# Sustainability Policy

## Basic policy on sustainability

The TOYO DENKI Group values contributing to society, customers and shareholders, meeting the challenges of the future, and building trust. To achieve these goals, we have consistently been supplying high-quality products and services globally, leveraging our technologies while responding to the changing needs of the times, over more than 100 years since our founding. While the environment surrounding society will keep changing in the future, we will continue to strive to refine our technologies and quality, contribute to the realization of a sustainable society through manufacturing, and increase corporate value.

## Sustainability Policy

We have formulated the Sustainability Policy that organizes the TOYO DENKI Group's business activities from three perspectives, with the aim of linking our basic policy to sustainability to specific actions.

**Business Principles**

The TOYO DENKI Group will practice the following business principles to ensure the growth of its business, earn the confidence and understanding of shareholders and stakeholders, and foster the development of its employees:

- Prioritize ethics and contribute to the prosperity of customers and society as a whole
- Encourage creativity and enterprising spirit to meet the challenges of the future
- Build trust by focusing on quality first

**Sustainability Policy**

| Three perspectives | Description | Specific actions |
|---|---|---|
| Initiative in Products and Services | We will use the Group's exceptional technologies to provide products and services that contribute to the realization of a sustainable society. | ● Supply of decarbonized energy, such as small hydroelectric power generation<br>● Popularization of energy-efficient transportation, such as railroads and electric vehicles<br>● Efficiency improvement of electrical equipment and the spread of power storage systems<br>● Improvement of safety through a shift to barrier-free transportation systems, etc. |
| Initiative in Production Activities | We will strive to minimize environmental burden in production activities and continue to protect regional environments. | ● Reduction of energy consumption in production<br>● Study of solar power generation and decarbonization of energy currently used<br>● Reduction of energy consumption during transportation of materials and products<br>● Recycling activities at production sites and offices, etc. |
| Initiative in People and Communities | We will value our employees and the local communities and carry our aspirations into the future. | ● Promotion of diversity and inclusion<br>● Promotion of health and productivity management and well-being<br>● Protection of the global environment and contributions to nature conservation<br>● Support for education through university endowment courses and offering factory tours for school students, etc. |

Environmental Philosophy

Quality Policy

Policies and Guidelines for Procurement

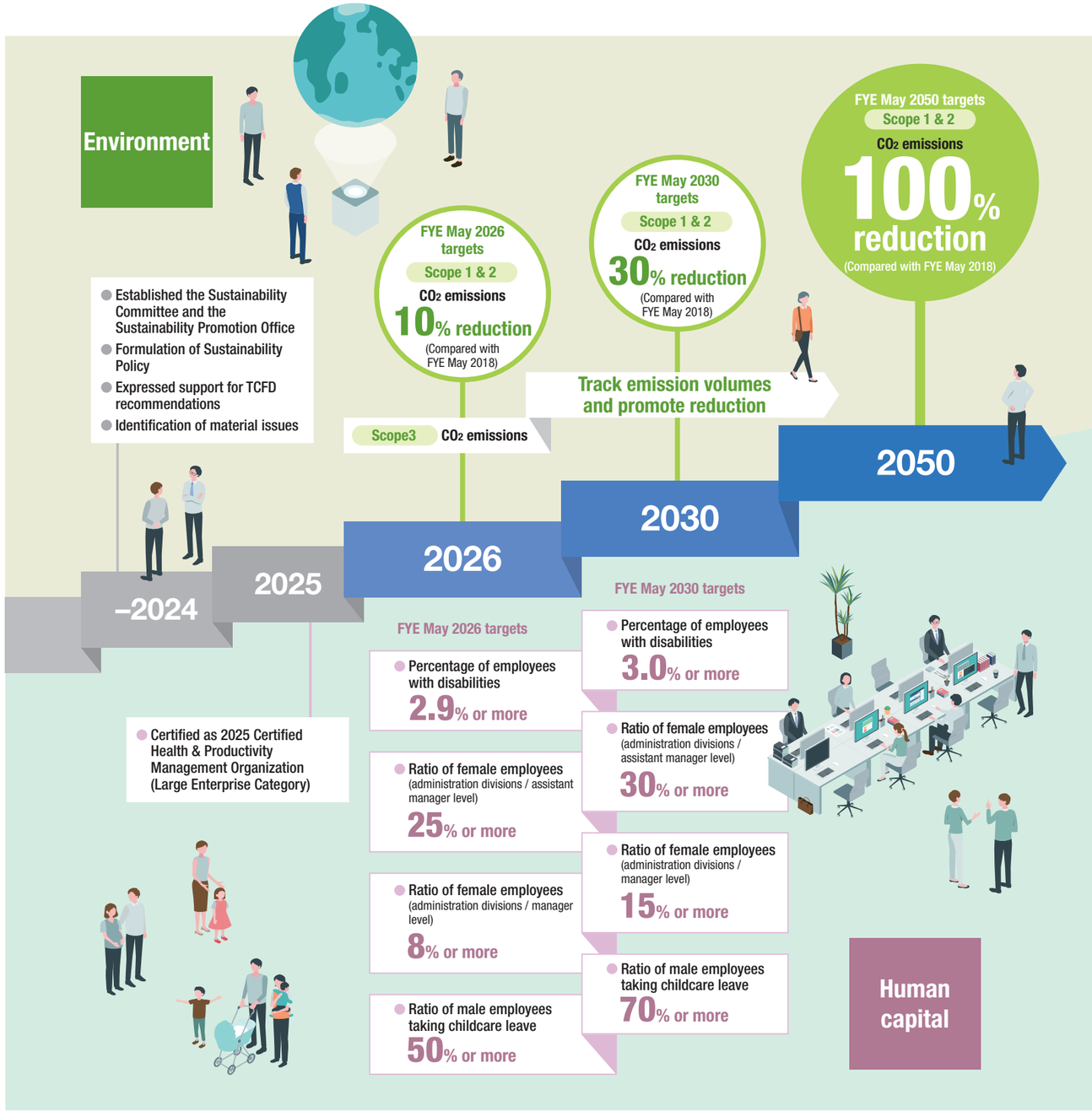
Information Security Declaration

Health and Productivity Management Declaration

Long-term Vision

**Help build social and industrial infrastructure that is considerate of the global environment, with a focus on exceptional motor drive technologies**

# Sustainability Roadmap



# Disclosure Based on the TCFD Recommendations

Recognizing that responding to climate change is an important management issue, we expressed our support for the Task Force on Climate-Related Financial Disclosures (TCFD) recommendations in June 2023. We will strive to further implement climate change initiatives and appropriately disclose information as part of our commitment to helping realize a sustainable society.

## Governance

In order to promote sustainability management across the Group, we established a Sustainability Committee under the Board of Directors and carry out company-wide initiatives based on our Sustainability Policy. The committee, which generally meets once every quarter, is chaired by the President, Representative Director, and its members comprise mainly Operating Officers. We recognize climate change as a very important challenge and have set numerical targets for the reduction of greenhouse gases. Progress towards these targets is monitored by the committee, and the content of committee discussions is reported to the Board of Directors for incorporation in the Group's management strategy.

