

TORISHIMA COMPANY PROFILE



Torishima Pump Mfg. Co., Ltd.

TORISHIMA PURPOSE

Drawing on Torishima's strengths and technology, we will contribute to a sustainable society by connecting lifestyles, lives, and the future.

Founded in 1919 in Japan, Torishima has developed into a leading pump manufacturer supplying centrifugal pumps, and we remain committed to providing innovative and reliable pumping solutions that meet the increasingly diverse and sophisticated needs of customers.

We are dedicated to addressing various issues across the globe through pumps while seeking out sustainable solutions that will enhance people's lives.



The Corporate Philosophy

**Never lose the public trust,
even if monetary loss proves unavoidable.**

The Torishima Group has consistently accorded highest priority to winning and maintaining the customer's solid trust. This philosophy was adopted during the postwar period when the Company was rebuilding, and has been passed down through generations to this day. Trust can only be built up over time, unlike financial debts that can be repaid to restore a clean slate. Once customer trust is lost, it can take years to restore and may be beyond recovery altogether. This can be a fatal blow to a company's survival.

As we address various issues occurring across the globe through pumps, our purpose is to sustainably enhance people's lives, promising to evolve to constantly create better change in the world. We have established a new mission statement to mark the 100th anniversary of our founding in 2019. Taking this mission statement as our core value, we will continue to take on the challenges of the next 100 years.

The Mission

**Passion for our Products and Services.
Evolving to meet the demands of an ever-changing world.**

The Vision

TEAMWORK
DIVERSITY
PROFESSIONAL
CLARITY
ENTHUSIASM
INNOVATION

EVOLUTION



TEAMWORK : Combining our skills to achieve our common goal



DIVERSITY : Embracing diversity to achieve success and maximize our global presence



PROFESSIONAL : Fulfill our duties and responsibilities to provide the best service possible



CLARITY : Working with integrity, transparency and sense of social responsibility



ENTHUSIASM : Our success is linked to our passion and enthusiasm throughout our organization



INNOVATION : Never stop challenging to provide creative solutions to our customers



Head Office & Works

As a platform for implementing the keyword EVOLUTION in our mission statement, this building integrates plant facilities based on the concepts of Liquid Work, a new style of work, and Borderless Place, which removes departmental barriers.



The building received the Kinki New Office Promotion Award at the 34th Nikkei New Office Awards in 2021 in Japan.

[Work Style]

Liquid Work

A work style that allows how and where we work to change as freely as water. Responding to changes in society and organizations, we encourage autonomy and creativity by developing optimal ways for each individual to work.

[Work Area]

Borderless Place

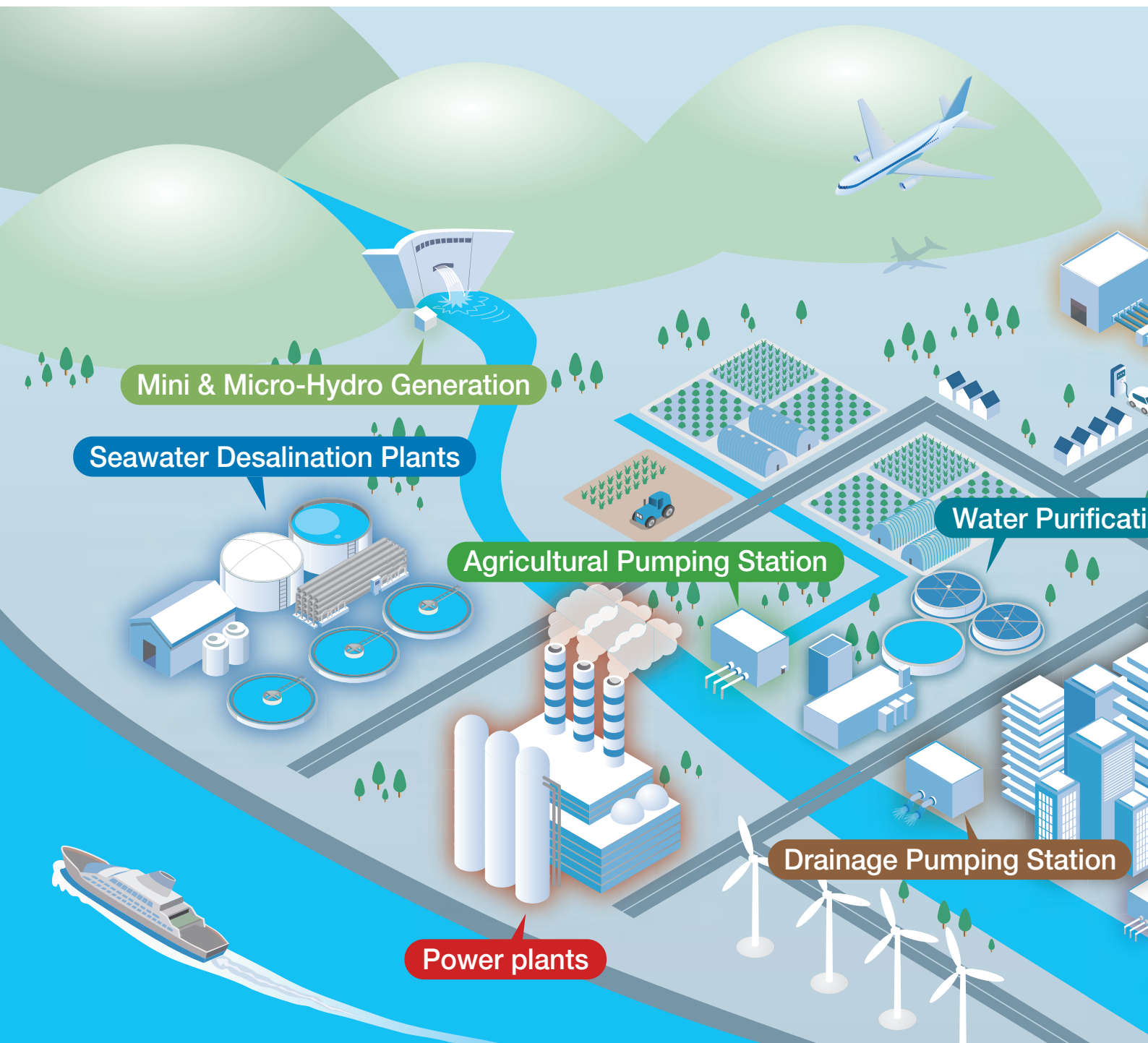
The split-level wall-free floor plan creates unity by eliminating walls: both physical structures that separate departments and the mental barriers among employees and between employees and management.

