

Green Technology System Business

In the Green Technology System Business, we use environmental control technology that comprehensively controls energy, air, and water to create an environment that makes people comfortable and design and install air-conditioning systems that is optimal for manufacturing.



Director, Managing Corporate Officer, Chief General Manager, Green Technology System Division

Tadashi Sobue

As an engineering company, we will contribute to the realization of a sustainable society by increasing the added value of the entire business through improved technological capabilities and the promotion of globalization.

Business environment (risks and opportunities)

- Increasing demand for low-carbon buildings and the growing need to develop advanced energy-saving technologies
- Accelerating capital investment to realize a sustainable society (carbon neutrality, smart factories, etc.)
- Increasing capital investment by manufacturing companies, faced with a global shortage of semiconductors and competition in the development of electric and fuel-cell vehicles
- Accelerating smartification of factories and other facilities, with increasing need for labor-saving and automation against the backdrop of advances in digital technology and decline in the working population in Japan
- Lack of future workers in the construction industry and smartification of construction sites through DX
- Increasing improvements in the working environment due to the application of the revised Labor Standards Act
- Search for new and stronger partnerships with subcontractors, aiming to grow together

Strengths

- Pursuit-based problem solving cultivated by fulfilling high requirements from customers
- Ability to respond to high-spec projects and extensive construction experience
- Providing customer-oriented solutions
- Our broad global network mainly in Asia

Business environment surrounding Green Technology System Division in light of risks and opportunities

The business of the Green Technology System Division remains sturdy currently backed by strong capital investment and other factors. In order to strive for further growth in the future, the Company intends to make greater efforts to improve technological capabilities by enhancing development of human resources and to promote globalization.

This division has relatively fewer mid-level employees than other categories of employees, so training and raising the level of young employees' capabilities as soon as possible is an urgent issue. To address this issue, the Company will work on challenging design and construction projects and improve both the quality and quantity of human resources to increase the number of specialists with technological capabilities. Through these efforts, we will aim to differentiate ourselves from other companies by securing human resources with high technical skills and enhancing the added value of the entire business.

With regard to promoting globalization, the current overseas sales ratio in this division is approximately 30% and the Company will continue to increase the ratio. Especially, the Company will aim to expand its business in India, centering its efforts on Nicomac Taikisha Clean Rooms Private Limited.

The Company will also focus on developing global human resources indispensable for promoting globalization. We will optimize the use of human resources on a group basis by sending employees abroad on international assignments and giving them more opportunities to take on challenges overseas, as well as giving national staff executive education programs and promoting the exchange of workers between Japan and overseas.

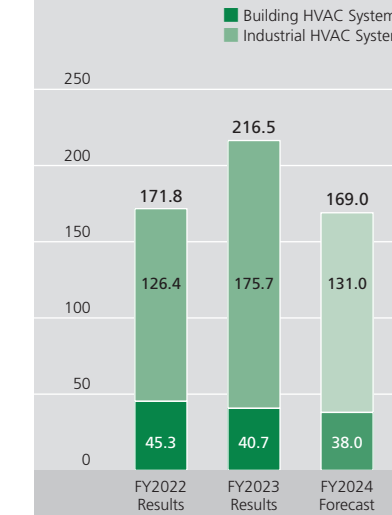
This fiscal year, we will actively utilize the new Research and Development Center TAIKISHA INNOVATION SITE Aikawa, which opened in July this year, in order to anticipate societal needs and link them to new business opportunities amid growing awareness of the need for decarbonization. In addition, we will promote compliance with the industry regulations for upper limits on overtime work and aim to improve productivity by newly establishing the "Product Management Dept." that will facilitate front-loading to help reduce on-site workload.

We will endeavor to provide solutions that meet the needs of our customers to realize our long-term vision of "Contribute to a Sustainable Society through Innovative Engineering of Energy, Air and Water."

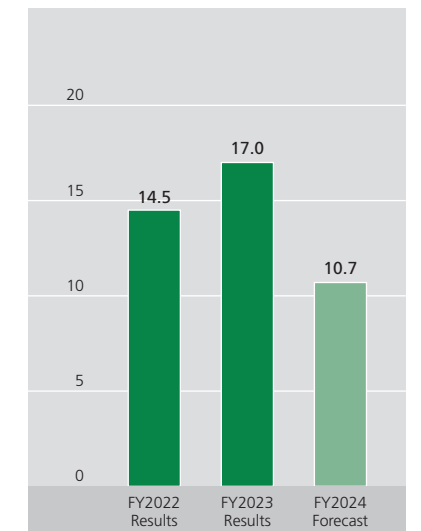
Orders received (Billion yen)