**Examples of matters reported at Board of Directors meetings**

- Updates to our Sustainability Roadmap
- Current status of human capital at the Company and related challenges for the empowerment of diverse talent
- Disclosure standards for sustainability-related information
- Creation of innovation leveraging our technologies (free discussion, current status/challenges/countermeasures)
- Stable procurement and high-quality manufacturing (current status/challenges/countermeasures)

## Strategies

We have analyzed the future impact of climate change on the Group's business activities under the 1.5°C/below 2°C and 4°C scenarios, identifying the associated risks and opportunities and calculating the degree of impact in each case. The focus time horizon was long-term (to 2050) and analysis was also done for the medium-term (to 2030) as a transitional point. The degree of financial impact on business activities was defined according to three levels: large (L), medium (M), and small (S).

**Scenarios**

| | |
|---|---|
| **1.5°C/ below 2°C scenario** | **Worldview:** A lower-carbon transition will take place across society and contain the temperature rise to a certain extent. Demand for energy-saving/eco-friendly products will grow. Legal, market, reputational, and other transition risks will increase.<br>Reference scenarios: SSP1-1.9, SSP1-2.6 (IPCC AR6) / NZE2050 (IEA) |
| **4°C scenario** | **Worldview:** With priority placed on economic growth, the temperature rise will not be contained and the impacts of climate change will worsen. A lower-carbon transition will not be realized, and physical risks such as extreme weather events will increase.<br>**Reference scenarios:** SSP5-8.5 (IPCC AR6) |

## Risk management

A working group made up of working-level employees engages in discussions for advancing a company-wide approach to sustainability challenges. Meanwhile, the Sustainability Committee identifies climate change risks, discusses countermeasures, and monitors progress in implementing those actions. It also tracks the progress of the medium- and long-term sustainability roadmaps formulated by each division.

## Indices and targets

We have set the following targets for reducing $CO_2$ emissions associated with our business activities to help curb global warming.

| Scope 1 & 2 $CO_2$ emissions (compared with FYE May 2018) | FYE May 2026 targets | FYE May 2030 targets | FYE May 2050 targets |
|---|---|---|---|
| | 10% reduction | 30% reduction | 100% reduction |

### Anticipated risks and opportunities

#### Risks

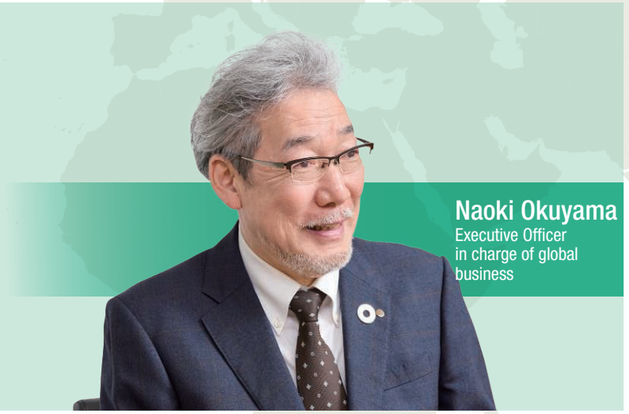
| | Anticipated Risks | | Impact 1.5°C/below 2°C 2030 | Impact 1.5°C/below 2°C 2050 | Impact 4°C 2030 | Impact 4°C 2050 | Actions |
|---|---|---|---|---|---|---|---|
| Transition Risks | Policy & regulation | ● Increase in procurement/shipping costs with adoption of carbon tax and more stringent regulations; increase in costs from equipment renewal and technological development | M | L | S | S | ● Avoid carbon tax and lower production costs by reducing GHG emissions through renewable energy use and switching to energy-efficient equipment<br>● Consider adopting ICP |
| | Technology | ● Increase in R&D costs of energy-saving products<br>● Loss of sales opportunities due to stalled development<br>● Decrease in demand for existing technologies and products | M | L | S | M | ● Enhance design/development systems, including production methods, and increase sophistication of our environmental technologies<br>● Identify needs for existing technologies/products through customer engagement |
| | Market | ● Decrease in railway product sales due to decline in railway ridership from population shrinkage and due to drop in relative environmental advantage of rail transport stemming from improvements in environmental performance of automobiles<br>● Stagnation of testing machine business due to delays in responding to the shift to EVs<br>● Decrease in equipment demand from manufacturers of printing machines, paper, and chemicals due to shift to paperless and plastic-free approaches | L | L | M | M | ● Prevent failures through condition-based maintenance and increase value added through personnel cutbacks and labor-saving approaches<br>● Develop products and systems reflecting the shift to EVs and consider creating alliances with other companies |
| | Reputation | ● Decline in reputation among stakeholders due to delays in responding to climate change<br>● Exclusion from supply chains; rise in financing costs; difficulty in securing human resources | L | L | M | M | ● Enhance disclosure through dialogue with shareholders, investors, suppliers, communities, and other stakeholders |
| Physical Risks | Acute | ● Suspension of operation, damage to production equipment, and stoppage of business site functions due to typhoons, flooding, etc.<br>● Difficulty in procuring parts and materials due to interruption of supply chain | S | M | M | L | ● Reinforce disaster countermeasures of production bases by strengthening business continuity planning (BCP)<br>● Increase supply chain resilience by establishing multiple channels, using local suppliers, and taking other actions, and transfer risk by purchasing insurance |
| | Chronic | ● Increase in factory energy costs, decline in employee productivity, and increase in incidence of heat stroke due to the temperature rise<br>● Increase in costs due to tidal flooding countermeasures taken in response to rising sea level<br>● Occurrence of malfunctions and failures in products and equipment due to the temperature rise | S | M | M | L | |

#### Opportunities

| Anticipated Opportunities | | Impact 1.5°C/below 2°C 2030 | Impact 1.5°C/below 2°C 2050 | Impact 4°C 2030 | Impact 4°C 2050 | Actions |
|---|---|---|---|---|---|---|
| Resource Efficiency | ● Increase in maintenance opportunities driven by longer use and recycling of products<br>● Decrease in costs through streamlining of product processes, optimized use of materials, and streamlining of shipping | L | L | M | M | ● Construct advanced production and processing equipment drive systems that capitalize on high-efficiency motors and invertors<br>● Improve recyclability through environmentally conscious design |
| Energy Source | ● Increase in demand for our products/services with shift to EVs and growth of demand for renewable energy and power storage technologies | L | L | M | M | ● Promote battery storage of regenerative power Build new storage systems, such as a superconducting flywheel Railway energy storage system<br>● Develop and supply testing equipment that supports the shift to EVs |
| Products / Services | ● Increase in demand for electrical equipment for railway vehicles driven by greater demand for highly environmentally advantageous railway service<br>● Increase in demand for high-efficiency motors and inverters, distributed power supply, and other energy-saving products/systems<br>● Increase in demand for new testing systems that support the shift to EVs | L | L | M | M | ● Improve environmental friendliness of electrical equipment for railway vehicles by increasing efficiency and reducing size/weight<br>● Make improvements to motors and inverters that enhance energy efficiency and maintainability of production equipment<br>● Develop testing systems that support the shift to EVs<br>● Increase the sophistication of status monitoring, alarm notification, and remote control of generators using IoT remote monitoring systems |
| Market | ● Potential for opening up new markets by uncovering demand for power storage systems, small hydroelectric power generation, wave power generation, etc.<br>● Increase in demand for IoT remote monitoring and automatic control systems to avert climate change-related food shortages and impacts on agricultural and livestock industries<br>● Popularization of EV-related products | L | L | M | M | ● Popularize power storage systems, small hydroelectric power generation systems, and biomass generators<br>● Participate in the demonstration of wave power generation and consider its commercialization<br>● Increase the sophistication of status monitoring, alarm notification, and remote control of generators using IoT remote monitoring systems |
| Resilience | ● Increase in demand for solutions that strengthen resilience and BCP in response to increased severity of natural disasters | L | L | M | M | ● Contribute to BCP preparation by supplying Emergency power generators for businesses and government offices<br>● Promote prediction and early detection of natural disasters using IoT remote monitoring systems |
| Reputation | ● Increased trading, improvement of stock price, and securing of human resources made possible by stronger reputation for environmental consciousness | L | L | M | M | ● Enhance disclosure through dialogue with shareholders, investors, suppliers, communities, and other stakeholders |

