change, waste (plastic) issues

Japan

Declining birthrate and aging population, declining population, nursing care issues, long working hours, food loss, aging social infrastructure, changes in career development

Identification of social issues to be solved through business activities

Process to identify material issues

We will speedily identify material issues (materiality) to which we should give priority through the following process and update them where appropriate while also considering the current social conditions and changes in the business environment.

STEP 01 — Identification of challenges
Identify social challenges with reference to the SDGs, ISO 26000, and other international guidelines

STEP 02 — Assessment of the challenges
Assess the challenges from the two perspectives of importance for our Group and importance for stakeholders

STEP 03 — Prioritization of the challenges
Prioritize the challenges our Group will tackle and consider the KPIs of actions

STEP 04 — Determination of material issues
Present the challenges, the action plan, and KPIs at the Management Council, etc., verify the adequacy, and determine material issues

Specifying of issues identified as material issues (materiality) according to the process

* ISO 26000: International standard on social responsibility

Promotion mechanism to realize our Vision (sustainability): Reform of management methods

Elevating to a structure that promotes addressing our key materiality, long-term vision, and Medium-Term Management Plan across divisions to create value throughout the Takasago Thermal Engineering Group

What we envision

Takasago Thermal Engineering Group's Long-Term Vision for 2040: Create our PLANET, Create our FUTURE

We will continue to rely on our air conditioning technologies, which are the cornerstone for expansion of environmental creation business areas, and ensure that all our employees act as a responsible **Environment-Creator™** by constantly taking on challenges alongside diverse human resources both within and outside our company, to co-create environmental value with our business partners.

Initiatives to achieve our vision

		Materiality
1	Solving social issues through business: Decarbonization and reduction of environmental impact	Climate and nature-related
2	Creating a diverse workforce that takes on the challenge of value creation	Wellbeing
3	Establishment of a business domain system tailored to social needs	Climate / Foundation
4	Building a value chain to co-create environmental value	Business infrastructure
5	Alignment of business domains through DX	Business infrastructure

Medium-Term Management Plan Vision Plan (Sustainability)

Transformation to an Environment-Creator™ company

Human resources and company transformation
- Develop professional human resources as an Environment-Creator™
- Reform personnel system to support employees (evaluation and compensation, multi-track career system)

Business model transformation
- Achieve the social implementation of green energy supply equipment (equivalent to a total of 5,000 kW)
- Propose a carbon transition of -15,000 t-CO_2 per year

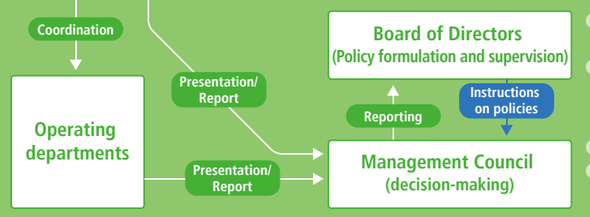
Former name: ESG Promotion Committee (held quarterly)
Sustainability Promotion Committee (discussion of medium- to long-term themes / held monthly)

Climate and nature-related
Engineering & Technology Management Department, General Affairs Division, CN Business Development Division
- Consideration to reduce CO_2 emissions generated by business activities
- Verification of effectiveness for promoting carbon neutrality projects

Wellbeing
Human Resources Development Division, Takasago Academy
- Fixed-point observation and analysis of employee engagement surveys, and consideration of reflecting the results in strategies
- Visualization of human resources growth, verification of effectiveness of training and education

Business infrastructure
Engineering & Technology Management Department, Business Strategy Management Department, DX Strategy Management Department
- Establishment of an appropriate supply chain in the construction business
- Spread of the strategy throughout the Group (domestic and overseas) and promotion of a growth cycle model
- Establishment and adoption status of DX tools as business infrastructure

Sustainability Promotion Office Secretariat



- Discussion on business strategies and business portfolios with an eye on megatrends
- Discussion on management strategies based on sustainability themes
- Review and formulation of business strategies
- Development and formulation of management plans, including growth investments, resource allocation, and organizational structure

Achievements and Plans for Material Issues

FY2023 activity results

Material issues		Activities		FY2023 KPIs	FY2023 results
E	Reduction of CO_2 emissions	Reduction of overall CO_2 emissions (Scopes 1 and 2) ・Promotion of the use of hybrid vehicles for company vehicles ・Reduction of electricity consumption in offices ・Promotion of the use of energy creation technologies at the Innovation Center		7.5% reduction (from FY2019)	○
		Reduction of overall CO_2 emissions (Scope 3) ・Expansion of sales of GDoc® (optimum heat source utilization system) and utilization of T-Base®(introduction of aluminum frame) ・Sales development of environmental technologies such as closed VOCs		3.7% reduction (from FY2019)	×
	Spread in society	Provision of "resource-saving methods for facilities" to encourage customers to conduct decarbonization management		10 or more comprehensive proposals for customers	—
	Reduction of water use	Introduction of a drainless policy to construction sites of more than a certain scale		Introduction of the policy to 50 or more construction sites	×
	Negative emission technology development related to the environment	CCU using recovered CO_2 for agriculture		Field testing and demonstration	○
		Use of recovered CO_2 for photobioreactors		Demonstration testing using prototype machinery	○
	Corporate rating	Participation in CDP (climate change) questionnaire		A- or higher	—
	Reduction of paper use	Reduction of copy paper use in the head office, main office and branch offices		Not more than 500 sheets/month per person	○
	Reduction of waste	Reduction of waste materials at the time of construction		10% reduction from the previous FY	○
		Recycling of industrial waste at construction sites		Recycling rate of 85% or more	○
		Development of actual cases for plastic elimination		Introduction of LIMEX to 5 construction sites or more per office	×
S	Quality control	Curbing of trouble and complaints		Down from the previous FY	×
	Engagement enhancement	Health and productivity management	Implementation of subsequent measures after regular health checks	100% submission rate of industrial physician opinion letters for people with high risks or potentially high risks	○
			Health checks concerning specific work (midnight, etc.)	All employees had a checkup	○
			Decrease in the number of persons with mental health issues	More than 80% understanding in questionnaire after mental health training	○
		Diversity	Foster a culture of diversity acceptance Conduct unconscious bias training for managers and above	80% or more positive response rate on post-implementation questionnaire regarding acceptance of diversity	○
			Promotion of understanding of disabilities	・Information sharing meetings for persons with disabilities ・Training for understanding disabilities Both of the above held at least once per year	○
			Creating an environment in which all genders can play an active role	At least 30% of male employees took childcare leave for at least 5 workdays	○
			Sharing role models who are active both inside and outside the company	Introduction of case studies of activities on the company intranet, etc. (at least one woman, one mid-career professional hire, one person with a disability, and one foreign national each)	○
			Stable hiring of persons with disabilities	・Promotion of hiring of new graduates with disabilities At least two new graduates entered the company in FY2023	○
	Employee satisfaction	Lost-time injuries		Decrease in the number of incidents from the previous FY	○
	Social harmony	Forestation and local activities		Once or more per headquarters/office per year	○
				Malaysian tropical rainforest restoration activities conducted once or more per year	○
G	Strengthening governance	Reduction of shares held for policy purposes		Agreed cross-shareholdings sales amount: 7 billion yen (FY2020 to before FY2022)	○
		Evaluation of integrated report		Average or higher in the evaluation	○
		Information disclosure and fruitful dialogue		Dialogue with 80 people or more in total	○

Activity descriptions and KPIs for FY2024

Item		Department in charge	KPIs
Climate and nature-related	CO_2 reduction for scopes 1, 2, and 3	Technical Engineering Headquarters (Quality Environment & Safety Control Division), General Affairs Division, Sustainability Promotion Office	6.9% lower for scopes 1 and 2 (compared to 2023) 5.2% lower for scope 3 (compared to 2023)
	Introduction of leased HV vehicles (rental cars)	General Affairs Division	100% of applicable vehicles
	Gasoline consumption	General Affairs Division	6.9% lower year-on-year
	Energy creation technologies at the Innovation Center	Planning Management Division, Research & Development Headquarters	2.0 times power consumption in office buildings
	Introduction of renewable electricity to offices, etc.	General Affairs Division	100% of applicable sites
	Number of sites with T-Base® options introduced	Process Management Section	70 construction sites per year
	Achievement of CO_2 reduction targets by main office and branches	Technical Engineering Headquarters (Quality Environment & Safety Control Division)	Achievement of 100% for entire company
	EMS provision (data collection)	DX Strategy Management Department / Customer Center / Research & Development Headquarters	12 buildings (from second half of year)
	Number of energy conservation / RN proposals	Sales & Marketing Management Division / Design Supervisory Department	10 per year
	Agriculture CCU	Research & Development Center	Completion of field demonstrations Customer consultations for the actual property
	Bioreactors	Research and Development Center	Establishment of culture technology and low-concentration CO_2 adsorption/desorption technology
	Introduction of water electrolysis equipment	Research & Development Headquarters, Carbon Neutral Business Development Division	1 or more orders received
	Introduction of drainage-less flushing	Technologies	50 construction sites or more
	Reduction of materials from time of construction start	Quality Environment & Safety Control Division	10% reduction from time of construction start
	Recycling of industrial waste at construction sites	Quality Environment & Safety Control Division	Recycling rate of 85% or more
	Introduction of LIMEX for plastic waste reduction	Quality Environment & Safety Control Division	Introduction to 5 construction sites or more per office
	CDP assessment	Sustainability Promotion Office	A- or above
	Forest conservation and community cleanup activities	General Affairs Division	One or more times per office per year
Wellbeing	Securing the necessary number of personnel	Human Resources Development Division	Net increase of 60 employees (50 mid-career employees and 5 international human resources), less than 50 employees leaving the company, 134 new graduates in April 2024, and 30% ratio of female employees
	Support for human capital growth that balances company strategy and career goals	Human Resources Development Division	"Opportunities for growth" Engagement indicator: +4 points
	Fostering an environment where employees can take time off to rest	Human Resources Development Division	100% of employees get 8 days off per month
	Fostering an open work environment	Human Resources Development Division	Year-on-year improvement in questionnaire responses
	Diversity promotion, male employees taking childcare leave	Human Resources Development Division	90% took at least 1 week of leave Inclusion indicator monitor
	Health and productivity management (1) People requiring measures after a routine health checkup	Human Resources Development Division	Rate of people with high risks or potentially high risks Year-on-year improvement (2Q report)
	Health and productivity management (2) Decrease in people with mental health issues	Human Resources Development Division	Comprehensive health risk Year-on-year improvement (3Q report)
	Number of lost-time injuries cases	Quality Environment & Safety Control Division	Frequency rate: 0.15 (under four lost-time injuries) Frequency rate: 0.002 (under 60 days of lost-time)
	Curbing of trouble/complaints	Quality Environment & Safety Control Division	Year-on-year reduction in expenses for measures addressing trouble/complaints
Business infrastructure	Sharing related to internal control at meetings of managers of overseas subsidiaries	International Business Headquarters	Setting up information related to compliance and control each time
	Reduction of shares held for policy purposes	Accounting & Finance Division	Net asset ratio of less than 15% by March 2027
	Dialogue with stakeholders	Finance & Investor Relations Department	150 people or above (including 5 new people)

In addition to the above, there are other disclosure items such as number of patents, number of first-class plumbing work operation and management engineers, number of annual working hours, number of female employees, total amount of construction completed, and R&D expenses.

Co-Creative Value with Stakeholders

Initiatives for sustainable development with multiple stakeholders

To solve social issues through our business activities in line with our Group Purpose which states, "With our revolutionary environmental innovations, we activate the Earth's future," it is essential to engage in co-creation with multiple diverse stakeholders.

To this end, we are implementing various mechanisms to encourage co-creation with our stakeholders.

Takasago Thermal Engineering



01 Initiatives for partner companies

- Shortened usance of electronically recorded monetary claims from 90 to 60 days and of notes payable from 120 to 60 days
- Efforts to appropriately negotiate and pass on labor costs
- Establishment of an "Excellent Partner" certification system, support for recruitment by partner companies, etc.
- Distribution of 20,000 wearable heatstroke prevention devices
- Support for education and training through the utilization of T-Base® and the Innovation Center
- Free provision of helmets (approximately 11,000) for use on construction sites, collaborative recycling efforts



02 Initiatives for communities and society

- Development of an air conditioning system for gymnasiums used for classes, sports practice by local residents, and as evacuation shelters in times of disaster, enabling measures against heatstroke and virus transmission
- Donations to disaster areas, recovery support, etc.
- Sponsorship activities to promote arts and culture
- Employee participation in environmental conservation, educational support, and volunteer activities
- Opening of the Takasago Thermal Engineering Innovation Center as a venue for local education and exchanges
- Endorsement of "Business for Marriage Equality," an initiative by three non-profit organizations in Japan working to achieve marriage equality (legalization of same-sex marriage)
- Sponsorship of the festival and parade organized by Tokyo Rainbow Pride



03 Initiatives for employees

- Revision of the personnel system
- Enhancement of various benefits based on employees' work styles and work environments (e.g.: 500,000 yen job relocation arrangements allowance), extension of shortened-hour work system for childcare until the child reaches grade 6 of elementary school, etc.
- Increase in starting salary for university graduates by 28,000 yen, bringing it to ¥270,000 yen per month
- Childcare leave for up to 28 days with salary and bonus payments provided
- Employee engagement survey, analysis, and improvement activities implementation (see p. 66 for details)
- Systematization of learning opportunities through clarification of skills (see pp. 65 and 68 for details)
- Promotion of initiatives for work-style reform at construction sites
- Diversity promotion (see pp. 66, 69-72 for details) (women, mid-career professional hires, international human resources, people with disabilities, LGBTQ+ people, seniors)
- Introduction of home leave for non-Japanese employees
- Holding of TakasaGo! Woman Pride event to promote women's workplace participation



04 Initiatives for shareholders and investors

- Holding of General Meeting of Shareholders
- Holding of financial results briefing sessions, individual IR meetings
- Holding of IR events for analysts and institutional investors (IR Day: site tours, etc.) and events for shareholders
- Timely disclosure, enhancement of information disclosed
- Held overseas IR meetings for the first time
- Answering questionnaires of ESG research companies



05 Strengthening engagement with other stakeholders

- Promotion of branding, commercials aired on TV, etc.



- Publication of "100-Year History of Takasago Thermal Engineering" https://www.tte-net.com/100th/100nenbook/
- Endorsement of international initiatives on climate change, etc.

TCFD Initiatives and Information Disclosure

We regard climate change as one of the most important material issues
and incorporate it into our management strategies to promote climate change countermeasures.

In March 2021, our Group obtained certification for the 2030 WB 2.0°C goal*1 from the Science Based Targets initiative (SBTi) for our greenhouse gas emissions reduction goals. However, under our 2026 Medium-Term Management Plan, we have raised our reduction goals to the 1.5°C level.*2 In line with this, in December 2023, we submitted an application to the SBTi to upgrade our goal to the 1.5°C goal and to gain certification for the 2050 net-zero goal. The Group will achieve its goals for which we made public commitments through various measures as an Environment-Creator™ to help realize a carbon-neutral and net-zero society.

We have been providing reports on the progress of these initiatives based on the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. Going forward, we will continue to enhance content by referring to the IFRS S2 standards.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Check our website for details >>>
https://www.tte-net.com/english/sustainability/environment/carbon_neutral/index.html

*1 2.5% reduction target per year *2 4.2% reduction target per year

Identification of key risks and opportunities

Business impacts of transition risks and response measures

Item	Risks	Business impacts*1 1.5°C scenario	Period*2	Summary of measures
Policies and regulations	Increase in operational costs due to the introduction of a carbon tax	Medium	Medium-term	The following policies are possible, and will be considered based on cost-effectiveness: ●Use of renewable electricity (including corporate PPA) ●Use of low-carbon vehicles ●Installation of renewable energy generation equipment and rechargeable batteries, etc.
	Increase in procurement costs due to higher operating costs for suppliers due to the introduction of a carbon tax	Large	Long-term	●Use of low-carbon materials and equipment through collaboration and cooperation with suppliers, and enhancement of materials and equipment selection functions
Technologies	Decrease in orders received due to delay in technological development related to energy conservation	Large	Short- to medium-term	●Accurately understand needs by grasping stakeholder trends, etc. → Ascertain customer needs for carbon neutrality through energy-saving proposals, etc. ●Establishment of appropriate business models based on trends of customers and competitors, etc. ●Promotion of research and development based on the above and collaboration with business partners
	Loss of revenue opportunities due to delays in the development of decarbonization-related technologies and services as well as inadequate response to decarbonization-related market needs	Large	Medium- to long-term	
Reputation	Decrease in corporate value due to inadequate response and disclosure information for climate-related issues	Large	Medium-term	●Participation in climate change response initiatives ●Proactive communication of our initiatives

Business impacts of physical risks and response measures

Item	Risks	Business impacts*1 4°C scenario	Period*2	Summary of measures
Acute physical risks	Loss of orders and revenue opportunities due to freeze/revision of clients' capital investment plans and process delays at properties being constructed due to the impact of extreme weather events	Large	Short- to long-term	●Implementation of measures based on the BCP
Chronic physical risks	Decrease in orders and revenue opportunities due to reduced employees and construction capacity as a result of work environments becoming tougher	Large	Short- to long-term	●Enhancement of health and productivity management, heat stroke countermeasures through use of remote operations via the IoT, etc. ●Increase in off-site work and scaling back on-site work via T-Base®, etc. ●Productivity improvement of on-site work through use of building information modeling (BIM)
	Decrease in revenue opportunities due to lower work efficiency caused by deteriorating work environments	Medium	Short- to long-term	
	Increase in air-conditioning equipment usage costs at business sites	Small	Short- to long-term	●Operations that reduce electricity (Cool Biz (setting air conditioning to higher temperature in hot season and having employees wear lighter clothes), Warm Biz (setting air conditioning to lower temperature in cool season and having employees wear warmer clothes), etc.)
	Loss of revenue opportunities and disaster damages due to suspension of business activities caused by flooding	Small	Short- to medium-term	●Strengthening of disaster and flood prevention measures for each project site

Business impacts of climate-related opportunities and response measures

Item	Opportunities	Business impacts*1	Period*2	Summary of measures
Resource efficiency	Reduction of operating costs and increase in productivity by transforming the construction process	Large	Medium- to long-term	●Productivity improvement through spread and promotion of T-Base® ●Consideration toward spread of building information modeling (BIM), etc.
Products and services	Increase in revenue opportunities due to increased corporate equipment replacement needs as a result of developments in energy conservation promotion policies and regulations	Large	Medium- to long-term	●Provision of information to customers to understand their needs and implement planned replacements/renewals ●Strengthening of collaboration with equipment manufacturers, suppliers, distributors, etc. ●Collaboration with government agencies, local governments, etc.
	Increase in sales from installation of products that contribute to reducing environmental impact (Swirling Induction Type TAKASAGO HVAC System (SWIT®))			
Market	Development of new markets by introducing new services and developing new technologies such as water electrolysis hydrogen production system (Hydro Creator®)	Large	Medium- to long-term	Promotion of research and development with the aim of launching our water electrolysis hydrogen production system (5,000 kW capacity) by 2026 Moreover, based on trends of customers and competitors, establishment of business models to collaborate with appropriate partners in a timely manner
	Creation of advantageous financing opportunities such as green bonds	Large	Medium- to long-term	Consideration for utilization when necessary for investment to capture the above opportunities ●Planning and implementation of accurate financing

*1 Business impact is classified as "small," "medium," or "large" based on a qualitative assessment of the estimated financial impact (costs: up to 100 million yen for "small," 100 million to three billion yen for "medium," and three billion yen or more for "large;" revenues: up to two billion yen for "small," two billion to 30 billion yen for "medium," and 30 billion yen or more for "large") (the cost and revenue thresholds for "large" are based on the TSE's timely disclosure standards).
*2 Short-term refers to one year (aligned with the annual management plan), medium-term refers to 3 to 10 years (aligned with the Medium-Term Management Plan), and long-term refers to over 10 years (aligned with the Long-Term Vision).

Our Group's 2050 net zero emissions transition plan

From the perspective of the need to strengthen the resilience of our strategies under both the 1.5°C and 4°C scenarios, the Group has formulated a transition plan toward net zero emissions in 2050. We will make medium- and long-term efforts to steadily capture newly created business opportunities in the future while appropriately avoiding risks.

		Results (through 2023)	Through 2030	Through 2050
Greenhouse gas reductions	Scopes 1 and 2	12.2% decrease compared to 2019	2030 target: 46.2% decrease compared to 2019	Net zero
	Scope 3	14.2% increase compared to 2019	2030 target: 27.5% decrease compared to 2019	
Important measures	Scope 1	Promotion of the use of hybrid vehicles for company vehicles	Promotion of use of electric vehicles for some company vehicles	Promotion of use of electric vehicles for company vehicles, conversion to energy-saving fuel, use of low-carbon energy
	Scope 2	Renewable energy generation at research and development centers (Takasago Thermal Engineering Innovation Center), etc. Procurement of renewable electricity (including corporate PPA) Reform of construction processes via T-Base® Takasago Thermal Engineering's DX strategy	Consideration and introduction of power generation facilities using renewable energy Improvement of productivity through promotion and spread of aluminum frame construction method Improvement of productivity through promotion of BIM, etc.	
	Scope 3	Energy-saving design ●Swirling Induction Type TAKASAGO HVAC System (SWIT®), etc. Various demonstration tests at T-Base® Use of renewable energy Waste heat recovery and utilization (Mega Stock®) Water electrolysis system, VOC, ozone wastewater treatment, etc. Energy-saving operations tool GODA®, etc.	Improved transportation efficiency, circular economy, consideration and introduction of the use of low-carbon materials Evolution of microgrids, etc. Development and implementation of hydrogen-related and decarbonization technologies Introduction of new tools	Further development of energy-saving design ●New technologies for different building applications Establishment of new business domains (2040) Carbon neutrality business Environmental equipment manufacturing and selling business Equipment maintenance business

Risk management

The Group has established a system to manage risks in business operations on a company-wide basis, centered on the Risk Management Committee chaired by the director in charge of risks.

Specifically, risks in overall business operations are categorized by function, such as operations and management, and the supervising division identifies and assesses risks within the three categories of "priority risks," "important management risks," and "other management risks" as necessary on a regular basis at least once a year, from the perspective of probability of occurrence and degree of impact. This is presented to the Risk Management Committee.

Priority risks	Risks that have a high probability of occurring in the near future and have a broad and serious impact on the Group's business operations
Important management risks	Risks whose probability of occurrence or impact is not as high as the priority risks
Other management risks	Risks whose probability of occurrence and impact are not as high as the priority risks and important management risks

Under our process, each risk discussed and decided by the Risk Management Committee is reported to and monitored by the Board of Directors after discussion and screening by the Internal Control Committee chaired by the president.

In FY2023, five risks, including compliance with labor regulations and the risk of human capital deterioration, were identified as priority risks, with the Risk Management Committee taking the lead in controlling these risks.

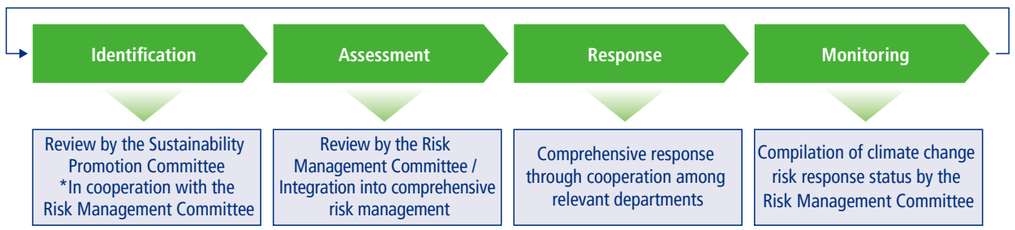
With regard to climate-related risks, the supervising division aggregates the identified individual transition risks and physical risks. From April 2024, these climate-related risks are assessed collectively by the Sustainability Promotion Committee before being coordinated with the Risk Management Committee. The most recent assessment positions "important management risks"* (the second risk category after priority risks).

In this way, climate-related risks are managed by the Risk Management Committee as one of the risks of business and reported to the Board of Directors. The individual transition and physical risks identified, as well as climate-related business opportunities, are addressed by the Sustainability Promotion Committee, which formulates response measures. These are reported to the Management Council and Board of Directors and are incorporated into management plans as medium- to long-term issues.



***1 The Risk Management Committee classifies and manages the identified overall business risks within three categories that incorporate: i. probability of occurrence (three levels: large, medium, and small), and ii. degree of impact (three levels: large, medium, and small).**

1. **Priority risks (i and ii are both large)**
2. **Important management risks (either i or ii is large)**
3. **Other management risks (other than the above)**



*2 The Sustainability Promotion Committee was newly established in April 2024 (formerly the ESG Promotion Committee until March 2024). See Governance for details.

