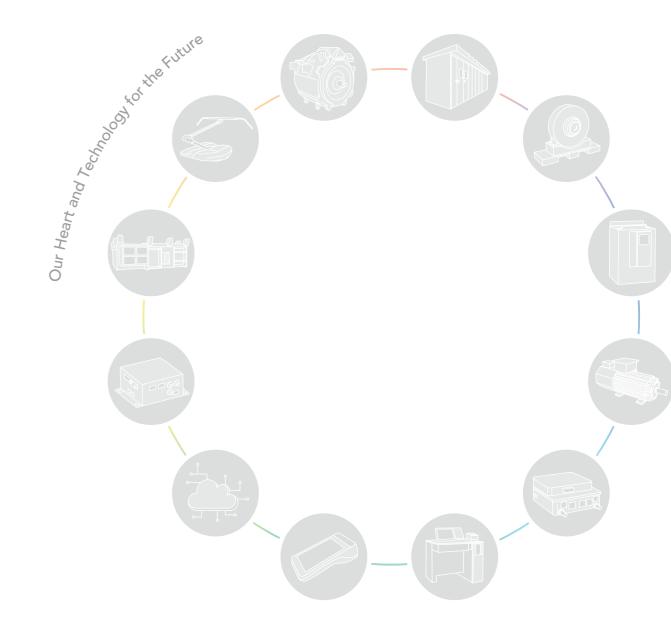




https://www.toyodenki.co.jp/





TOYO DENKI SEIZO K. K.

Corporate Profile





Toyo Denki Seizo's heart and technology that has been nurtured over 100 years.

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

Toyo Denki Seizo's business fields include transportation infrastructure such as railways, and general industry that involves many pieces of production equipment, both of which have high social and public utility and bring richness to the world. We continue to realize social and industrial development and comfortable living through manufacturing that takes advantage of our advanced technical expertise.



### 05 - 06 Transportation Business

- Electrical equipment for railway vehicles
- Railway energy storage system
   E<sup>3</sup> Solution System

### 07 - 08 Industry Business

- Testing system for automobiles
- Production and processing equipment drive systems
- Power generation and power supply systems