# Initiative in Products and Services

We will provide products and services that help build a sustainable society using the exceptional technologies of the Group



**Naoki Okuyama**
Executive Officer
in charge of global business

Special Report 1

## Taking on the challenge of the Indonesian railway market


### Railway conditions in Indonesia

Indonesia is the leader of the Association of Southeast Asian Nations (ASEAN), and has been recognized as an outstanding country in the Global South in recent years. Alongside Honshu in Japan, Java in Indonesia is one of few islands with a population of more than 100 million, and there is extremely high demand for railways, particularly to cover medium to long distances between cities. In order to strengthen railway transportation capacity, the government of Indonesia (the "government") is endeavoring to add more lines and increase maximum speeds, but there have been delays in the development of urban railways in urban areas. Even in the Jakarta Metropolitan Area, where commuter demand is approximately 20 million people per day, the rail network only covers approximately 300km. Rail's share of transportation is below 10%, and chronic traffic congestion has become a social issue.

In the Jakarta Metropolitan Area, there is an urban railway created by electrifying the existing national railway called the "KRL Commuter Line," which is used by approximately one million people per day. Used vehicles exported from Japan have been playing a leading role in railway. A total of 1,488 railcars were exported between 2000 and 2020, partly because the standards for the lines are similar to those of Japan. The users of this railway more than tripled over this twenty-year period, and it has become an essential method of transportation for the residents of Jakarta. At present, almost 1,000 railcars are in active service. Of these, almost 90% were originally the 205 series from the East Japan Railway Company (JR East), which were once active on the Musashino Line and other lines.

Since 2020, the government has announced a policy of introducing new vehicles. The government is particularly prioritizing the development of domestically produced commuter trains. The government has determined a budget to be allocated to the development of domestic industry, and as a first step, PT Industri Kereta Api (INKA), a state-operated railcar manufacturer, has produced 16 trains of 12 railcars each, for a total of 192 railcars. TOYO DENKI SEIZO has received orders for a set of electrical equipment for these domestically produced trains (propulsion controllers (VVVF inverters), traction motors, auxiliary power supplies, driving gear units, current collectors (pantographs), etc.).

Congestion in Jakarta

Used railcars imported from Japan
(left: Former Tokyo Metro 6000 Series, right: Former JR East 205 Series)

Used railcars imported from Japan (former Tokyo Metro 05 Series)

Newly built INKA railcar CLI-225 Series

## *INTERVIEW*

Interview: Satoshi Takagi, Asian railway writer stationed in Indonesia

**Q** **It seems TOYO DENKI SEIZO electrical equipment has a substantial presence in Indonesia. Why did TOYO DENKI SEIZO receive the order related to 192 railcars for trains made by INKA?**

The fact that the Company's electrical equipment was used in trains exported as used railcars, particularly the 205 Series, was significant. That was what led to the start of talks for this project.

**Q** **The fact that Japanese railway rolling stock was exported overseas as used railcars means that electrical equipment is used in an environment that was not originally envisioned, but failures are rare and it has an extremely good local reputation. What are the reasons for this good quality?**

Japanese electrical equipment for railway vehicles, including the Company's products, have been refined through use in the commuter rush hour and other circumstances. I think the fact that they have redundancy both in terms of their lifespan and usage frequency is one reason why they are well adapted to the environment in Indonesia.

**Q** **Did the high level of trust in these regards contribute to the Company winning this order?**

Certainly, I think that was one factor. Originally, the relationship between INKA and the Company started when the Company supplied the same pantographs as the 205 Series for railcars for the airport line in Jakarta, in response to a request from INKA. I think that INKA submitted inquiries to most Japanese electrical equipment manufacturers concerning electrical equipment for these 192 railcars. I believe the Company won this order thanks to trust in its products, as well as the positive assessment of its commitment to a quick delivery schedule and the content of its proposal for technical advice.

**Q** **Looking at the status of orders in Japan, perhaps one strength of TOYO DENKI SEIZO is its ability to deliver small-lot projects?**

When manufacturing to Japanese specifications, the basic parts are fundamentally the same, meaning the Company is able to accept orders even for small lots. Now, this project for 192 railcars is actually classed as a large project for the Company. The electrical equipment for this Indonesia project, however, was built to Japanese standards, not overseas standards, so conversely, the Company was able to complete delivery on a tight schedule, even with limited resources.

**Q** **Now, in addition to the export of completed products, it also includes some products that will be assembled locally (knockdown) and technical support for a shift to domestic production in the future.**
**In some aspects, this process is similar to what happened in the Chinese railway market at one time, but will Indonesia be an important market for TOYO DENKI SEIZO in the future?**

Since receiving an order for the Beijing subway in the second half of the 1990s, the Company has focused on exporting products and providing technical advice from Japan, as well as production, maintenance, and other operations locally in China. I think there are also some similar aspects in the Indonesian railway market. We have great expectations for the size of the local market in the future, including knockdowns and maintenance, and we intend to develop this market as the Company's "Indonesian business."

**Point**
**Promotion of domestic production**

It could be said that TOYO DENKI SEIZO won the order from INKA because we satisfied conditions related to quality, price, and delivery schedule, but there is another important concept related to the Indonesian market. That is the promotion of domestic production. At present, in many aspects, INKA is manufacturing railcars by assembling equipment procured from manufacturers overseas. The government of Indonesia intends to develop peripheral industries and first increase the ratio of domestic production to at least 40%.

Now, in response to INKA's demands, TOYO DENKI SEIZO is supporting the shift to local production (knockdowns) for some equipment, such as VVVF inverters and auxiliary power supplies, starting from the 11th train out of 16. INKA and its subsidiary (PT. Rekaindo Global Jasa (REKA)) produce trains, with some important components imported from Japan, such as core semiconductor equipment and controllers, and outer cases and unit parts and materials (switches, terminals, harnesses, etc.) procured in Indonesia.

## INTERVIEW

Technical advice at the Yokohama Plant (propulsion controller (VVVF inverter))

**Q In specific terms, what sort of technical support did the Company provide?**

Since October 2024, we have provided advice to Indonesian trainees at the Company's Yokohama Plant for each area of responsibility related to VVVF inverters, harnesses, power units, and pantographs. Subsequently, following three months of advice by engineers from the Company in Indonesia, members trained in Japan have played a core role in promoting production.

**Q Have there been any difficulties related to domestic procurement in Indonesia from the perspective of quality, etc.?**

The Company and the Indonesian side (INKA and REKA) have engaged in local procurement while maintaining communication, with the boundary that they will absolutely not compromise on quality. Within that process, we struggled with some aspects of the procurement of pantograph parts and materials. For the first lot, around 80% of the total were procured from Indonesia.

**Q How were the results when the components were actually completed?**

Initially, when we conducted voltage-resistance tests on the harnesses, there were arcs (sparks) from damage to electrical wires. We showed this to workers from INKA and REKA and had them consider what aspects they must pay attention to themselves, then we worked on ensuring quality. At present, we use testing equipment to confirm that there are no quality issues in completed products.