Environmentally Friendly and Disaster Resistant

The building has achieved the ZEB Oriented evaluation criteria by reducing energy consumption by more than 40% compared to conventional buildings through the use of energy-efficient air conditioning systems and building design innovations. Additionally, all electricity consumed in the building is derived from renewable energy sources.

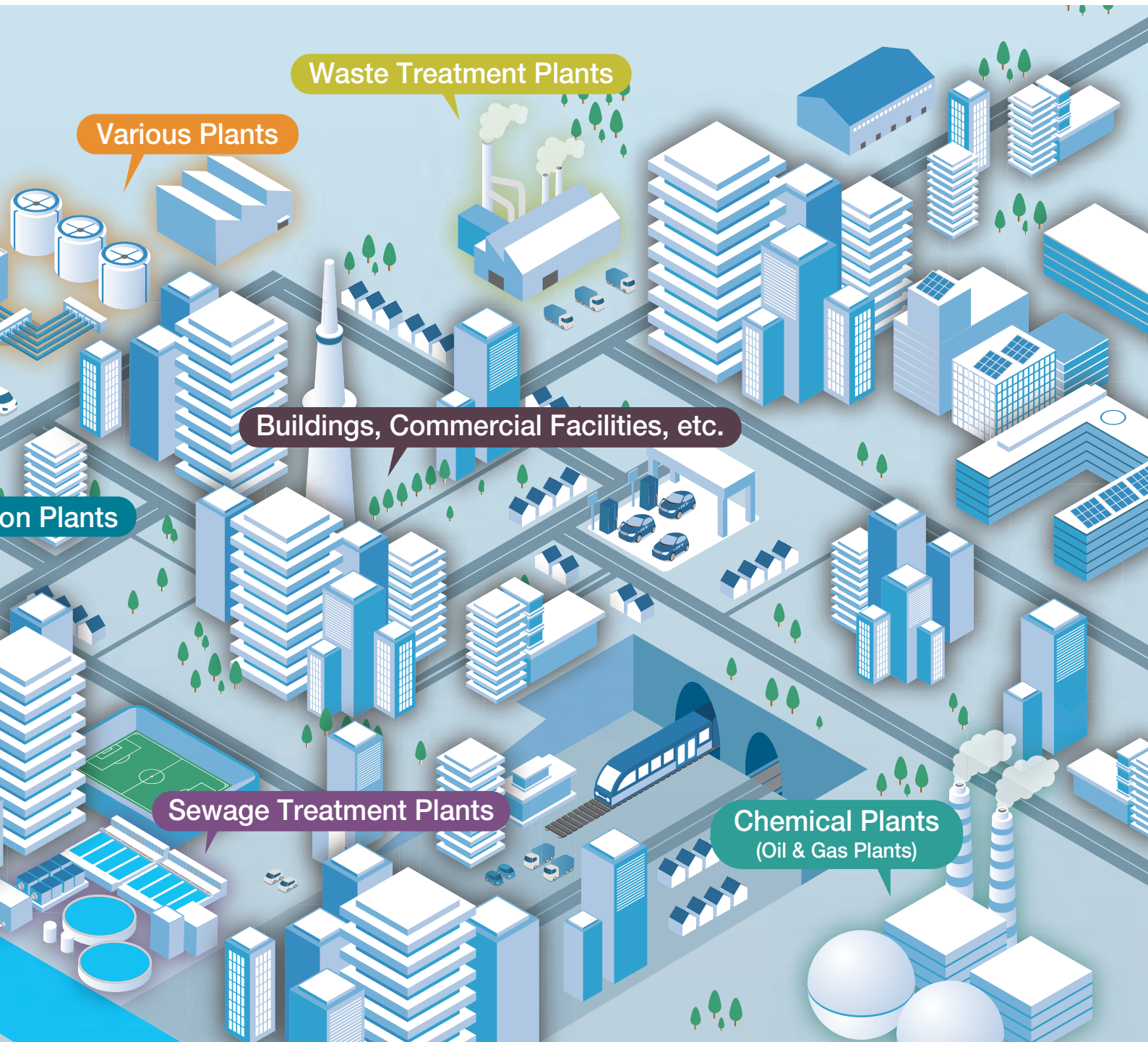
Its earthquake-resistant structure can withstand major earthquakes up to seismic intensity 6+.

The building is also equipped with backup facilities for water supply and electricity to maintain its functionality even in the event of a disaster.



Torishima pumps are everywhere.

Torishima offers a wide range of products and services centered on pumps in four business domains: High-Tech Pumps, Projects, Service Solutions, and Renewable Energy & Environment. In addition to supporting a safe, secure, and comfortable lifestyle, we are also working to address social issues such as energy conservation and reducing CO₂ emissions by enhancing the efficiency of our products.



High-Tech Pumps

Provide high-value-added pumps to meet increasingly sophisticated and diverse needs.



Service Solutions

Provide operation, maintenance, and solutions for pump facilities.