#### 09 - 10 ICT Solution Business

- Railway station operating equipment systems
- loT solutions

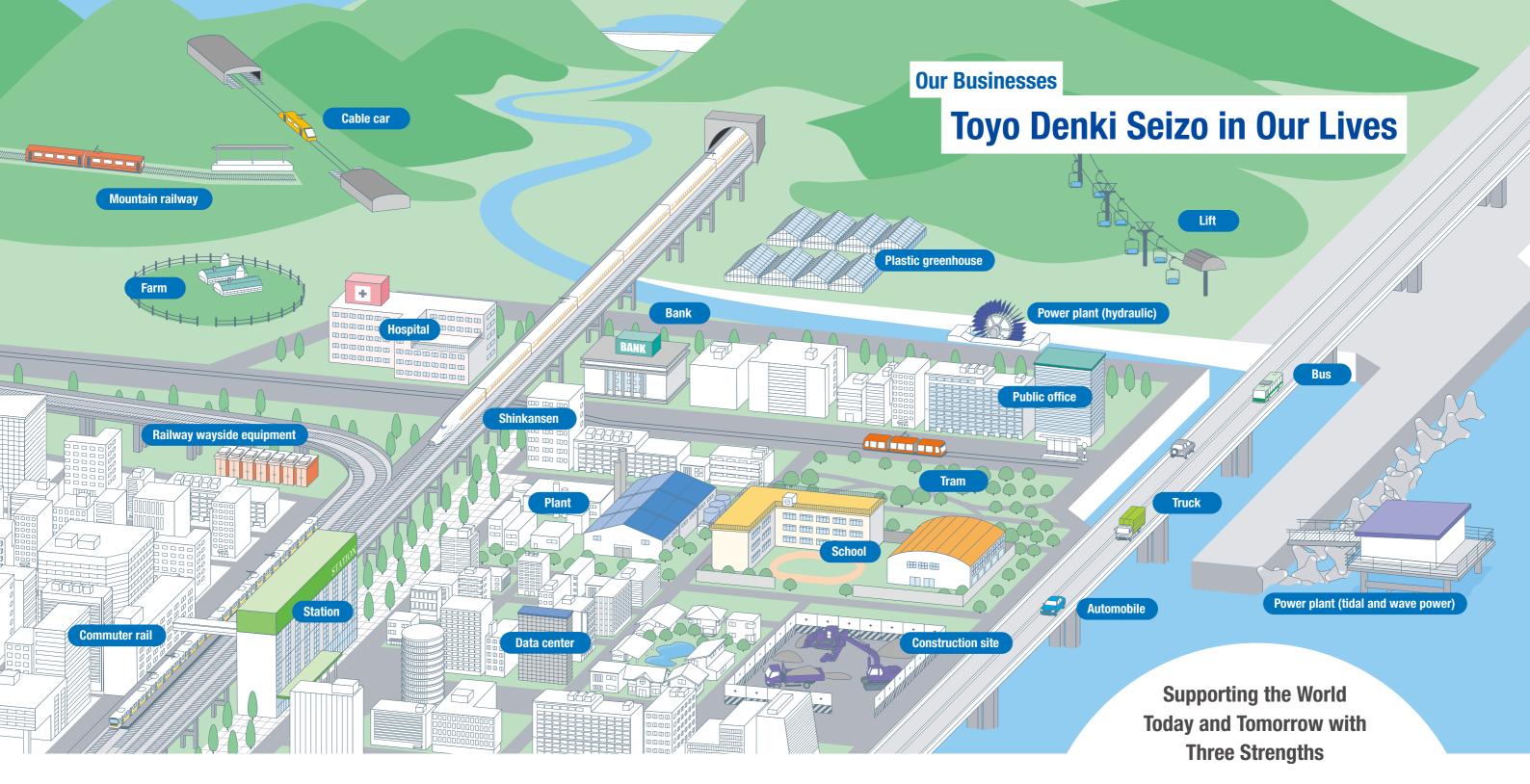
#### 11 Development Center

- On-demand motors/Inverters
- Cashless payment terminal solutions
- 12 13 Technology and Quality

**That Underpin Safety and Security** 

14 Company Profile





### — Main products and systems

#### Railway

03

- Propulsion system
- Auxiliary power system
- Train control and management system
- Vehicle condition monitoring system
- Door operating equipment
- Handset for conductor
- Cashless service system
- Railway energy storage system

### **Station**

- Commuter pass issuing machine
- IC card issuing machine
- Compact ticket issuing machine
- Judgment engines for automatic fare gate

#### **Automobile**

- Testing system for automobiles

#### **Truck/Bus/Construction equipment**

- Car-mounted electrical equipment for electrification of vehicles
- Vehicle monitoring solutions
- Door drive system

### Power plant

- Distributed power supply system
- Equipment monitoring solutions

#### **Plant**

- Production and processing equipment
- Printing equipment
- Emergency power generator
- Equipment monitoring solutions