Technical advice at INKA (pantographs)

Technical advice at REKA (harnesses)

### Comments from the interviewer

Domestically produced Indonesian commuter trains, which should be described as a collaboration with Japan, will finally come into service from December 2025 onward. Leveraging this success as a springboard, INKA aims to participate in electrification projects, not just in Jakarta, but also in major cities in Indonesia. Although the new administration led by President Prabowo, which began in October 2024, has expressed its intention to pivot away from the former policy of prioritizing infrastructure, it intends to continue investing in railways, which are essential for urban development.

It is also developing the "Jakarta MRT" as a new urban railway. In March 2019, Phase 1 (approximately 16 km) of the North-South Line began operating, providing an impetus for the construction of Phase 2A (approximately 6 km) of the North-South Line, which is currently underway. Under a similar scheme, construction is expected to start on Phase 1/Stage 1 (approximately 25 km) of the East-West Line in 2026, and plans are in place for this line to become the longest line, with a final length of over 80km or so.

Amid rapid economic growth, urban railways in Indonesia have left behind their period of relying on used railcars, and are now attracting attention as a new railway market, not just from Japan, but from the world. Global railcar and electrical equipment manufacturers are eagerly targeting this demand, but manufacturers who are able to make proposals that leverage local aspects have an advantage. There is only one railway rolling stock manufacturer in Indonesia, INKA. Having contributed to the manufacture of 192 railcars for trains domestically produced by INKA, will the presence of TOYO DENKI SEIZO grow further in Indonesia in the future?

Jakarta MRT North-South Line



Special Report 2 **Progress on Development of In-Tyre-House Dynamo® (ITHD®)**

# Taking on the challenge of carving out the future of vehicle testing

**Development of "In-Tyre-House Dynamo (ITHD)," the Company's proprietary technology created out of engineers' spirit of taking on challenges**

**Chiaki Nakano**
Executive Officer
In charge of Industry Business, General Manager of Industry Business Unit

**Yuichi Takasaki**
Industrial Sales Management
Automotive Testing System Sales Division/Development Center Product Development Division
Automotive Testing Project Team
Project Manager

## Progress on the development of testing systems for automobiles at the Company

**Nakano** Testing systems for automobiles that perform tests to assess the driving power of automobiles are essential in the automobile development sector. There are numerous types of testing systems for automobiles. Of these, we have been receiving many inquiries from automakers and related companies regarding the "In-Tyre-House Dynamo® (ITHD®) (see p. 20)" testing system for automobiles developed in-house by the Company as a proprietary technology of the Company.

**Takasaki** The significant features of these ITHD are the fact that, compared with conventional roller-type chassis dynamometers, they are suitable for saving space, setting, reducing noise, drive test verification, environmental testing, and powertrain testing equipment. ITHD are a system where the four wheels are independent, meaning they are also suitable for testing 4WD vehicles and ABS (braking from high speed on dry asphalt road surfaces, and testing the stopping distance and vehicle behavior). ITHD can also perform tests that include recreating driving on actual roads with simulations and "steering," which are not possible with conventional roller-type chassis dynamometers.

**Nakano** Since our founding, the Company's main business has been the manufacture of electrical equipment for railways, but I shall explain why we have developed testing systems for automobiles. In 1918, the Company was established with the aim of domestically producing electrical machinery for railway vehicles. Later, in 1957, we completed the construction of a specialist factory in Kyoto to make general industrial motors utilizing railway motor technology. The Company's motors began to be used in water supply and sewage, as well as various types of production and processing equipment, and this formed the foundation of the Company's current Industry Business.

After the Tokaido Shinkansen began operating in 1964, demand for the development of high-performance brakes for the Shinkansen and other applications increased, and in 1966, the Company began manufacturing various types of brake testing equipment for testing and researching high-speed brake shoes for the Shinkansen, as well as automobiles, etc. Starting with the delivery of torque converter performance testing equipment for automobile engines to domestic automakers in 1968, the Company began supplying an increasing number of testing systems to major automakers in Japan and overseas, and following the development of an in-wheel motor for automobiles in 2004, this led to the development of the ITHD.

## ITHD was created through the positive spirit of taking on new challenges, inheriting "creativity and an enterprising spirit"

**Nakano** The Industry Business Unit of the Company has received offers from various companies to the effect that they want us to create a product that does not currently exist, and we

have a track record of creating many prototypes. This is one of our strengths in manufacturing as a manufacturer. The plan for ITHD came up when I was overseeing business planning, and I take pride in the fact that we were able to take the bold step of tackling something new, as a sign of the Company's spirit of taking on new challenges. I certainly hope that we can pass on our stance of tackling new things as a manufacturer to future generations.

**Takasaki** I think one strength of the Company's engineers is the fact that they can flexibly work across a broad range of areas and have wide-ranging knowledge, even outside of their own specialist areas. I think another strength is the fact that because our organization is not large, an environment is in place that makes it easy to take on challenges even outside of our area of expertise. The fact that human resources with various technical skills and knowledge work together contributes to our flexibility, enabling us to address various customer needs. I would like to use this opportunity to express my thanks to all parties who support our day-to-day development efforts.

**Nakano** When we created a prototype of the ITHD, I was surprised because some members of the development team asked to purchase a car in order to actually attach the prototype to a vehicle and test it, but I allowed it, considering it an investment in a new business. I intend to ensure we maintain a corporate culture and environment as a company that allows proactive investment in research and development.

## Differences between ITHD and chassis dynamometers, and conventional testing systems for automobiles

**Takasaki** As mentioned briefly at the start of this feature, compared with conventional roller-type chassis dynamometer testing systems for automobiles, one feature of ITHD is that it does not require large-scale construction, and can be installed anywhere there is a level space, meaning it saves space. For regular roller-type chassis dynamometers, the ground must be dug out to a depth of almost 2 m for their installation. On top of requiring major construction, one major precondition of such systems is that they will be installed on the ground floor. On the other hand, ITHD does not require any major construction, and can be installed on any floor with a suitable allowable load, no matter whether it is the second floor or third floor. Compared with conventional dynamos directly attached to the hub, ITHD is also easy to install and setup can be completed in one or two hours.

**Nakano** The high level of safety is another major merit. The same could also said to be true of dynamos directly attached to the hub, but testing is performed by removing the tire and attaching the ITHD. This means the vehicle physically cannot move, so tests can be performed safely.

**Takasaki** It is fair to say that the fact that we can conduct tests of sudden braking is also another major characteristic. It is also possible to "reach a certain level of speed and suddenly brake," while maintaining an awareness of safety, by driving an actual vehicle on a test course, but it is true that tests of sudden braking are very difficult with general roller-type chassis dynamometers owing to their structure. Sudden braking is dangerous as it causes the vehicle body to lift, and it is said that it is impossible under current circumstances. Representatives from automakers who have actually experienced ITHD have praised this product for its ability to perform tests of sudden braking that are not normally possible.

**Nakano** Another characteristic is the fact that we can perform repeated tests under stable conditions in environmental tests. It is possible to use simulations to recreate driving on snowy roads and other roads that are easy to skid on or in poor condition, not just braking tests. Accordingly, these tests are not affected by the temperature and the weather, and tests can be performed repeatedly in the same conditions without worrying about wear on the tires. It is also possible to perform tests when some part of the car is changed and the impact of that change is clear.

**Takasaki** Another major strength are the added functions, including recreations of driving on actual roads with simulations, which was not possible with roller-type chassis dynamometers.