Targets and goals

We formulated medium- to long-term greenhouse gas emissions reduction goals. We updated our SBT certification to the WB 1.5°C level in June 2024 while also obtaining certification for our net-zero target.

We will strive to further reduce greenhouse gas emissions for all the scopes.

Target scope	Target value for FY2030 (Compared to FY2019)	Major reduction initiatives	Results in FY2023 (Compared to FY2019)
Scopes 1 and 2	46.2% reduction	Conversion of company vehicles to HVs and EVs, etc. Utilization of renewable electricity, etc.	12.2% reduction
Scope 3	27.5% reduction	Energy-saving design and construction, etc.	0.3% reduction

	Main points for future reduction
Scopes 1 and 2	**Utilization of electricity derived from renewable energy sources, etc.** ● Systematic conversion of company vehicles to HVs and EVs (Scope 1) ● Active use of renewable electricity, including corporate PPA, at each office and reduction of energy consumption on site through expansion of utilization of T-Base® (Scope 2)
Scope 3	**Provision of technologies and services that support carbon neutrality for customers and society** ● Energy-saving design and construction through the use of SWIT®, etc. ● Development of new energy-saving technologies such as exhaust heat utilization ● Design of renewable electricity, hydrogen generation, rechargeable batteries, and microgrid operation ● T-Base® initiatives ● Establishment of an energy management system

Topics

Acquisition of "net-zero target" recognition from the SBTi

Our goal to achieve net-zero greenhouse gas emissions across the entire value chain by 2050 has been recognized on a scientific basis by the Science Based Targets initiative (SBTi), earning certification as a "net-zero target."

In addition, our short-term greenhouse gas emissions reduction target for FY2030, which was certified by the SBTi in FY2021, has been revised to increase the reduction rate, now meeting the 1.5°C level rather than the 2°C level.

To achieve these targets, we are advancing efforts such as utilizing renewable energy at our business sites; proposing and implementing renewal projects that leverage AI, IoT, and energy-saving technologies; and purchasing and selecting equipment with high energy efficiency. We are also progressing in the research and development of environmental technologies that contribute to decarbonization, such as hydrogen and biomass, with the aim of implementing them in society. Moreover, under our Sustainability Promotion Committee, we will strengthen initiatives that address significant social issues, including the environmental.

Net-zero target	● **Achieve net-zero greenhouse gas emissions across the entire value chain (Scopes 1, 2, and 3) by FY2050**
Short-term targets	● **Scopes 1 and 2: Reduce greenhouse gas emissions by 46.2% compared to FY2019 by FY2030** ● **Scope 3: Reduce greenhouse gas emissions by 27.5% compared to FY2019 by FY2030**

Research and Development

Creating technologies and businesses that contribute to becoming an Environment-Creator™

Four years have passed since the Takasago Thermal Engineering Innovation Center opened in Tsukubamirai City, Ibaraki Prefecture. The Research and Development Headquarters operates the center as a base for research and development and as part of the functions of the main office.

The themes of our research and development are centered on our "three plus α" pillars of "Creating building environments," "Protecting the global environment," and "Tackling new environmental challenges." We have worked to create technologies and products that help to realize a decarbonized society, protect the global environment, improve productivity, reform work styles, and meet other diverse customer needs.

Specifically, we are working on the development of technologies for utilizing renewable energy and unused energy, the development of resource recycling technologies, and the performance improvement and verification of technologies introduced at the Takasago Thermal Engineering Innovation Center.

In particular, we have positioned hydrogen energy utilization technology, which is expected to contribute to the promotion of decarbonization, as a key development issue, and are promoting the development of related technologies as well as business development.

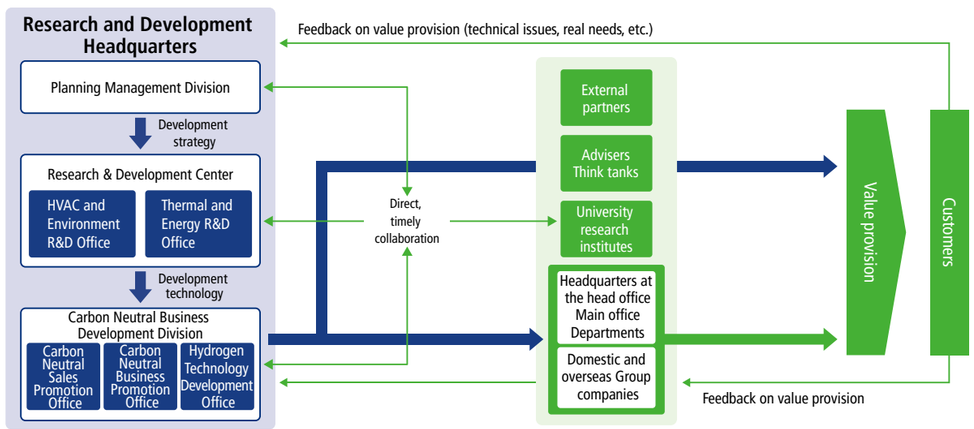
In terms of the organization, the Research and Development Headquarters was reorganized in April 2022. Its policy is "Connective research and development, connective business development," and now has three divisions: the Research & Development Center, the Carbon Neutral Business Development Division, and the Planning Management Division.

Based on the development strategy formulated by the Planning Management Division, there is a system in which the Research & Development Center is responsible for research and development, and the Carbon Neutral Business Development Division is responsible for linking this to business for social implementation by leveraging our proprietary technologies created through the research and development. Through further connection with each organization within the Group, we will contribute to the achievement of the KPIs in the Medium-Term Management Plan.

Research and business development themes



System of connective research and development, connective business development




Panoramic view of the building


Atrium


Main workplace

Takasago Thermal Engineering Innovation Center

Sustainable research facility that balances environmental impact reduction and intellectual productivity improvement

The Takasago Thermal Engineering Innovation Center is designed to embody the concept of sustainable architecture that combines environmental impact reduction with intellectual productivity improvement. It has aimed to achieve ZEB status through the active use of renewable energy, and to provide a variety of work spaces that respond to changes in work styles as well as spaces that contribute to communities.

In terms of use of renewable energy, in addition to 200 kW of solar power generation, the Center has introduced 80 kW of biomass gasification power generation fueled by wood chips produced locally in Ibaraki Prefecture. It has also achieved carbon-free status by reducing the ratio of electricity received and using green electricity derived from hydroelectric power generation. In addition, the health and comfort of the workers are realized through a desiccant outdoor air processing unit that uses underground water or exhaust heat from biomass gasification power generation, ceiling radiant air conditioning panels, and individual air conditioners that can be operated with personal devices. These achievements have been highly evaluated by related academic associations and others, and have won multiple awards.

The above awards were conferred in recognition of the Center being a facility pursuing the feasibility of carbon neutrality, based on its achievements during the two years since its completion.

Divided into the following four main points, the Center has realized ZEB status by adopting thorough energy-saving technologies and energy-creating technologies not being stuck in preconceived ideas. In the indoor environment, human-centric technologies and systems that promote intellectual productivity were proactively adopted to create an environment where employees can actually operate and improve the facility on a daily basis and promptly provide feedback for research and development. In addition, we consider it an important responsibility not only to build buildings, but also to communicate and contribute to the local community and society. We have planned and realized the Center to be not only energy independent in normal times, but also to provide security to the community even in times of emergency, and to be a place for growth in harmony with the local community.

Four main points

Main point 1
Building plan that incorporates passive energy-saving technology
New construction technology and sensing/ cloud monitoring

Main point 2
Energy planning for ZEB and off-grid electricity

Main point 3
Human-centric air conditioning systems, such as personal air conditioning

Main point 4
Formation of a base for passing on air conditioning technology and contributing to the local community

Awards received

- **ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers), ASHRAE Technology Awards 2024, Global Second Place** (FY2023)
- **Energy Conservation Center, Japan (ECCJ), 2023 Energy Conservation Grand Prize, Energy Conservation Best Practices at Workplaces Category, Minister of Economy, Trade and Industry Award (Business Field)** (FY2023)
- **ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers), ASHRAE Technology Awards 2024, Asia Region First Place** (FY2023)
- **The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, 61st SHASE Award for Distinguished Technologies, Construction and Equipment Division** (FY2023)
- **Japanese Association of Building Mechanical and Electrical Engineers, 11th Carbon Neutral Award, Carbon Neutral Award Grand Prize** (FY2023)
- **Association of Building Engineering and Equipment, 21st Environmental and Equipment Design Award (Category II: Integrated M&E Design), Distinguished Design Award** (FY2023)

* The fiscal years in parentheses indicate when awards were announced or received.





A Exhaust heat location (exhaust heat recovery)



B Usage location (usage of transported exhaust heat)

Adsorbent thermal storage system Mega Stock®

The effective utilization of waste heat and other forms of unused energy is required for further energy saving and reduction of CO_2 emissions in industrial areas. While the use of high-temperature waste heat for power and steam generation, etc. is promoted, most low-temperature waste heat of around 100°C is discarded into the atmosphere at present because its uses are limited and the mismatch in time and space between the supply of the heat and thermal demand makes it difficult to use the heat.

To solve this challenge, we have developed and are marketing a new large-scale thermal storage system that recycles waste/unused heat for air conditioning and as a thermal source.

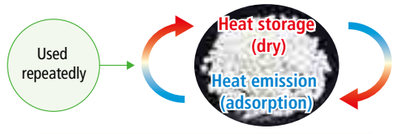
With this system, exhaust heat recovered within plant facilities is stored in a heat storage tank, which enables it to be used in different places and at different times. The heat can be used effectively for dehumidification, air conditioning, drying processes, etc. We also expect to introduce it as an offline heat recovery, transport, and utilization system to recover exhaust heat from sludge and garbage incineration plants of local governments, etc., as well as exhaust heat from factories, and use the heat in the nearby areas.

In FY2018–2019, we launched a demonstration test for the system as a project subsidized by the New Energy and Industrial Technology Development Organization (NEDO) jointly with Hamura City, Tokyo, and five other organizations. We created a thermal storage system using HASClay®, a new high-density heat storage material, to collect full-year demonstration data on the fixed type and the offline heat transport type and demonstrated the storage of waste heat from factories, cogeneration exhaust gas, and waste warm water, as well as the use of heat in production lines and commercial facilities. In FY2023, we introduced this equipment to store and reuse unused low-temperature waste heat produced by the Honjo Factory (west site) (in Yurihonjo, Akita Prefecture), TDK Corporation's largest scale domestic manufacturing and development base.

In 2023, a paper we prepared that summarized the results of researching and developing the above technology won the 62nd Academic Award Paper Award (in the Academic Paper Division) from the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan due to our promotion of the effective utilization of unused low-temperature exhaust heat to significantly contribute to far-reaching heat exchange.

Features of this system

1. Low-temperature waste heat of 80 to 200°C can be stored.
2. The thermal storage density is more than twice that of conventional heat storage (over 500kJ/L).
3. Recovered waste heat can be used for air conditioning (cooling/heating, outdoor air processing, and dehumidification) and supplying hot water.
4. Heat loss from stored heat is minimized (because of the principles of moisture adsorption/desorption reactions).
5. Heat users can substantially reduce their CO_2 emissions.

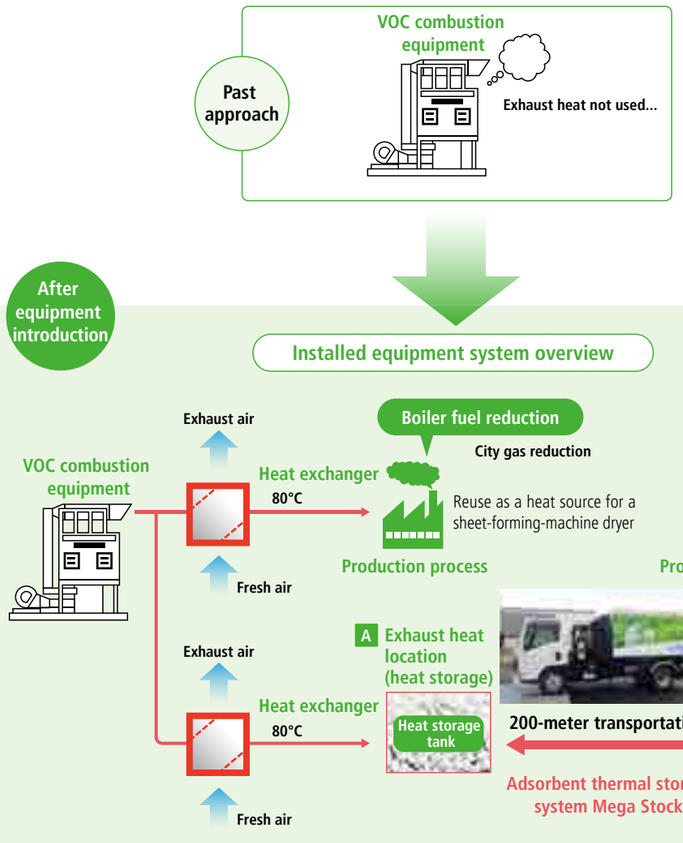


Using reaction heat from the absorption and desorption of water to and from adsorbent (heat storage material)

- Desorption of water → Heat storage
- Adsorption of water → Heat emission (use of heat)

Utilization example

Offline heat transport at TDK Corporation's Honjo Factory (west site)



Viewable on the National Institute of Advanced Industrial Science and Technology YouTube channel "Sansoken Channel (AIST Channel)" >>>
https://www.youtube.com/watch?v=IJ_E3LUVCnc

TDK Corporation's Honjo Factory (West site) introduction press release >>>
https://www.tte-net.com/article_source/data/news/detail/2024/678.html

Awards received

- **New Energy and Industrial Technology Development Organization (NEDO), 2018 Strategic Innovation Program for Energy Conservation Technologies, Excellent Business Award** (FY2019)
- **New Energy and Industrial Technology Development Organization (NEDO), 2020 NEDO Energy Conservation Technology Development Award, Excellent Business Award** (FY2020)
- **Advanced Cogeneration and Energy Utilization Center Japan, Cogeneration Grand Prize 2021 (Industrial Division), Award of Excellence** (FY2021)
- **Japan Machinery Federation, FY2022 Excellent Energy-Saving and Decarbonization Machinery and Systems Award, Chairman's Award** (FY2022)
- **The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, 62nd SHASE Award for Academic Papers, Academic Paper Division** (FY2024)

* The fiscal years in parentheses indicate when awards were announced or received.



Actual equipment for VOCs with low-boiling points



48th Environment Award | Award of Excellence Winner (2021)

Closed VOC recycling system

Toluene, ethyl acetate, NMP, and other major volatile organic compounds (VOCs) are used in a wide range of fields, including cutting-edge lithium-ion batteries, all-solid-state batteries, paints, printing inks, and adhesives.

When VOCs are emitted into the atmosphere, they cause air pollution that includes photochemical smog and PM2.5, so exhaust gas resulting from manufacturing processes has been suitably treated in line with laws and regulations in the past. However, the incineration method of treating VOC exhaust gas—the most common approach in the past—was flawed in that pyrolysis could not completely remove VOCs, so a certain amount of them ended up emitted into the atmosphere. In addition, VOC pyrolysis results in the emission of a lot of CO_2. Until now, CO_2 emissions stemming from the use of pyrolysis were not viewed as a particular problem. However, based on estimates of the Ministry of the Environment (MOE), CO_2 emissions resulting from the incineration of NMVOCs (non-methane VOCs) amount to around two million t-CO_2 per year. Therefore, under the MOE's greenhouse gas emission calculation, reporting, and announcement system, starting with the FY2024 report (which describes FY2023 emissions), CO_2 emissions due to the incineration of solvents, including NMVOCs, have been added to the scope of calculations of CO_2 due to non-energy sources.

In terms of helping to achieve a decarbonized society, companies that handle solvents view the non-incineration treatment of VOCs as an urgent issue. To protect the atmospheric environment, there is also an increasing need to reduce the atmospheric emissions of VOCs that cannot be completely removed.

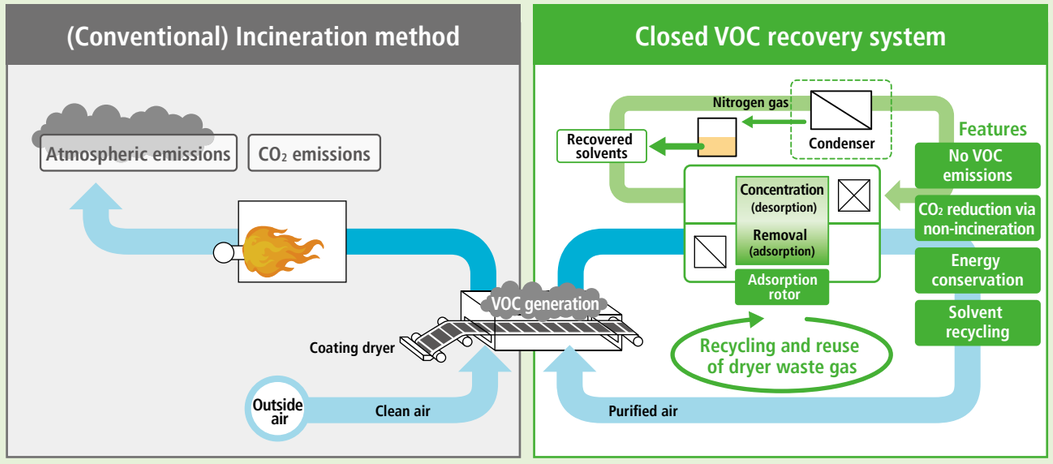
Therefore, we have developed a system that adsorbs for recovery and treats VOCs without incineration while also reducing the amount of VOCs emitted into the air significantly. Our approach uses a closed system that recycles and reuses air for a solvent dryer after solvent recovery. This greatly reduces the emissions of VOCs into the atmosphere while also reducing the energy necessary to heat and dehumidify gas supplied to the dryer, which makes our system outstanding in terms of environmental friendliness and energy-saving performance. In addition, recycling the recovered solvents reduces the emissions of CO_2 during the new-solvent manufacturing process and therefore contributes to resource conservation.

Our closed VOC recycling system consists of a solvent concentration rotor that removes VOCs by adsorption and concentrates them as well as a recovery coil that achieves the liquefaction recovery of VOCs by cooling them. We have two types of closed systems that differ depending on the VOC boiling point: low-boiling-point and high-boiling-point systems. We are an industry pioneer in terms of achieving a low-boiling-point closed recycling system that features high-density concentration by use of nitrogen gas and ultra-low-temperature liquefaction recovery of low-boiling-point solvents used for printing and adhesive tape manufacturing.

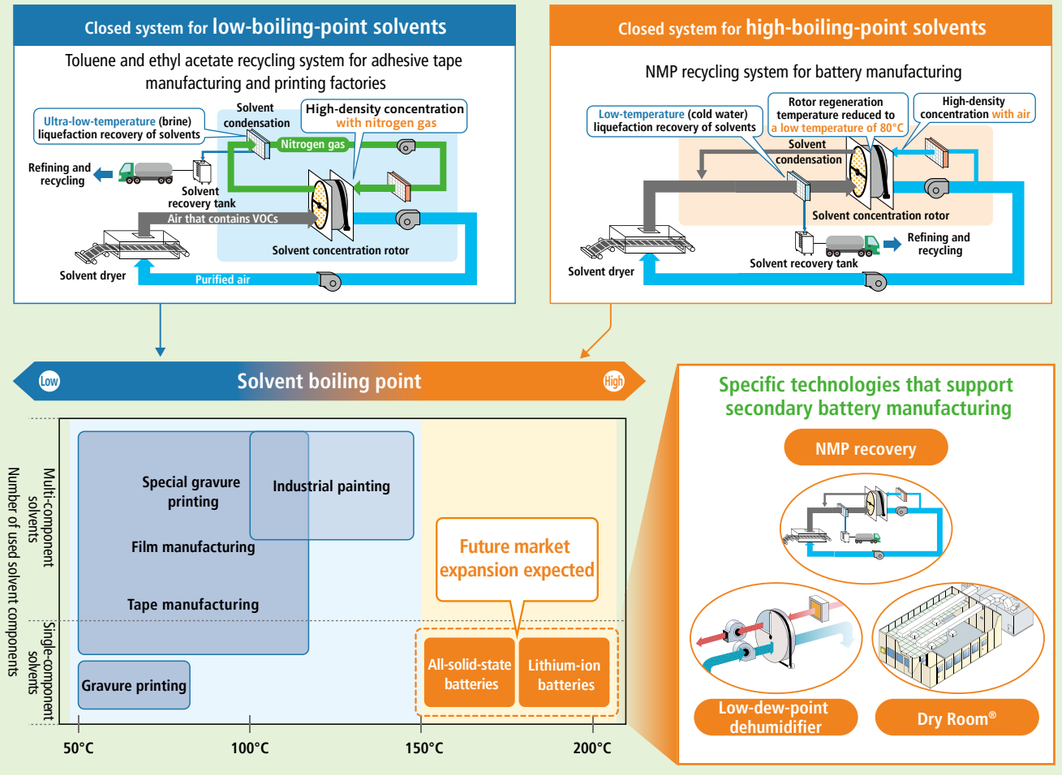
In terms of the high-boiling point solvents used for the manufacturing of lithium-ion batteries and all-solid-state batteries—for which demand is expected to increase as the EV market and storage battery market expand—the heating energy can be minimized by using a high-boiling-point closed recycling system for which low-temperature regeneration has been achieved for the solvent concentration rotor. We can achieve further energy-saving and CO_2 reductions by deploying our closed VOC recycling system, which incorporates our Dry Room® technology—which uses an energy-saving dehumidifier and has contributed to reducing the manufacturing costs of secondary batteries up until now—and our solvent concentration rotor that can regenerate at low temperature ranges.

By promoting the non-incineration treatment system capable of achieving CO_2 and VOC emissions reduction simultaneously, we will go on contributing to global environmental preservation.

VOC gas treatment method



Closed VOC recycling system line-up



Awards received

- Japan Air Cleaning Association, 38th Annual Technical Meeting on Air Cleaning and Contamination Control | Chairperson's Encouragement Award (FY2022)
- National Institute for Environmental Studies/Nikkan Kogyo Shimbun, 48th Environment Award, Award of Excellence (FY2021)

* The fiscal years in parentheses indicate when awards were announced or received.

Environmental Conservation

Support for realizing a low-carbon society

Our basic philosophy on environmental conservation is to "contribute to the conservation of the global environment while working for the sustainable development of society by fully using environmental conservation technologies and our corporate power." Based on this philosophy, we have established the Basic Environmental Policy to specify rules on the promotion system. We will actively develop energy-saving and CO_2 emission reduction technologies in our business activities and achieve optimal operation of facilities through cooperation with customers to help create a low-carbon society. Meanwhile, we have estimated CO_2 emissions in FY2023 for the external announcement and disclosure of environmental data (CO_2 emissions), etc.

As an Environment-Creator™, we strive to provide environmentally friendly technologies and services in collaboration with all stakeholders.

1. We contribute to the realization of a decarbonized society and circular economy by promoting the efficient use of energy and resources.
2. We work to achieve optimal space environments with high efficiency through active deployment of energy-saving technologies and optimization of building operations.
3. We actively engage in research and development on resource recycling, energy value chains, and other such matters to create new value.
4. We strive for biodiversity through initiatives to conserve water and forest resources.
5. Through the above, we promote initiatives to address climate-related issues.

CO_2 emissions by scope (results in FY2023)*

Class/category		Scope of the estimation	Relevant activities	Emissions in FY2023 (t-CO_2) Consolidated	Emissions in FY2023 (t-CO_2) Non-consolidated
Scope 1	Direct emissions	Direct emissions from the use of oil, etc. and industrial processes in the company	Gas, oil, gasoline	4,689	2,564
2	Energy-derived indirect emissions	Indirect emissions in association with the use of electricity and heat purchased by our facilities	Electricity, etc. at business sites, offices, etc.	5,801	2,775
3	Other indirect emissions (excluding those which fall under Scope 1 or 2): design, construction work, etc.			7,007,529	4,892,550
Category 1	Purchased goods and services	Emissions in association with activities up to the production of raw materials and other materials	Ductwork, piping, scaffolding	157,799	121,613
			Main items of HVAC systems (freezers, air conditioners, packaged air conditioners, fan coils, fans)		
2	Capital goods	Additional construction of production facilities	Capital investment	11,856	9,031
3	Energy-related activities	Minerals required for the generation of electricity purchased by the company	Electricity usage	2,149	1,272
4	Transportation (upstream)	Emissions in association with the transportation of products from suppliers to construction sites	Number of trucks required for transportation	7,400	5,649
5	Waste generated in operations	Emissions in association with the transportation and disposal of general and industrial waste generated by the company	General waste from buildings and offices	3,937	3,873
			Disposal of industrial waste from sites		
6	Business travel of employees	Business travel	Domestic and international business trips	2,679	2,631
7	Employee commuting	Commuting	Commuting	745	677
11	Use of sold products	Emissions in association with the use of products by users (consumers, business operators)	Facilities for delivery to customers	6,820,009	4,747,059
12	End-of-life treatment of sold products	Emissions in association with the end-of-life treatment of products	End-of-life treatment of purchased products	956	745
			Total	7,018,019	4,897,889

* An independent third-party assurance has been received from Sustainability Accounting Co., Ltd.