### Public office, bank, etc.

- Emergency power generator
- Continuous-use generator

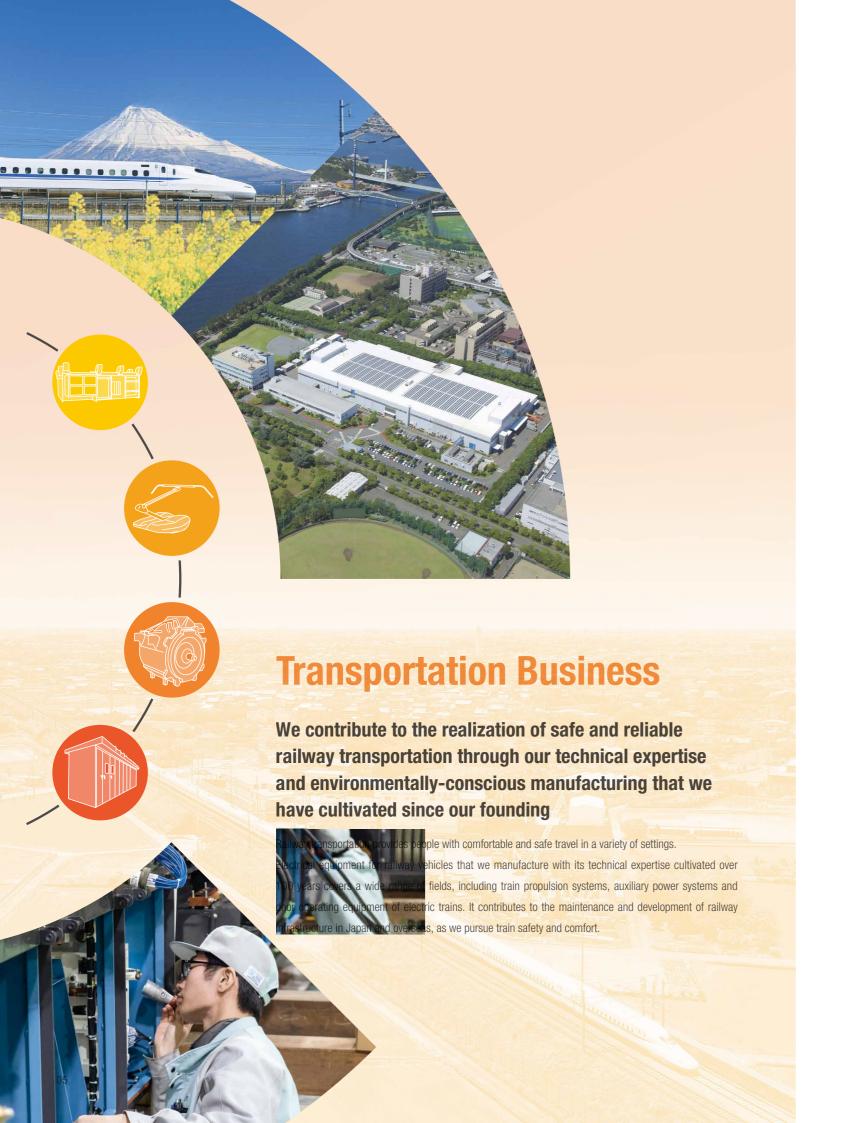
Toyo Denki Seizo engages in  $\it manufacturing$  that is useful to society through

three businesses. Three strengths —

 $\label{the Transportation Business} \ that \ supports \ comfortable \ and \ safe \ railway \ transportation,$ 

the Industry Business that helps people's daily lives and energy-saving, and the ICT Solution Business that enables you to monitor tasks comfortably through networks. These support Japan and the world today and tomorrow.

04



### Electrical equipment for railway vehicles

## Contributing to the maintenance and development of railway infrastructure in Japan and overseas by connecting people and cities through comfortable and safe travel

Our electrical equipment for railway vehicles includes control and drive systems, which are core mechanism of these vehicles. By manufacturing these products, we have been contributing to the development of many railway operators as we pursue further functionality and comfort, while underpinning the trust in safety required of public transportation systems. Toyo Denki Seizo's sophisticated electrical equipment for railway vehicles, which integrates electronics and mechanical technologies, drives our customer's innovations.

#### **Propulsion systems**

The power source and control of railway vehicles, including current collectors (pantographs), propulsion controllers, traction motors and driving gear units, are all taken care of. Those products are highly efficient and reliable, and support the safe and smooth operation of railways.

#### **Auxiliary power systems and door operating equipment**

Auxiliary power supply and other devices improve the comfort and safety of railway vehicles. These products control indoor lighting and air conditioning, and door opening/closing to ensure comfortable and safe travel for passengers.