ITHD enables tests that include steering

It can be installed anywhere there is a level space

## Automakers' and component manufacturers' demands of ITHD and the Company's response

**Nakano** In recent years, the automobile industry has been facing a major turning point. The way automobiles are made itself is changing with the emergence of hybrid cars and electric automobiles. Automated driving (AD)/advanced driver-assistance systems (ADAS), where the vehicle drives by sensors alone with no need to hold the steering wheel, have also been attracting more attention.

**Takasaki** ITHDs also facilitate tests such as assessment tests that include "steering" and recreations of driving on actual roads with simulations, which were difficult with existing testing systems for automobiles. As a result, there is strong anticipation among automakers for the application of ITHD to AD/ADAS test development. Recently, we have also enhanced our line-up to make ITHDs compatible with large vehicles such as SUVs, including battery EVs.

**Nakano** These measures to address AD/ADAS have been our target since the start of development. A major strength of ITHD is the fact that it is compatible with steering tests and development, and we already have experience of taking on the challenge of "parking assistance system tests."

**Takasaki** We are promoting technological development with the target of "making it possible to perform tests by recreating roads around the world, even without going out on actual roads, with ITHD."

## Relationship between the future vision for automobile development and ITHD

**Nakano** As part of the development of automated driving, repeated tests are conducted where the "automobile assesses the conditions and moves in accordance with the situation." With ITHD, these tests can be performed not by driving on actual roads, but instead in a simulated world on top of a platform.

**Takasaki** It can also be combined with vehicle sensor simulators and applied to assessments of self-driving cars. This means we can safely conduct tests that could previously only be performed on a test course on a platform. For example, at present, we can only test "can the car properly stop if a person suddenly jumps out?" on a test course. If we make progress on the Company's ITHD simulation technology, it will become possible to perform these tests on platforms, enabling us to make these tests safer and reduce development costs.

**Nakano** In the future, we will work to further enhance the line-up of these products and refine their functions, creating more sophisticated equipment capable of addressing more advanced testing needs. We will aim for ITHD to grow in popularity around the world as a testing systems for next-generation automobiles.

### Feedback from customers

As demand for 4WD chassis dynamometers (4WD-CHDY) was rising, our company was considering augmenting the capacity of our facilities, but we directly faced the issues in the form of land shortages and the difficulty of replacing the old CHDY. In particular, the fact that it is impossible to install a 48-inch roller CHDY in the upper floors of buildings was a major constraint. Under these circumstances, when we were considering the selection of alternative equipment, TOYO DENKI SEIZO introduced us to their In-Tyre-House Dynamo (ITHD), and we began considering adopting it.

We decided to introduce it after confirming that it satisfied our performance criteria such as the weight, which was a standard for installation, and the equivalence with the driving power of CHDY.

After introducing this system, TOYO DENKI SEIZO also helped us consider how to utilize it, and it was possible to use ITHD as an alternative for assessing behavior in the event of engine failures and driveability, such as sudden braking, which we previously conducted with CHDY and test courses. We can also recreate actual road tests under various conditions, such as bad roads, low-friction roads, and turns, and its effectiveness as a high-value added facility has been proved. We anticipate this system's development into new sectors, such as AD/ADAS development utilizing steering functions.

SUBARU CORPORATION, Manager, Engineering Coodination Sect. Vehicle Environment Development Dept. Engineering Div. **Shinya Tanaka, Takamitsu Kashima** (SUBARU Living Service)

# Initiative in Production Activities

We will strive to minimize environmental burden in production activities and continue to protect regional environments

## Aiming for Realization of a Sustainable Society

A sustainable society as envisaged by the Company is the combination of a “low-carbon society,” a “recycling-based society” and a “nature-symbiotic society.”

The environmental technologies of the Company have produced numerous products that contribute to energy conservation, including high-efficiency motors and inverters that capitalize on the amalgamation of our outstanding motor drive technology and other state-of-the- art technologies. In the meantime, the Company has been striving to conserve resources through not only the efficient use of energy but also the reduction of the size and weight of its products.


- Energy conservation through the Company’s technologies and products
- Energy conservation in production activities
- Use of sustainable energy
- Improvement of logistics efficiency
- Proper treatment of wastes
- Reduction of amount of final disposal of wastes
- Proper management of chemical substances
- Cleanup around offices

## Environmental Management System

In order to tackle environmental issues on an independent and continuous basis, the Company has developed and operates an environmental management system and thereby obtained ISO 14001 certification. This certification has been acquired for all offices and the production bases Yokohama Plant and Shiga-Ryuo Plant.

**Years of ISO 14001 certification**

| | |
|---|---|
| Shiga-Ryuo Plant* | 2001 |

*The Shiga Ryuo Plant was the Shiga Factory (Moriyama) when it obtained the certification.

| | |
|---|---|
| Yokohama Plant | 2004 |
| Extended to all offices | 2010 |

## Initiatives to Prevent Global Warming

### Initiatives to reduce greenhouse gas ($CO_2$) emissions

The Company is promoting energy conservation at each of its production bases and offices to reduce its $CO_2$ emissions. At the production bases in particular, we are promoting power-saving and streamlining at production facilities. In addition, the Yokohama Plant uses solar power generation for peak shaving of power demands.

### Targeted reduction of $CO_2$ emissions and progress status

The Company’s $CO_2$ reduction targets are as stated in our Sustainability Roadmap (see p. 26). In fiscal 2024, we reduced total energy consumption per unit (submitted values under the Energy Efficiency Act) across the Yokohama Plant and Shiga-Ryuo Plant production bases, but the assessment of $CO_2$ per unit increased 8.4% compared with the previous fiscal year owing to changes in $CO_2$ emissions factors at electric power companies with whom we have contracts.

### Yokohama Plant initiatives

**1 Installation of a solar power generation system**

We installed a solar power generation system (500 kW) on the roof of the Yokohama Plant in 2012. In recent years, the system has generated 600,000 to 650,000 kWh of electricity annually, all of which is consumed internally. This contributes to reducing greenhouse gas emissions (equivalent to approximately 300 tons of $CO_2$ per year) and curbing global warming. We are considering adding solar panels to further reduce $CO_2$ emissions.

**2 Modal shift in logistics**

The plant is expanding its shift of some outgoing customer shipments from truck transport to railway container transport, which places a smaller burden on the environment.

### Shiga-Ryuo Plant initiatives

**1 Contribution to a low-carbon society**

We endeavor to limit unnecessary energy consumption by monitoring energy consumed and spreading awareness within facilities.

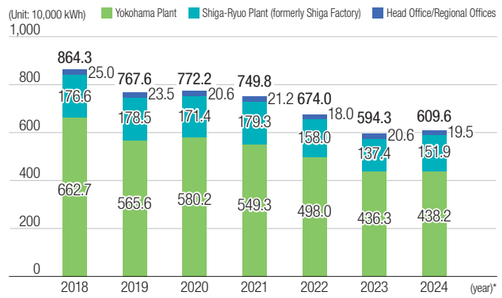
**2 Contribution to a recycling-based society**

We have shifted some plastic trash to resource collection and processing. In the future, we will work to further expand these efforts.

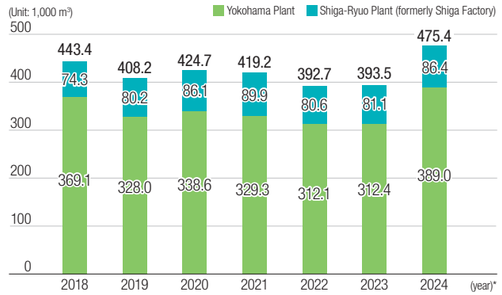
**3 Contribution to a nature-symbiotic society**

We compost grass cut during weeding and also use it as an “insect hotel,” as part of our endeavor to protect the habitat environment of living creatures.