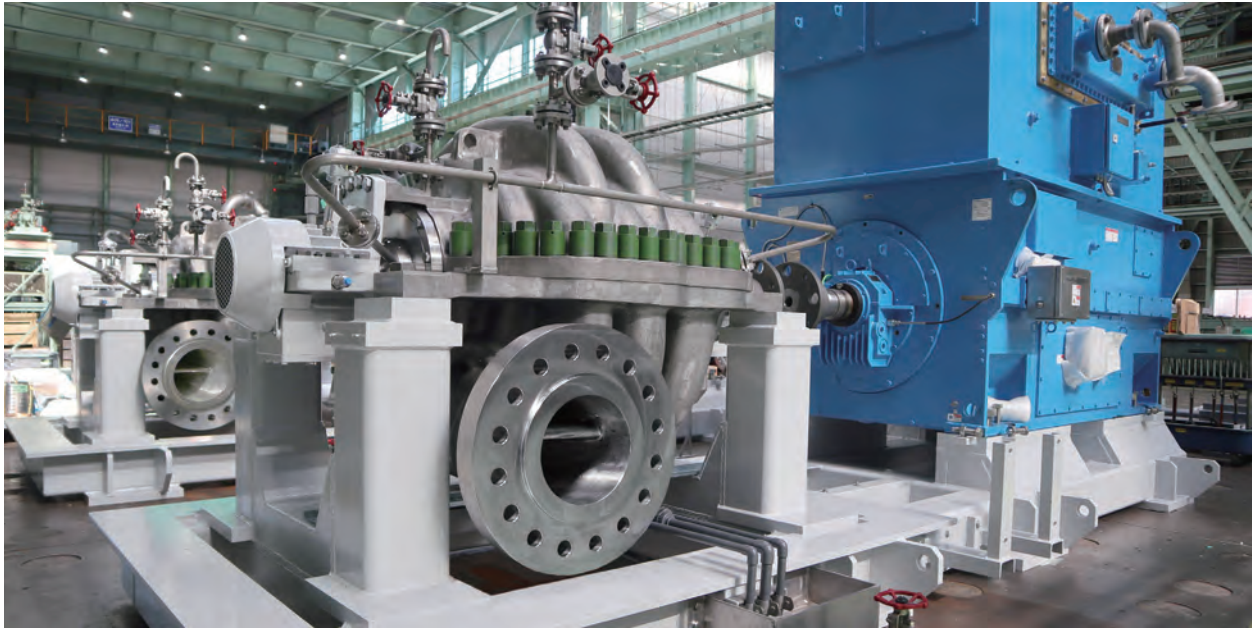
Projects

Provide EPC (engineering, procurement, and construction) for entire pump facilities.



Renewable Energy & Environment

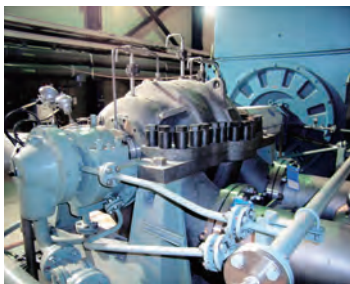
Contribute to building a decarbonized society through the use of renewable energy.



High-pressure seawater supply pumps

As an industry leader in the manufacture of desalination pumps, we contribute to solving the world's water shortages.

Numerous countries worldwide are suffering from chronic water shortages. Seawater desalination plants are playing an increasingly important role in solving this problem. As an industry leader in the manufacture of desalination pumps, Torishima has delivered countless pumps worldwide. We are contributing to the stable water supply through our high-efficiency pumps for Reverse Osmosis (RO) systems, which are becoming mainstream, as well as Multi Stage Flash (MSF) and Multi Effect Distillation (MED) systems.



High-pressure seawater supply pumps



Seawater intake pumps



ERD pressurized pumps



Long-distance pumps for transporting drinking water

Ministry of Economy, Trade and Industry selects Torishima as one of the Global Niche Top 100 Companies for its seawater desalination pump

Despite the changing and fiercely competitive international business environment, Torishima has been selected as one of the 2020 Global Niche Top (GNT) Companies Selection 100, which acknowledges companies that have prevailed in their niche fields in the global market and continue to make technological development and management efforts.

The award honors the Company's extensive delivery record to seawater desalination plants worldwide and its highly efficient pumps, which play a key role in the heart of these plants.



Our pumps contribute to the stable supply of electric power and **the realization of zero-emission thermal power generation.**

While demand for electricity grows as the world's population increases and emerging economies develop, much attention is being turned toward creating zero-emission thermal power generation with low environmental impact. Torishima offers a full lineup of major pumps used in thermal power plants and has contributed to the stable supply of electricity and environmental conservation by providing highly efficient and reliable pumps.

Looking ahead, we will contribute to the realization of zero-emission thermal power generation by focusing on developing pumps for hydrogen, ammonia, and other next-generation fuels.



Boiler feed pumps (Barrel type)



Boiler feed pumps (Ring-section type)



Boiler circulation pumps



Water circulation pumps



Ammonia dispensing pumps

Torishima also has a proven track record in clean energy applications, such as biomass power plants, geothermal power plants, and waste incineration power plants.



Boiler feed pumps for biomass power plants



Hotwell pumps for geothermal power plants

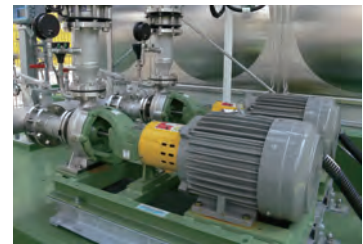
We support **energy conservation and efficient facility operation** in various industrial fields.

Numerous pumps of various types are in operation in a wide range of industries, including steel, automotive, paper, food, district heating and cooling, buildings, commercial facilities, and many others.

Torishima supplies a wide range of highly reliable pumps for various industries to support industrial development. We pursue and develop highly efficient pumps to help meet our customers' needs to reduce power consumption and operate their facilities efficiently.



Cooling water pumps for electric furnace manufacturers



Raw water pumps for drinking water plants



Cooling water pumps for district heating and cooling facilities



Boiler feed pumps for incineration plants

Pursuit of high efficiency

The launch of *a Super Eco-Pump*

Saves energy and reduces CO₂ emissions

A 3D rendering of a Super Eco-Pump with water splashing around it. The pump is silver and has a complex design with multiple ports and a large motor. It is shown in a dynamic, high-speed environment with water splashing around it.



We strongly promote our Go Green with Pumps initiatives to reduce energy consumption and environmental impact.

Pumps play an indispensable role in people's lives and industrial development, but they also account for a large percentage of energy consumption due to the significant number of units in operation and their operating hours. They reportedly consume about 30% of all electricity used in Japan. Accordingly, energy efficiency through pumps can reduce power consumption and CO₂ emissions and contribute significantly to achieving carbon neutrality.

