SHIHEN TECHNICAL Corporation
http://www.shihen.co.jp/

PIONEERING NEW TECHNOLOGIES:
Shihen Technical Corporation plays a role in fulfilling the social mission of ensuring a stable power supply, and makes a continuous contribution for the development of industry and comfortable lives.

After its establishment in 1946, Shihen Technical Corporation started the production of pole transformers as the only transformer manufacturer in Shikoku. Since then, the company has been contributing to and serving society by playing a role in supplying power with an established 70-year history as a company.

Shihen Technical Corporation is now pursuing the possibilities of new creativity and services based on five business domains, including electric power equipment such as transformers and distribution boards, assistance in the stable supply of electric power, electronic equipment to support customers with unique inverter technologies, electric water heaters to contribute to comfortable lives, and high-precision dies to realize advanced pressing. The company has been responding to the needs of customers and gaining strong trust and popularity from customers with these technologies.

The environment surrounding companies has been rapidly changing in the 21st century, such as exacerbating environmental problems, innovation of information and communication technologies, and the globalization of corporate activities. In addition, the concept of CSR (corporate social responsibility) is attracting attention in recent years, and society expects companies to act accordingly.

The administrative policy of Shihen Technical Corporation is to strive to further polish technologies under the company policy of serving through creation and to build permanent and strong trust with stakeholders in the spirit of cooperation and harmony connected with “respect, affection, and reliance.” This policy is similar to the CSR activities that the company is now working on and embedded in the long history and tradition of the company.

Shihen Technical Corporation is also committed to thorough compliance and striving to reduce its environmental load by effectively operating an environmental management system and introducing energy-efficient products that satisfy the need for energy conservation.

With the technologies and expertise that the company has developed so far, the company is aiming to establish a new Shihen brand. All the executives and employees are working together in earnest to respond to expectations. We appreciate your continuous support and advice.

Tadashi Kojima
President of Shihen Technical Corporation

創造奉仕
Serving through creation
Shihen Technical Corporation serves society with creativity and ventures into the path of true prosperity and endless happiness through this service.

敬・愛・信
Respect, Affection, and Reliance
The company cultivates relationships connected by respect, affection, and reliance to work together with society and grow and develop with local communities.

The company quickly responds to changes in the business environment and implements global business while constantly suggesting the best solutions using various applied technologies based on technologies for the stable supply of power.
Since 1946

The shipment of the first product in 1946 A pole transformer burned in the war was repaired.
Shihen Technical Corporation is working on five business domains based on “technologies to ensure stable power supply” that the company has accumulated in its history.

Used for converting and controlling electricity at substations, utility poles, and factories

- Distributes, controls, and protects electricity at substations, factories, and offices
- Built-in power supply supports stable operation of office appliances, LED lights, and industrial machinery

We produce new “Shihen Value” while effectively using technologies that the company now has.

Shihen Technical Corporation is also producing dies which are essential tool of manufacturing and metal processing using the dies.

Delivers hot water to any places including at home, stores, and offices

- Electric water heater
- Large type heat pump water heater
- Natural refrigerant heat pump water heaters (ECO)
- Heat pump water heaters with two connected tanks

Switchgear, Control panels
- Outdoor 22 kV closed switchgear
- Digital controlled switchgear
- Substation monitoring LAN system
- Pole-mounted transformer
- Digital controlled monitoring control system
- Top runner oil-immersed transformer
- Mobile substation
- Transformer for power distribution substation

Precision dies
- High-speed terminal dies
- Automated machinery, hydraulic pressing machine
- Single dies
- Pressed product
- Resin mold (processing sample)
Provides high quality electric energy in a stable supply using transformers and reactors

The integrated production system covering from the design and production to the installation of cubicles and distribution boards supports the development of the industry.

![66kV class oil-immersed transformer](image1)

![66kV distribution substation (Shikoku Electric Power)](image2)

![Digital control and protection panel](image3)

**Technologies of transformers and reactors**

**[Standard customized design and technology for top-runner]**
- Large-capacity oil-immersed transformers, mold transformers, and type-H dry transformers have the same level of efficiency as top-runner transformers.
- We can design transformers with the highest efficiency for the expected equivalent load of transformers that our clients use.