Support for realizing a circular economy

Reduction of waste

We regard waste as precious domestic resources and aggressively strive for 3R* at production sites and offices in order to recover useful resources from waste and utilize it effectively. In addition, waste is comprehensively managed up to the final disposal.

* 3R means Reduction, Reuse, and Recycling.

Achievement of a recycling rate of 90% at sites through separation of construction materials

We worked to reduce construction facility waste from contract work through such initiatives as the use of prefabricated facilities, elimination of packaging, promotion of recycling, and thorough separation of waste. As a result, the overall recycling rate in our 863 contract work sites in FY2023 was 90%, achieving our target. Going forward, we will work for even more separation of waste and materials in order to increase the recycling rate, including promoting initiatives at T-Base®.

Ensuring 100% control of chlorofluorocarbons (CFCs) and industrial waste

We started to recover CFCs in FY1995, ahead of other members of the industry. In FY2023, we recovered 100% of the CFCs to be collected at 561 sites, which weighed approximately 30 tons in total.

The amount of CFCs we have recovered since the start of the activities is equivalent to 897 tons. We will continue to control the recovery process completely and strive to recover CFCs to protect the ozone layer, and we will also consider introducing the recycling of CFCs in the future. (Currently being partially implemented)

Preservation of water resources

In consideration of biodiversity and ecosystems, we conduct forest conservation activities such as tree planting through local environmental activities. In order to reduce environmental impact of wastewater from production sites, including reducing waste at offices, we have developed technology for flushing without any water drainage, and are committed to the practical and widespread use of it.

Practical use of technology for flushing without any water drainage

We are conducting various forms of research and development to reduce the impact of effluents and exhaust air on the biological environment during construction and post-completion facility operations. For effluent treatment, we have developed a technique to purify effluents containing zinc eluted from coated zinc as a result of flushing in pipes at the completion of piping and to return the purified effluents to the pipes instead of discharging them. We worked to disseminate the technique and had 42 cases of the introduction into sites in FY2022.



Flushing water purification unit

Targets and achievements of environmental conservation activities

In FY2023, we implemented environmental conservation activities to meet the quantitative target set for each of the activity targets and items in construction sites and offices. The results are as follows:

Goal of the activities	Description of the activities			Control items	Baseline value	Actual result	Evaluation
Contribution to the realization of a decarbonized society	Proposal for energy saving at the design and construction stages	Proposal for energy saving at the design stage	(New construction)	Amount of energy saved*1 / Baseline*2 energy consumption	10%	45%	✓
			(Renovation)	Amount of energy saved*1 / Baseline*2 energy consumption	30%	37%	✓
		Reduction of energy used by equipment during construction		Amount of energy saved*3 / Energy consumption in the original design	10%	15%	✓
	Energy saving at offices	Reduction of energy used at the head office, main branches, sales branches, and R&D center		1 - Energy consumption in the current fiscal year / Energy consumption in the previous fiscal year	270 kWh or less per person per month	100%	✓
	Reduction of construction materials	Reduction of the amount of piping, ductwork, and equipment scaffolding during construction		1 - Amount of reduced materials / Amount of materials used for ductwork, piping, and scaffolding in the original design	10%	22%	✓
Contribution to the realization of a society in harmony with nature	Participation in local environmental activities			Local cleanup activities and support for events	One or more activities per office	100%	✓
	Practical and widespread use of technologies that contribute to biodiversity			Trial introduction of flushing technology to clean pipes without any water drainage	50PJ	71PJ	✓
Contribution to the realization of a circular economy	Implementation of activities to generate no industrial waste from construction sites*4			1 - Recycling rate: Final disposal volume / Total waste volume	85%	90%	✓
	Thorough management of industrial waste manifests			Number of sites managed with manifests / Total number of contract work sites	100%	100%	✓
	Thorough management of the CFC recovery process control table			Number of sites managed with the CFC recovery process control table / Total number of sites recovering CFCs	100%	100%	✓

*1: Buildings of a certain scale designed by the company (new construction and renovation)
*2: The baseline value is annual energy consumption equivalent to the baseline in the Act on the Rational Use of Energy or the amount defined specifically for each building.
*3: Buildings of a certain scale (new construction and renovation)
*4: All buildings in contract work

Strengthening Human Capital at Takasago Thermal Engineering Group

Takasago Thermal Engineering believes that people are our greatest asset. Since our founding, under our corporate mission of "Contribute to society through social harmony and creative solutions," we have contributed to the development of society by creating new value through the collective efforts of each of our employees based on the idea of creating what does not yet exist. It is each employee that supports our Group and we believe that our valuable human resources' autonomous growth will lead to the company's growth.

Basic policy on human resources management

Based on our philosophy that "people are our greatest asset," we conduct human resource management based on human resource development and respect for people.

In order to contribute to society by constantly creating new value through our corporate activities, it is our basic belief that we must be a company that continues to grow day by day, and that this growth is supported by our human resources, who are constantly growing. We develop human resources who have character and high ethical standards, are autonomous, and are always willing to take on challenges.

We also foster a corporate culture in which people recognize and respect each other's diversity regardless of gender, sexual orientation, gender identity, nationality, disability, or other attributes, and create a work environment where individual human resources are healthy and vibrant and can maximize their abilities.

Four pillars of our human resource strategy, which consider various issues surrounding Takasago Thermal Engineering

To enhance our human capital, we have organized information on current problems and identified priority issues aimed at resolving them. More specifically, we are working to strengthen our human capital by focusing on the four pillars of "recruitment," "support for growth," "career success," and "visualization of capabilities."

Priority issues aimed at resolving problems

Urgent issues	Medium- to long-term issues	Ongoing issues
Secure necessary personnel and address the problem of excessively long working hours. Also strive to maximize profit	Pursue ongoing implementation to secure strong human capital that can achieve our strategy	Enhance human capital while achieving the happiness of employees
Securing talented human resources / Work style evolution	Allocation of human capital / Support for independent career development / Evaluation and compensation in line with achievements	Improved health

Four pillars of our human resource strategy

Long-Term Vision for 2040

Medium-Term Management Plan (Phase 1): four years to embark for the future

Secure and enhance human capital that can achieve our strategy

Four pillars of our human resource strategy

Recruitment
- Aiming to be a company of choice
- Company-wide hiring activities

» P.64

Support for growth
- Curriculum: collaboration between Takasago Academy and divisions
- Support for autonomous learning and reskilling
- E-learning
- Cross-border experience and cross-field interaction and training

» P.65

Thriving activities
- The right people for the right jobs: matching up aptitudes and strategic needs
- Enhancement of multiple-track human resource operations
- Career development support

» P.66

Visualization of capabilities
- Visualization of skills and experience
- Clarification of behavioral assessment standards

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A company of choice that offers job satisfaction: Job satisfaction + Comfortable working environment

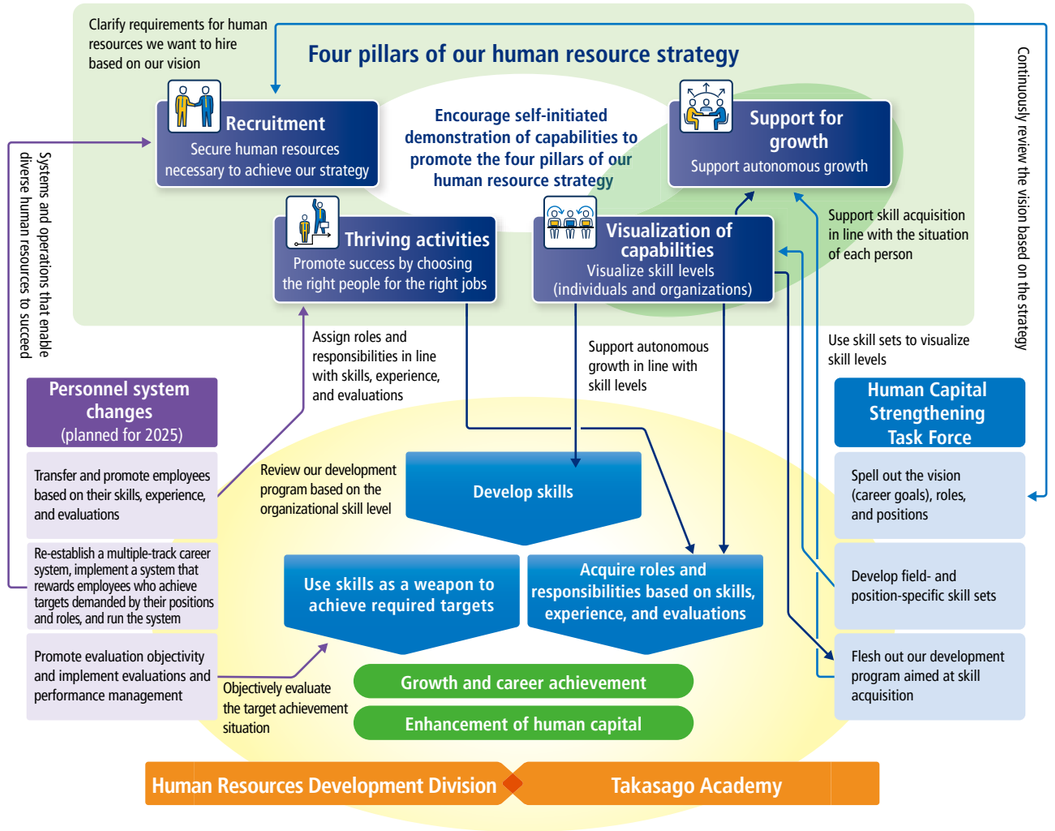
Health and productivity management

Mission of our human resource strategy: Employee happiness and business development

Purpose and Vision

Overall picture of our initiatives to enhance human capital

To enhance our human capital, we have established a cross-departmental Human Capital Strengthening Task Force, which cooperates with our Human Resources Development Division and Takasago Academy to work on the four pillars of our human resource strategy (recruitment, support for growth, career success, and visualization of capabilities).

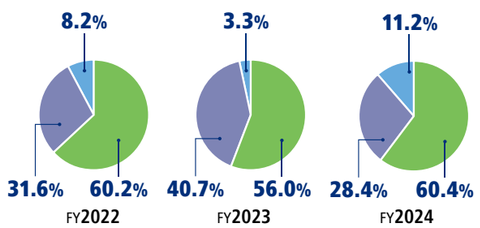


Recruitment

We are actively recruiting new graduates who will become future Environment-Creators™. When hiring new graduates, we use a merit-based approach that has nothing to do with gender or nationality. We actively recruit employees in line with our goals of increasing the number of female employees to 30% of the total by around 2030 and increasing the number of foreign national employees.

In our recruitment of mid-career professionals, we hire human resources who are ready to work immediately to support our core construction business and people who have the expertise necessary to realize our management plan.

Recruitment results



Three-year average

Women 33.6% | International students 7.6%

Support for growth

Basic concept for human resources development

As a pioneer in the construction equipment field, we consider it our corporate mission to "contribute to society through social harmony and creative solutions." Therefore, to contribute to the world in terms of carbon neutrality though environmental engineering and to help pave the way to a future that enables rich, fulfilling lives as an Environment-Creator®, we endeavor to develop human resources capable of providing the highest possible quality and leveraging their inventiveness to develop technologies. With employee training and self-improvement performing a complementary role, we are creating an organizational climate that encourages a "give-it-a-try" spirit and inventiveness.

Training tailored to individual objectives and career stage

At the Takasago Academy, a division that aims to develop human resources who will create our future, we develop human resources by offering various types of training (Off-JT: off the job training) and various experiences (OJT: on the job training) as the two main components. Through these practical and multifaceted training programs, we provide support to facilitate the growth of human resources in line with individual objectives and career stages.

Training system chart

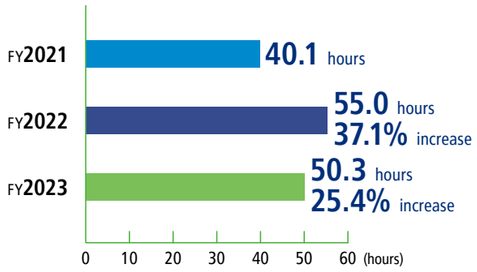
		Training system					
		New employees to 5th-year employees	Career development period	Mid-level class	Management staff	Senior management	Skilled staff
Training by job type	Technical training	Basic technique	Deepening of technique	On-site management			
		Advanced expertise, etc.					
	Sales training	Sales engineering, etc.					
	Optional training	Subordinate coaching, presentations, etc.					
Training by position	Management	Newly appointed staff training					
			Leader seminars	Manager seminars	Management seminars	Director training	
	Development of the next generation		External study in Japan	MBA, other schooling			
Training by purpose	Global matters	Global training					
		Overseas trainees					
	Diversity	DE&I seminar (working mothers training, women's workplace participation, LGBTQ+, etc.)					Career design
	DX and IoT	Digital transformation seminars					
	Cutting-edge themes	Business development seminars					
Acquisition of official qualifications		Support for acquisition of official qualifications					

On-site training for new hires

Through on-site training, new employees experience construction management work, regardless of whether they are technical or clerical staff. By engaging in practical experience, employees gain an understanding of how the company grows through the creation of added value and profits, leading to them being able to build diverse career paths.

Changes in training hours per employee

[Calculated from training held by Takasago Academy (excluding training held by the headquarters, main office, and branches)]



* Percentages use FY2021 as the baseline.

Purpose-based training and position-based training

In the purpose-based training, the trainees work to acquire necessary capabilities and business skills, develop a sense of ethics, and otherwise undergo diverse kinds of training so that they can work actively at all stages from the time of joining the company through retirement.

In the position-based training, which focuses on management skills, we offer opportunities to acquire an MBA degree and carry out training to develop next-generation leaders, manager seminars for management candidates, leader seminars for young employees, and other programs to continuously develop human resources who will play the main role in our future management.

Establishment of Career Port (career consultation service)

We established our "Career Port" career consultation service by envisioning a port where young employees can casually drop by for consultation on various problems, including career development problems and the need to balance work with assorted events associated with life stage transitions, including marriage, childbirth, and nursing care. Staff in charge of human resource development, staff in charge of diversity and inclusion promotion, and staff who are knowledgeable about the personnel system kindly provide advice on how to solve problems during consultation with employees.

Thriving activities

Further engagement enhancement

To keep employees motivated and engaged in their work, we must enable them to devote themselves to their work with a sense of fulfillment and pride by ensuring that both our management philosophy and business description contribute to society. We must also develop a working environment that enables employees to lead healthy and fulfilling lives by enabling a variety of work styles with a sense of wellbeing and by achieving work-life balance.

By accumulating these efforts, we are building trust between employees and the company, aiming to build a company that allows each employee to feel motivated and happy while also thriving and experiencing excitement at work.

Implementation of engagement surveys and establishment of the Engagement Enhancement Subcommittee

We conduct our main survey once a year as well as simple surveys (pulse surveys) every quarter to understand the engagement status of our employees. We will further enhance engagement by clarifying organizational issues through surveys, sharing examples of successful initiatives with all branches nationwide through the cross-company Subcommittee team, and continuously working to make improvements.

Diversity, equity, and inclusion

Setting mutual respect as a basis in our management philosophy, we promote the fair appointment of human resources irrespective of nationality or sex. As illustrated by our installation of a team that promotes cross-sectoral diversity, we are actively committed to the creation of workplaces where diverse human resources can make the fullest use of their personalities and capabilities to prove themselves.

Our DE&I team identifies issues and implements measures specific to the themes of women, people with disabilities, international human resources, mid-career professional hires, senior citizen employees, and LGBTQ+ people.

Our DE&I logo, which uses the Company symbol as an element

高砂熱学 Diversity, Equity & Inclusion

Measures to address harassment issues

To prevent sexual and other forms of harassment including abuse of authority and discrimination against pregnant employees, we send messages of top management and clarify our basic policy to never allow any forms of harassment. We have set up consultation counters on and off the company premises to address the matter and also conduct regular questionnaire surveys to check whether there is any harassment in the workplace. In addition, every August is designated as Harassment Elimination Awareness Month, and company-wide training is conducted to raise awareness of harassment prevention.

Support for achieving a balance between work and family life

To support employees in balancing work and childcare or nursing care, we have in place a childcare/nursing care leave system, a reduced working hour system, and various holiday systems such as a system of leave for taking care of children. In addition, we have enabled flexible work styles including staggering commuting and teleworking. When it comes to the latter, we have a teleworking system that all employees can use.

We also support men in taking part in childcare actively and encourage male employees to take childcare leave by, for example, allowing them to take one month of leave with pay. As part of supporting employees' return to work from childcare leave, we conduct a return-to-work interview or introduce nursery schools operated by companies.

Percentage of employees who took childcare leave (at least one week)

Gender	FY2021	FY2022	FY2023
Men	15.6%	65.7%	**86.0%***
Women	100%	100%	**100%**

* Calculated by using the number of people who "took at least one week of childcare leave," a target specific to Takasago Thermal Engineering, as the numerator

Health and productivity management

Under the President's Health Keeping Statement, we have established the Health Care Management Office as a department dedicated to helping executives and employees maintain and improve their health and promoting health and productivity management. We aim to become a company where all executives and employees are physically and mentally healthy and work energetically ("wellbeing company") with the Health Care Management Office staffed by medical professionals.

In addition to accepting consultations on mental and physical health as needed, the Office provides support for balancing work and illness, follow-ups on health checkups, and educational and awareness activities to improve health literacy.

In addition, we are devising ways to encourage employees to improve their health awareness through familiar topics of personal interest, including holding a walking campaign, holding seminars to support the health of working women, offering on-site exercise classes at work, and publishing a monthly health newsletter called "Takasago Health News" that introduces health information. Due to such initiatives, in FY2024, we were recognized for the 2024 Certified Health & Productivity Management Outstanding Organizations Recognition Program, winning this award once again.

Going forward, we will strive to enhance our medical professional system to provide the same level of health support to all employees and further promote health and productivity management.

2024 健康経営優良法人 Health and productivity

Career challenge system (in-house recruitment system)

We have established a career challenge system (in-house recruitment system) to encourage self-directed career development by employees. Under this system, divisions that are promoting new projects in particular post their human resource requirements, and then employees directly apply with the Human Resources Development Division, which provides them with an opportunity to achieve their career goals.



VOICE | Employee feedback

Deputy Manager, Carbon Neutral Business Promotion Office, Carbon Neutral Business Development Division, Research and Development Headquarters
Shigekazu Mitamura

Since I joined the company, I spent 12 years working at the Yokohama Branch, spending the last six years working at the Design Department, where I mainly worked on energy-saving proposals related to renovated properties, etc. In the last several years, it has become increasingly necessary to pay attention to our customers' strong awareness of the need for carbon neutrality. As a result, I have had several opportunities to give presentations and hold study sessions on Takasago Thermal Engineering's energy-saving technologies as well as the world's latest carbon-neutrality technologies. As a result of that experience, I decided that—in addition to the energy-saving technologies I was able to propose at the branch Design Department—I also wanted to be able to propose energy conversion and other cutting-edge technologies. Given my frame of mind, when I noticed that the Carbon Neutral Business Promotion Office was recruiting in-house employees at the end of last year, I felt like my transfer was predestined and therefore applied. Although I was positive about that opportunity, I also had some concerns. After all, I had never transferred before, and I am currently a single father trying to raise a child on my own, so I was worried about work-life balance.

It has been three months since I transferred, and I am extremely glad I decided to apply. The members of the Carbon Neutral Business Promotion Office welcomed me with open arms, and they actively share information with me as well. My job involves a lot of business trips and meetings all over the place, so there are few opportunities to get together with everyone at once, but even our remotely held meetings go smoothly. In addition, my new office has a mutually supportive culture, which comes in handy when things don't work out or there is a workload bias, and I have learned that all my worries before I transferred were totally unnecessary.





My main job is to determine the capacity of supply equipment based on hydrogen consumer information, demonstrate the basis for such decisions, and organize basic designs for building supply facilities. I am expected to provide explanations and share information at regular weekly project meetings as well as other meetings, which leaves me with a constant feeling of job satisfaction. I also have the opportunity to learn a lot about both how to advance plans and facilitation from people representing various companies at consortium meetings held in line with our business plans, and every day is therefore fulfilling. Conversely, I also feel like the consortium members really rely on my materials, which is always encouraging.

As I work on my current project, I am constantly hearing about topics that I was interested in even before I transferred. Although I have only taken the first step at this point, I feel like I am that much closer to my desired career. At the same time, I hope to take full advantage of my experience with the Design Department, where I worked before I transferred, as I develop my career in this new area.

Visualization of capabilities

Promoting the enhancement of human capital through human resource management linked to management strategies

We are advancing human resource management by managing various kinds of human resource data on each employee and utilizing it for recruitment, training, and human resource allocation and appointment.

We utilize our human resource management system, which we introduced in FY2021 and have been developing ever since, to promote initiatives aimed at enhancing the human capital necessary to achieve our management strategies.

Linking skill map development to educational system reviews

Understanding the capabilities and skills of employees makes it possible to assign and appoint the right people to the right jobs and train them efficiently, leading to the creation of an organization that is resilient to change and improved employee engagement.

In FY2023, we established our cross-sectoral "Human Capital Strengthening Task Force" to organize the skills required for each occupation, and we started up full-scale operations in FY2024. In addition, we link developed skills to a learning curriculum aimed at even higher level abilities, review our educational systems, and have started working on utilizing our approach to develop professional human resources specific to each division.

Human Rights

We respect the human rights of stakeholders affected by all our business activities and strive to realize sustainable society throughout our value chain. To clarify our approach to respect for human rights, we formulated our Basic Policy on Human Rights in December 2021 and launched initiatives related to human rights due diligence in 2022.

Human rights due diligence

In FY2023, we conducted risk identification and assessment at our main office and branches as well as at member companies of Kowakai, which consists of our partner companies.

As a result, we became aware of five kinds of risk we are likely to encounter during our business activities, which are shown below, and we will keep them in mind as we strive to achieve respect for human rights and sustainable business.

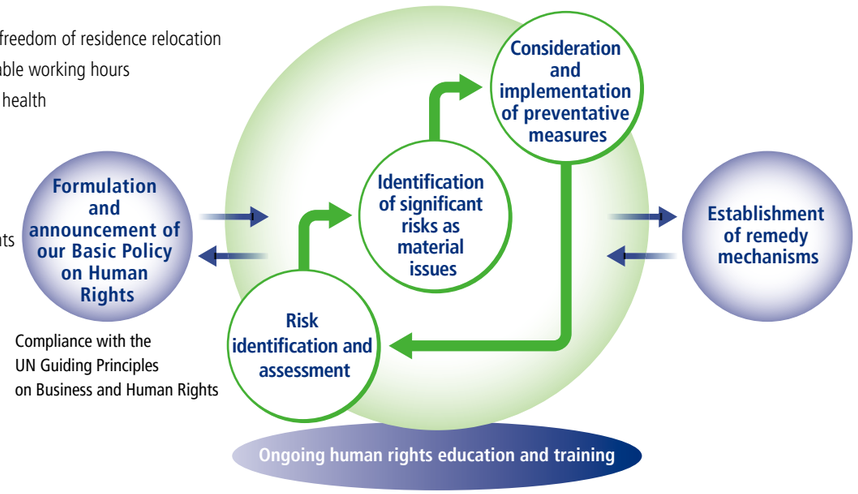
Risks we are likely to encounter

1. Privacy rights
2. Employment disparities, freedom of residence relocation
3. Excessive and unreasonable working hours
4. Occupational safety and health
5. Diversity

Training conducted in March 2024

- Business and human rights

Overall picture of human rights due diligence



Compliance with the UN Guiding Principles on Business and Human Rights




Yoko Seki, outside director


Akane Kanda, a professional storyteller

[Special Feature ❶] Promotion of Diversity, Equity, and Inclusion by the Takasago Thermal Engineering Group

In April 2021, the Takasago Thermal Engineering Group established the Group-wide, cross-departmental DE&I Promotion Subcommittee as part of its efforts to utilize a diverse range of human resources and provide them with opportunities to fully demonstrate their capabilities. The Group promotes other diversity management initiatives aimed at achieving innovation and value creation as well. We will continue to pursue initiatives aimed at promoting DE&I for a wide range of employees, including women, mid-career hires, international human resources, employees with disabilities, LGBTQ+ employees, and senior citizens.