In addition to supplying highly efficient Eco-Pumps, we also focus on Go Green with Pumps initiatives to promote optimal energy-efficient methods tailored to each facility to achieve even greater energy-efficient results.



Energy conservation diagnosis of pump facilities



Go Green with Pumps seminar



Eco Pump News



Energy conservation proposals/reports

TORISEAL

Because Every Drop Counts

Leveraging our years of experience as a pump manufacturer, Torishima offers the most suitable mechanical seals.

Used as shaft seals for pumps and other rotating machinery, mechanical seals play an important role in supporting safety and economic efficiency. Torishima's mechanical seal, Tori Seal, offers high quality, safety, and superior performance in various models to provide the best solution for each customer's application.

- Environmentally friendly, waterless seal
- Cartridge seal for easy maintenance
- Seals for high-temperature and high-pressure applications
- Seals for fluids with high slurry content
- Seals for highly corrosive liquids, seawater, etc.





Water transmission pumping stations

As an EPC contractor for entire pump facilities, Torishima helps to create safe and secure lives.

Torishima has a long history of supplying pump stations as an EPC contractor and not just as a pump supplier. We provide turnkey services to customers in which we design, engineer, procure, construct, and commission all equipment in a pumping station. Torrential rains caused by climate change and other factors have become more common in recent years, causing severe damage in many areas. Torishima contributes to ensuring safe and secure lives through our proprietary technologies for disaster prevention and mitigation.



Stormwater drainage pumping stations



River drainage pumping stations



Pump facilities at sewage treatment plants



Irrigation pumping stations



Long-distance water transmission pumping stations



Sewage relay pumping stations

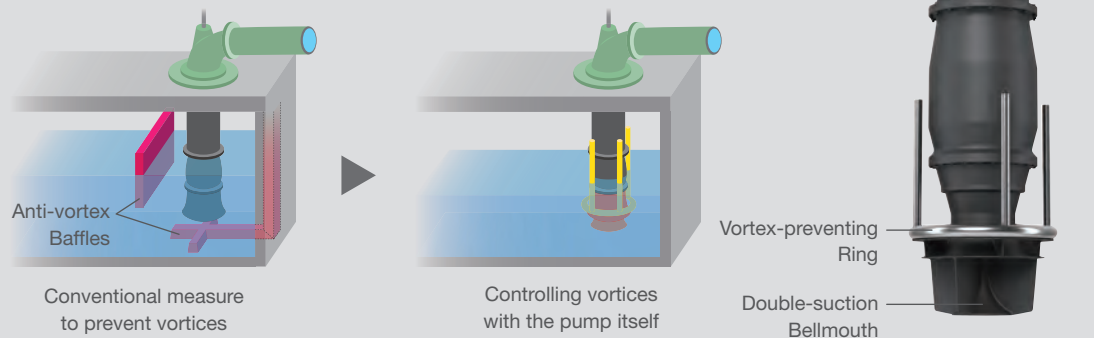


Torishima's unique pumping technology helps prepare against the frequent torrential rains caused by extreme weather.

Pump body with vortex prevention technology

When torrential rain hits, drainage pump stations are subjected to large volumes of rainwater flow over short periods. As a result, more pumps are being replaced or added to increase capacity. However, if pumping volume increases without changing the shape and dimensions of existing pump sumps, the water flow within the sump will increase, causing vortices that can damage the pumps.

Torishima's vortex prevention technology is more effective than conventional anti-vortex baffles (civil engineering). This new technology can suppress vortex within the pump, so it eliminates the need to install the conventional anti-vortex baffles and reduces civil engineering costs.



Pump with integrated submersible motor

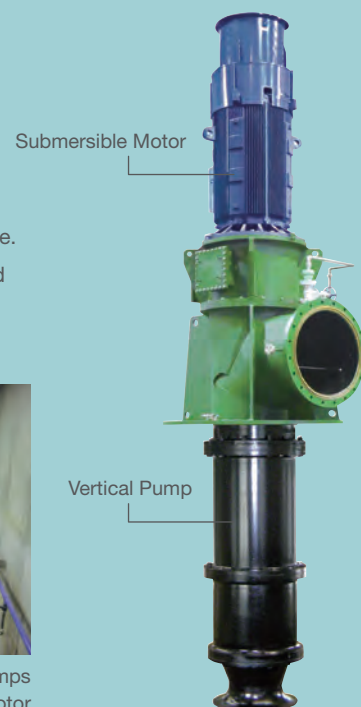
In recent years, record-breaking torrential rains and large typhoons have flooded pumping stations, rendering pumps inoperable and increasing the damage caused by floods that the stations are meant to protect against. Torishima supplies pump and motor integrated into one unit. Even when flooded, the pumps can operate underwater and continue providing drainage. By integrating the pump and motor into a single unit, installation is simplified and earthquake resistance is improved.



