

Business of the Toyo Denki Group

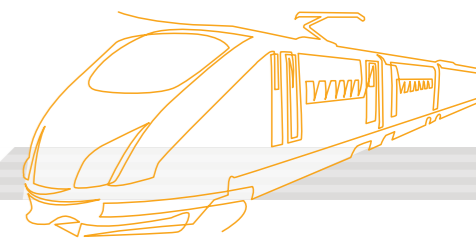
The Toyo Denki Group operates three businesses, namely, Transportation Business segment, Industry Business segment, and ICT Solution Business segment. We also conduct new business development in our Development Center.

In the Transportation Business segment, we are a leader in electrical equipment for railway vehicles. The Industry Business segment is centered on industrial electrical equipment such as motors and inverters for production equipment and machinery. The ICT Solution Business segment develops and manufactures railway station operating equipment and IoT solutions. The Development Center pursues initiatives for the expansion of new businesses and products.

The Group is contributing to the prevention of global warming and the realization of a recycling-based society through the manufacture of highly energy-efficient products.



Transportation Systems Segment



Support railway transportation that connects people and cities with safety and trust, through manufacturing that merges electronics technologies and mechanical technologies in a highly advanced manner



Naoki Okuyama
General Manager of Transportation Business Unit

Business environment and strategy

While some recovery of economic activity can be seen with the easing of restrictions on activities as part of infection countermeasures, there continue to be price rises of raw materials and supply shortages of semiconductor chips. Even further corporate efforts and activities to support the railway operators have become necessary.

In the domestic market, with the recovery in railway passenger transport, there is a certain level of demand for rolling stock production and equipment renewal, and receipt of orders remains firm. The production and sales divisions are working together to avoid the impact of our most pressing issue of the protraction of delivery times for parts and materials.

In overseas markets, recovery of demand can be seen in China, but we are keeping a close watch on the impact of the resurgence of infections after the easing of COVID-19 infection countermeasures. We continue to receive inquiries from Southeast Asian countries and the North American region, and the sales, engineering, and production divisions are working together to respond to them.

We support initiatives by the railway operators to achieve the SDGs and carbon neutrality. Specifically, we will strive to roll out the E3 Solution System, our railway power storage equipment that will realize energy saving and stable transport through the effective use of electric power.

Results for FYE May 2022

● Orders Received
18,800 million yen (Down 0.1% year on year)



● Net Sales
19,456 million yen (Down 9.6% year on year)



● Segment Income
2,190 million yen (Down 1.0% year on year)



Main actions

In addition to our ongoing pursuit of safety and reliability of electrical equipment for railway vehicles, which operate in harsh conditions, we will devote efforts to reducing our environmental footprint, including energy saving, maintenance saving, and noise reduction, and work to provide environmentally friendly products and services.

In the promotion of digital transformation (DX) in product maintenance, we have started providing remote monitoring systems for condition-based maintenance (CBM), which predicts product age-related deterioration and breakdown timing by monitoring conditions using AI and data science. We are also placing efforts into smart maintenance that aims for efficiency improvement and preventive maintenance with appropriate inspection cycles.

We have launched maintenance businesses for delivered products in both North America and China. By steadily capturing the growing demand for maintenance and servicing, we will strive for the expansion of our business and the stable provision of services.

Industrial Systems Segment

Deliver technologies and gratitude to customers with highly precise, highly responding and highly efficient power electronics, for realization of an environment-friendly society



Toshihito Nakanishi
General Manager of Industry Business Unit

Business environment and strategy

With the recovery in the economy after the COVID-19 pandemic, capital investment in the manufacturing industry is on a path to recovery. In fiscal 2021, although there was still visible impact of restrictions on sales activities, such as overseas travel restrictions and voluntary restraint from meetings with customers, those restrictions are easing, and we can expect new demand for capital investment. On the other hand, the effects of rising prices of raw materials and shortages of semiconductor chips and other components continue to be felt, and the production and sales divisions are keeping each other closely informed to handle this situation.