#### **Main products**



### - Railway energy storage system, E<sup>3</sup> Solution System

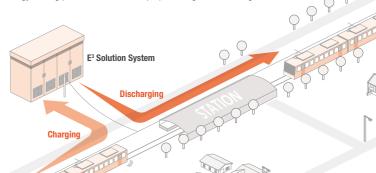
# "Recycling power is better than wasting it" Making effective use of regenerative power contributes to energy-saving and stable railway transportation, and improves environmental performance

The E<sup>3</sup> Solution System, a railway energy storage system, is a rail substation assist system that uses storage batteries. It consists of a new type of large-capacity lithium-ion battery and a bidirectional DC/DC converter control panel, which suppresses drops in overhead line voltage when many trains operate during rush hours and improves efficiency in energy use by absorbing and discharging regenerative power.

Introducing the E<sup>3</sup> Solution System eliminates the need for railway operators to construct new substations or increase the capacity of exsiting ones, thus significantly reducing costs. Its high energy-saving performance also helps prevent global warming.



Cubicle panel





### Testing system for automobiles

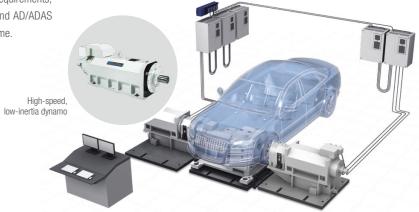
### Product lineup to support the development of next-generation automobiles

Based on our core technologies related to space-saving, high response, quietness and energy-saving, we provide durability testing, performance testing, efficiency testing, and vibration/noise testing systems for vehicle and unit development.

We excel at customization tailored to the customers' requirements, support the automotive industry's shift toward xEVs and AD/ADAS with high reliability, and propose reduced development time.



in-Tyre-House Dynami

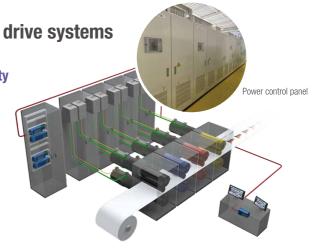


Example of configuration of testing system for automobiles

## Production and processing equipment drive systems

## Toyo Denki Seizo's solutions that support productivity improvement and energy-saving

Our strength lies in the ability to build advanced systems using compact, energy-saving motors and outstanding motor drive technology. For a variety of applications, we build systems that are highly accurate, energy-efficient, and easy to maintain, and provide solutions that help our customers improve their productivity.



Example of printing system configuration

### - Power generation and power supply systems

### Reliable power supply solutions that can be relied on in emergencies

It is absolutely essential to secure a power supply in preparation for emergencies such as natural disasters and fires. The Company provides highly reliable disaster-prevention and general-emergency power generation systems that contribute to the realization of a sustainable society, and has a proven track record of installing such systems in data centers, hospitals and at a variety of other customers. We also handle distributed power supply systems that use renewable energy, such as small hydroelectric power generation systems, and deliver products that contribute to global environmental protection and enhance disaster resilience.



Emergency power generator



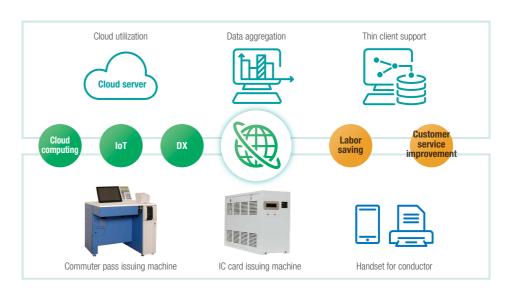
Small hydroelectric power generation



### Railway station operating equipment systems

### Smooth and convenient execution of business in stations and trains

We contribute widely by applying IT technology to information processing operations associated with railway ticket issuing and checking systems, such as issuing commuter passes and in-train tickets, settling fares, and issuing and recharging IC cards. We provide highly functional and reliable railway station operating equipment systems to realize smooth and stress-free operations in stations and trains.