Vertical axial-flow pumps with integrated submersible motor



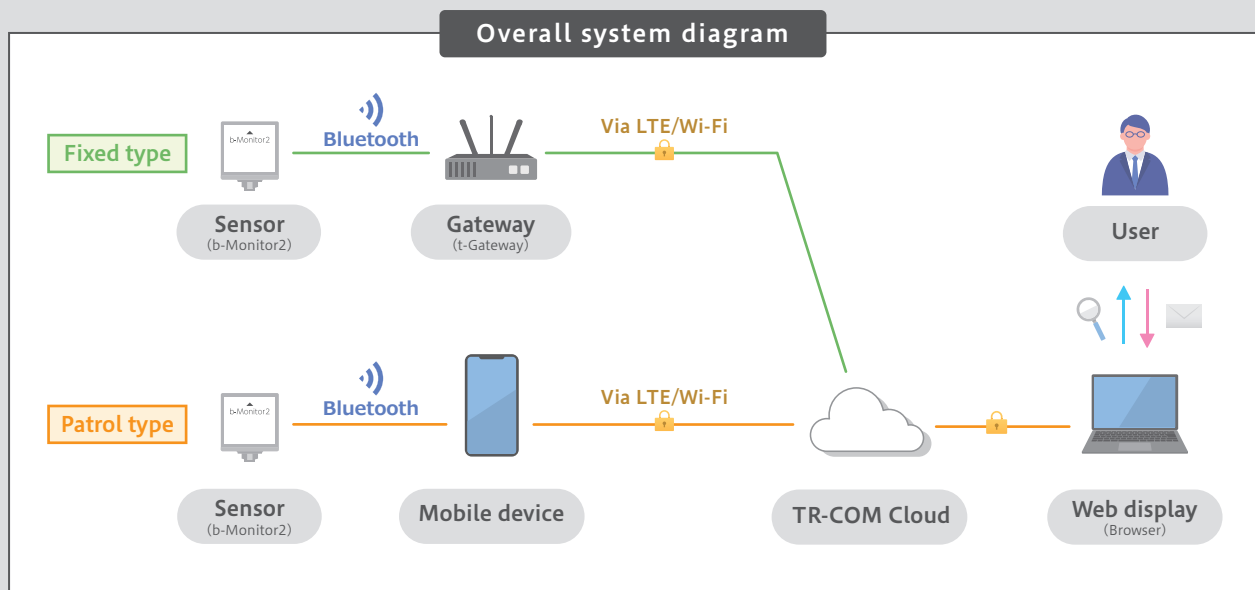
Vertical mixed-flow volute pumps with integrated submersible motor



Torishima's new IoT vibration monitoring solution for early detection of machine malfunctions and longer lifespan

Torishima's TR-COM rotating equipment monitoring system uses IoT technology to provide enhanced support for the operation and maintenance of pumps and other rotating equipment.

Utilizing IoT sensors to measure machine vibrations makes it possible to detect signs of potential malfunctions, allowing early action to be taken to prolong the lifespan of machinery.



Main features of TR-COM

Easy installation

- Only a sensor and a mobile device (iPad/iPhone) are required for the initial investment.
- Sensors can be retrofitted, eliminating the need for electrical wiring work.

Reduced inspection time

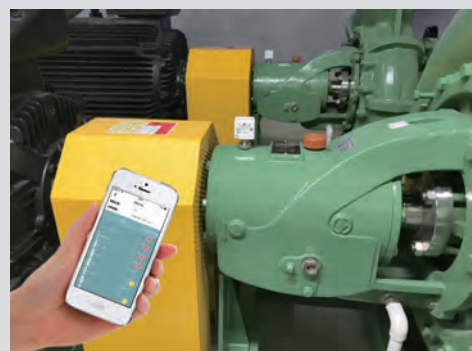
- Data can be collected in a short time from a safe location.

Easy information sharing

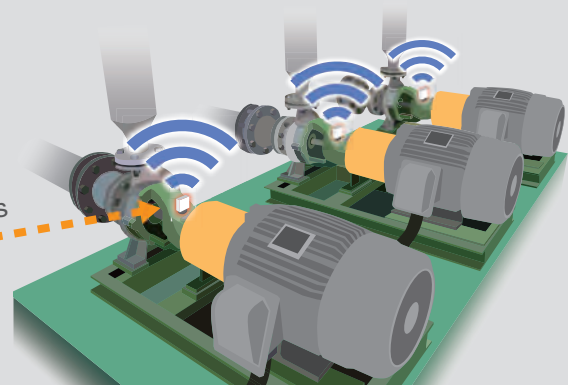
- Centralized cloud management allows for access anytime, anywhere.

Smart log (daily report)

- Capable of recording images, video, audio, comments, inspection records, etc.



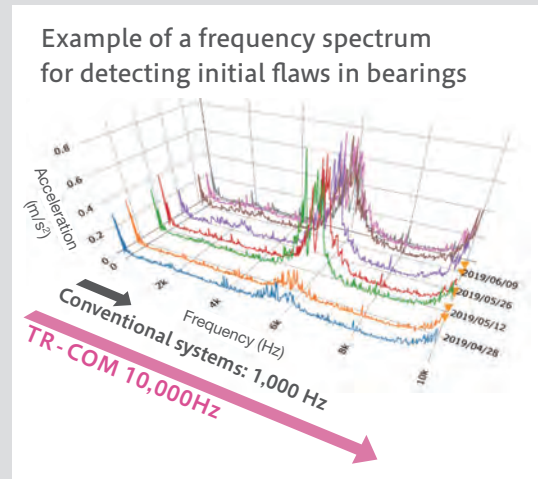
Capable of acquiring data from multiple units from a distance of around 20 meters



Strengths of TR-COM

Measurement of vibration frequencies at up to 10,000 Hz

General status monitoring has a frequency spectrum of up to about 1,000 Hz. However, potential signs of machine failure are latent in the high-frequency spectrum above 1,000 Hz. Utilizing TR-COM, it is possible to measure up to 10,000 Hz, which allows for early detection of potential signs of machine failure and prevention of sudden failures while extending the machine's lifespan.

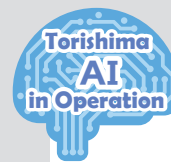


Accumulate maintenance knowledge through Torishima AI

The vibration frequency spectrum (FFT) is stored in a chronological series to visualize changes in the state of the machine in the form of changes in the pattern. Torishima's unique method of detecting abnormalities allows for detailed analysis that is difficult with conventional threshold management. Understanding each machine's frequency spectrum characteristics allows us to speculate on the causes of abnormalities and **accumulate maintenance knowledge**.

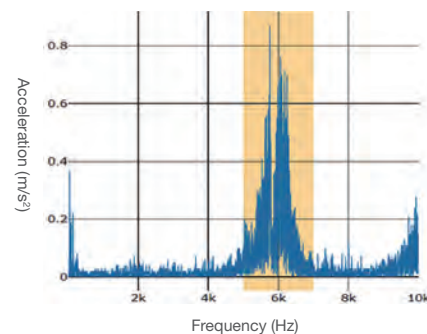
[Example of abnormality cause (for pumps)]

Low flow rate operation, misalignment, cavitation, impeller unbalance, initial bearing damage, bearing creep, etc.