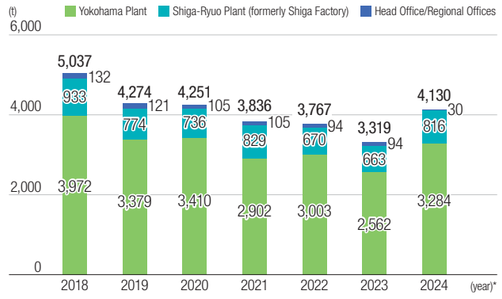
**Total energy input (electricity)**




**Total energy input (gas)**




**$CO_2$ emissions**




*The fiscal year is from April to March of the following year
*Figures for the Shiga-Ryuo Plant include those of TD. Drive Mfg. Co., Ltd. from fiscal 2018

## VOICE

We mainly used truck transport for electrical equipment for railway vehicles shipped from the Yokohama Plant. In consideration for the environment (reducing $CO_2$) and to address the 2024 logistics problem, we have shifted from truck transportation to railway container transportation for approximately 50% of pantographs and axles and approximately 80% of traction motors, for transportation over long distances of 500 km or more. This initiative was well received, and in December 2024, we received “Eco Rail Mark” certification as a supporting company. We will continue to promote modal shift efforts.

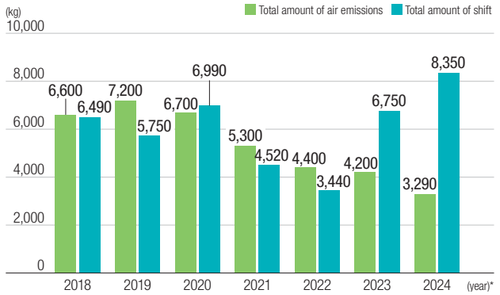
エコレールマーク
協賛企業 K24-004

**Shinsuke Suzuki**
Transportation Business Unit, Transportation Systems Works General Manager of Production Management Division

## Initiatives for Control over Chemical Substances

Volatile organic compounds (VOCs) emitted as a result of our business activities are adequately controlled and the amount of emission is monitored under the Pollutant Release and Transfer Register (PRTR). We will further engage in the reduction of waste through such measures including using non-VOC materials and implementing recovery and reuse of solvents. PCB waste is also subject to adequate control, storage and disposal in accordance with Japan's Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes.

**Notification volume for Pollutant Release and Transfer Register (PRTR) substances**

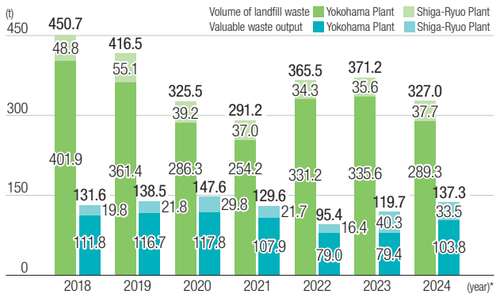



## Initiatives for Reducing Disposed Waste as Well as Recycling

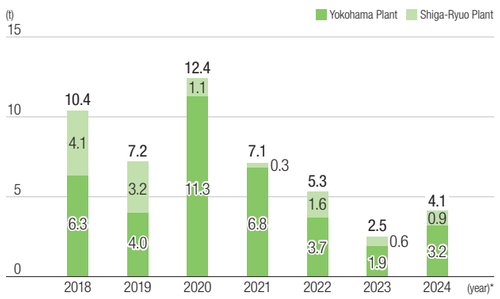
### Main actions

The Company has been thoroughly implementing waste processing rules, sorting metal waste, and recycling paper resources. As a result, its landfill waste volume rate in fiscal 2024 was 0.9%.

**Output of general and valuable waste**




**Volume of landfill waste**




## Quality Control – Providing Safe and High-Quality Products

### Quality Policy

The Company's electrical equipment for railway vehicles is installed in many rail vehicles. These extremely important products play a direct role in ensuring the safety of human life and property during rail transportation. In the Industry Business and ICT Solution Business as well, the Company's products and services are used in customers' production facilities, development sites and in the field of social infrastructure, and they form the foundation supporting the sustainable development of a society that is safe and comfortable to live in.

In order to ensure the high quality of our products and services, the Company has established a quality policy, which is deployed across the Group as we strive to maintain and improve our human resources education, compliance with rules, and our facilities.

**Quality Policy (excerpts)**

Based on our commitment to making quality our top priority, we will contribute to society by reliably providing safe and high-quality products and services that satisfy our customers.

*For details of the Quality Policy, please see the Company's website.
https://www.toyodenki.co.jp/sustainability/quality-policy.html

### Promotion framework

With regard to quality control, each fiscal year the Company develops policies and the promotion framework aimed at further maintaining and improving quality in each business unit, along with specific policies pertaining to the reduction of flaws and other issues.

The Company's Corporate Quality Control Division works together with the quality control department or the quality assurance department in each business unit to put together a report on the status of quality control and results in each unit. The report is delivered to top management at the monthly Operating Officer Liaison Meeting where measures are debated and decided.

Furthermore, in the event that a flaw is discovered after a product has been shipped, the necessary steps are swiftly taken, mainly by the quality assurance division in each business unit, while at the same time the causes that led to the flaw and its mechanism are investigated, and this information is put into a database so that the information can be shared in-house in an effort to prevent recurrence.

### Certified according to EN 15085 for requirement of welding in a manufacturer to ensure safety operation of railway vehicles and components in EU.

Railway vehicles and components are required to meet stringent safety level.
To ensure and maintain this quality, we have certified according to EN 15085* certification for the requirement of welding for railway vehicles and components by from the certification body TÜV Rheinland. Specifically, the certification covers activity D (Design) and S (Procurement and Supply) of pantographs under classification level CL1.


* EN 15085
Quality and safety standards for the requirements of "welding" for railway vehicles and their components in the European Union (EU)

The Company has supplied electrical equipment to many railway operators, both in Japan and overseas. We will use the opportunity presented by this certification to further expand our business globally.

## Quality Management System

The Company has created and operates a quality management system and has obtained ISO 9001 certification, including at its production bases, the Yokohama Plant and the Shiga-Ryuo Plant.

Starting with the acquisition of ISO 9002 certification for the "manufacture of general-purpose inverters for motor drive" in 1994, our certification was raised to ISO 9001, including design and development, in 1996, and in 1997, we also acquired certification for each type of railway rolling stock equipment and alternators for industrial use. Subsequently, we added various products to this certification, and expanded it to cover the entire company in 2005.

## Towards Just and Fair Procurement

### Communication with suppliers

The Company's products possess distinctive characteristics such as being individually built-to-order, manufactured in multi-product small lots, and demanding high reliability. Therefore, the Company can be affected by issues such as delays in supply due to fluctuations in production quantity or delays in processing due to the quality of products procured. In order to reduce these risks, the Company carries out instruction and support related to quality, technology, and skills for our suppliers, as well as guidance for improvement of production sites, in order to ensure stable procurement of even better quality products. In addition, we actively promote information sharing through the "TOYO DENKI SEIZO Cooperation Association" to which our leading suppliers belong.