Net sales of completed construction contracts (Billion yen)



Ordinary income (Billion yen)



Key strategies

- Expand orders from non-Japanese customers by utilizing our overseas networks.
- Train professionals with abundant knowledge and experience to enhance construction quality.
- Create opportunities for national staff at overseas affiliates.
- Focus on areas where we can demonstrate our advanced technological capabilities. Strengthen ties with customers and actively follow their technological innovations.
- Develop specialists through cutting-edge technology projects and build an organization with mobility.
- Uncover potential customer needs by utilizing Research and Development Center and R&D Satellite.
- Actively promote the introduction of digital devices and on-site work support tools.
- Use BIM in construction drawing work.

Direction of Mid-Term Business Plan

- Business development that continues to create added value**
 - Further expand our overseas business.
 - Enhance engineering capabilities that are the lifeblood of the Company.
 - Aim to become a Group where all employees can work lively regardless of country, region or race, and contribute to the economic development and technological improvement of countries where we operate.
- Strengthen Taikisha, the Technology Company**
 - Further strengthen technological capabilities.
 - Promote accumulation and transmission of technology.
 - Respond flexibly to the technical needs of customers and projects.
 - Create opportunities to create new value.
- Improve business operation systems and productivity**
 - Respond to a decline in the working population and a shortage of workers in the construction industry in Japan.
 - Reduce working hours and improve the ease of working and work-life balance of employees.

Taiwan Semiconductor Manufacturing Company, Ltd. (TSMC) Completes Plant Construction Project in Japan

In February 2024, TSMC, the largest semiconductor contract manufacturing company in the world, completed the construction of its first production base in Japan in Kumamoto Prefecture. The company's expected production capacity is 55,000 300mm wafers per month. Participating in this unparalleled large-scale and short-term construction project as a supplier and successfully completing the construction work of the main equipment, including the clean room and production exhaust gas treatment system, has expanded our potential and instilled confidence in each of our employees. With this experience, we will continue to take on challenges on a global scale, aiming for even greater heights in the future.





Established the new Research and Development Center, TAIKISHA INNOVATION SITE Aikawa

A Base for Creating New Value Ahead of Societal Needs

Background of the opening

In the Mid-Term Business Plan (from the fiscal year ended March 31, 2023 to the fiscal year ending March 31, 2025) announced in May 2022, the Company has declared the “challenge to create new value” as one of its basic policies. To create new value, it is essential to integrate solutions from external parties, including our customers, and utilize the company’s existing technologies and know-how of our own.

Our Research and Development Center, established in Aikawa, Kanagawa Prefecture, in 1991, has been involved in a wide range of activities from basic research to demonstration experiments for over 30 years. The Center has long been used by customers to solve their equipment problems, verify various systems, and other purposes. Since 2019, we have renovated the premises of the Center in phases in order to establish a place for creating new development themes through the fusion of customers’ issues and solutions with our technologies and thereby achieving innovation through collaborative creation. With the completion of ADVANCED PLAZA, it will launch as a new research facility, combining with the previously completed SOLUTION LAB and TECHNICAL LAB.

About TAIKISHA INNOVATION SITE Aikawa

TAIKISHA INNOVATION SITE Aikawa (TISA) is based on the concept of “bringing people, information, and technology together.” Under this concept, TISA promotes the development of pioneering technologies, including AI technology, through open innovation and anticipates and meets the future value-creation needs of customers and society.

TAIKISHA INNOVATION SITE Aikawa features the following three buildings.

ADVANCED PLAZA

A place where people, technology, and information meet, gather, and collaborate to create Taikisha’s future technologies

SOLUTION LAB

A place to verify technologies on a real scale and solve problems

TECHNICAL LAB

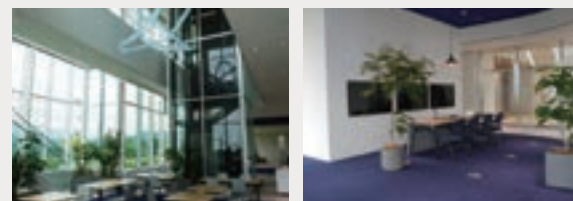
A place to verify technologies in a specialized environment equipped with a reverberation room, a clean room, etc.

ADVANCED PLAZA, a place to create future technologies

Central to the Research and Development Center, this building accommodates four communication areas for creating open innovation with customers, academic and research institutions, startup companies, etc.