01 Holding "TakasaGo! Woman Pride 2023" for the first time and welcoming women from all over the country

On October 27, 2023 (Fri.), we held TakasaGo! Woman Pride 2023 in Tokyo, and around 360 women (90% of all our female employees) from our head office and branches participated.


Networking


Panel discussion

Event objectives

We held the event because we consider active workplace participation by women to be the first step in promoting DE&I.

1. To help female employees understand that the need for women's empowerment is a personal problem and to encourage self-directed career development by them
2. To give employees who never see each other the chance to network across divisions and branches, share work-related problems, engage in career consultation, and find other employees who can serve as role models
3. To encourage not only female employees but also male employees to think about the importance of active workplace participation by women in order to develop a culture that understands and accepts the need for women's career development

Main content

This event started with a message from Kazuhito Kojima, our president, and the first half included a lecture by Akane Kanda, a professional storyteller (theme: women flexibly working in positions made by men) as well as a panel discussion by three employees: a manager, someone with childcare experience, and a technical employee.

The second half of the event was focused on networking, and employees who normally only interact by email or phone had the opportunity to exchange business cards and deepen their interaction with each other in person.

We also considered diversity, including setting up an adjoining daycare to enable employees with young children to participate on the day of the event without worry and providing a sign language interpreter.

- First half: a message from Kazuhito Kojima (president), announcement of individual work results, a keynote speech, tea-time, a message from Yoko Seki (director), and a panel discussion
- Second half: reception

02 "Diversity management" for managers who have female team members

We conducted training for women that included leadership training, career design training, and training for employees returning to work after taking childcare leave. We also conducted "diversity management training" for managers in positions that enable them to develop female employees. There was a lot of interest in the training. In fact, there were many more applications than the initially planned 50 slots, so we had to hold additional sessions. We plan to hold this training next year and beyond as well and will encourage even more managers to attend.

Training content

1. Environment surrounding us as we work
   - Why is it necessary to promote DE&I and women's workplace participation?
2. Thinking about issues that must be addressed to empower female employees
3. Learning key points for training female employees
4. Learning about employee management given time constraints
   - Considerations in terms of promoting the taking of childcare leave by men
5. Summary (declaration of action)

Comments from trainees

- I learned that promoting diversity leads to organizational work style reform as well as improved performance.
- I learned that there are differences in the ways men and women think. I feel like this could be a hint in terms of initiatives to increase the number of female managers.
- The training was a great opportunity to become aware of both the importance of diversity management and my own unconscious bias. I plan to take steps to make this part of my conscious understanding instead of just a temporary flash of awareness.


Text-based guide


Small-scale model of our lander (space vehicle) for HAKUTO-R, a private lunar exploration program in which Takasago Thermal Engineering is participating

03 Guided tours of the Takasago Thermal Engineering Innovation Center for employees with disabilities

On September 1, 2023 (Fri.), we conducted a guided tour for employees with disabilities. Before the tour, we asked participants what kinds of special considerations and support they would require, and we then discussed this and took suitable measures through our Research and Development Headquarters and diversity work group.

- Text-based guides and sign language interpreting (for employees with hearing disabilities)
- Small-scale models to provide an understanding of the shape by actually touching them (for visually impaired employees)
- Setting up tour routes that consider the walking surface (for employees with upper and lower limb disabilities)

Based on the knowledge gained here and relevant issues, we hope to work towards enabling members of the general public with disabilities to tour our facilities as well.

04 Training at the Asu Challe! Academy (Challenge for Tomorrow! Academy) Lectures on Communication and Reasonable Consideration

We attended the Asu Challe! Academy (Challenge for Tomorrow! Academy) Lectures on Communication and Reasonable Consideration, which are part of a training program on considering reasonable care for people with disabilities. This program is run by the Nippon Foundation Parasports Support Center. We learned about people with disabilities, the importance of empathy and acknowledging their differences, and the concept of a cohesive society where everyone can live easily and comfortably. We also learned about working together with people with disabilities and becoming aware of how to provide better service to a diverse range of customers.

We invited the current para-athlete Eri Yamamoto as a lecturer for this training program, which was held both in person and online and attended by about 200 employees. It was a productive program in which the participants learned about how becoming aware of the little things and showing consideration in various situations is precisely what reasonable consideration is, and that practicing reasonable consideration is how we can create a cohesive society.





◆ Lecturer introduction: Eri Yamamoto



- Affiliation: The Nippon Foundation Parasports Support Center
- Birthday: May 17, 1983

Current para-powerlifter.
Wheelchair user due to congenital spina bifida. As an employee of the Nippon Foundation Parasports Support Center, she is in charge of developing educational and training programs on the subject of para sports in order to balance work and competition. She also speaks as a lecturer. She specializes in giving lectures that promote positivity and vitality for everyone by turning differences caused by disabilities into strengths, which she learned through her experience studying abroad at a graduate school in Canada.

* In the case of training and events in which employees who have hearing disabilities participate, we always take steps to make things easier for them, including using speech-to-text applications and arranging for sign language interpreters. We provide constant support to increase the options available to them.








05 Opinion exchange meetings & receptions held at various workshops with different attributes

Mid-career professional hires

- **Date held:** Dec 8 (Fri), 2023
- **Number of participants:** 42
- **Main topics**
  - Issues related to Takasago's corporate culture that become clear due to experience working at other companies

The opportunity for mid-career professional hires—who lack colleagues from the same period—to interact with employees who have similar circumstances was extremely useful and offered a chance to do some networking.

International human resources

- **Date held:** Dec 1 (Fri), 2024
- **Number of participants**
  22 (foreign national employees) / 15 (Japanese employees)
- **Main topics**
  - Objectives of working for a Japanese company
  - Things employees want people at companies and in the workplace to understand

To encourage inclusion in this event, which was held for the second time, Japanese employees were also invited to participate, and everyone held discussions and interacted with each other.

Senior citizen human resources

- **Date held:** Jan 26 (Fri), 2024
- **Number of participants:** 32
- **Main topics**
  - Enabling employees of age 61 or older to continue working successfully for the company
  - Optional retirement system, salary level

One participant said that they had the chance to actively exchange opinions with people of the same age from other branches—who they met for the first time after working for the company for 50 years—and it made them feel better.

\ VOICE /

Utilization of the home-leave holiday system Ruan Jie, Kanto-Koshinetsu Branch

I utilized the home-leave holiday system* newly established in FY2023 to temporarily return to my home country. It was my first time back home in several years, and I was able to spend precious time with my family and friends. In spite of his advanced age, my dad was waiting to meet me in the airport arrival lobby, where he was smiling and waving. When I arrived home, my mother had already cooked many of my favorite dishes. I was relieved to see that my mother, who apparently practices tai chi every day, seemed to be in good health. Later, all my relatives gathered around a round table to chat while eating delicious food.

This home-leave holiday was very useful to relieve the fatigue of daily life and refresh my body and soul. I was also able to take care of my parents and strengthen the bonds with my relatives and friends. In particular, I will never forget how happy my parents were. I realized that the holiday enabled me to perform more efficiently and creatively at work. I believe that the establishment of this system will help us to attract more global talent in the future.




* This system enables foreign national employees working in Japan to return to their home countries for 14 days or less twice a year (employee: second person from the right).

06 Winning a PRIDE Index 2023 Silver award

To promote diversity, equity, and inclusion, we pursue initiatives aimed at eliminating discrimination on the basis of sexual orientation and gender identity to ensure that our workplace environment enables everyone to work energetically and be themselves. Our activities ended up being well-received, and we won a PRIDE Index 2023 Silver award as a result.

work with Pride Silver 2023

(We won a Bronze award in FY2022.)



07 Tokyo Rainbow Pride 2024 "Don't give up until things change."

TOKYO RAINBOW PRIDE

Like last year, we once again endorsed Tokyo Rainbow Pride 2024 this year, and we participated in the parade held on April 21, 2024 (Sun.). We hoisted our original diversity banner on our way through Harajuku, Shibuya, waving rainbow flags as we cheered for the cause.

This year's theme was "don't give up until things change," and, on the day of the event, we could really feel how strongly everyone is committed to refusing to give up until we have achieved a society in which everyone can live as they see fit.

Feedback from participants

- I realized that, to establish a society where LGBTQ+ people can live ordinary lives, the most important thing is for everyone else to accept them and welcome them to come out.
- I hope that I can stop thinking of what is perfectly natural for me as natural for everyone else so that I can base my actions on a better awareness of diverse ways of thinking and lifestyles.
- I hope to teach my own child that there are a lot of LGBTQ+ people in the world and that it is important to understand and accept them.

08 LGBTQ+ understanding promotion training

On July 19, 2023 (Wed.), we welcomed Fumino Sugiyama, a front-line transgender-issue activist, as a lecturer to conduct LGBTQ+ understanding promotion training.

The first half of the training covered basic LGBTQ+ knowledge, stories of Mr. Sugiyama's experiences, and the legal system surrounding LGBTQ+ issues. Meanwhile, the second half consisted of a lecture that covered suitable measures and support necessary to ensure that individuals and companies accept LGBTQ+ people. Over 380 employees participated, including not only in-person and online event participants but also people who watched the video on a later date, and the training helped to deepen understanding of LGBTQ+ issues.

◆ Lecturer introduction: Fumino Sugiyama

Personal history
Former representative of Japan's national women's fencing team
Engaged in gender and sexuality research at a Waseda University graduate school. Mr. Sugiyama has published a book on his personal experiences as a transgender individual. He currently has two children with his partner. They live with his friend (the sperm donor), and they have therefore established a new family style in which they raise the kids as three parents.



09 Endorsement of marriage equality (legalization of same-sex marriage)

To help achieve marriage equality (legalization of same-sex marriage), Takasago Thermal Engineering endorses Business for Marriage Equality. This is a symbolic message that emphasizes the importance of realizing a society in which the lifestyles of individuals are truly respected, and it also expresses our commitment to treating each of our employees and the individuals who make up society with respect. We are working toward a society in which everyone can live as they choose.

love
Business for Marriage Equality


Forestation activities in Malaysia


Forestation activities in Malaysia

[Special Feature ❷] Social Contributions of the Takasago Thermal Engineering Group

01 Takasago Thermal Engineering Forest (forestation activities) and community clean-up activities

In 2016, we rented forests in Gunma Prefecture and Kyoto Prefecture, which we call "Takasago Thermal Engineering Forests" and, ever since then, employees of the Takasago Thermal Engineering Group and their families have been engaged in forest conservation activities in cooperation with nonprofit organizations and municipalities. In fact, we conduct such activities not only in Japan but overseas as well.





Topics

Forestation activities in Malaysia (industry-academia collaboration)

There are tree planting activities underway in Takasago Forest, a 10-hectare expanse of land on the grounds of the University of Malaysia Sarawak, which is located in Sarawak, Malaysia.

These efforts have been ongoing since 2018, and, in November of FY2023, we once again conducted on-site seedling and tree planting activities. A total of around 180 people participated, including Malaysian government stakeholders, Sarawak college students and faculty members, local elementary and middle school students, and Takasago Group staff (from the head office as well as our subsidiaries in Malaysia and Singapore).

Objectives

1. Creating a forest to serve as a tropical-rainforest restoration model
2. Utilizing the results for investigative research on forest restoration by college students and applying the results to tree planting and tropical rainforest protection and restoration in Sarawak and various other regions of Malaysia

Activity details

Planting around 2,500 trees and saplings

In addition to forest conservation, we also actively participate in environmental activities in municipalities and communities where our branches are located. Through activities such as these, we will continue contributing to the preservation of the global environment.









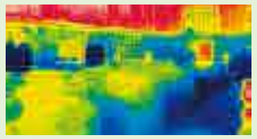


02 Air conditioning and ventilation system for gyms offering safety, comfort, and infection control

We collaboratively developed Fresh Cool®—a gym-oriented air conditioner with ventilation functions intended to help prevent heatstroke, protect against the cold, and stop infections not only in normal gyms but also in evacuation centers—in collaboration with NIPPON PMAC Co., Ltd., one of our Group companies, and we started selling these air conditioners in December 2023.

The heat of summer and the cold of winter have become increasingly severe in recent years. The environment inside gyms, especially in the intense summer heat, poses a risk of heatstroke not only for participants in competitions and events, but also for visitors. In addition, for the use of gyms as evacuation centers, besides the heat and cold, there are also other issues to be addressed such as ventilation and ensuring privacy. Given the wide age range of evacuees, it is extremely important to have a ventilation system that covers the entire gym to prevent the spread of viruses and other infections, and there is a need to come up with ways to ensure safety even in densely populated spaces. Starting in 2022, we conducted a demonstration test (one year long) at an elementary school gym in Tsukubamirai City, Ibaraki Prefecture, and the system recently went on sale. We will work to contribute to environmental improvements in municipalities and at private athletic facilities.





03 Collaboratively creating the Gakken Manga de Yoku Wakaru Series book Kuki no Himitsu with Gakken Inc. and donating around 24,000 copies to elementary schools, public libraries, children's centers, etc.



We collaboratively created Kuki no Himitsu (Secrets of the Air), which is part of the Gakken Manga de Yoku Wakaru Series (the Gakken Learning with Manga Series) of learning books for elementary school students published by Gakken Inc. In December 2023, we donated around 24,000 copies of the book to public and private schools (including special needs schools) as well as public libraries, children's centers, and other institutions all over Japan through Gakken.

The Gakken Learning with Manga Series is on the list of books recommended by the Nippon PTA Zenkoku Kyogikai (the Nippon PTA National Council). The purpose of this series of educational comic books is to make it easy and fun for elementary school students to learn about various familiar themes. The series has been around for over 20 years, includes over 200 books, and has earned itself the nickname the Himitsu Series (the Secrets Series).

Through these activities, we hope to make future generations of children aware of some issues they do not normally pay much attention to, including the importance of the air, air conditioning and ventilation systems, and future possibilities related to the air. We will continue providing similar educational support.

Gakken Kids' Net >>>
https://kids.gakken.co.jp/himitsu/library202/

04 Sponsoring and supporting activities related to culture and the arts

To promote culture and the arts, we sponsor or support festivals and celebrations as well as activity groups.



Kokoro no Gekijo (Theater of the Heart), a performance in Hokkaido to which children were invited
(Organized by: Butaigeijutsu Center and Shiki Theatre Company)



Concert for Children
(Photo provided by: Seiji Ozawa Matsumoto Festival Executive Committee)

Enhancement of Corporate Governance

We work to achieve sustainable growth and medium- and long-term improvement of corporate value by enforcing effective corporate governance.

Basic approach

Our basic policy of corporate governance is to ensure the legality, transparency, and swiftness of management and to improve management efficiency in order to earn the trust of society and increase our corporate value over the medium and long term.

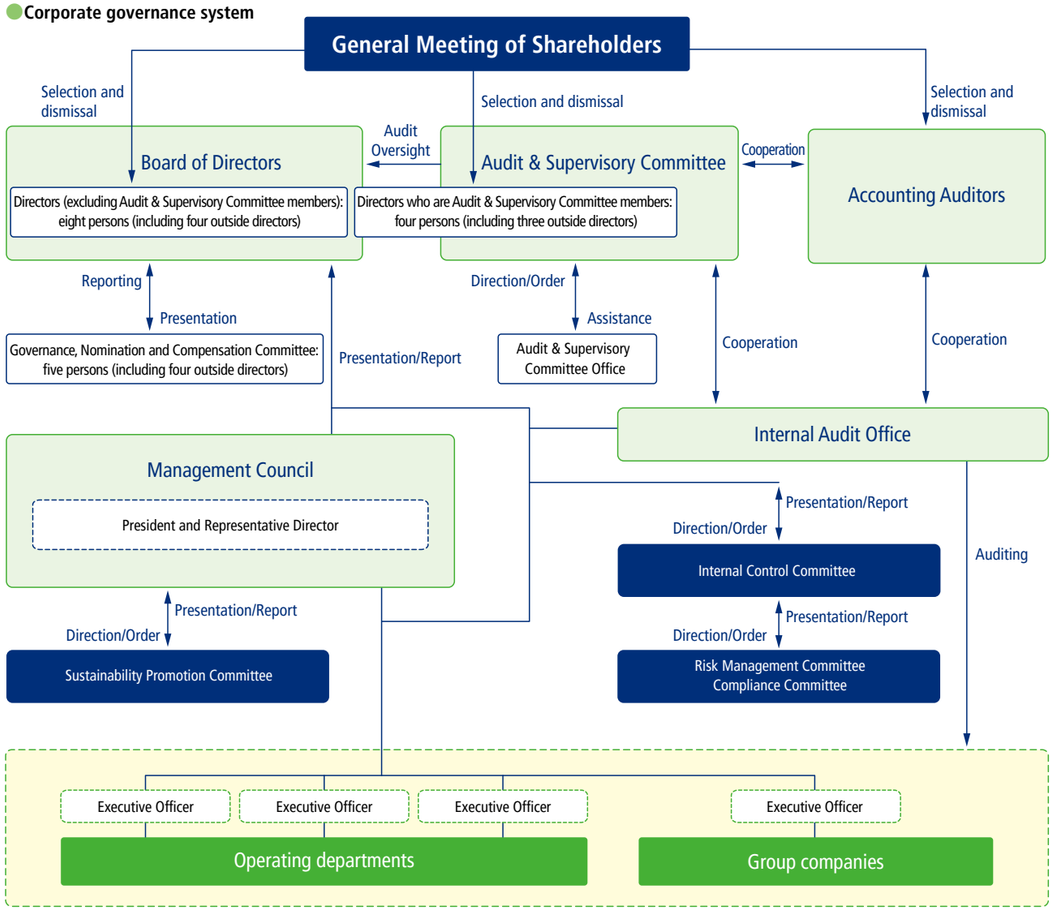
Through corporate activities based on our Purpose—"with our revolutionary environmental innovations, we activate the Earth's future"—we are committed to securing the trust of society by positioning sustainability management at our core to contribute to our stakeholders, including shareholders, employees, customers, partner companies, and local communities.

Corporate governance system

Takasago Thermal Engineering became a company with an Audit & Supervisory Committee at the end of the 143rd Ordinary General Meeting of Shareholders held on June 23, 2023, in which it obtained the approval of shareholders. The purpose of this change is to further enhance corporate governance by accelerating decision-making, enhancing discussion of management policies at the Board of Directors meetings, and strengthening the supervisory function for management of the Board of Directors. We have adjusted the number of directors and shortened their term, which is one year at present, and also introduced an executive officer system to clarify management decision-making and supervisory functions as well as business execution functions for prompt and flexible management.

The Board of Directors currently consists of 12 members (including seven outside directors) and its meeting is held once a month in principle and on an asneeded basis. At the meetings, the Board of Directors passes resolutions on the matters specified by laws and the articles of incorporation as well as important matters based on the Board of Directors Regulations and supervises the execution of duties by the directors.

Corporate governance system



Outside directors strive to fulfill their expected roles, such as by providing helpful observations and opinions at meetings of the Board of Directors and other meetings from objective, professional viewpoints independent of the execution of business operations.

The Board of Directors works to improve management efficiency and ensure the legality and adequacy of business execution by making important business decisions and supervising the directors' execution of duties. Furthermore, the company has concluded a liability limitation agreement with the seven outside directors to limit their liabilities for damages to the aggregated amount set out in each item of Article 425, Paragraph 1 of the Companies Act, concerning the liabilities under Article 423, Paragraph 1 of the Companies Act, if gross negligence has not been committed and they perform their duties in good faith.

The Audit & Supervisory Committee currently comprises four members (including three outside directors), and meets once a month in principle and on an as-needed basis. The Committee supervises the directors' execution of duties, including reporting audit results to the Board of Directors.

We have also established the Management Council, composed of directors excluding outside directors, to enhance deliberation on important matters concerning management and make prompter decisions on the allocation of management resources. In addition, the Internal Control Committee, chaired by the president and composed of directors excluding outside directors, has been established to promote the improvement and operation of the internal control system of the company and its corporate group in a cross-sectoral manner. The Committee discusses development of the internal control system of the Group and revision/abolition of the basic policy for the internal control system based on the status of its development, passes a resolution for revision/abolition of the rules for escalation to the Board of Directors, for the Internal Control Committee as well as organizations for compliance promotion and risk management of the Group and for compliance and risk management of the company, passes a resolution for the annual activities policy for compliance and risk management of the company, and reports to the Board of Directors. Furthermore, to strengthen our handling of issues in the sustainability area in the medium to long term, we have established a Sustainability Promotion Committee that consists of executive directors. This Committee identifies material issues in line with our three priority themes—"climate-related," "wellbeing," and "business infrastructure"—discusses and implements our policy for responding, and then presents the results to the Management Council and Board of Directors (for deliberation, passing resolutions, and reporting).

In addition, we have voluntarily established the Governance, Nomination and Compensation Committee, consisting of a majority of independent outside directors and chaired by an independent outside director, as an advisory body for the Board of Directors. The Committee deliberates on the appointment, reappointment, and dismissal of directors and executive officers of the company as well as representative directors and auditors of affiliates (excluding affiliates of minor importance to the company), provides recommendations to the Board of Directors (except on the appointment and reappointment of directors who are Company Audit & Supervisory Committee members, which require the consent of the Company Audit & Supervisory Committee), and deliberates on the compensation of directors (excluding directors who are Audit & Supervisory Committee members) and executive officers of the company and representative directors of affiliates. Moreover, the Committee implements analysis and assessment of the effectiveness of the Board of Directors, and confirms the formulation policy and progress of the Succession Plan for the President and Representative Director, which is formulated by the president and representative director. The names of the members of the above structure are shown in the diagram below.

In addition to the members, accounting auditors and the Internal Audit Office coordinate together to enhance corporate governance by conducting effective audits.

Organizations and members

		Organizations and members					Knowledge, experience, and capabilities							
		Board of Directors	Management Council	Audit & Supervisory Committee	Governance, Nomination and Compensation Committee	Internal Control Committee	Corporate management and management strategies	Technology, innovation, and DX	Environment	Global matters	Sales strategies and marketing	Finance and accounting	Legal matters and risk management	Human resources development and diversity
Directors (excluding Audit & Supervisory Committee members)	Kazuhito Kojima	○	◎		○	◎	●	●	●		●			
	Hiroshi Kubota	○	○			○					●			
	Tadashi Kamiya	○	○			○		●	●		●			
	Masatoshi Morino	○	○			○						●	●	●
Outside	Shuma Uchino	◎			○		●					●	●	
Outside	Atsushi Takagi	○			◎		●			●		●		
Outside	Yoko Seki	○			○							●	●	
Outside	Hideka Morimoto	○			○				●				●	●
Audit & Supervisory Committee members	Masato Nakamura	○		◎			●			●		●	●	
Outside	Kazuo Sakakibara	○		○									●	
Outside	Hiroyuki Hioka	○		○			●		●	●			●	●
Outside	Hiroyuki Wakamatsu	○		○								●	●	

○: member of the organization ◎: head of the organization

Audit & Supervisory Committee

The Company's Audit & Supervisory Committee is composed of four directors, including three outside directors. The three outside directors in the Committee are a lawyer, certified public accountant, and person with experience in corporate management. They all obtain and provide information from an independent standpoint, and strive to monitor circumstances from an outside perspective. In addition, one full-time Audit & Supervisory Committee member is appointed to attend important meetings other than meetings of the Board of Directors, collaborate with major internal departments, and share information obtained through these activities with all Audit & Supervisory Committee members in order to enhance the effectiveness of the Committee's activities. The Audit & Supervisory Committee conducts audits in accordance with the audit plan. It also strives to monitor the execution of duties by the directors through coordination with accounting auditors and the Internal Audit Office.

Results of our analysis and evaluation of the Board of Directors and action policies of the Board of Directors

We promote the sustainable growth and medium- to long-term corporate value improvements of the Takasago Thermal Engineering Group through our New Long-Term Vision (2040), formulation of our Medium-Term Management Plan (2026), and transition to a company with an Audit & Supervisory Committee. In addition, to improve our earning power, capital efficiency, and other characteristics, we have defined the following roles and responsibilities to be fulfilled by our Board of Directors, and we will engage in various initiatives aimed at ensuring that our Board of Directors is highly effective.

Based on our evaluations of the effectiveness of the Board of Directors, we reflect on whether it is fulfilling its roles and responsibilities and then make improvements to compensate for any deficiencies and promote more sophisticated management reform.