In the area of automobile testing systems, with the rapid shift toward electric vehicles, some automakers and parts manufacturers are considering revising the content of their conventional testing systems. Our unit is proceeding with proposals in response to these kinds of revisions.

Further, amid the trend toward carbon neutrality, expectations for power generation using natural energy are on the rise, and we are making proposals to meet those expectations.

Amid such changes in the environment, we will work together with the new Development Center that was established in June 2022 to actively engage in new areas with the prospect of contributing to sustainability.

Results for FYE May 2022

Orders Received

10,688 million yen (Up 0.9% year on year)



Net Sales

9,902 million yen (Down 6.1% year on year)



Segment Income

477 million yen (Down 33.4% year on year)



Main actions

We will expand into areas where we can contribute to sustainability, such as decarbonization.

In the area of automobile testing systems, to respond to the shift toward electric vehicles, in addition to working on increasing the output of battery simulators, we made our first delivery to a customer of the in-wheel-well dynamo that we had been developing. With representatives of the automakers who attended trade exhibitions and factory tours expressing an interest in this product as a tool for various testing of automobiles, we will make modifications in line with their feedback and aim for its use in the testing of driver-assistance systems.

Overseas, our Thai subsidiary, SIAM TOYO DENKI, which was established in 2019, is achieving results in the expansion of its customer base. Pandemic restrictions are easing, and we are proceeding with the commercialization of the 690V motor and inverter for overseas markets, with the aim of rolling them out in the Asian region. In Japan as well, we will respond to the increase in inquiries for our products accompanying the recovery in capital investments in energy saving and other areas by stepping up our efforts toward small hydropower generation and wave power generation, in which the Company has a strength.

ICT Solution Business Segment

Reorganized from the Information Equipment Systems segment in June 2022

Support the improvement of customers' operational efficiency, convenience, and added value and the construction and operation of DX-MaaS infrastructure with ICT solutions that combine advanced ICT and electronics.



Shingo Furuzawa
General Manager of ICT Solution Business Unit

Business environment and strategy

Although railway passenger numbers in Japan are not expected to return to pre-pandemic levels, they are gradually recovering as people learn to live with COVID-19, and capital investment related to railway station operating systems is starting to recover.

In particular, the market is expected to expand for systems that contribute to improved rail passenger services and for MaaS-related services

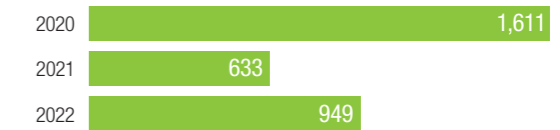
Against the backdrop of dramatic advances in technologies such as cloud computing, communications, data analysis, and AI, as well as working population shortages and value creation using big data, the IoT market is starting to expand into new areas. These include countermeasures against the deterioration of infrastructure equipment, particularly in the manufacturing, public, and transportation sectors, upgrades in transportation infrastructure, and supply chains.

The ICT Solution Business segment, which was reorganized in June 2022, will work toward the active expansion of business fields in these areas.

Results for FYE May 2022

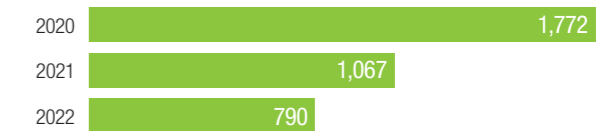
Orders Received

949 million yen (Up 49.8% year on year)



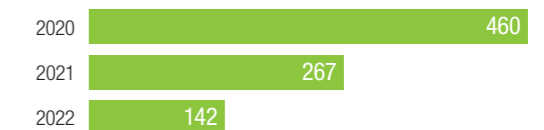
Net Sales

790 million yen (Down 26.0% year on year)



Segment Income

142 million yen (Down 46.5% year on year)



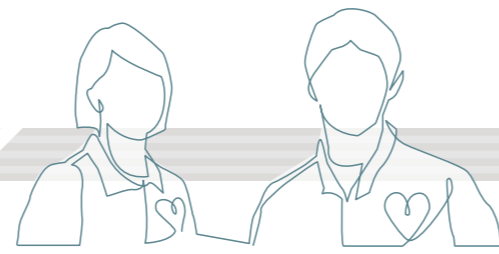
Main actions

The ICT Solution Business segment is a segment that integrates railway station operating systems and IoT solutions.