Torishima has patented this unique abnormality diagnosis method.

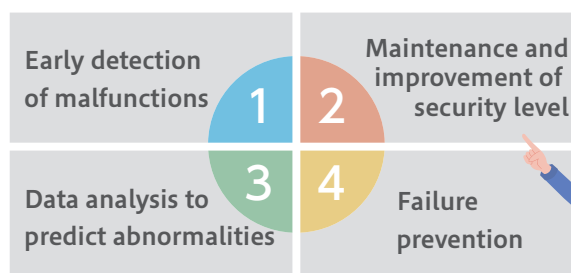
(Abnormality detection device and method for diagnosing abnormalities in vibrating machines)



Recommended by the Ministry of Economy, Trade and Industry's Smart Security Technology initiative

Amid the increasing prevalence of DX initiatives, the Ministry of Economy, Trade and Industry is promoting Smart Security to address various issues in the industrial security field, such as aging facilities, aging human resources, and the declining ability to pass down technical skills and knowledge. TR-COM has been recognized and listed as an effective technology in the Smart Security Technology Catalog (Electrical Security).

Four highly regarded TR-COM features





Maintenance of boiler feed pumps at Torishima's factory

Torishima supplies **the best solutions** to ensure efficient use of pump equipment.

Torishima is constantly evolving to provide the best solutions to customers, even in aftermarket fields. To ensure long-term and efficient use of pump equipment, we provide optimal solutions for every situation from a diverse range of services—including periodic maintenance and diagnostics, and maintenance at Torishima's factory—that can restore and confirm pump performance through detailed inspections and performance tests.



Maintenance and inspection (monitoring of machine conditions)



On-site maintenance of pumps



On-site maintenance of pumps



Maintenance of pumps at Torishima's factory



3D scanning of pump casing



Internal examination of pumps with endoscope camera



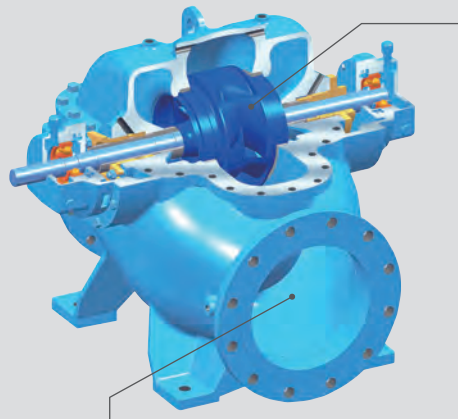
Torishima's unique service system



REDU (Re-Engineering and Design Up) is Torishima's unique service system.

Through this system, we offer optimal solutions for every case, from re-examining pump equipment specifications, optimizing materials, and extending service life to restoring or replacing aging or damaged parts.

REDU example with a double-suction volute pump



Impeller upgrade (material optimization, life extension)

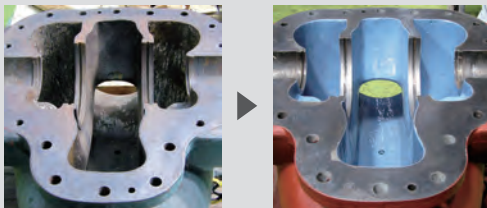


Before

3D scanning (ATOS) to capture precise 3D geometric features

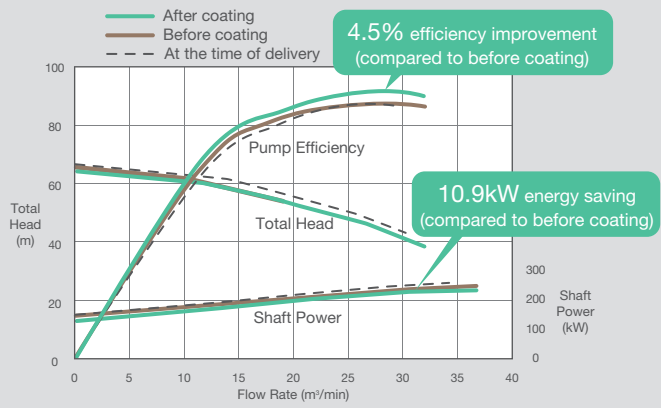
After

Inner coating of the casing (restores/improves pump performance)

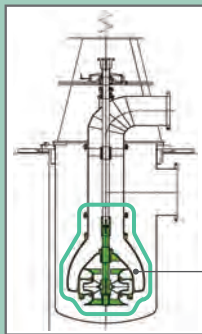


Before

After



REDU example with a vertical-shaft volute pump



Before



After

Replacing hydraulic parts (improves pump performance)

Torishima is also involved in the field of **renewable energy** — an essential aspect of achieving a carbon-neutral society.

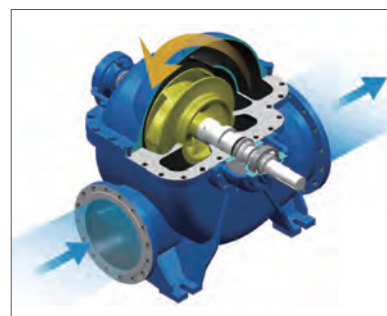
As the issues of global environmental conservation and energy reduction become increasingly pressing, Torishima is engaged in mini and micro-hydro generation and wind power generation to contribute to the health of the planet.

In the field of mini and micro-hydro generation, we leverage our strengths as a pump manufacturer to provide highly efficient reverse-rotated pump turbines.

In the field of wind power generation, we are working to improve the operating rate of wind turbines by establishing a system to support their operation, maintenance, and inspection through EOS Engineering & Service Co., Ltd., which specializes in maintenance of wind power generation facilities.



Reverse-rotated pump turbines



Structure of reverse-rotated pump turbines



Vertical-shaft reverse-rotated pump turbines



Genkai Wind Energy Development, Genkai Town, Saga Prefecture (1,500 kW × 6 units)



Blade maintenance



Nacelle maintenance

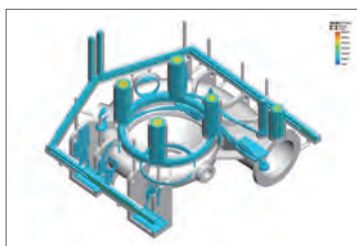
Torishima maintains an integrated and efficient production system from casting to machining, assembly, testing, and coating.