Our Board of Directors deliberated on the results of our recent FY2023 evaluation of its effectiveness to map out a path for effectively responding. The results are described below.

Roles and responsibilities to be fulfilled by our Board of Directors

1. Indicating the general direction of our corporate strategy, etc.
2. Developing an environment that facilitates suitable risk-taking by senior executives
3. Effectively supervising executives based on an independent, objective perspective

01 Framework for improving the effectiveness of our Board of Directors

As part of our initiatives to improve the effectiveness of our Board of Directors, we conducted self-evaluation questionnaires and interviews covering all our directors.

Questionnaire survey

- ❶ Targets: **All directors (12)**
- ❷ Response method: **Non-anonymous method**
- ❸ Evaluation items: **A survey consisting of a total of 25 questions in line with the five themes shown below**
  1. Monitoring of important management matters* (effectiveness in terms of fulfilling duties)
  2. Operations of the Board of Directors
  3. Operational situation of important meeting bodies (Audit & Supervisory Committee; Governance, Nomination and Compensation Committee; etc.)
  4. Handling of issues pointed out during the previous fiscal year
  5. Current Board of Directors stage and any other opinions

Interview survey

- Targets: **All directors (12)**
- Listeners: **Secretariat of the Board of Directors + Corporate Planning Division**
- Interview items: **Identification of issues based on the questionnaire survey results followed by discussion of the evaluation to improve effectiveness**

Board of Directors

Deliberation on the effectiveness evaluation results by the Board of Directors followed by formulation of action policies to improve the effectiveness of the Board of Directors

The Board of Directors deliberates on matters and then refers matters that show our direction to the executive side. The details are the five items listed on the right.

1. Corporate value (our value creation cycle, which starts with our Purpose)
2. Capital policy, shareholder returns, and shareholder composition
3. Design, development, and operation of our decision-making process and governance system
4. Effectiveness of the Medium-Term Management Plan
5. Strategy for establishing business domains, including affiliates

02 Effectiveness evaluation results

Summary

- We confirmed that our Board of Directors thoroughly discusses important management matters and indicates our general direction to the executive side. As a result, the Board of Directors successfully shares our targets and strategies with executives. In addition, based on our evaluation, by promoting the gradual delegation of authority, we have successfully encouraged risk-taking, ensured the adequacy of business processes and results on the executive side, and enabled our Board of Directors to suitably fulfill its roles and responsibilities. At the same time, during our recent effectiveness evaluation, we discovered improvement items as well as matters to be addressed in the medium to long term, and we will continue striving to improve our effectiveness as a company.
- Based on our recent evaluation, our "Board of Directors pre-briefing operations" and "having outside directors attend important meetings on the executive side and visit business divisions," both of which were intended to revitalize discussions by the Board of Directors, helped to encourage more active dialogue between executives and outside directors, thereby promoting a better understanding of business. We will continue striving to further revitalize such efforts to interact and share opinions.
- Starting in June 2023, we transitioned to operations in which an independent outside director serves as the chairperson of our Board of Directors. This has made it possible to promote more sophisticated governance as well as the demonstration of more effective supervisory functions, and our evaluation showed that our Board of Directors is suitably supervising operations. In addition, the partnership between directors and executives is helping to concretely achieve "closeness without collusion."

Our vision for the Board of Directors (awareness of issues)

- Our executive and supervisory sides have gotten on the same page based on our objectives in transitioning to a Company with Audit & Supervisory Committee. Given this, we will promote the flexible delegation of authority to the executive side, endeavor to increase our management speed, and aim to establish a management system that will help us to achieve our target Long-Term Vision.
- In addition to promoting the delegation of authority to the executive side, we will promote the development of suitable systems for Group governance and risk monitoring, flesh out deliberations by our Board of Directors on important management matters (formulating a specific strategy to establish business domains in line with our Long-Term Vision), and enhance the supervisory functions to achieve management reform.

03 FY2024 initiatives aimed at improving effectiveness

As a result of deliberation by the Board of Directors on the results of our recent evaluation of the Board of Directors, we decided to implement the initiatives described below to improve the Board's effectiveness.

FY2024 Board of Directors action policies

1	Revitalize deliberations on important management matters (improve operations of the Board of Directors)	●Formulate an agenda to revitalize discussions by the Board of Directors, and ensure that discussions are held related to our general direction in terms of important management matters, corporate strategies, etc. ●Discuss requirements related to human resources required by the Board of Directors, and monitor appointed human resources
2	Promote suitable risk-taking on the executive side	●Continue promoting the delegation of authority to the executive side in order to speed up decision-making ●Report high-risk matters to the Board of Directors as soon as possible, secure ample opportunities for discussion, and maintain operations that enable suitable risk assessment
3	Create systems to which stakeholder feedback is applied	●Formulate a stakeholder relationship chart, and further clarify our strategic direction ●In addition to conducting IR activities, increase opportunities to visit business divisions, and provide more comprehensive information to the Board of Directors ●Consider and design the shareholder composition (including capital strategies) to be aimed for in the medium to long term
4	Flesh out governance functions (legitimacy and adequacy of business execution)	●Clarify responsibilities related to three lines of defense, and enhance our auditing system through mutual cooperation ●Consider and establish a Group governance system ●Enhance staff (secretariat) training (including self-improvement), and flesh out personnel
5	Take action to revitalize discussions by the Board of Directors	●Set up off-site meetings, and revitalize discussions by the Board of Directors ●Flesh out training opportunities to deepen everyone's understanding of construction business practices and our business (technology, sales, and construction accounting)

04 Formulating an agenda to revitalize discussions by the Board of Directors

To ensure the effectiveness necessary for us to achieve sustainable growth as well as improvements in our medium- to long-term corporate value, we have organized the matters below to be discussed by the Board of Directors. Starting in FY2024, we will operate according to this agenda and strive to ensure the effectiveness of our Board of Directors.

FY2023 Board of Directors agenda (meetings generally held at least once per month)

- ❶ Resolutions: ●Decision-making related to matters the Board of Directors needs to pass resolutions on in line with the Board of Directors Regulations and other decision-making rules
- ❷ Reported matters: ●Confirmation of the quarterly reports of executive directors and matters regarding which decisions were made on the executive side
- ❸ Discussion items: ●Discussion of matters related to our direction in terms of business areas as well as the execution of other important business

FY2024 Board of Directors agenda (meetings generally held at least once per month)

❶ Corporate topics (matters to be discussed in order to decide on the company's target direction)
- ●Matters related to our management strategies in anticipation of medium- to long-term megatrends
- ●Business portfolio-related matters
- ●Matters related to management strategies that consider sustainability
- ●Decision-making on important management matters aimed at lasting corporate value improvement

← Deciding on our target direction as well as our management and corporate strategies

Objectives of transitioning to a Company with Audit & Supervisory Committee

❷ Monitoring topics (matters to be supervised by the Board of Directors)
- ●Monitoring of important management measures (supervision)
- ●Execution of duties by the executive side in response to decisions made by the Board of Directors (including matters deemed necessary by the Board of Directors as well as matters related to Management Council proceedings)
- ●Confirmation of quarterly reports of executive directors, other matters deemed necessary by the Board of Directors, and activities of various committees

← Ongoing promotion of the delegation of authority to the executive side in terms of management strategies decided on by the Board of Directors

❸ Operation-related topics (matters to be worked on in terms of operations of the Board of Directors)
- ●Matters related to evaluating the effectiveness of the Board of Directors, actions related to disclosing information for CG reports, integrated reports, etc., and discussion related to improving operations of the Board of Directors

Internal Audit Office

The Internal Audit Office (with eight staff members) has been established as a section under the direct control of the president. It conducts systematic audits on the appropriateness and efficiency of business operations from an independent standpoint based on the Internal Audit Regulations. It also evaluates the improvement and operational status of internal control concerning the financial reporting of the company and important consolidated subsidiaries.

The Internal Audit Office reports the results of audits directly to the President and Representative Director, and also checks the measures needed for improvement as well as the status of implementation of those measures. It also reports directly to the Board of Directors and the Audit & Supervisory Committee as necessary. In order to ensure mutual cooperation with the Audit & Supervisory Committee and the accounting auditors, the Office attends regular meetings of the three parties to confirm the progress of audit operations and share audit results, thereby striving to conduct effective internal audits.

Accounting Auditors

The accounting auditing for us is performed by two certified public accountants from KPMG AZSA LLC.

Employees responsible for auditing are rotated appropriately, engaging in the job for up to seven consecutive fiscal years.

They are supported by seven certified public accountants and 16 others.

Succession Plan for the President and Representative Director

In order to ensure the transparency and objectivity of succession by the president and representative director to the successor, the Succession Plan for the President and Representative Director is reported to the Governance, Nomination and Compensation Committee on the successor's education policy, training plan, and plan progress, and the Committee deliberates on the plan. The president and representative director proposes to the Governance, Nomination and Compensation Committee the most suitable candidate to replace him or her, and the Committee deliberates on the matter and reports the results of its deliberation to the Board of Directors.

Policy for the training of directors

We believe that matters required of directors mainly consist of matters unique to Takasago Thermal Engineering, such as necessary knowledge of our businesses, finance, and organization as well as general knowledge that includes the roles required of directors and their legal and other responsibilities.

Executive directors work to gain a better understanding of general matters, such as our businesses, finance, and organization, through discussions at the Management Issue Review Committee every year. Executive directors and inside directors who are Audit & Supervisory Committee members strive to understand the roles and responsibilities required of directors and directors who are Audit & Supervisory Committee members by participating in training by external experts.

We provide an explanation of matters such as our businesses, finance, and organization to outside directors when they assume their posts and as required, to facilitate the acquisition of knowledge required of our outside directors. As such, we develop an environment for them to fulfill their roles.

In addition, we provide opportunities and services and pay the necessary expenses to acquire and properly update the knowledge required of each director. The Board of Directors regularly checks progress on the training of executive directors and inside directors who are Audit & Supervisory Committee members.

Remuneration of executives

Executive remuneration policy

We consider the compensation we pay to our directors (excluding directors who are Audit & Supervisory Committee members) and our executive officers (called executives below) to be an important strategy in terms of suitably incentivizing them to demonstrate the sort of management leadership necessary for us to achieve our goal of being an "Environment-Creator®."

Basic policies

- Foster a sustainable "growth mindset" by evaluating the demonstration of leadership and suitable risk-taking to establish a compensation plan that enables the realization of suitable returns in line with achievements
- Maintain compensation details and levels effective for continuing to secure talented human resources
- Establish a compensation governance system that ensures independence, objectivity, and transparency, and make sure that executives are accountable to stakeholders

As to the remuneration of directors (excluding directors who are Audit & Supervisory Committee members) as well as directors who are Audit & Supervisory Committee members, we set the upper limit for the total amount of the remuneration, etc. of all the directors (excluding directors who are Audit & Supervisory Committee members) and directors who are Audit & Supervisory Committee members based on a resolution at a shareholders' meeting.

To enhance the independence, objectivity, and transparency of the remuneration of executives, we established the Governance, Nomination and Compensation Committee as a voluntary advisory body consisting of representative directors, the chair and director, the president and director, the vice president and director, and independent outside directors (excluding directors who are Audit & Supervisory Committee members). After discussions at the Committee, we determine the remuneration of directors (excluding directors who are Audit & Supervisory Committee members) based on a resolution of the Board of Directors. The majority of the Committee is composed of independent outside directors. At the time of submission of this report, the Governance, Nomination and Compensation Committee consisted of five members, four of whom were independent outside directors.

The remuneration of directors (excluding directors who are Audit & Supervisory Committee members) consists of basic remuneration, a bonus as a short-term (annual) incentive, and a stock-based compensation plan (executive remuneration BIP trust) as a medium- to long-term incentive. The composition is set in consideration of the relevant policy.

It is our policy that as one rises in rank, the proportion of basic remuneration decreases, while the proportion of the variable compensation (bonus and stock-based compensation plan (executive remuneration BIP trust)) increases. As for the standard payment basis for representative directors, the ratio of fixed compensation (basic remuneration) and variable compensation (bonus and stock-based compensation plan (executive remuneration BIP trust)) will be around 40%:30%:30%.

Independent outside directors receive only basic remuneration, and there is no bonus or stock-based compensation plan (executive remuneration BIP trust).

The basic remuneration is determined as a fixed amount according to the position of each of the directors (excluding directors who are Audit & Supervisory Committee members) and is paid each month.

Bonuses serve as an incentive to achieve single-year performance targets and as a way to encourage commitment to the achievement of milestones aimed at realizing our Medium- to Long-Term Vision. Bonuses are paid at a specific time every year and fluctuate within a range of 0% to 200% according to the consolidated ordinary income, consolidated gross profit margin, and individual evaluation of each executive.

Stock-based compensation consists of performance-linked compensation (60%) and non-performance-linked (stock-price-linked) compensation (40%). Performance-linked compensation is intended to increase executive motivation to contribute to improving our corporate value in the medium to long term. Therefore, this compensation fluctuates within a range of 0% to 200% according to the achievement of performance targets, which is evaluated by using the important indicators called for by our Medium-Term Management Plan and other indicators stipulated by our Board of Directors. Our initial indicators are consolidated ordinary income, consolidated ROE, relative TSR (with respect to TOPIX), CO_2 emissions, and employee engagement. Note that, if there are changes in the external environment surrounding the company, a review of our medium- to long-term strategies, or similar circumstances, the indicators and their evaluation weight are subject to change following deliberation by the Governance, Nomination and Compensation Committee and the passing of a resolution by our Board of Directors. Performance-linked compensation is paid a certain period of time after the end of the Medium-Term Management Plan, while non-performance-linked compensation is paid at the time of resignation.

The remuneration of executive officers also consists of basic remuneration, a bonus as a short-term (annual) incentive, and a stock-based compensation plan (executive remuneration BIP trust) as a medium- to long term incentive as in the case of directors (excluding directors who are Audit & Supervisory Committee members). The levels are decided based on a resolution of the Board of Directors after deliberations by the Governance, Nomination and Compensation Committee.

The directors (excluding independent outside directors) and executive officers make efforts to acquire our shares via voluntary contribution through the Official Shareholding Association.

Remuneration, etc. of directors who are Audit & Supervisory Committee members is basic remuneration only, and the amount of the basic remuneration of each director who is an Audit & Supervisory Committee member is decided through consultation with directors who are Audit & Supervisory Committee members based on the comprehensive examination of the content, volume and difficulty of his/her duties, the degree of responsibility, etc. In view of their duties, etc., directors who are Audit & Supervisory Committee members receive no bonus or stock-based compensation.

Overview of the compensation mix (representative director: standard) [following the revision: current as of June 2024]

Type of remuneration		Overview, etc.		
		Overview	KPI: weight	Performance-linked range
Fixed 4 : Variable 6	Basic remuneration (40%)	Fixed monthly compensation determined according to the position	—	—
	Bonus (30%)	Compensation for commitment to achieving milestones aimed at single-year performance and realizing our Medium- to Long-Term Vision	Consolidated ordinary income: 50% Consolidated gross profit margin: 20% Individual evaluation: 30%	0% to 200%
	Stock-based compensation (30%)	Compensation for commitment to medium- to long-term performance and corporate value improvement	Performance-linked compensation: 60% Consolidated ordinary income: 30% Consolidated ROE: 20% Relative TSR (with respect to TOPIX): 30% CO_2 emissions: 10% Employee engagement: 10%	0% to 200%
			Non-performance-linked (stock-price-linked) compensation: 40%	—

Total remuneration, etc. by executive category, the total amount of each type of remuneration, and the number of eligible executives
(FY2023: April 1, 2023, to March 31, 2024)

Category	Total amount of remuneration, etc. (million yen)	Number of eligible executives
Directors (excluding Audit & Supervisory Committee members) (excluding outside directors)	341	5
Outside directors (excluding Audit & Supervisory Committee members)	59	6
Directors (Audit & Supervisory Committee members) (excluding outside directors)	20	1
Outside directors (Audit & Supervisory Committee members)	35	3
Auditors (excluding outside auditors)	13	2
Outside auditors	9	3
Total	**479**	**20**

Policy for constructive dialogue with shareholders

We believe that listening to shareholders and taking proper measures lead to sustainable growth and medium- and long-term improvement in corporate value. Therefore, we are committed to building a constructive relationship with shareholders through dialogue with them and the disclosure of materials.

Our policy on constructive dialogue with shareholders is as mentioned below.

1. We appoint the representative director as the person who controls dialogue with shareholders, the CFO or division manager in charge of IR as the person in charge of handling information, the manager of the Communication Division as the person in charge of timely disclosure, and the manager of the Accounting Division as the person in charge of annual securities reports, etc. (the structure is shown in the schematic diagram of an overview of the system for timely disclosure later on this page).
2. The members mentioned above share information and issues on a daily basis through regular meetings and other opportunities for the promotion of coordination while making efforts to take appropriate actions.
3. In addition to biannual financial results briefing sessions, we plan and organize opportunities for dialogue such as briefing sessions for investors on an as-needed basis.
4. We also participate in external events for investors. Directors and senior executives will obtain information directly through attendance at briefing sessions for investors, released analyst reports, and other channels and receive reports from responsible sections regularly and when necessary.
5. In order to prevent insider trading, we strictly adhere to the Insider Trading Management Rules, which stipulate regulations concerning matters such as compliance with the Financial Instruments and Exchange Act and other related laws as well as the management of internal information. When we have dialogue, we try to manage the information in a way to avoid being suspected of giving any insider information while disclosing information not selectively but fairly. We set the period from the day following the end of the settlement term (quarterly and full-year) to the date of the announcement of financial statements as a "period of silence." In the meantime, we obtain knowledge on the prevention of insider trading and give education to update the knowledge.

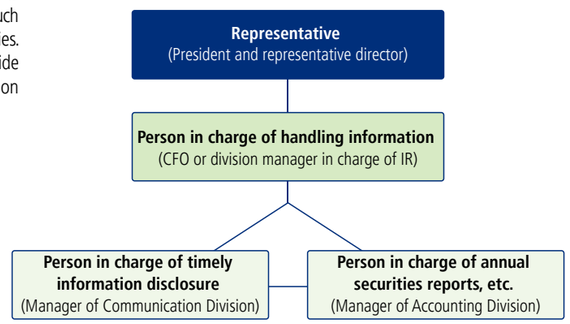


Financial results briefing session

Outline of the timely disclosure system

Our internal system for the timely disclosure of corporate information is described below.

1. The representative and the person in charge of handling the information endeavor to ensure the timeliness, legitimacy, accuracy, and fairness of the information to be disclosed. The information is discussed and reported at the Management Council and Board of Directors meetings as necessary.
2. The person in charge of timely information disclosure complies with the Timely Disclosure Rules and relevant laws on a daily basis and also collects information from related sections in a prompt and comprehensive manner for the execution of his/her duties. He/she also makes efforts to prepare proper disclosure materials and enhance the disclosure such as investigation of cases of information disclosure in other companies.
3. The Audit & Supervisory Committee and accounting auditors provide advice and instructions on information disclosure to us in addition to periodical audits.
4. We also seek opinions from third-party experts, etc. when necessary. We have established the Insider Trading Management Rules and the Disclosure Policy (Information Disclosure Rules) as internal rules as well as the Group Corporate Code of Ethics, which mentions that they must be strictly followed to prevent insider trading and follow Fair Disclosure Rules, including by group companies.



Schematic diagram of an overview of the system for timely disclosure

Executives

Directors (excluding directors who are Audit & Supervisory Committee members): eight persons



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

President and
Representative Director
Kazuhito Kojima

April 1984 Joined the Company
April 2015 Administration Officer; Branch General Manager, Yokohama Branch, East Japan Headquarters
April 2017 Executive Officer
April 2018 Branch General Manager, Osaka Branch
April 2019 Group General Manager, Management Strategy Headquarters
June 2019 Director and Executive Officer
April 2020 President and Representative Director, COO
In charge of work style reform and Global Business Planning Headquarters
April 2021 In charge of Global Business Planning Headquarters and Research & Development Headquarters
April 2022 In charge of Global Business Planning Headquarters, Research & Development Headquarters, and Finance & Investor Relations Department
June 2023 President and Representative Director (current)

Reason for selection as an officer

Through the execution of the air conditioning equipment business, Kazuhito Kojima has gained abundant experience and deep insight in the design/construction of building equipment relating to the Group's businesses. He has also fulfilled his executive responsibilities through the development of the Group's medium-term/annual business plans and through structural reforms and ESG/SDG-conscious corporate planning operations. We believe that, as President, he can be expected to achieve the Group's sustainable growth as well as medium and long-term improvement in corporate value and to revitalize and strengthen the functions of the Board of Directors.



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

Director and Executive Vice President
Chief Executive Officer of Sales & Marketing Headquarters
In charge of Research and Development Headquarters
Hiroshi Kubota

April 1985 Joined the Company
April 2016 Administration Officer; General Manager, Sales & Marketing 1, Tokyo Main Office, East Japan Headquarters
April 2017 Deputy General Manager, Tokyo Main Office
April 2018 General Manager, Sales & Marketing Management Division, Business in Japan Headquarters
April 2019 Executive Officer; General Manager, Sales & Marketing Management Division, Business Management Headquarters
April 2020 Group General Manager, Sales & Marketing Headquarters
April 2021 Managing Executive Officer
June 2022 Director and Managing Executive Officer
Chief Executive Officer of Sales & Marketing Headquarters
In charge of Sales & Marketing Headquarters
April 2023 Chief Executive Officer of Sales & Marketing Headquarters
April 2024 Director and Executive Vice President (current)
Chief Executive Officer of Sales & Marketing Headquarters
In charge of Research and Development Headquarters (current)

Reason for selection as an officer

Hiroshi Kubota has been involved in the sales sections for many years and currently serves as the Chief Executive Officer of the Sales & Marketing Headquarters, overseeing sales in the HVAC business. We believe that with this background, based on his excellent capabilities and insight and abundant experience, he has fulfilled his executive responsibilities through sales section management. We believe that, as Director and Managing Executive Officer, he can be expected to achieve the Group's sustainable growth as well as medium and long-term improvement in corporate value and to revitalize and strengthen the functions of the Board of Directors.



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

Director and Senior Managing Executive Officer
Chief Executive Officer of
Technical Engineering Headquarters
In charge of Group Companies Management,
DX Management sector,
and Business Strategy Management Department
Tadashi Kamiya

April 1986 Joined the Company
April 2016 Administration Officer; General Manager, Engineering Division, Engineering Headquarters
April 2018 Executive Officer
April 2019 Deputy Group General Manager, Business Management Headquarters
In charge of work style reform
June 2019 Director and Executive Officer
April 2020 Director and Managing Executive Officer
In charge of Quality, Environment & Safety Control, Japanese Group Companies, and Business Management Headquarters
April 2021 Group General Manager of Business Management Headquarters
In charge of Quality, Environment & Safety Control, Total Engineering, Group Companies, and Sales & Marketing Headquarters
June 2022 Group General Manager of Business Management Headquarters
In charge of Quality, Environment & Safety Control, Total Engineering, and Group Companies
April 2023 Chief Executive Officer of Technical Engineering Headquarters
In charge of Group Companies Management, and Business Strategy Management Department
April 2024 Director and Senior Managing Executive Officer (current), Chief Executive Officer of Technical Engineering Headquarters
In charge of Group Companies Management, DX Management sector, and Business Strategy Management Department (current)

Reason for selection as an officer

Through the execution of the air conditioning equipment business, Tadashi Kamiya has gained abundant experience and deep insight in the design/construction of building equipment relating to the Group's businesses. He has also fulfilled his executive responsibilities through business management and productivity improvement in the air conditioning equipment business. We believe that, as a director in charge of business management and business strategy, he can be expected to achieve the Group's sustainable growth as well as medium and long-term improvement in corporate value and to revitalize and strengthen the functions of the Board of Directors.