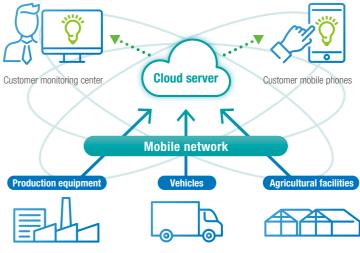
### Main products

- · Commuter pass issuing machine
- · IC card issuing machine
- · Handset for conductor
- · Compact ticket issuing machine
- Judgment engines for automatic fare gate, etc.

### IoT solutions

## We offer monitoring and control of vehiles and remote facilities with a variety of simple, cost-effective IoT solutions

We supply products tailored to customer needs, such as location monitoring for trucks and other vehicles, temperature monitoring for agricultural facilities, and power monitoring for production equipment. We provide simple and affordable IoT solutions using cellular networks and cloud servers that can perform monitoring and control at the same time.



IoT solution system configuration example

### **Main products**

- IoT solutions (Cloud-based remote monitoring and control systems)
- Remote monitoring and control system compatible terminals







### Collaboration with business units toward the expansion of new businesses and products

We capitalize on our core technologies of power electronics, motor drives, control, and power conversion technology in order to develop technologies and products that contribute to decarbonization and the realization of a sustainable society and expand into new business areas. We also aim to realize a more convenient and efficient society by providing cashless payment terminal solutions.

### **On-demand motors/Inverters**

### Capitalizing on our technologies in power electronics and manufacturing, we propose motors and inverters tailored to customers' requirements

We help add value to products by developing products tailored to customers' requirements, such as electric motors and inverters for mobile entities, prime movers, pumps, and built-in products (gear and controller integrated) for production machinery. We offer a one-stop service from prototyping to mass production.







Car-mounted Inverter







### **Cashless payment terminal solutions**

### We develop a variety of cashless payment systems tailored to customers' requirements using general-purpose mobile terminals, etc.

We provide terminals with a variety of payment mediums, including credit cards, code payment, and electronic money. It is a service integrated with a printer and is portable, so it can be used at any location and in any situation. We also build business applications tailored to customers' requirements.



## **Technology and Quality That Underpin Safety and Security**

### **Research and development/Design**

### Taking on the challenge of giving shape to customers' needs

We primarly adopts a make-to-order production system to meet customers' needs. Accordingly, we have been developing a close network with our business partners over the years since our founding. Our design and development depertments cover a variety of tasks ranging from making proposals to customers, discussing specifications, and conducting various performance verification tests, to providing product explanations.

"What do customers want?" We are tirelessly making efforts to understand and give shape to it, and also working to enhance our research and development framework with the aim of further creating new businesses and products.

### Manufacturing/Quality assurance

### Manufacturing sites that earn the trust of customers by enhancing quality

At the Yokohama Plant, Shiga-Ryuo Plant, and the manufacturing sites of our group companies, we engage in product manufacturing using the latest equipment and systemized production processes in a comfortable work environment. Each of our production sites has obtained ISO 9001 certification, the international standard for quality management, and we are also working to improve productivity while striving for further improvement in quality. We build a track record and trust through our thorough customer-facing approach.



### **After-sales service**

#### Mission of after-sales service to maintain safety and security

In order to maintain the safety required of public transportation systems and the reliability of production equipment that is responsible for corporate growth, Toyo Denki Seizo puts as much emphasis on providing after-sales services such as maintenance as it does on manufacturing. We maintain close communication with our customers at all times, and provide care through a complete follow-up system. It is our responsibility as a company that delivers richness to society.



### **Human resources development**

### Growth of our employees creates the future of manufacturing and corporate value

At our company, we believe that bringing out the motivation and creativity of each employee and supporting their growth are essential for our sustainable development. We offer a variety of development programs, including specialized training to nurture professionals who contribute to society through manufacturing, as well as position-based training and skill development support programs. We are committed to maximizing support for employees' growth, which leads to increased corporate value.

12 11



### **Providing safe and high-quality products**

### **Quality management system**

We have created and operated our quality management system and have obtained ISO 9001 certification across our organization, including at its production bases, the Yokohama Plant and the Shiga-Ryuo Plant.