The Torishima Group's main factory, which primarily manufactures large, medium, and high-pressure pumps, is equipped with state-of-the-art technology to carry out sophisticated, diversified, and labor-saving operations to efficiently produce high-quality products. An integrated production process from casting to machining, assembly, performance testing, and coating has been implemented. To ensure that our customers' needs are delivered accurately and promptly to the production site, we have also established an environment that directly connects key departments such as sales, design, service, R&D, and procurement.



Casting Process

Torishima ranks as one of the leading pump manufacturers in Japan, with its own in-house foundry shop. Leveraging our many years of experience and the latest casting simulation technology, we manufacture high-quality cast products to meet the needs of our customers as they become larger and more diverse with time.



Casting solidification analysis simulation



Mold assembly



Melting and discharging of iron with electric furnace



Casting operation

- Production capacity
 - Maximum casting capacity: 21.5 tons
 - Maximum flask size: 4,000 mm × 4,000 mm
- Melting furnaces
 - 5-ton low-frequency furnace × 3
 - 1-ton high-frequency furnace × 1
- Main manufacturing materials
 - Gray cast iron
 - Spheroidal graphite cast iron
 - Austenitic cast iron
 - High-chromium cast iron
 - Stainless steel casting

Machining and Welding Process

Torishima's main plant is organized into four divisions: large- and medium-sized part processing, small-part processing, shaft processing, and welding, so we can meet any demand. We ensure high quality with micron-level precision that we achieve through the extensive experience of our skilled engineers and state-of-the-art processing technology and equipment.



Large-size boring machine



Five-sided processing machine



Vertical NC processing machine



Shaft turning



Submerged welding machine

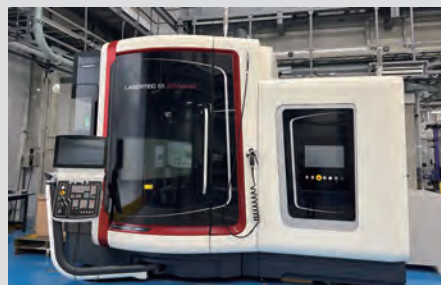
Processing plant equipped with state-of-the-art machinery and equipment

This state-of-the-art processing facility (Workshop No. 6) is integrated into the Head Office building and is primarily dedicated to the manufacture of high-pressure, high-speed pump rotors that are the hearts of pumps. Automating the delivery of parts to machines and the unloading of finished processed products helps to increase production speed while reducing labor requirements. Additionally, the facility is fully air-conditioned to improve the quality of manufactured products and the work environment for employees.



Installed new additive manufacturing* (AM) equipment

Torishima has introduced additive manufacturing (AM) equipment, a high-profile manufacturing process that is expected to revolutionize the manufacturing industry. Conventional manufacturing requires two separate processes, molding (or casting) and removal, which increases fabrication lead time and limits the feasibility of 3D designs. With AM equipment, addition (metal layering: 3D printing) and subtraction (machining: 3D-CAM) can be performed simultaneously, which allows for manufacturing of complex 3D shapes, ultra-short turnaround times, and ultra-smooth surfaces.



* Additive manufacturing is a processing method that combines materials to create modeled objects based on 3D model data. In many cases, models are built up in layers instead of using removal and shaping processes.

Pump Assembly Process

Pumps are primarily composed of casing, rotor, bearings, and shaft seal. In the assembly process, these components are combined to form a pump. Dedicated assembly lines are equipped based on the size and type of pump, such as small, large, high-pressure, and specialized pumps, which enhances production efficiency.



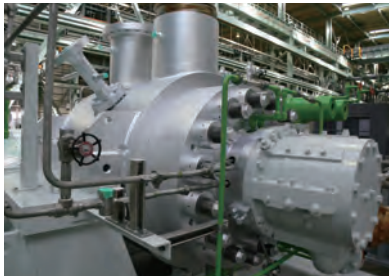
Assembly of large vertical pump



Assembly of large horizontal pump



Assembly of high-pressure ring-section pump



Assembly of high-pressure barrel casing pump



Assembly of specialized pump



Assembly of medium-sized pump

Consistent attention to quality throughout the entire process guarantees the Torishima brand.

Torishima has established a consistent quality control system throughout the manufacturing process, from design to procurement, manufacturing, testing, and on-site installation and commissioning, to ensure that all our customers receive high-quality products.

Beginning with material inspections and extending to various sizes and types ranging from 25 to 3,000 mm in diameter, our testing facilities thoroughly inspect products to ensure they meet customer specifications and conform to Torishima's quality criteria. While strictly adhering to our own high standards, we also demand the same level of strictness from our suppliers of parts and materials to ensure that we consistently supply high-grade products that are safe and reliable.



Performance test of boiler feed pump



Performance test of large vertical pump



Dimensional inspection of high-pressure pump



3D shape evaluation of impeller using ATOS

Torishima works continuously to be a company that contributes to a better future for the global environment, society, and people's wellbeing.

The Torishima Group has defined a Mission and Vision underlying our Corporate Philosophy, which serves as the cornerstone of our corporate operations. Together with all stakeholders, we endeavor to develop through sound and transparent management as well as business operations that are in harmony with society and the environment. We will fulfill our social responsibility by working to achieve the Sustainable Development Goals (SDGs).

Addressing social issues through business

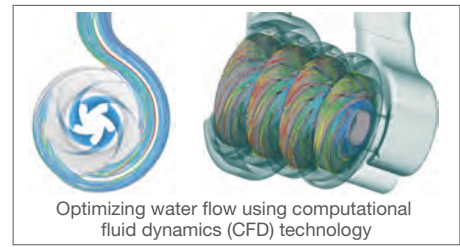
Torishima is committed to the preservation of the global environment and the creation of safe and secure living environments. To this end, we are promoting energy conservation and disaster prevention/mitigation technologies through pump products, promoting DX through smart maintenance, reducing environmental impact throughout the supply chain, and converting energy used in factories and offices to renewable energy sources.