Newly appointed

Director and Executive Officer
General Manager of Finance & Investor Relations Department
In charge of Risk & Compliance and Corporate Operation sector
Masatoshi Morino

April 1989 Joined Sumitomo Bank (currently Sumitomo Mitsui Banking Corporation)
June 2005 Head Secretariat, Secretariat, Administrative Services Department, Sumitomo Mitsui Banking Corporation
April 2007 Deputy General Manager, Tokyo Corporate Banking Department 2, Sumitomo Mitsui Banking Corporation
April 2014 General Manager, Takamatsu Corporate Business Office and General Manager,Takamatsu Branch, Sumitomo Mitsui Banking Corporation
April 2016 General Manager, Global Corporate Banking Department, Planning Department., Wholesale Banking Unit, Sumitomo Mitsui Banking Corporation
April 2018 General Manager, Tokyo Corporate Banking Department 8, Sumitomo Mitsui Banking Corporation
April 2021 Joined the Company
General Manager, Public Relations Department, Global Business Planning Headquarters
October 2021 Administration Officer
April 2022 General Manager, Finance & Investor Relations Department
April 2023 Executive Officer
April 2024 Executive Officer
In charge of Risk & Compliance and Corporate Operation sector
June 2024 Director and Executive Officer (current)
General Manager of Finance & Investor Relations Department
In charge of Risk & Compliance, and Corporate Operation sector (current)

Reason for selection as an officer

Masatoshi Morino has extensive experience working at financial institutions, he possesses advanced level knowledge of not only finance but also business execution in general, and he has fulfilled his executive responsibilities as a general manager in relation to finance, accounting, IR, and public relations. We believe that, as a director in charge of the Finance & Investor Relations Department, Risk & Compliance, and the Corporate Operation sector, he can be expected to achieve the Group's sustainable growth as well as medium and long-term improvement in corporate value and to revitalize and strengthen the functions of the Board of Directors.

Directors (excluding directors who are Audit & Supervisory Committee members): eight persons



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

Chairperson of the Board
Outside Director

Shuma Uchino

April 1978 Joined Mitsubishi Corporation
April 2009 Executive Officer, Mitsubishi Corporation (Managing Executive Officer, Mitsubishi Motors Corporation)
July 2010 Executive Officer; General Manager, Corporate Accounting Department, Mitsubishi Corporation
November 2010 Executive Officer; General Manager, Corporate Accounting Department; Assistant to Chief Financial Officer, Mitsubishi Corporation
April 2013 Executive Vice President; Chief Financial Officer (CFO), Mitsubishi Corporation
June 2013 Representative Director and Executive Vice President; Chief Financial Officer (CFO), Mitsubishi Corporation
April 2016 Representative Director, Mitsubishi Corporation
June 2016 Advisor, Mitsubishi Corporation
Outside Director, the Company (resigned in June 2018)
June 2018 Senior Audit & Supervisory Board Member (full time), Mitsubishi Corporation
June 2019 Full-time Audit & Supervisory Board Member, Mitsubishi Corporation
June 2022 Outside Director (Audit and Supervisory Committee Member), Digital Garage, Inc. (current), Outside Director, the Company (current)
June 2023 Chairperson of the Board, the Company (current)

● Significant concurrent positions:
Outside Director (Audit and Supervisory Committee Member), Digital Garage, Inc.

Reason for selection as an officer

Shuma Uchino has abundant experience and insight as a representative director and CFO of a general trading company. We expect that he can supervise and check business management from an independent perspective based on such experience and knowledge. We also expect that he can adequately perform his duty as an outside director given the reason mentioned above such as offering advice and opinions useful to our business management. Furthermore, as he is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

Chairperson of the Governance, Nomination and Compensation Committee
Outside Director

Atsushi Takagi

April 1991 Joined Nomura Research Institute, Ltd.
September 1997 Joined Morgan Stanley Japan, Ltd.
December 2004 Managing Director, Morgan Stanley Japan, Ltd.
October 2015 Deputy General Manager, Research Division, Morgan Stanley Japan, Ltd.
November 2019 Representative Director, Infrastructure Research & Advisors Co., Ltd. (current)
June 2020 Non-Executive Director, MAEDA CORPORATION (current)
April 2021 Advisor, the Company
October 2021 Outside Director; Chairperson of Compensation Committee, INFRONEER Holdings Inc. (current)
June 2022 Outside Director, the Company (current)
June 2023 Chairperson of Governance, Nomination and Compensation Committee, the Company (current)

● Significant concurrent positions:
Representative Director, Infrastructure Research & Advisors Co., Ltd.
Non-Executive Director, MAEDA CORPORATION
Outside Director and Chairperson of Compensation Committee, INFRONEER Holdings Inc.

Reason for selection as an officer

Atsushi Takagi has experience working as an analyst at security firms, considerable expertise regarding finance, and wide-ranging insight regarding the construction sector. We expect that he can supervise and check business management from an independent perspective based on such experience and knowledge. We also expect that he can adequately perform his duty as an outside director given the reason mentioned above such as offering advice and opinions useful to our business management. Furthermore, as he is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

Outside Director

Yoko Seki

October 2002 Registered as attorney
November 2002 Registered as certified public accountant
December 2006 Joined Ginza Prime Law Office (current)
April 2014 Professor at Kokushikan University (current)
June 2019 Outside Director, the Company (current)

● Significant concurrent positions:
Outside Corporate Auditor, TAIJU LIFE INSURANCE COMPANY LIMITED
Supervisory Director, AEON REIT Investment Corporation

Reason for selection as an officer

Yoko Seki has abundant experience and knowledge as a lawyer and certified public accountant, and we expect that she can supervise and check business management from an independent perspective on business execution based on such experience and knowledge. While she was not involved in corporate management by any other method than serving as outside officer, we believe that she can adequately perform her duty as an outside director given the reason mentioned above such as offering advice and opinions useful to our business management.
Furthermore, as she is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)

Outside Director

Hideka Morimoto

April 1981 Joined the Environment Agency (currently Ministry of Environment)
August 2011 Councillor, Cabinet Secretariat and Director-General of the Task Force for the Reform of Nuclear Safety Regulations and Organizations, the Cabinet Secretariat
September 2012 Deputy Secretary General, the Nuclear Regulation Agency
July 2014 Director General, Ministry of Environment
July 2017 Administrative Vice-Minister, Ministry of Environment
July 2019 Advisor, Ministry of Environment
April 2020 Professor at Waseda University, School of Law (current)
Advisor, the Company
June 2021 Outside Director, the Company (current)
March 2022 Outside Director, INPEX CORPORATION (current)

● Significant concurrent positions:
Outside Director, INPEX CORPORATION

Reason for selection as an officer

Hideka Morimoto has abundant experience and knowledge of public administration and the environment, and we expect that he can supervise and check business management from an independent perspective on business execution based on such experience and knowledge. While he was not involved in corporate management by any other method than serving as outside officer, we believe that he can adequately perform his duty as an outside director given the reason mentioned above such as offering advice and opinions useful to our business management.
Furthermore, as he is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.

Directors who are Audit & Supervisory Committee members: four persons



Attendance at Board of Directors meetings
100% (10 out of 10 meetings)
Attendance at Audit & Supervisory Committee meetings
100% (10 out of 10 meetings)

Full-time Audit & Supervisory Committee member

Masato Nakamura

April 1984 Joined Mitsubishi Bank, Ltd. (currently MUFG Bank, Ltd.)
April 2011 Chief Executive Officer, Bank of Tokyo Mitsubishi UFJ (Malaysia) Berhad
November 2012 President, The Japanese Chamber of Trade and Industry, Malaysia (JACTIM)
March 2014 Joined the Company
January 2015 Administration Officer; General Manager, International Corporate Management Division, International Business Headquarters
April 2017 Executive Officer;
Deputy Chief Officer, International Business Headquarters;
General Manager, International Business Management Department;
Head of International Business Planning Office
April 2020 General Manager, Corporate Planning Headquarters
October 2021 Managing Executive Officer
April 2023 Special Business Project Manager of Corporate Planning Division
June 2023 Director (Audit & Supervisory Committee member) (current)

Reason for selection as an officer

Masato Nakamura has extensive experience and insight in finance, accounting, and international business from his work at financial institutions. Moreover, since joining the company, in addition to his work experience in the sector responsible for international business, he has also fulfilled his executive responsibilities through the development of the Group's medium term/annual business plans and through structural reforms and ESG/SDG-conscious corporate planning operations. By utilizing these experiences to supervise and check management, we believe that he can adequately perform his duty as a director who is an Audit & Supervisory Committee member.



Attendance at Board of Directors meetings
100% (12 out of 12 meetings)
Attendance at Audit & Supervisory Committee meetings
100% (10 out of 10 meetings)

Outside Audit & Supervisory Committee member

Kazuo Sakakibara

April 1984 Appointed as a Public Prosecutor
December 2015 Director of the Trial Division, Supreme Public Prosecutors Office
April 2017 Chief Public Prosecutor, Osaka District Public Prosecutors Office
February 2018 Superintending Prosecutor, Fukuoka High Public Prosecutors Office
January 2020 Superintending Prosecutor, Osaka High Public Prosecutors Office
July 2021 Resigned
October 2021 Registered as attorney
November 2021 Joined Anderson Mori & Tomotsune (current)
April 2022 Auditor, Tokyo Dental College (current)
June 2022 Management Committee Member, NHK (Japan Broadcasting Corporation) (current)
Outside Audit & Supervisory Board member, the Company
June 2023 Director (Audit and Supervisory Committee member) (External), Sumitomo Mitsui Trust Bank, Limited (current)
Outside Director (Audit & Supervisory Committee member), the Company (current)

● Significant concurrent positions:
Auditor, Anderson Mori & Tomotsune Management Committee Member, Tokyo Dental College Director, NHK (Japan Broadcasting Corporation)
Outside Audit and Supervisory Committee Member, Sumitomo Mitsui Trust Bank, Limited

Reason for selection as an officer

Kazuo Sakakibara has abundant experience and knowledge due to his many years as a public prosecutor and attorney. We expect that he can supervise and check business management from an independent perspective based on such experience and knowledge. We also expect that he can adequately perform his duty as an outside director who is an Audit & Supervisory Committee member such as offering advice and opinions useful to our business management. While he was not involved in corporate management by any other method than serving as outside officer, we believe that he can adequately perform his duty as an outside director who is an Audit & Supervisory Committee member given the reason mentioned above.
Furthermore, as he is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.



Attendance at Board of Directors meetings
100% (10 out of 10 meetings)
Attendance at Audit & Supervisory Committee meetings
100% (10 out of 10 meetings)

Outside Audit & Supervisory Committee member

Hiroyuki Hioka

April 1981 Joined Japan Airlines Co., Ltd.
June 2006 Vice President, Audit Department (in charge of Compliance Promotion and Responding to Corporate Risk), Japan Airlines Co., Ltd.
October 2009 Vice President, Administrations Managing Division (in charge of General Affairs), Japan Airlines Co., Ltd.
February 2010 Senior Vice President, the Americas and Senior Vice President, New York Regional Office, Japan Airlines Co., Ltd.
April 2013 Executive Officer, General Affairs (Chief of General Affairs, Legal Affairs, Public Relations, Secretariats, and Policy Proposal), Japan Airlines Co., Ltd.
June 2018 Representative Director, President, AGP Corporation
June 2021 Chairperson, AGP Corporation
September 2022 Advisor, Japan Airport Terminal Co., Ltd. (current)
June 2023 Outside Director (Audit & Supervisory Committee member), the Company (current)

● Significant concurrent positions:
Advisor, Japan Airport Terminal Co., Ltd.

Reason for selection as an officer

In addition to his work experience in compliance promotion, corporate risk response, and general affairs management at an airline company, Hiroyuki Hioka has abundant experience and knowledge as a representative director of a listed company. We expect that he can supervise and check business management from an independent perspective based on such experience and knowledge. We also expect that he can adequately perform his duty as an outside director who is an Audit & Supervisory Committee member such as offering advice and opinions useful to our business management.
Furthermore, as he is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.



Attendance at Board of Directors meetings
100% (10 out of 10 meetings)
Attendance at Audit & Supervisory Committee meetings
100% (10 out of 10 meetings)

Outside Audit & Supervisory Committee member

Hiroyuki Wakamatsu

April 1995 Joined Tohmatsu & Co. (currently Deloitte Touche Tohmatsu LLC)
April 1998 Registered as certified public accountant
October 2008 Established Wakamatsu CPA Office, assumed office as Representative (current)
June 2010 Outside Auditor, With us Corporation (current)
June 2012 Outside Audit & Supervisory Board Member, mixi, Inc. (currently MIXI, Inc.) (current)
August 2017 External Audit & Supervisory Board Member, RENOVA, Inc. (current)
July 2018 Established Generys Co., Ltd., assumed office as Representative Director (current)
June 2023 Outside Director (Audit & Supervisory Committee member), the Company (current)

● Significant concurrent positions:
Representative, Wakamatsu CPA Office
Outside Auditor, With us Corporation
Outside Audit & Supervisory Board Member, MIXI, Inc.
External Audit & Supervisory Board Member, RENOVA, Inc.
Representative Director, Generys Co., Ltd.

Reason for selection as an officer

Through his experience as a certified public accountant at a major audit firm and as an outside auditor at listed companies, Hiroyuki Wakamatsu has not only specialized knowledge in accounting, but also broad professional insight and experience in corporate auditing. We expect that he can supervise and check business management from an independent perspective based on such experience and knowledge. We also expect that he can adequately perform his duty as an outside director who is an Audit & Supervisory Committee member such as offering advice and opinions useful to our business management.
Furthermore, as he is not from a parent company, a fellow subsidiary, a major shareholder or a major client or supplier of Takasago Thermal Engineering, we believe that there is no particular problem in terms of independence.



A Dialogue Between an Outside Director and the Head of the Sustainability Promotion Office

Achieving a Comfortable Working Environment and Job Satisfaction Through Sustainability Management While Emphasizing Inclusion to Realize Company-Wide Optimization

Communicating sustainability management as a clear message

Ms. Etsumi: There is still no clear concept of what sustainability means in terms of business, and different companies approach it in different ways. Starting this year, Takasago Thermal Engineering is promoting sustainability management based on three material issues—"climate and nature-related," "wellbeing," and "business infrastructure"—but how do you think about related issues, shortages, and the like?



Yoko Seki | Outside Director

Ms. Seki registered as a lawyer in October 2002 and then joined the Ginza Prime Law Office in 2006 (current position).
In June 2019, she started serving as an outside director for Takasago Thermal Engineering.

Ms. Seki: I define "sustainability" as "global-environment stability that enables people to live their lives" and "sustainability management" as the act of "ensuring the sustainability of the company while pursuing management based on an awareness of sustainability." The Company's three material issues are conceptually similar to ESG, but they are each concretely expressed. I believe this makes them easier to communicate to employees and stakeholders. That said, the phrase "business infrastructure" is somewhat abstract, so I think it would be better to also offer a specific explanation of this.

Ms. Etsumi: In our case, "business infrastructure" refers to the establishment of the company's four domains. The phrase therefore expresses our goal of achieving Group-wide harmony as we create value, but we would like to use integrated reports, websites, in-house newsletters, and other channels to provide explanations aimed at increasing the penetration of this concept both within and outside the company.

Ms. Seki: It really is important to communicate our message. I feel like our Group's Purpose, "with our revolutionary environmental innovations, we activate the Earth's future" as an Environment-Creator®, is starting to achieve a certain degree of penetration both within and outside of the company. I suspect that the next issue we face is to increase the penetration of our approach to sustainability through the three material issues we have identified. As climate change accelerates, everyone is keeping a more critical eye on how companies contribute to decarbonization. I therefore think that communicating information on the kind of thinking we base our sustainability management on has an effect not only in terms of how we are evaluated regarding our corporate value and investment targets but also in terms of securing human resources.

Towards an environment that uses "systems" to provide a comfortable working environment and "opportunities" to provide job satisfaction

Ms. Etsumi: The Company started pursuing full-scale DE&I (diversity, equity, and inclusion) initiatives in FY2021, but how have these efforts been evaluated?

Ms. Seki: Well, I participated in TakasaGo! Woman Pride 2023 in an effort to promote more active participation by women in the workplace, and around 360, or 90%, of the company's female employees showed up, which suggests that it was an extremely useful event. The ultimate goal of initiatives for promoting women's workplace participation is to achieve gender equality in the workplace to the degree to which such initiatives—including holding events—become unnecessary. However, given that the construction industry is still dominated by men, I believe it is first necessary to enable women to connect with colleagues in the same workplace so that they can share their concerns. We must therefore consider this step as we promote inclusion to create an organization that enables everyone to be themselves and is a comfortable place to work regardless of their gender or other attributes. As an example, it is certainly important to make it easier for employees to take time off for childbirth, nursing care, and other obligations, but it is also vital to create systems that help other employees follow up on the work of colleagues who take leave. I also think increasing the engagement of employees in general will lead to improved corporate value.

Ms. Etsumi: They say that companies that have made progress in terms of diversity have characteristics such as the following: "a clear corporate stance on diversity that is effectively communicated to employees," "initiatives aimed at achieving both a comfortable working environment and job satisfaction," and "an advanced company-wide optimization perspective that goes beyond specific attributes."

Ms. Seki: We are engaged in various initiatives aimed at achieving these three targets. Although it will take time to achieve all of them, I think aiming to become a company with these characteristics is the right course of action.

Ms. Etsumi: When it comes to reaching these goals, I also think it is important to promote initiatives aimed at achieving a comfortable working environment and job satisfaction. Although we can make our working environment more comfortable by fleshing out related systems, ensuring job satisfaction involves internal problems and seems more difficult in some ways. What do you think the company can do right now to improve job satisfaction?

Ms. Seki: Whether a person can envision "who they want to be" and "what kind of effect their work has on their company and society" has a profound impact on job satisfaction. At large organizations, including Takasago Thermal Engineering, many employees work in limited environments,





Tomoko Etsumi | Head of the Sustainability Promotion Office

Ms. Etsumi joined the company in 1995.
Over the years, she has been in charge of business with the General Affairs, Accounting, Human Resources Development, and Management Divisions. Involved in promoting personnel-system reform and diversity, she now serves as the head of the Sustainability Promotion Office.

including job sites and branches. Therefore, even if a given company effectively communicates its stance, I feel like there are issues in that employees often have few opportunities to experience the results of their work or horizontal relationships, which can make it difficult for them to really claim ownership of their work. To resolve such issues, I think it would be effective to actively create opportunities for employees to check out job sites, share their achievements with employees of other departments, and really identify with each other. I suspect that this would help them to experience more pride in their work and thus lead to increased job satisfaction. In addition, in terms of "who they want to be," it is also necessary to have systems that enable career development and career-plan consultations. For example, it is important to establish support systems, including backup and training, to enable anyone who takes childcare leave to smoothly return to work. I feel like this would increase job satisfaction as well as the number of employees who experience career development.

Ms. Etsumi: In addition to childcare, everyone is likely to eventually face the challenges of nursing care, so we would like to follow up with our employees on this as we aim for overall optimization.

Making our core business more sustainable to become a more appealing company

Ms. Seki: We discussed various topics related to sustainability management, but the most important thing is to sustainably execute core business while striving to be an appealing company. As the shortage of human resources becomes an increasingly serious issue, if we are not appealing as a company, there is a risk of us encountering tougher hiring difficulties and a higher turnover rate. That is why we must strive to provide both a comfortable workplace environment and job satisfaction to employees, thereby continuing to evolve into a more appealing company. To accomplish this, it is essential to pursue suitable initiatives and communicate information. In addition, the key to our future growth is how effectively we can expand our carbon neutrality business, one of our four business domains, in particular. I therefore believe it is important to respond to the carbon-neutrality needs of society as a whole by promoting research, development, and investment.

Ms. Etsumi: Our shareholders, investors, and other stakeholders evaluate not only our short-term corporate performance but also our sustainability initiatives. Although it is difficult to numerically evaluate non-financial areas, including carbon neutrality and diversity, choosing not to work on such areas is simply not an option. We will focus on each related initiative to improve our corporate value and contribute to the achievement of a sustainable society.

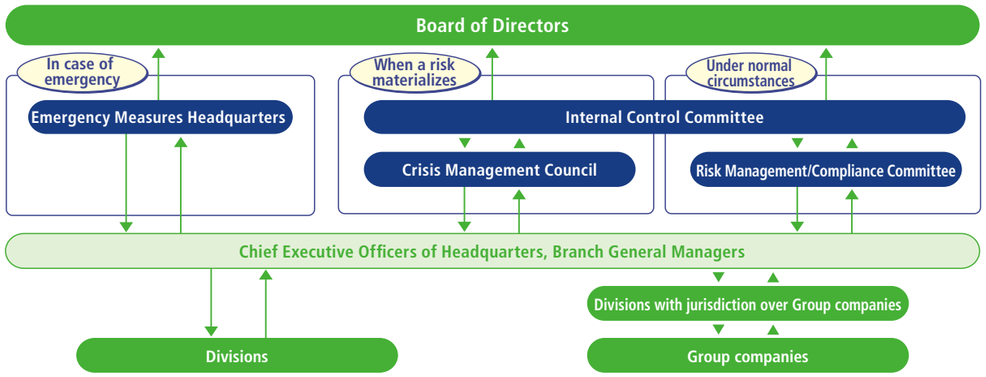
Risk Management

We are committed to measures to prevent management risks from materializing and adequate initial measures and subsequent actions to minimize the impact of crises.

Risk management system

The Takasago Thermal Engineering Group carries out risk management to prevent all risks from materializing and minimize damage in case a risk actually materializes. To prevent risks from materializing, we established the Risk Management Committee, which is chaired by the executive in charge of risk management, and in which the president and representative director serves as the chief officer, in accordance with the Risk Management Regulations. The committee is responsible for the development of the operating policy and plan for the risk management system, the identification of any risks that may have a significant impact on our Group, and the evaluation of the adequacy of measures to address risks. We have developed a system to minimize damage and loss in case a risk materializes to cause a crisis in accordance with the Crisis Management Regulations.

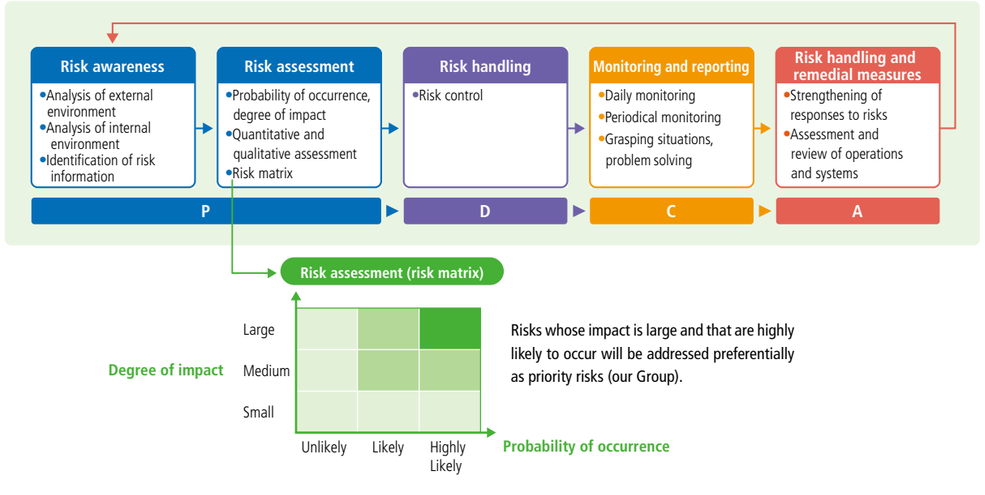
●Risk management system



Risk management cycle

In our Group, the Risk Management/Compliance Committee is responsible for identifying and assessing risks to determine what risks to prioritize and to make sure that risk awareness is shared on a Group-wide basis. In risk management, we give first priority to the risks that especially have a large impact on business management and can occur with a high probability as focused key risks. By having the Group-wide Risk Management/Compliance Committee, whose sessions take place five times a year, review progress and problems every quarter, we enhance the PDCA cycle that contributes to risk reduction activities.

●Risk management cycle



Promotion of information security measures

We view information security as an important business issue. To prevent information security accidents such as information leakage surrounding personal information, customers' and partners' confidential information as well as all types of confidential information handled in the process of work, we have the Basic Policy for Information Security in place to strengthen information security measures on a Group-wide basis.

Information security management and promotion structure

In addition to appointing the officer responsible for risk management as the information security supervisor for the company and the entire Group, we have established an Information Security Committee, which operates under the company-wide Risk Management/Compliance Committee, to strengthen and monitor information security measures and manage the state of their implementation, provide security education to employees, and respond to and control information security incidents.

Information security measures

We established the digital transformation (DX) strategy "TakasaGO! DX toward the future;" regularly review information security risks to respond to the accelerated use of digital technology in our Company, unstable global situation, and increase in high-level, diversifying cyber-attacks; and maintain and strengthen information security measures.

- Implementation of risk assessment and regular revision of information rules, including rules and regulations
- Enhancement of authentication, encryption measures, and endpoint monitoring
- Regular inventories of monitoring records and trend analysis
- Collection of threat and vulnerability information as well as implementation of measures in response
- Utilization of SIEM (Security Information and Event Management), and development and operation of an SOC (Security Operation Center)/CSIRT (Computer Security Incident Response Team) system

Information security education and training

In addition to offering e-learning and training emails to all employees, we distributed a brochure that contains essentials on information security (general version and construction-site version) to raise employees' awareness of information security.