**Policies and Guidelines for Procurement**

The TOYO DENKI Group will, in its procurement of raw materials, services, etc. for the products that it supplies to customers, engage in practices mindful of society's expectations concerning human rights and the environment, and in doing so will advance sustainability initiatives and will work together with suppliers to help realize a sustainable society.

*For details of the Policies and Guidelines for Procurement, please see the Company's website.
https://www.toyodenki.co.jp/sustainability/material-procurement.html

**Partnership Development Declaration**

The Company announced the "Partnership Development Declaration" in order to build new partnerships by promoting collaboration and harmonious mutual prosperity with its supply chain partners and business operators seeking value creation.

*For details of the Partnership Development Declaration, please see the Company's website.
https://www.toyodenki.co.jp/sustainability/material-procurement.html

パートナーシップ構築宣言

*The fiscal year is from April to March of the following year *Figures for the Shiga-Ryuo Plant include those of TD. Drive Mfg. Co., Ltd. from fiscal 2018

# Initiative in Valuing People and Communities

We will value our employees and the local communities and carry our aspirations into the future

## With Our Employees

### Ensuring diversity

#### Female empowerment

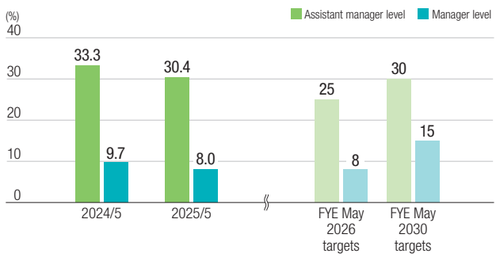
We have 784 employees, and women make up 2.2% of our managers. Further, women make up 9.7% of our permanent employees, and work needs to be done to raise female representation across the board.

As part of our new graduate recruitment activities, we host individual meetings for female students that provide the opportunity for them to speak with female employees and gain a better idea of what it is like to work for TOYO DENKI SEIZO. We further strive to recruit diverse talent through mid-career hiring and a program that enables fixed-term employees to switch to permanent employment.

In addition, we implemented a training program for Directors, Operating Officers, and managers to support female empowerment, a career training program for female employees, and workshops aimed at the creation of internal networks. We will make ongoing efforts to foster awareness and provide support for our female employees to be more positive and active in their own ways than ever before.

#### Ratio of female employees

Administration divisions



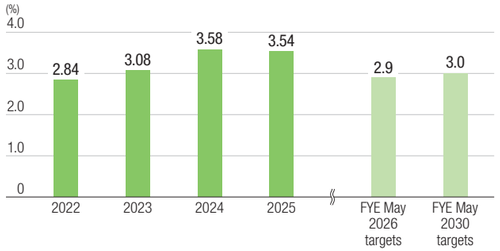

*As noted above, women make up 9.7% of our permanent employees, and work needs to be done to raise female representation across the board. We are initially targeting administration divisions in our efforts to increase the ratio of female managers.

#### Employment of the disabled

Aiming to be a company where both the disabled and nondisabled work together positively in their own way, the Company makes improvements to the workplace environment and carries out workplace training. We have promoted the hiring of people with disability by offering hands-on workplace training opportunities in collaboration with local special-needs schools and support organizations. In the future, we will continue creating workplaces where everyone can exercise their capabilities with peace of mind, as we aim to become a company where employees can experience the joy of working.

#### Percentage of employees with disabilities

Percentage of employees with disabilities




*Figures are as of June 1

### Improvement of working environment

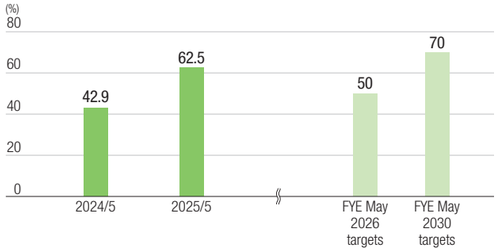
#### Flexible workstyles

In order to help employees achieve a good work-life balance, we are expanding our systems supporting flexible workstyles, including the introduction of a flex-time system, systems for bringing forward and pushing back work start and end times (staggered work system), and a teleworking system.

In 2014, we were certified as a "company that supports child-rearing" and received the "Kurumin" certification logo from the Tokyo Labor Bureau. Our efforts to encourage more male employees to take childcare leave include providing information, not only to those who are expecting a child, but also to encourage understanding among colleagues, including training and the distribution of guidebooks to deepen understanding of childbirth and childcare, and a collection of employees' personal stories about their experiences in taking childcare leave.

#### Ratio of male employees taking childcare leave

Ratio of male employees taking childcare leave




*The above ratios were calculated for childcare leave, etc. as prescribed in Article 71-6, Item 1 of the Ordinance for Enforcement of the Act on Childcare Leave, Caregiver Leave, and Other Measures for the Welfare of Workers Caring for Children or Other Family Members (Ordinance of the Ministry of Labor No. 25 of 1991), pursuant to the provisions of the Act on Childcare Leave, Caregiver Leave, and Other Measures for the Welfare of Workers Caring for Children or Other Family Members (Act No. 76 of 1991).

*The ratio of female employees taking childcare leave is 100%, and we will strive to maintain that level by further working to support the work-life balance of women.

#### Initiatives on organizational climate reform

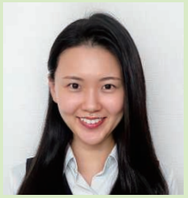
Roundtable meetings have been held regularly since 2022 to share values between the President, Representative Director and employees and to practice management that listens to employees' opinions. The President, Representative Director has visited each of our domestic bases and held the meetings 18 times so far, with a total of 90 employees participating. Since February 2025, we have expanded this initiative to managers, and have held five such meetings to date. We will continue to place importance on two-way communication with employees. Since March 2024, we have also been conducting engagement surveys, and in September 2025, we relaunched the "self-reporting system," creating an opportunity to hear employees' wishes once a year. In such ways, we are working to enhance employee engagement.

**VOICE**

As part of our sustainability efforts, the Company values connections between employees and their families.

At the Shiga-Ryuo Plant, we held the "Kids Open Day" for parents and their children. At this event, children could see the workplace, providing them with an opportunity to develop understanding and respect for their parents and guardians at work.

We will continue to promote activities that value connections between people.



**Sayaka Nonomura**
Shiga-Ryuo Plant
Administration Division

## Health management

#### Promotion of "health and productivity management"

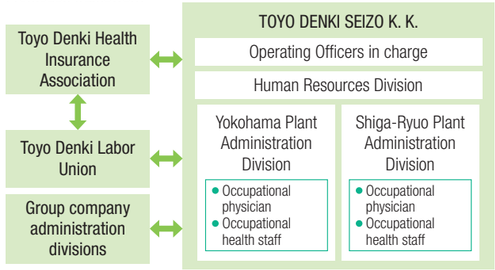
We promote health and productivity management with the health insurance association and labor union, with the aim of being a company where employees can play active roles in good physical and mental health. With the "Health and Productivity Management Declaration" also in place, our efforts focus on the following six priority items.

2025 健康経営優良法人 KENKO Investment for Health 大規模法人部門

**Health and Productivity Management Declaration**

The TOYO DENKI Group expresses in its business principles its commitment to "ensuring the growth of its business, earning the confidence and understanding of shareholders and stakeholders, and fostering the development of its employees." Recognizing that the realization of the commitment involves each employee to be physically and mentally healthy and able to play an active role with enthusiasm, the Company will support its employees to achieve good health.