In railway station operating systems, the combination of advanced ICT and mechatronics will simultaneously achieve improved convenience for railway patrons and labor saving for railway operators. We will develop platforms, devices, and applications for the MaaS era with the keywords of contact-free, cashless, and thin client, and provide a seamless mobility environment.

In IoT solutions, we will provide solutions that monitor and control mobile entities and remote equipment to realize operational efficiency improvements, maintenance optimization, preventive maintenance, and condition-based maintenance (CBM) with cloud services and systems services for mobile communications.

We will strive to expand the ICT Solution Business segment by providing our customers with solutions that generate added value.



Development of new business fields across the entire company

The new Development Center established in June 2022 is playing a central role in our efforts to strengthen and expedite development of new business fields across the entire company.

Transportation Business × ICT Solution Business × Development Center

Real-time condition monitoring system for railways

We built and delivered a system that can monitor railway operational condition and behavior in real time over the public cloud by retrofitting our IORemoter to the railway vehicle's VVVF device. This system has realized the conversion of the equipment installed in railway vehicles to an IoT device with simple retrofitting.

Through assistance with energy consumption reductions achieved by data collection and analysis for the improvement of maintenance performance in the railway sector, we will work to realize energy- and maintenance-saving railway systems.



Industry Business × Development Center

Development and mass production of custom-made motors

Capitalizing on the power electronics technologies and production technologies we have cultivated for railway vehicles and general industry, we are pursuing the exclusive development of electric motors and invertors for mobile entities, optimal design of built-in electricals for motors, pumps, and production machinery, and other developments as motors tailored to customer needs.

By handling everything from customized prototyping to small-lot mass production for downsizing, weight reduction, inverter-converter control, environment resistance, efficiency optimization, and advanced functions, we will realize the development of products with higher added value.



ICT Solution Business × Transportation Business × Development Center

Cashless payment terminal solutions

We will provide terminals that offer a wide variety of payment methods, including touch payment, code payment, and e-money. Because these terminals have an inbuilt printer and are portable, they can be used in any location and for any situation.

These terminals can be used for various applications other than as conventional supplementary on-board ticket issuing devices, and we can provide logistical systems using cloud services. We will also build commercial applications in line with customers' preferences.



Industry Business × ICT Solution Business × Development Center

Power generation systems using recyclable energy

Amid the trend toward the realization of carbon neutrality worldwide, we will provide environmentally friendly distributed power generation systems (power generation + power conditioner panel) using natural energy generated by hydropower, wind power, ocean energy power, and such.

With our extensive track record of over 100 deliveries, we are able to provide electrical equipment suites that include power transforming equipment to meet new needs. Such needs include power supply for self-sustained operation during loss of grid power, such as in emergencies, and output control response to meet grid-side requirements, with optional demand monitoring and control solutions.



Industry Business × Development Center

Evaluation equipment compatible with advanced driver-assistance systems (ADAS)

Using the in-wheel-well dynamo that we developed in 2020, we are pursuing further development with the aim of providing next-generation vehicle testing devices that are suitable for testing autonomous driving and advanced driver-assistance systems.

Through the ongoing development of new functions that incorporate the wishes of users to whom we have already delivered our products and people who have shown an interest at trade exhibitions and other events and that also reflect future market trends, we will support the development of automobiles and help to realize a decarbonized and sustainable society.



Intellectual Property

Our intellectual property is placed as a key corporate resource. Our intellectual property department is responsible for the management of intellectual property and the development divisions in each business unit and the Development Center actively apply for patents and utility models.

Patent applications granted