Compliance

We comply with legislation concerning information security at home and abroad, personal information protection, data transfer, among others, and check relevant legislation when needed for appropriate responses and measures.

Business site risks

We have identified the risks below as potentially having significant impacts on the financial conditions, corporate performance, cash flow, etc. of our Group. We will take various measures to address them to reduce the risks.

●Business environmental risks (★: priority risks)

Risk item	Assumed impact	Measures to address the risk
Fluctuations in private capital investment	As a result of the suspension, postponement, change, etc. of investment plans of customers, the demand for construction and HVAC systems may fall more than previously estimated.	We will implement comprehensive company-wide measures including the reduction of fixed costs.
Increase in costs and delays in delivery related to procurement of materials and equipment	When material and equipment prices for ducts, piping, heat insulation, refrigerants, and other utility works have sharply risen due to the economic environment but it is difficult to reflect the cost increase on the contract amount, the costs of the construction work may increase more than previously estimated. Construction periods may also be delayed due to longer delivery times.	We will strengthen our procurement function based on the advantage of scale by enhancing the system to control purchases and accelerating the integration of purchases by all offices. We will also address extended delivery periods by proposing to the purchaser to place an order ahead of time or to change the model or system.
★ Shortage of technical staff and skilled workers	We may fail to establish a sufficient construction structure to complete the construction work by the specified construction period and lose the trust of customers as a result.	We will improve productivity through the establishment and use of an outsourcing system, and by streamlining operations and upgrading business processes through the use of DX. We will also secure technical staff through commitment to the recruitment of new workers in contract construction firms and the introduction of the construction career development system promoted by the MLIT.
★ Application of overtime caps	With the start of the application of overtime caps for construction work, a decrease in the total number of hours worked by engineers and other workers will lead to a reduction in construction capacity.	We will work to improve productivity through means such as transforming the way construction is carried out by shifting from conventional site-by-site "construction management" to platform-based "production management" (T-Base® project).
Overseas business development	We may face various risks in our target countries such as regulations and supervision by authorities including voluntary regulatory bodies, economic and political instability and differences in business practices, as well as intensified competition with competitors that have a competitive edge in a specific country/region or the global market.	We will promote the review of the strategic bases in our international businesses as a whole and implement proper monitoring through the constant exchange of information with overseas Group companies.
Expansion of business fields	In a target market, the technologies we own may not be suitable or we may not be able to achieve the initially anticipated results depending on the speed of the market expansion, the scale of the growth, or difficulty in entering the market.	We will judge whether we need to withdraw from the market or not according to the predetermined criteria.
M&A/Investment	Contingent liabilities may occur or unrecognized liabilities may be found after an acquisition. The possibility to recover invested capital may decline to losing the whole or part of the investment if the revenue cannot be produced as expected due to changes in the business environment, sluggish performance of the invested company, etc.	Before an M&A or investment, we will perform due diligence on details including the financial statements and contractual relationships of the target company.
Trends of the financial market / Decrease in the credit strength of our Group	We may fail to raise funds in a timely manner under favorable conditions for our Group, which may constrain the execution of our business.	We will successively communicate and exchange information with financial institutions.
Occurrence of liability for damage or liability for non-conformity	We may be required to pay compensation for damage that is too large to be covered by the umbrella liability insurance carried for unforeseeable circumstances.	To prevent such a situation, we will thoroughly control health and safety through measures such as the provision of instructions on health and safety to sites and the establishment of a proper working environment.
Aging of employees	Decreases in the number of employees are anticipated due to increases in the employees who retire at mandatory retirement age, possibly leading to problems for our future business activities.	We will promote long-term employment by reinforcing the retirement age extension and re-employment systems and increase productivity with labor saving and efficiency improvement through the visualization of techniques by using IoT, etc. We will enhance the use of diverse human resources including overseas personnel.
Appointment of young workers and professional human resources	If we cannot appoint sufficient young workers and professional human resources, it may create problems for the continuity of our business activities.	We will visit universities, etc. in Japan actively, organize recruitment workshops, and conduct an internship program while also increasing professional human resources by employing mid-career workers.
Absence or infringement of patents	The technologies, etc. used in our Group are not protected if we fail to acquire their patent rights and other intellectual property rights. In the meantime, in case we unintentionally infringe any patent rights and other intellectual property rights of others, we may be required to pay compensation for damage.	We will establish a system to thoroughly investigate infringed patents and constantly share information among all departments.
Asset holding	Marketable stocks, etc. involve the risk of price fluctuations. We may suffer an impairment loss due to a significant decline in market prices and post it as an extraordinary loss.	While paying attention to the economic trends, we will consider options, including the sale of the assets we own, to reduce the risk of a decrease in the value of the assets.
Fluctuations in the exchange rate	The financial results, assets and liabilities of overseas affiliates can be affected by fluctuations in the exchange rate because those figures are converted from the local currency to yen for the preparation of consolidated financial statements.	When conducting a transaction in a foreign currency, we will try to reduce the risk of fluctuations in the exchange rate with foreign exchange reserves and other actions while paying attention to the economic trends.
★ Possession of personal information and confidential information of customers	In case of external leakage, abuse, etc. of information with illegal access, etc., we may be involved in a legal dispute and subject to punishment from supervisory authorities in Japan and overseas.	We will take measures to address cyber-attacks and strengthen IT governance. To enhance our approaches to incidents, we aim to construct a Computer Security Incident Report Team (CSIRT) system while giving relevant training to employees and taking other initiatives to improve their information technology literacy.
Application of legal regulations, etc.	The operation of our Group may be subject to new constraints due to the establishment or revision of legal regulations, withdrawal of approval/license or punishment by supervisory authorities, the establishment or revision of new guidelines or voluntary rules, etc.	We will promote cross-sectoral initiatives for compliance in the Group and report the status of the initiatives to the Risk Management Committee and the Board of Directors to ensure proper execution of duties while also conducting internal audits to reinforce the compliance system.
Lawsuits, etc.	Our Group may face lawsuits and other claims concerning various issues including the environment, labor and intellectual property rights.	We will try to prevent incidents through the establishment of a crisis management to prepare for emergencies as well as the activities of the Crisis Management Council, while also cooperating with our legal advisors, etc. as needed.
Natural disasters	The occurrence of large-scale natural disasters, such as earthquakes, typhoons and tsunamis, and pandemics of infectious diseases might result in a suspension or significant delay of construction works as well as a decline in the demand for construction due to the slowdown of economic activities in society as a whole.	We will work to improve the accuracy of the business continuity planning (BCP) manual and develop measures to address emergencies.
Human rights violations	Insufficient efforts regarding human rights may result in suspension of transactions, claims for damages, and other issues.	We have formulated our Basic Policy on Human Rights, and will establish a human rights due diligence system to prevent or mitigate the risk of human rights violations.
Climate change	Delays or lack of response to climate change may lead to a reduction in business activities due to a decline in reputation among investors, customers, workers, and other stakeholders, and a corresponding decline in corporate value.	In order to handle the transition to a decarbonized society, the ESG Promotion Committee has been established to constantly monitor changing conditions, review environmental targets, and put in place a system to prevent and promptly address risks before they materialize.

Intellectual Property Management

The objectives of our intellectual property strategies are to protect intangible assets that result from our capital investment—including technologies, data, know-how, organizations, systems, and relationships—and to maximize the profit we gain from such assets. Our Intellectual Property Management Office supports the formulation of research and development strategies in line with our management policies in an effort to enhance our capabilities related to patents and engineering technologies.

Mission strategies

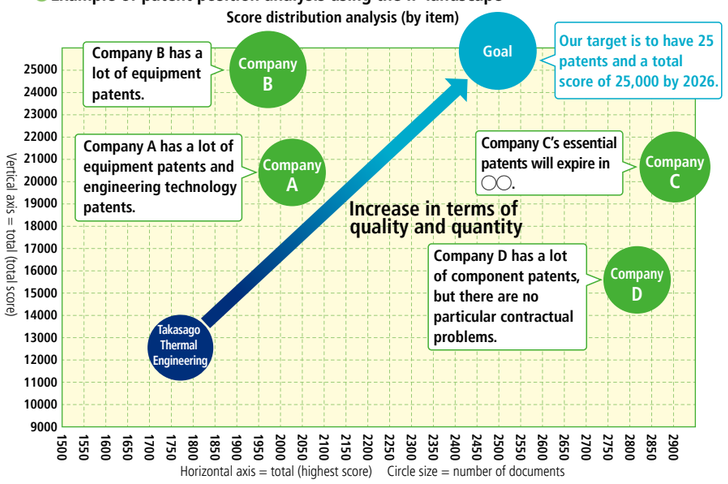
Under the Takasago Thermal Engineering Group's Long-Term Vision for 2040, we have spelled out the need to reform our Group and achieve our goals by pursuing DX-related cooperation in four business domains to respond to the social environment surrounding our Group: (1) construction business, (2) equipment maintenance and management business, (3) carbon neutrality business, and (4) environmental equipment manufacturing and selling business. Our 2026 Medium-Term Management Plan, which is phase 1 of our strategy, calls for various measures, including reforming our construction processes (the T-Base® project), establishing carbon neutrality business based on water electrolysis equipment, researching and developing environmental technologies, developing digital infrastructure based on BIM, and developing human resources, which are the source of our value creation. The mission of our Intellectual Property Management Office is to contribute to the realization of sustainable growth for the company by planning and formulating technology strategies aimed at establishing our four business domains, pursuing initiatives to enhance our system of cooperation between Group companies and divisions that make up these domains, and protecting and utilizing the technological assets and other assets created through the implementation of the various measures in our Medium-Term Management Plan.

Enhancing our patent-related capabilities

The source of competitive advantage for engineering companies is differentiation from other companies, and one of the most important intellectual property measures is to use patents to curtail imitations of differentiated technologies.

In addition to utilizing the IP landscape to conduct an analysis of the technical fields specific to each of our four business domains, we have taken steps to visualize the company's position based on a comparison with competing companies, and we have set clear qualitative and quantitative targets in relation to patent rights that are necessary for our strategies. To achieve our targets, we will identify original core technologies based on the different perspectives of developers, the Intellectual Property Management Office, and external organizations, aim to acquire essential patents, and acquire peripheral patents related to our core business to establish a strong patent portfolio.

Example of patent position analysis using the IP landscape



Confidentiality of engineering know-how

The intangible asset of technological know-how on design, procurement, and construction is an important management asset for engineering companies. To ensure the confidentiality of engineering know-how, it is necessary to be aware of the need to prevent technology leaks by on-site engineers and to ensure the implementation of suitable confidentiality management as well as the signing of non-disclosure agreements whenever necessary. We therefore have our patent contact personnel—who consist of on-site engineers—hold regular meetings, at which they confirm points to keep in mind in order to prevent the leakage and misappropriation of technical know-how accumulated on a daily basis. In addition, our patent contact personnel spearhead efforts to conduct intellectual-property awareness-raising activities at each base, distribute leaflets, and implement other awareness-raising activities targeting every employee through e-learning and other approaches.



Meeting of patent contact personnel



E-learning

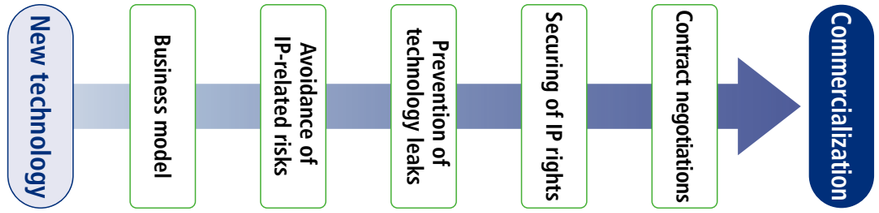
Utilization of intellectual property

The HVAC industry is facing the common issue of improving on-site productivity in its core business. Takasago Thermal Engineering is actively developing technologies for improving on-site productivity, such as the aluminum frame construction method, aluminum refrigerant piping systems, and on-site construction management tools, for the HVAC industry via equipment and material manufacturers and IT tool vendors. During development, we are aiming for mutually-beneficial co-existence with the value chain consisting of equipment and material manufacturers, IT tool vendors, and sales agencies, while at the same time recovering the costs incurred in the development of these technologies.

We have completed development of 27 research themes, reaching a cumulative total of 39 companies, and the amount of recovered costs is increasing each year. We have also established a system for sharing useful on-site know-how via our internal website.

Commercialization support system

Our Intellectual Property Management Office is organized within the Corporate Planning Division as part of our head office structure. Meanwhile, under our system, intellectual property specialists are stationed at our Technical Engineering Headquarters (T-Base®) and Research and Development Headquarters (Takasago Thermal Engineering Innovation Center), and they work on commercialization in collaboration with various divisions to help achieve our Medium-Term Management Plan, Long-Term Vision, and intellectual property strategies. More specifically, in terms of business processes covering everything from the creation to the commercialization of new technologies, the Intellectual Property Management Office considers intellectual property and intangible asset utilization plans and business model plans, conducts competition analysis from the perspective of our intellectual property strategies, avoids intellectual property risks, comprehensively manages technology information, strengthens our intellectual property capabilities with an eye to competition, concludes contracts with suitable conditions, and otherwise provides support alongside related divisions. This support system enables us to promptly protect and utilize new technologies, and cooperation with our intellectual property specialists can be expected to improve the intellectual property literacy of each division. We also plan to expand this system for our Group companies as we endeavor to achieve sustainable growth for the Takasago Thermal Engineering Group as a whole.



Initiatives of the Intellectual Property Management Office

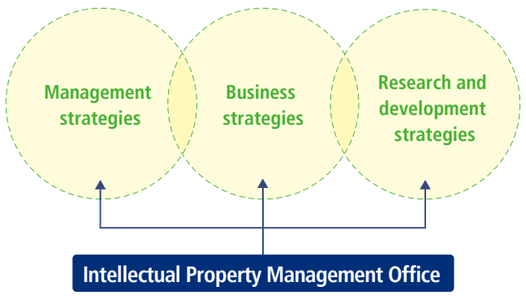
Formulation and implementation of strategies on the utilization of intellectual property

1 **Formulation and implementation of measures to strengthen intellectual property-related capabilities**
Fortifying of our foundation for establishing a solid intellectual property position in the HVAC industry
(maximization of opportunities and profits and risk hedging)

2 **Prevention of leaks of proprietary technology**
Maintenance and improvement of our competitive advantage in the HVAC industry
(measures to achieve high profit margins)

Support for the formulation of technology strategies in line with management policies

1 **Governance compliance for and utilization of intellectual property assets**
Visualization of intangible assets as the basis for providing high added value and development into a transformation story
(deepening and exploration)



Supply of Quality That Generates Satisfaction and Trust

To ensure that our sites can constantly achieve the aggressive target of "the creation of the best product quality," we are committed to initiatives from multidimensional viewpoints.

What is the best product quality?

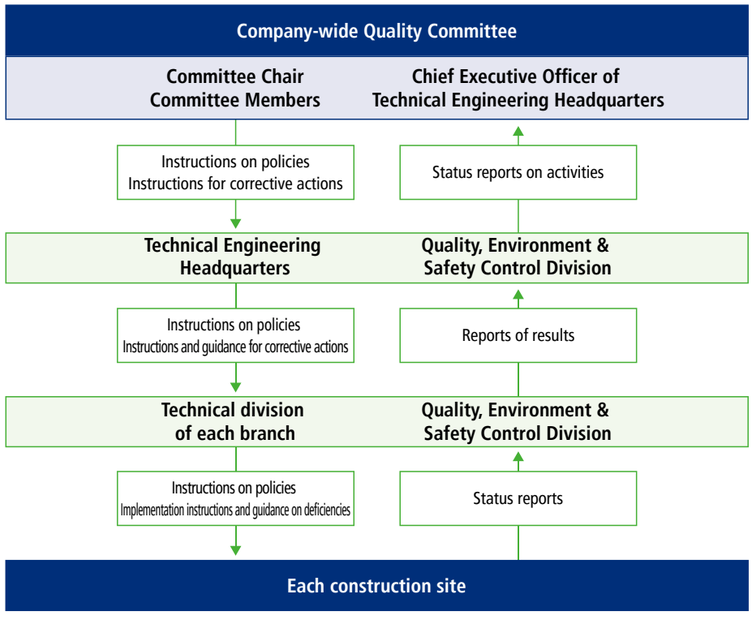
To provide value to customers and get them to realize the value, it is important to consider that customers can realize the value only when they make full use of the goods. Therefore, quality assurance cannot be completed without taking how customers use the goods into consideration. Our organization also has to establish a quality assurance system that not only meets the performance and service specifications required by customers, but also includes the process until customers can realize the value through the provided performance and services. We aim for an ideal quality assurance system where quality is based on the perspective of ensuring that customers can realize the value at the highest level, in addition to the performance of the goods.



Quality control system

Based on the quality management system certification (ISO 9001:2015) obtained, we will improve ourselves continuously so that we can offer quality goods and services to customers as soon as possible. We will also proactively offer proposals concerning CO_2 reduction or energy-saving systems and their operation to create new added value in customers' facilities.





Basic concept for occupational health and safety

Under our established health and safety philosophy, which states that "safety is the top priority in carrying out all business tasks," we strive for health and safety activities on construction sites based on the following basic approach: "The employees working for Takasago Thermal Engineering and their families must never suffer from accidents at construction sites."

Furthermore, the president conducts on-site patrols during National Safety Week.



Cooperation with partner companies

Kowakai was organized to enhance cooperation with our partner companies working together on the construction sites. It consists of the headquarters and branches. The health and safety cooperation committee established in each of them is committed to the communication of information on health and safety technologies, PR activities, and thorough dissemination of relevant laws. The branches implement activities to improve health and safety including the Branch Office Health and Safety Convention.

Kowakai also operates an online system for safety improvement, TKCS-s (Takasago Kowakai Communication Systems-safety), to share safety information.

Analysis and identification of risks and measures to address them

We see the elimination of three accidents leading to serious accidents in recent years as a priority, coming up with actions to prevent them. To take accident-preventing action based on the above policies, we compile concrete activities to pursue in the Health and Safety Activities Policy, which we issue early in each term, to disseminate this information to all technical staff and partner companies. In addition, we include risk assessment in the safety and health management, urging each construction site to focus on prevention of risks and measures against them.

In addition, by streaming our Company-wide Safety and Health Conference—which we hold every spring—online, holding various meetings remotely, and taking similar steps, we actively utilize digital tools and promptly share information as widely as possible in an effort to raise employee and partner-company awareness of health and safety activities as well as their risk management level.

Safety records by year and pursuit of the elimination of accidents

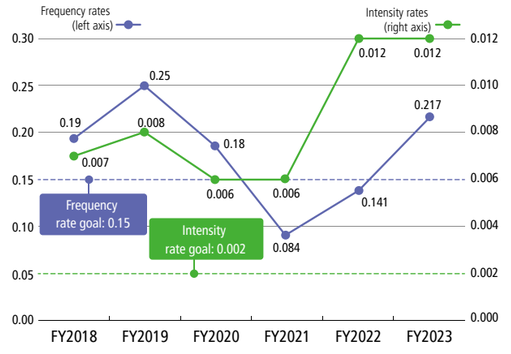
In FY2023, 46 occupational accidents (eight injuries requiring at least four days off, and 38 injuries requiring less than four days off) occurred. As a result, we failed to meet our safety targets in terms of both the frequency and intensity rates.

When it comes to the accidents leading to injuries requiring at least four days off in particular, we will incorporate recurrence prevention measures in the Safety and Health Activities Policy after a thorough analysis of causes to promote zero accidents.



Company-wide Safety and Health Conference held with an in-person audience for second year in a row

Safety performance trends/frequency and intensity rates for the past 6 years (%)



Compliance

Based on our belief that establishing compliance is the basis for strengthening our corporate governance, we continuously strive to provide information on compliance to everyone in an effort to raise awareness and conduct related activities on a daily basis.

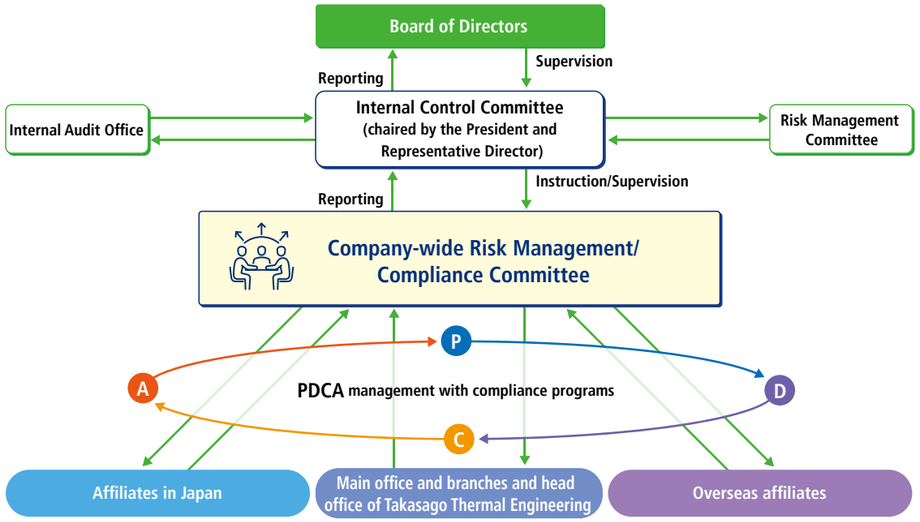
Compliance promotion system

We have set up the Risk Management/Compliance Committee chaired by the officer in charge of the supervision of risk management in the Takasago Thermal Engineering Group as a whole. This committee takes various measures based on the basic policy on compliance. The Compliance Office, which is a dedicated section, is committed to establishing the compliance system and promoting measures for it including the transmission of information to executives and employees and the dissemination of the consultation and reporting counters.

We incorporate compliance with competition laws, a major compliance subject, into our compliance programs, and we work to promote compliance through shared recognition of problems as well as the confirmation of progress on measures and the examination of cooperation and coordination between departments by the Company-wide Risk Management/Compliance Committee.

An officer in charge of corporate ethics and staff in charge of the promotion are appointed in each of our affiliates in Japan and overseas to enhance coordination with us and continuously develop the Group-wide system.

Organizational chart of compliance in the Group



Continuous activities to promote compliance

Awareness-raising activities with the Group Corporate Code of Ethics and various tools

We have established the Group Action Guidelines as the basic action guide for executives and employees and digitized the "Group Corporate Code of Ethics" for Group executives and employees to use for daily duties, in-house training, and other purposes.

In addition, we organize various training programs on compliance for not only employees but also partner companies and periodically prepare and distribute tools for small study sessions in workplaces.

In FY2024, we also revised our Group Corporate Code of Ethics based on changes in social conditions and the Group's diverse lines of business.

Compliance awareness survey

We conduct a compliance awareness survey once a year to grasp yearly changes and any new trends in the awareness of compliance among employees.

The objective of this survey is to gain an understanding of problems and resolve them as soon as possible. We guarantee the anonymity of our employees to enable them to respond without worry, and the survey questions cover topics that include the existence of harassment and other problematic behavior, relationships with suppliers, employee awareness of ordering, and the in-house situation.

We also revise the questions every year based on recent trends as well as responses from the previous fiscal year in order to gain a more accurate understanding of the situation and take concrete measures to address issues.

The survey results are disclosed to all employees and used for compliance training and other purposes in each department. The analysis of the answers is reported to various committees to share the problems and help develop action policies and measures for improvement.

Maintenance of proper relationships with customers (commitment to the prevention of bribery)

To maintain proper relationships with customers, we have prohibited excessive business entertainment, the offering of bribes to government workers, etc., and the commercial bribery of private customers in the Group Corporate Code of Ethics.

In consideration of the current international situation and other factors, we have also established rules concerning the prevention of bribery that explicitly prevent bribery in each of our subsidiaries in Japan and overseas. The effectiveness of the rules is enhanced through the adaptation of them to the local culture and business practices as well as regular monitoring.

Measures to comply with the Anti-Monopoly Act

For thorough compliance with the Anti-Monopoly Act and other competition-related laws, we have specified and practiced measures for each of the stages from "prevention" to "detection and early discovery," "response to the occurrence or suspicion of a violation," and "measures to prevent any violations from being forgotten or the rules from losing substance."

Our executives and employees will strive for thorough compliance, and we will continue to create an environment enabling the continuous execution of healthy operations.