Promotion framework




Promotion framework members meet twice a year

### Six priority items

#### 1 Disease prevention, prevention of illness aggravation

We will maintain a 100% participation rate for regular health checkups, improve the take-up rate for specific health guidance aimed at preventing lifestyle diseases, and support the attendance of follow-up examinations.

#### 2 Work-life balance

In order to enable diverse employees to achieve work-life balance and continue to work in their own way, the Company has established a "no overtime" day, provides annual paid leave more than statutorily required, sets minimum rest periods between shifts, and has introduced a teleworking system from fiscal 2025, in addition to the efforts described in the "Flexible workstyles" section on the previous page. Believing that improved productivity of each and every employee through those efforts will lead to the

enhancement of technologies and value we provide to customers, we will continue to work on the development of an environment where employees can work with peace of mind while balancing their jobs with family life, through such means as expanding the scope of application of our flextime program.

### 3 Promotion of health and safety activities and realization of a comfortable working environment

To secure a safe working environment and achieve zero occupational accidents, we have in place the "Company-Wide Safety and Hygiene Management Policy," and the Safety and Hygiene Committee at each office each month addresses any issues at workplace. Information on the committees' actions is shared at the Company-Wide Safety and Hygiene Committee, which convenes quarterly, in order to raise the level of health and safety activities at each office. Two of the quarterly meetings are also attended by our Group companies to share information on health and safety activities.

### 4 Improvement of employee health, communication promotion and support

We conduct annual training on self-care and women-specific health issues with the aim of improving employees' health literacy to encourage their voluntary health maintenance and improvement efforts, as well as holding health events together with the health insurance association and labor union. In addition, we support internal club activities, and social events at each workplace, to promote communication among the employees.

### 5 Prevention of mental health problems and support for returning to work

We annually carry out employee stress checks and analyze stress-related conditions of each organization to prevent and detect mental health problems at an early stage. In addition, we provide annual line care training for managers so that they recognize the importance of communication and promptly coordinate with occupational health staff at each office. Also, we have set up in- house and external mental health consultation services to further support mental health care for our employees.

### 6 Health management of employees at overseas posts

In addition to properly conducting health checkups before and after overseas postings, we manage employee health during those assignments by utilizing external healthcare services to provide access to medical care, including for emergencies.

## Human resources development

### Human resources development policy

Guided by the following policy, we strive to be a company that continuously develops the competencies of its employees so that everyone can make the most of their talents as professionals.

(1) To develop human resources who understand and practice our business principles and Conduct Guidelines and who are of value both as company employees and as members of society.

(2) To develop human resources who are professionals, each possessing a high degree of specialized expertise, by enhancing the knowledge, techniques, and skills they need to carry out their duties.

(3) To provide a variety of educational opportunities in order to promote personal development, with emphasis on a self-directed approach to study and growth.

### Education and training system

To help its employees play an active role, the Company provides learning opportunities and support according to the various roles required of each employee. For example, we provide provisional hire training for those who have received provisional job offers, level-specific training that develops the skills needed for each year, individual training according to job types and roles, a support program aimed at helping employees to obtain academic degrees and official qualifications, and division education conducted by each division. Furthermore, new employees in technical positions receive lectures and practical training at the Technical Training Center for one year to equip them with basic and specialized technical skills before their assignment to a workplace.

### Skill transfer

In line with our business principles focusing on quality first, we encourage our employees to acquire official certifications. Employees with exceptional manufacturing skills or expertise are also recognized as "Technical Meister" and assigned to instruct and train younger employees. Three employees of the Company have accepted Contemporary Master Craftsman awards from the Minister of Health, Labour and Welfare, and four* have been awarded the Medal with Yellow Ribbon by the Japanese government. Moreover, a large number of employees have become certified as special-grade skilled workers.

*As of November 2025

**HR and labor-related data (at TOYO DENKI SEIZO K.K.)***

*Number of permanent employees including Operating Officers, and number of special employees, temporary employees, contract employees and staff on loan from other companies, etc.

| Item | | Unit | FYE May 2021 | FYE May 2022 | FYE May 2023 | FYE May 2024 | FYE May 2025 |
|---|---|---|---|---|---|---|---|
| Number of employees | Total | Persons | 847 | 830 | 792 | 791 | 784 |
| | Men | | 766 | 746 | 708 | 701 | 691 |
| | Women | | 81 | 84 | 84 | 90 | 93 |
| Ratio of female employees | | % | 9.6 | 10.1 | 10.6 | 11.4 | 9.7 |
| Number of administrative professionals | Total | Persons | 139 | 134 | 133 | 143 | 136 |
| | Men | | 136 | 132 | 131 | 139 | 133 |
| | Women | | 3 | 2 | 2 | 4 | 3 |
| Ratio of female administrative professionals | | % | 2.2 | 1.5 | 1.5 | 2.8 | 2.2 |
| Average age | Overall | Age | 41.7 | 42.3 | 42.6 | 42.9 | 43.1 |
| | Men | | 41.6 | 42.2 | 42.5 | 42.9 | 43.3 |
| | Women | | 42.8 | 43.0 | 43.5 | 42.8 | 42.2 |
| Average years of employment | Overall | Years | 16.0 | 16.5 | 16.9 | 17.0 | 17.1 |
| | Men | | 16.2 | 16.7 | 17.2 | 17.4 | 17.6 |
| | Women | | 13.9 | 14.0 | 14.2 | 13.5 | 13.0 |

## Contributions to Local Communities

## To Convey the Mission and Appeal of Toyo Denki

### Receiving interns

We are committed to activities that raise awareness and appreciation of our manufacturing expertise by accepting interns from local technical high schools and providing them with hands-on experience at manufacturing sites. This internship system serves as an effective means of recruiting outstanding technical staff on a consistent basis as some students from these schools apply for positions at the Company.

### Yokohama Plant internships for people with disabilities

The Yokohama Plant provides internships for students of local special-needs schools as another initiative for promoting the employment of disabled people.

### Certification under the Shiga Businesses Supporting Facilities for People with Disabilities program

At the Shiga-Ryuo Plant, we contracted some facility maintenance and management operations to a social welfare corporation. That connection led to the Company employing employment transition support users as part-time employees. We will endeavor to continue promoting diversity, equity, and inclusion (DEI) through collaboration with the local community.

### Factory tours

We conduct "factory tours" that enable the public to gain a deeper understanding about the business operations of the Company. In addition to learning about our products, participants in factory tours also see frontline sites where we actually manufacture electrical equipment for railway vehicles.

### Participation in university endowment courses and hands-on courses

We conduct lectures leveraging the know-how fostered through operations and our business activities in on-site training courses held by educational institutions including universities. This year, we continued to participate in endowment courses sponsored by the Yokohama Green Purchasing Network so that participants can deepen their knowledge on history of railway and the environment through our business activities.

### Conducting cleanup activities

At the Shiga-Ryuo Plant, we regularly participate in river clean-up activities held by local volunteer organizations. Through the beautification of rivers, we contribute to protecting biodiversity and beautifying scenery.

Going forward, we will continue working to create a comfortable living environment for local people through environmental conservation activities.

### Donation to Yokohama Kyodo no Mori Fund

Our Yokohama Plant cooperates in small woodlands conservation activities led mainly by the city of Yokohama by donating part of the proceeds from its vending machines to the Yokohama Kyodo no Mori Fund.

### Donations to Omi Victim Support Center

We donated some sales from on-site vending machines to the "Omi Victim Support Center," thus supporting the victims of crime. (Actual amount donated in fiscal 2024: 26,286 yen)