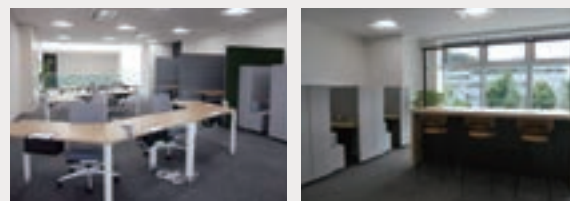
(1) Virtual Showroom

The Virtual Showroom is the core area of TAIKISHA INNOVATION SITE Aikawa, equipped with functions for introducing and disseminating technologies. The area includes a studio space that can be connected to other locations for two-way communication and a presentation space that can host large audiences, making it possible for Taikisha to disseminate information globally and interact with customers.



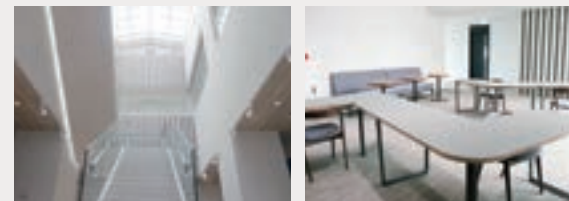
(2) Work Concentration Area

The Work Concentration Area is for performing intensive work requiring a stable work environment, such as IoT and AI image development.



(3) Co-working Area

The Co-working Area is the place where internal and external co-developers create synergy through active communication. In addition to the free-address co-working space, this area is equipped with a natural ventilation system that uses natural lighting and atriums to ensure a comfortable environment for users.



(4) Incubation Area

The Incubation Area is the place where open innovation is created. It ensures project independence and security and allows collaboration with partner companies. The area is equipped with an 11-meter-high development room, capable of conducting large-scale, spatial experiments.



Symbol Mark of TAIKISHA INNOVATION SITE Aikawa



The symbol, featuring vibrant birds in flight, expresses the idea that many technologies will be developed and take off from this center. The four-ringed birds symbolize the three buildings and humans, representing a lively space where a virtuous cycle of technology is born through the fusion of the inside and outside and where diverse communication is in harmony.

Initiatives toward carbon neutrality

At ADVANCED PLAZA, as part of our efforts to achieve net zero CO₂ emissions, we employ solar heat collectors, natural ventilation and outside air cooling switching control, and our own unique direct expansion type radiation air conditioning system to reduce energy consumption. At the same time, by generating energy through solar power and other means, the building has achieved the Net Zero Energy Building (ZEB) standard by keeping the building’s energy consumption net zero or below. It has also acquired a six-star rating, which is the highest rating of the Building-Housing Energy-efficiency Labeling System (BELS). In addition to being environmentally friendly, the building is granted a five-star rating, the highest rating of the Comprehensive

Assessment System for Built Environment Efficiency (CASBEE) Wellness Office system, which comprehensively evaluates the quality of buildings, including indoor comfort and consideration for the surrounding landscape.

Going forward, we will continue to actively introduce new systems and integrate products and services developed in-house into the building. We also plan to fully utilize the Research and Development Center as a site for field testing—for example, by conducting multifaceted verification of how effective and how easy they are to use, incorporating the user’s perspective.

<One of our proprietary technologies>

Establishment of proprietary technologies utilizing solar energy

- A tracking concentrator solar power generation system (a system that can use both electricity and heat)
- Development of a heat collection system: A system that makes effective use of waste heat from power-generating element cooling
- A refrigerant liquid pump system that can be controlled to a temperature suitable for heat utilization

What is a tracking concentrator solar power generation system?

A tracking concentrator solar power generation system is a parabolic concentrator that collects sunlight to generate power and then extracts heat by recovering the cooling heat of the power-generating elements. Currently, the system operates at an outlet temperature of 80°C or higher, a power generation efficiency of 20%, a heat extraction efficiency of 29%, and an overall efficiency of 49%.



Tracking concentrator solar power generation system

Future outlook

In April last year, prior to the completion of the “TAIKISHA INNOVATION SITE Aikawa (TISA),” we opened a satellite facility, “TAIKISHA INNOVATION GATE Shinjuku (TIGS),” in Shinjuku, Tokyo, which is highly convenient for the Tokyo metropolitan area.

Based on the concept of “bringing people, information, and technology together,” TIGS is used for multi-site conferences connecting our domestic and overseas bases. We are also considering collaborating with the Technical Center of the Paint Finishing System Division (Zama City, Kanagawa Prefecture).

We hope that the open activities at TISA will foster revolutionary and advanced innovations by not only collaborating with our customers and other partners but also by revitalizing communication and information sharing across divisions and countries.