❶ Prevention	● Clarification of rules with the Basic Rules on Compliance with Competition Law and the Guidelines on Compliance with Competition Law as well as periodical review of them ● Enhancement and improvement of training for compliance with competition laws
❷ Detection and early discovery	● Checking and storage of records on contact with companies in the same industry ● Voluntary inspection by sales sections and management sections ● Internal audits or monitoring by legal sections
❸ Response to the occurrence or suspicion of a violation	● Establishment of procedures to prevent violations ● Development of an in-house investigation system
❹ Measures to prevent any violations from being forgotten or the rules from losing substance	● Periodical review and implementation of training in the "Compliance Month" ● Report of the status of management and operation of the Competition Law Compliance Program to the Internal Control Committee and the Board of Directors

Whistle-blower system that guarantees independence and anonymity

In addition to the consulting counters within the company, we have established a wide range of reporting counters, including external services by a law firm that eliminates conflicts of interest separate from the legal counsel, thereby establishing reporting channels independent from the chain of command and order in business operations. We enacted and implemented the Rules on the Protection of Whistle-blowers in the Group, which ensures independence and anonymity.

In FY2023, we received a total of 14 reports through this system, including reports on harassment and opinions to the company.

The reports are passed to the Company-wide Risk Management / Compliance Committee and the Internal Control Committee, while the protection of the whistleblowers is ensured, to identify and remedy problems early. The content of the reports is also reflected in the subjects selected for compliance training and other efforts to maintain and build appropriate systems.

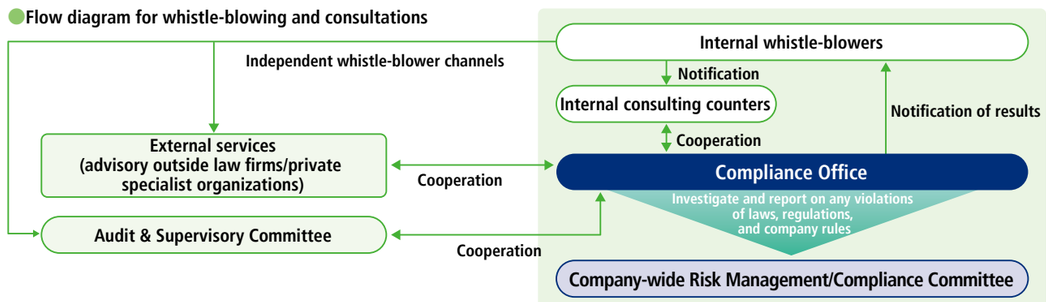
At our overseas bases, we work to make the whistle-blower system known and promote the establishment of the counters in multiple languages.

Number of reports made in the whistle-blower system by category

Category	FY2021	FY2022	FY2023
Harassment	2 (0)	4 (0)	7 (0)
Opinions to the company or superiors	4 (2)	5 (3)	4 (3)
Labor management, etc.	1 (1)	0 (0)	0 (0)
Other	2 (2)	1 (1)	3 (2)
Total number of reports	9 (5)	10 (4)	14 (5)

Figures in parentheses are the number of cases not corrected

Flow diagram for whistle-blowing and consultations



Financial Data

*Rounded down to the nearest million yen

Financial data (consolidated)	Unit	2014	2015	2016	2017		2018	2019	2020	2021	2022	2023 (FY)
Business results												
Orders received	million yen	255,648	265,301	273,464	288,646		333,887	297,883	287,501	340,184	372,774	**403,110**
Net sales	million yen	243,582	251,291	260,204	289,933		319,834	320,893	275,181	302,746	338,831	**363,366**
Gross profit	million yen	27,800	29,526	34,082	39,550		41,877	43,376	36,845	41,396	46,363	**59,947**
Selling, general and administrative expenses	million yen	20,073	20,237	21,699	23,187		24,657	25,476	24,545	27,012	31,036	**35,755**
Operating income	million yen	7,727	9,289	12,383	16,362		17,219	17,900	12,300	14,383	15,326	**24,192**
Ordinary income	million yen	8,582	10,602	13,427	17,461		18,359	19,286	13,902	15,639	16,685	**26,150**
Net income attributable to parent company's shareholders	million yen	5,196	6,650	8,665	11,804		12,609	13,231	10,116	11,535	12,227	**19,612**
Net income per share	yen	69.28	89.40	117.83	160.41		173.29	186.49	145.56	169.38	185	**296**
Rate of return on equity	%	5.2	6.4	8.2	10.3		10.4	10.8	8.0	8.7	8.9	**12.8**
Ratio of ordinary income to total assets	%	3.9	4.7	5.9	7.0		6.8	7.1	5.2	5.5	5.4	**8.0**
Gross profit margin	%	11.4	11.8	13.1	13.6		13.1	13.5	13.4	13.7	13.7	**16.5**
Selling, general and administrative expenses ratio	%	8.2	8.1	8.3	8.0		7.7	7.9	8.9	8.9	9.2	**9.8**
Ratio of operating income to net sales	%	3.2	3.7	4.8	5.6		5.4	5.6	4.5	4.8	4.5	**6.7**
Debt equity ratio	times	0.07	0.09	0.05	0.14		0.14	0.18	0.23	0.24	0.21	**0.21**
R&D expenses	million yen	791	918	903	1,064		945	1,357	899	1,150	2,621	**2,746**
Capital investment	million yen	2,019	2,325	862	3,303		3,962	12,669	4,422	2,552	5,430	**3,494**
Depreciation and amortization	million yen	758	840	776	730		824	1,299	1,537	1,739	2,278	**2,505**
Net sales of general air conditioning equipment	million yen	150,547	157,511	162,818	181,341		194,658	188,968	151,115	160,202	158,194	**161,961**
Net sales of industrial air conditioning equipment	million yen	85,927	86,350	88,664	101,373		118,305	125,183	118,137	136,503	173,822	**193,532**
Manufacturing and sales of facilities and equipment	million yen	6,976	7,291	8,572	7,068		6,713	6,588	5,796	5,953	6,722	**7,782**
Other	million yen	130	138	148	149		156	153	132	86	91	**90**
Overseas	million yen	40,959	28,553	33,824	47,343		47,360	47,749	34,311	50,631	62,707	**58,850**
Maintenance	million yen	20,512	20,586	21,739	22,856		23,632	25,056	24,194	25,446	26,653	**30,466**
Financial positions												
Total assets	million yen	225,810	223,267	233,426	264,062		279,743	265,649	271,146	300,736	313,391	**340,106**
Net assets	million yen	108,362	104,613	111,574	124,484		126,208	125,861	135,849	136,897	147,165	**167,231**
Interest-bearing debt	million yen	7,700	9,435	5,527	16,277		17,402	21,733	29,933	33,058	29,815	**34,133**
Net assets per share	yen	1,413.59	1,392.30	1,487.29	1,637.63		1,704.31	1,757.68	1,907.64	2,009.35	2,151.02	**2,476.38**
Shareholder's equity	million yen	105,725	102,325	109,382	120,546		122,060	122,091	132,135	132,897	142,470	**164,355**
Equity ratio	%	46.8	45.8	46.9	45.7		43.6	46.0	48.7	44.2	45.5	**48.3**
Cash flows												
Cash flows from operating activities	million yen	(3,423)	(1,272)	23,528	6,170		14,892	(6,369)	22,568	1,186	25,826	**(13,100)**
Cash flows from investing activities	million yen	(4,921)	(5,398)	2,329	(5,685)		(6,069)	(8,187)	(324)	1,042	(5,427)	**(8,103)**
Cash flows from financing activities	million yen	(837)	(2,215)	(6,079)	7,107		(7,928)	(4,199)	3,642	(8,007)	(8,325)	**(491)**
Dividends												
Dividends per share	yen	25	28	36	50		52	56	56	60	63	**129**
Payout ratio	%	36.1	31.3	30.6	31.2		30.0	30.0	38.5	35.4	34.1	**43.6**
Ratio of dividends to net assets	%	1.9	2.0	2.5	3.2		3.1	3.2	3.1	3.1	3.0	**5.6**
Number of employees												
Number of employees	persons	4,471	4,576	4,831	5,714		5,912	5,899	5,890	6,018	5,885	**5,606**
Non-consolidated	persons	1,858	1,885	1,950	2,025		2,051	2,064	2,116	2,131	2,166	**2,230**
Consolidated subsidiaries in Japan	persons	1,940	1,999	2,040	2,120		2,218	2,201	2,182	2,198	2,058	**1,612**
Overseas consolidated subsidiaries	persons	673	692	841	1,569		1,643	1,634	1,592	1,689	1,661	**1,764**

ESG Data

E Environment

Item	Unit	2019	2020	2021	2022	2023 (FY)
Greenhouse gas						
Greenhouse gas (consolidated) (GHG) emissions (Scope1+2+3)	t-CO_2	6,141,516	4,925,357	5,815,032	6,304,982	**7,018,019**
Scope 1	t-CO_2	4,794	3,491	4,453	5,491	**4,689**
Scope 2	t-CO_2	7,167	5,677	6,101	5,236	**5,801**
Scope 3	t-CO_2	6,129,555	4,916,189	5,804,478	6,294,255	**7,007,529**
Greenhouse gas (non-consolidated) (GHG) emissions (Scope1+2+3)	t-CO_2	4,970,121	4,006,329	4,653,237	4,758,483	**4,897,889**
Scope 1	t-CO_2	2,924	2,183	2,334	2,801	**2,564**
Scope 2	t-CO_2	4,070	3,202	2,739	2,494	**2,775**
Scope 3	t-CO_2	4,963,127	4,000,944	4,648,164	4,753,188	**4,892,550**
Waste						
Total amount of industrial waste discharged	t	23,972	20,213	20,790	16,667	**19,649**
Final disposal volume	t	3,430	2,797	2,900	2,128	**1,933**
Amount of waste recycled	t	20,542	17,416	17,890	14,539	**17,716**
Recycling rate	%	86	86	86	87	**90**
Water resources and contribution to water resource conservation through proprietary technologies						
Amount of water resources input	m^3	22,581	24,181	32,484	42,283	**128,193**
Number of sites with flushing water purification units (Reduction of environmental impact from wastewater at production sites)	number	49	56	52	42	**60**
Other						
Green procurement at offices	%	100	100	100	100	**100**
Percentage of main offices and branch offices with lights off during lunch breaks	%	100	100	100	100	**100**

S Society

Item	Unit	2019	2020	2021	2022	2023 (FY)
Promotion of diversity (non-consolidated)						
Number of employees	persons	2,064	2,116	2,131	2,166	**2,230**
Employment rate of people with disabilities	%	2.26	2.48	2.57	2.62	**2.50**
Ratio of female employees	%	15.7	14.6	17.3	18.2	**19.4**
Ratio of female managers	%	1.3	1.5	1.6	1.9	**2.3**
Ratio of female manager candidates (Ratio of employees to deputy managers)	%	5.0	4.2	5.5	6.3	**7.5**
Average number of years worked — Men	years	15.5	15.5	16.4	16.4	**16.4**
Average number of years worked — Women	years	13.6	12.6	12.3	11.8	**11.5**
Turnover rate (turnover rate within three years of joining)	%	23.5	12.5	6.5	11.5	**7.1**
Percentage of male employees who took childcare leave*	%	18.6	27.7	21.5	85.1	**98.1**
Ratio of mid-career professional hires	%	9.1	9.1	8.9	16.5	**16.9**
Number of foreign national employees	%	1.9	3.0	3.0	3.5	**4.4**

* FY 2021 and before: percentage of males who took at least one day of childcare leave, FY2022 and after: percentage of males who took at least one day of childcare leave or leave for childcare purposes

Item	Unit	2019	2020	2021	2022	2023 (FY)
Employee training *Calculated from training held by Takasago Academy (excluding training held by the headquarters, main office, and branches)						
Total training cost	million yen	186	108	92	160	**236**
Total training time	hours	77,445	76,023	85,528	119,200	**103,341**
Training cost per person	ten-thousand yen	9.0	5.1	4.3	7.4	**10.5**
Training time per person	hours	37.5	35.9	40.1	55.0	**47.0**
Health and productivity management						
Percentage of employees who received health checkups	%	100	100	100	100	**100**
Comprehensive health risk	–	93	90	93	92	**89**
Productivity loss due to presenteeism	million yen	(1,901)	(1,756)	(1,985)	(2,035)	**(1,887)**
Percentage of employees who received stress checks	%	–	–	–	98.2	**99.2**
Occupational safety and health						
Frequency rate — Goal	%	0.15	0.15	0.15	0.15	**0.15**
Frequency rate — Actual result	%	0.25	0.18	0.084	0.141	**0.217**
Intensity ratio — Goal	%	0.002	0.002	0.002	0.002	**0.002**
Intensity ratio — Actual result	%	0.008	0.006	0.006	0.012	**0.012**
Social harmony						
Contributions to NGOs and NPOs Amount invested in communities	million yen	69	58	44	40	**38**
Number of Kowakai member companies	companies	1,613	1,830	1,950	2,080	**2,120**

G Governance

Item	Unit	2019	2020	2021	2022	2023 (FY)
Compliance and risk management						
Number of employees disciplined or terminated due to corruption, bribery, etc.	persons	0	0	0	0	**0**
Cost of fines and settlements due to corruption, bribery, etc.	million yen	0	0	0	0	**0**
Number of compliance (whistle-blower) reports	number	10	6	9	10	**14**
Compliance seminars, e-learning, awareness surveys	number of times held	3	3	3	3	**5**
Governance						
Number of directors (after the Ordinary General Meeting of Shareholders)	persons	11	11	10	11	**12***
Number of outside directors (after the Ordinary General Meeting of Shareholders)	persons	4	4	5	6	**7**
Ratio of outside directors	%	36.4	36.4	50.0	54.5	**58.3**
Number of issues of cross-held shares	issues	110	105	102	92	**89**
Number of cross-held shares	thousand stocks	19,547	17,357	16,252	15,295	**14,439**
Total sum posted on the balance sheet of cross-held shares	million yen	26,130	29,879	26,929	27,031	**34,164**

* In June 2023, we transitioned to a Company with Audit & Supervisory Committee. This includes four directors who are Audit & Supervisory Committee members.

Corporate Overview (As of March 31, 2024)

Corporate Overview

Company name	Takasago Thermal Engineering Co., Ltd.	**Listed**	On the First Section of the Tokyo Stock Exchange (now the TSE Prime Market)
Established	November 16, 1923	**Address**	6-27-30 Shinjuku, Shinjuku-Ku, Tokyo, 160-0022
Number of employees	2,230 (consolidated: 5,606)	**TEL**	+81-3-6369-8212
Capital	13,134 million yen	**FAX**	+81-3-6369-9103
Financial closing	March		

Business description

- Air conditioning systems
- Clean rooms and associated equipment and devices
- District heating and cooling facilities
- Plumbing and sanitary systems
- Co-generation systems
- Electrical, instrumentation and communication systems
- Equipment diagnosis
- Failure diagnosis systems
- Dehumidifying/drying systems
- HVAC systems for nuclear energy facilities
- High-precision HVAC systems
- Waste vacuum transfer systems
- Construction work
- Exhaust heat recovery systems
- Heating/cooling systems
- Refrigerating/freezing systems
- Design, construction, production, installation, and maintenance of other environmental control and thermal engineering systems
- Design, manufacture, import, export, sale, and mediation of machinery, equipment, and materials
- Consulting services concerning energy saving and environmental measures
- Business related to greenhouse gas emissions trading
- Purchasing, sale, brokerage, leasing, and management of real estate
- Worker 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

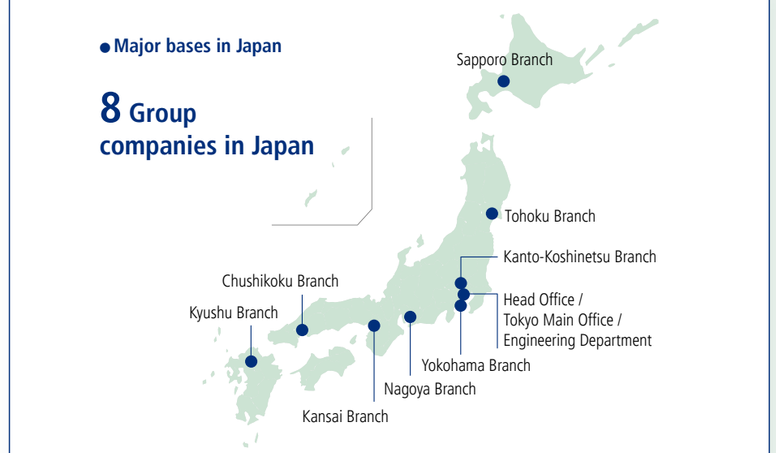
Special construction business

- **License No.:**
  (TOKU-2) No. 5708 issued by the Minister of Land, Infrastructure, Transport and Tourism
- **License date:**
  December 4, 2020
- **Duration of license validity:**
  From December 4, 2020 to December 3, 2025
- **Licensed fields of construction:**
  Plumbing, machine and equipment installation, electrical work, telecommunications work, and general construction work

Ordinary construction business

- **License No.:**
  (HAN-2) No. 5708 issued by the Minister of Land, Infrastructure, Transport and Tourism
- **License date:**
  December 4, 2020
- **Duration of license validity:**
  From December 4, 2020 to December 3, 2025
- **Licensed fields of construction:**
  Fire protection facility construction work

Major bases





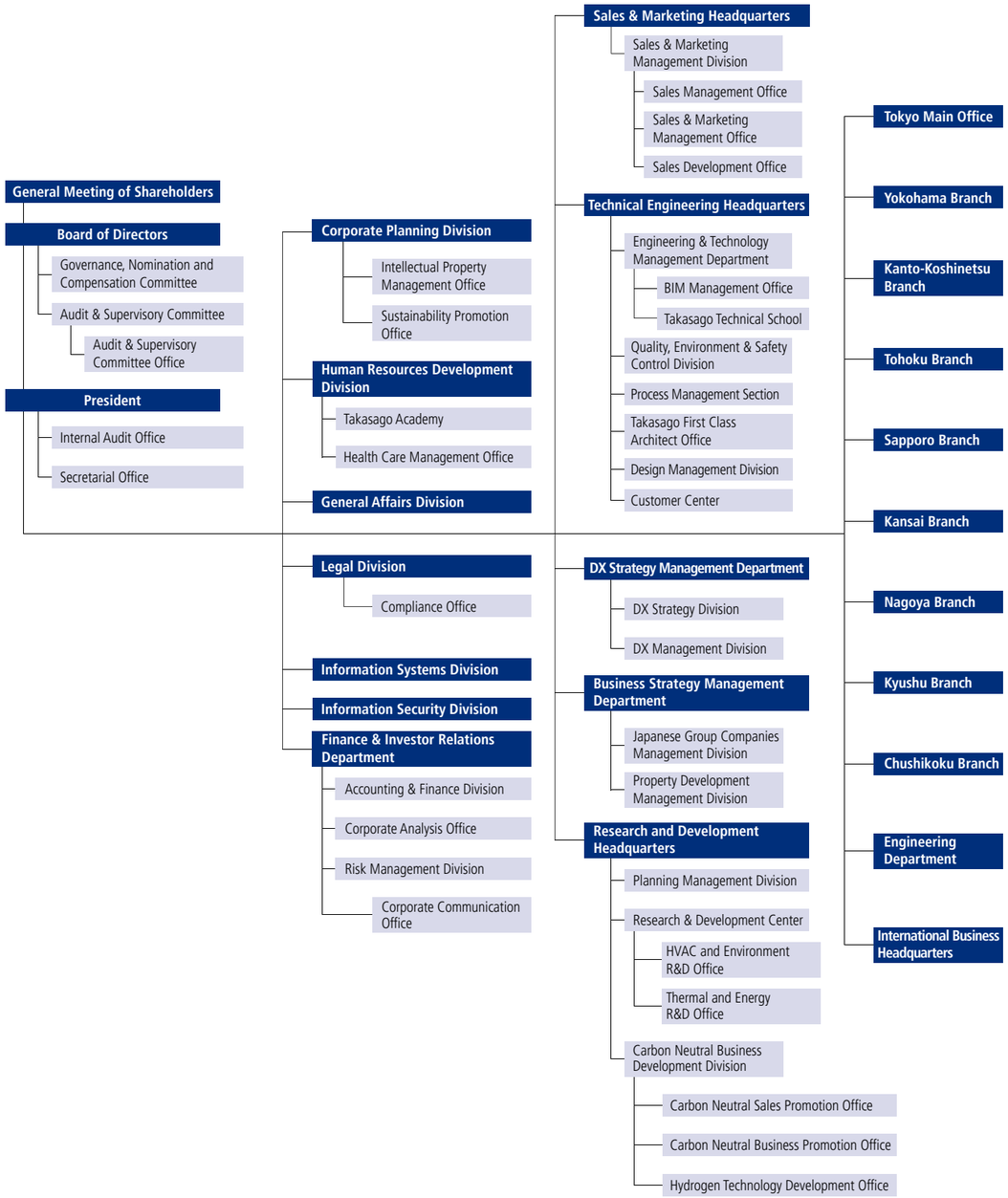
9 overseas Group companies

- Takasago Constructors and Engineers (China) 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)

*Myanmar Branch Office of Takasago Thermal Engineering has been established in Myanmar.

Organization chart

(As of April 1, 2024)



Stock information

Major shareholders

(Top 10)
(As of March 31, 2024)

Shareholder's name	Number of shares owned (thousand shares)	Percentage (%)
The Master Trust Bank of Japan, Ltd. (Trust Account)	7,329	10.89
Nippon Life Insurance Company	4,560	6.78
Dai-ichi Life Insurance Co., Ltd.	4,231	6.29
Takasago Thermal Engineering Employee Shareholders' Association	3,295	4.90
Takasago Mutual Benefit Society	2,894	4.30
Custody Bank of Japan, Ltd. (Trust Account)	2,317	3.44
MUFG Bank, Ltd.	1,439	2.14
Mizuho Bank, Ltd.	1,210	1.79
Keiokaku, Ltd.	1,016	1.51
Sanwakogyo Co., Ltd.	831	1.23

(Notes) 1. The number of shares owned is shown rounded down to the nearest thousand shares.
2. The treasury stock (2,986,430 shares) is excluded from the calculation of the shareholding ratio.
3. The shareholding ratio is rounded down to two decimal places.
4. The treasury stock excludes our shares owned by the executive remuneration BIP trust (346,216 shares).
5. The treasury stock excludes our shares owned by the Employee Stock Ownership Plan (J-ESOP) (273,100 shares).

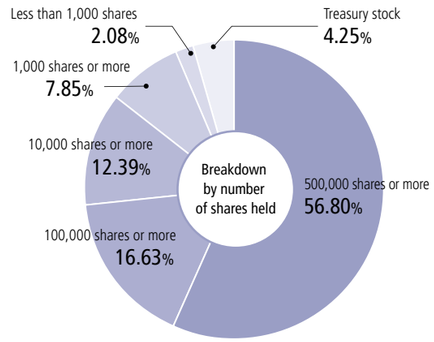
Status of shares

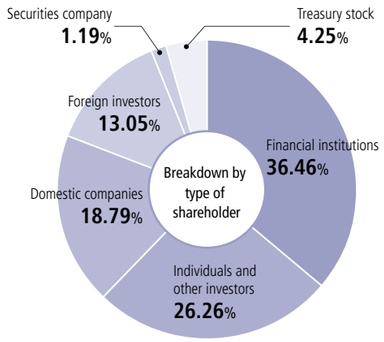
(As of March 31, 2024)

Total number of issuable shares **200,000,000** shares

Total number of issued shares **67,252,972** shares (excluding 2,986,430 treasury stock shares)

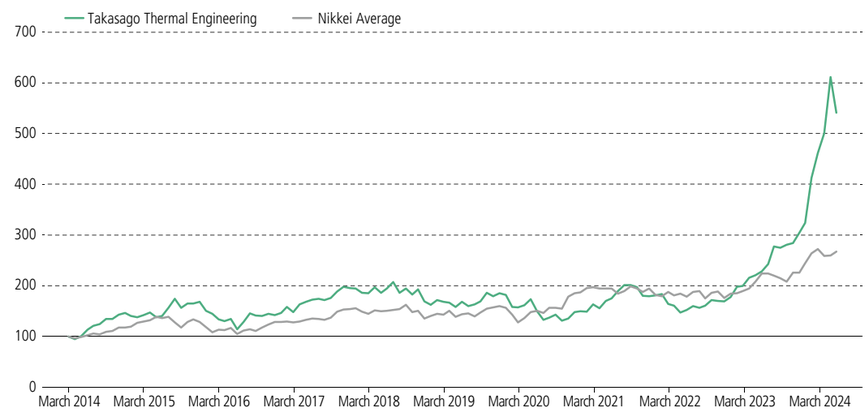
Number of shareholders **10,486** shareholders (increased by 3,626 from the end of the previous fiscal year)





Stock price trends

The stock prices of Takasago Thermal Engineering and Nikkei Average are relative values with the prices at the end of March 2014 set to 100.



Initiatives We Endorse

Incorporation into External Rating and Index Companies