Supplying pumps with submersible motors (Disaster prevention and mitigation)



Smart maintenance using IoT (Promotion of DX)



Optimizing water flow using computational fluid dynamics (CFD) technology

Thorough improvement of pump efficiency (Energy conservation)

Energy consumption reduced by 41% at Head Office & Works building

All purchased electricity derives from renewable energy sources

(Reduction of environmental impact)



Investment in wind power generation (Reduction of environmental impact)



Forest conservation activities such as tree planting and mowing (Environmental conservation)

Contribution to local communities

Torishima continues to engage in various initiatives such as educational and cultural projects, environmental preservation, and employee volunteer activities to contribute to local communities.



Participating in public events (Relations with local communities)



Plant tours for local citizens (Relations with local communities)



Pump classes at elementary schools (Educational support for the next generation)

Building trust among society

Trust from society is earned through corporate initiatives guided by social demands, such as compliance with laws and regulations, fair competition, maintenance and improvement of product quality, appropriate information disclosure, assurance of information security, and development of crisis management systems. Torishima is committed to maintaining its business operations in line with its Ethical Standards and Compliance Code of Conduct, while strengthening its governance and management foundation to ensure its management operations are highly trusted by society.



Respect for human rights

Torishima is devoted to respecting the human rights of all stakeholders, regardless of age, gender, nationality, social position, or any personal attributes. We strive to create a work environment that is rewarding, safe, and healthy for the diverse employees of the Group.



Actively recruiting foreign employees
(Diversity)



Osaka Prefecture Support Company
for the Challenged
(Employment of the challenged)



Improving of work environment
(Work style reform)



Certification by Ministry of
Health, Labour and Welfare
(Child-rearing support)



Birdland, an in-house childcare center
(Child-rearing support)



Mental health training seminar
(Health management)

Human resource development

As people are the source of corporate sustainability, the growth of each employee is the foundation for the future of the Torishima Group. To develop their capabilities, we provide various training and educational support, including ESG training to raise awareness of compliance, and encourage self-development. We also strive to maximize employee vitality by establishing a fair and transparent personnel system to motivate employees while enabling them to demonstrate their abilities to the fullest.



Various technical training programs
(Technological education support)



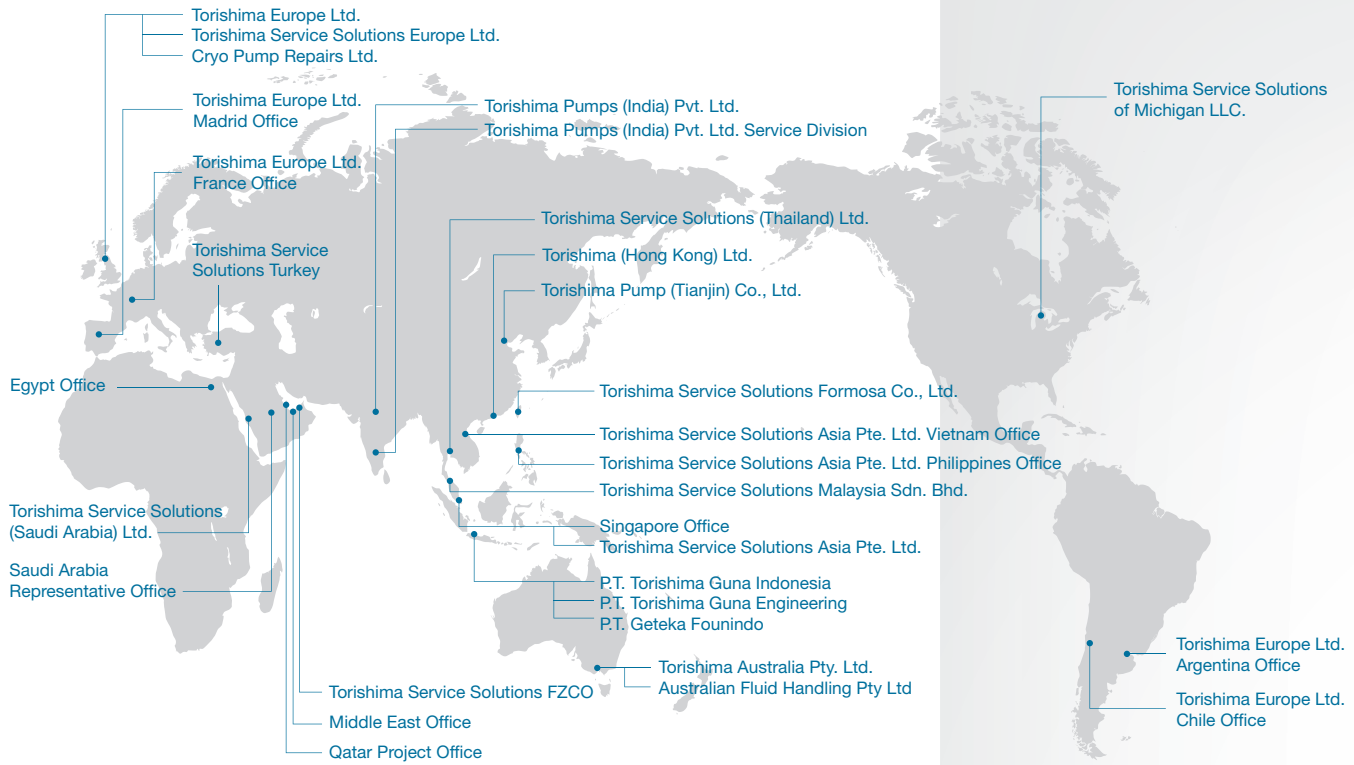
Overseas on-site training
(Improvement of employee motivation)



English conversation training
(Educational support)

Global Network

(as of August 2023)



Domestic Network

(as of August 2023)



Company Name: Torishima Pump Mfg. Co., Ltd.

Founded: August 1, 1919

Head Office: 1-1-8 Miyata-cho, Takatsuki-shi, Osaka 569-8660, Japan

Capital: 1,593 million yen

Website: <https://www.torishima.co.jp/en>