High level of safety is essential for rail vehicles. In 2013, we became the first in Japan to obtain the International Railway Industry Standard (IRIS) (currently ISO 22163) for auxiliary power supply, a standard established by UNIFE, the Association of European Rail Industry in 2007 to ensure the quality of rail vehicles.





[Acquired for] Auxiliary power supply



### Thorough protection of information, which is a social responsibility

### Information security management system

Our Yokohama Plant ICT Works are certified under the information security management system (ISO 27001).

#### Information security

The Company holds a vast amount of information assets including information presented by customers related to its business execution and confidential information concerning the Group's proprietary technologies and its trade. Each Group company is taking various measures in this respect based on an awareness of shared security under the Group's information security guidelines, which have been established to adequately manage and use these information assets.



### Aiming for realization of a sustainable society

### **Environmental management system**

#### Providing products and systems that contribute to environmental preservation

Many of our products and systems contribute significantly to environmental protection by reducing power consumption, noise, CO<sub>2</sub> emissions and waste.

By continuing to develop and provide high-quality products and systems, we will contribute to the development of a sustainable society that balances affluence and environmental conservation.

#### **Promotion of environmental management**

In order to address environmental issues on a voluntary and ongoing basis, we have obtained the certification of the environmental management system (ISO 14001) across the Company, including at its production bases, the Yokohama Plant and the Shiga-Ryuo Plant.

#### Use of sustainable energy at production bases

As a facility symbolizing environmental conservation actions in our own corporate activities, solar-power panels have been installed on the roof of the Yokohama Plant to utilize renewable energy.





Solar-power panels at Yokohama Plant

### **Company Profile**

Company Name	TOYO DENKI SEIZO K.K.	
Established	20 June, 1918	
Capital	4,998,390,000 yen	
Head Office	1-4-16, Yaesu, Chuo-ku, Tokyo, 103-0028, Japan TEL. 03-5202-8121 https://www.toyodenki.co.jp/	
Domestic Bases	Osaka Branch Nagoya Branch Kyushu Branch Hokkaido Branch Sendai Branch Yokohama Branch Okinawa Branch Yokohama Plant Shiga-Ryuo Plant	Toyokouki Co., Ltd. TAIHEI ELECTRIC Co., Ltd. Toyo Sangyo Co., Ltd. TD. Drive Mfg. Co., Ltd. Toyo Shoji Co., Ltd.
Overseas Bases	Toyo Denki (Beijing) Co., Ltd. Changzhou Yangdian Zhanyun Transport Equipment Co., Ltd. Changzhou Ruiyang Transmission Technology Co., Ltd. Beijing Jingche Shuangyang Traction System Co., Ltd. Chengdu Shuangyang Rail Transit Equipment Co., Ltd. Chengdu Yonggui Toyo Rolling Stock Equipment Co., Ltd. SIAM TOYO DENKI Co., Ltd. TOYO DENKI RAILWAY SERVICE, LLC.	



Yokohama Plant



### **Over 100 Years History of Toyo Denki Seizo**

Toyo Denki Seizo was founded in 1918 with the intention of having "domestic production of electrical machinery for railway vehicles." The name "TOYO DENKI SEIZO K.K." has come from the wish to export products not only domestically but also to various Asian countries (Toyo means East Asia in Japanese) and contribute to the development of the country.

And this feeling has been handed down to successive employees, and to this day, we have been delivering many types of 'first in world' and 'first in Japan' electrical equipment to the world. We will continue to contribute to the development of social and industrial infrastructure systems around the world as "Technology Toyo."



Click here for the 100th anniversary

Yokohama factory at the start of operations (Hodogaya-ku, Yokohama)

#### 1921



Japan



Electrical equipment for Japan National Railway Series 0



the Panama Canal



Electrical equipment for shaftless newspaper rotary press





Electrical equipment for Beijing subway systems (VVVF



LRV electrical equipment for Los Angeles County Metropolitan

13 14