**[Technologies to design transformers for thyristors and inverters]**
- We design and produce thyristor transformers such as bridge connection and double star connection as the power supply for rectifiers.
- We also have technologies to design and manufacture output transformers for multiplex inverters for reducing high-frequency wave interference and transformers for IGBT converters of large variable-speed systems.

![Forced-oil water-cooled transformer for thyristor](image4)

**[33kV insulation technology]**
- We can design and produce substation equipment used for 33kV extra-high tension circuit.

**[LAN-type monitoring and control system for distribution substation]**
- We realize smaller space using fewer wires by integrating the distribution substation monitoring and control system within LAN.
- We improve the efficiency of operation and maintenance using network communication and software technologies.

**[Reduced size of distribution substation]**
- We enable the installation of a distribution substation (one bank) within the premise of a transmission tower (about 260 m²) connected to 66kV distribution lines using compact transformers and cubicles as well as aluminum case type control panel.

![Installation of transformer](image5)

![Repair of switchgear](image6)

![66kV transmission tower](image7)

![A substation within the premise of a transmission tower](image8)

**[Support system]**

**[Support system for transformers and switchgear]**
- We quickly respond to problems to ensure a stable supply of electricity.
We support our customers with a variety of inverter technologies.

[DC stabilizing power supply]
- We can design and produce power supplies for various purposes. We provide optimal design and manufacturing for electric circuits and transformers.
- This product is designed with energy conservation design to reduce power consumption during standby.
- We have acquired safety certificates from countries around the world to respond to global needs.

[Power supply for LED lighting]
- We enable reduced cost and smaller size with advanced designs created by fusing the DC stabilizing power supply technologies and electric ballast technologies.
- We have acquired safety certificates of many countries for highly reliable and safe designs (protection from overload, overcurrent, and overheating).

[Electronic ballasts for fluorescent lamps]
- We can design and produce various types of inverters to respond to the needs of our customers.
- We realize continuous dimming which does not require a dimmer.

[Inverter application technology]
We realize high conversion efficiency using the latest circuit topology (method).

[Technology of microcomputer application system]
- We use advanced system design technologies to optimize circuit and software designs.
- Production can be selected for different purposes ranging from cost-effective microcomputers to performance-oriented high-power devices.

We produce advanced pressing dies for which high precision is required using solid technologies and the skills of expert workers.

■ Progressive press dies technology
The progressive dies have extra value that improves processing speed, reduces power consumption in post-processing, and improves yields.

■ Two-material parallel-feed composite dies
This dies enables integrated processing of cutting, shifting, inserting, and punching by injecting two different types of materials at different feed speeds. Only mechanical structure is necessary for this processing, which enables the processing speed of 700 strokes/minute.

■ Dies with simultaneous injection of one coil and forming of two-roll terminals
This dies enables both improved yield and high productivity by simultaneously forming two lines of dies facing each other using one material.

■ Multi-process integrated dies
This is an dies is an integration of multiple processes such as parallel feed, progressive processing, bonding, and punching using two different types of materials (with a material feed system).
Electric water heater technology

The electrically heated, safe, clean, and economic hot water provides comfortable lives.

Clean and efficient integrated production line

We are conducting high-efficient production using the knowhow based on long-years of experience to ensure stable production of low price and high quality products which satisfy our customers.

Design and production of customized products

Downstairs water heating system
This system provides hot water to downstairs by improving the strength of the tanks rather than improving air valves that have the risk of damage when a water heater supplies hot water to downstairs.

Warming system
“Warming system to circulate hot water inside pipes,” which is an applied version of water warmer for facilities with long hot water pipes such as hotels.

Connected system combined with household heat pump water heaters
“Heat pump water heaters with two connected tanks” produced by connecting two household heat pump water heaters to supply large amount of hot water at low cost for facilities such as barbers which use more hot water than households.

Industrial large-capacity direct and parallel water heating system
Multiple electric water heaters are directly connected to enable water heating for many hours for large facilities such as hospitals. Parallel connection of water heaters enables instantaneous water heating for a large volume of water for facilities such as public baths.

Pursuit of high quality
We are developing products with high efficiency and long service lives using our knowhow and repeated testing using latest facilities to enable high efficiency and durability under various environmental conditions such as ambient temperature and water quality.

Challenge for new technologies and new fields

Cultivation of new businesses
We are constantly cultivating new businesses to achieve sustainable growth and development and to contribute to stakeholders and local communities.

Technological development

High power microwave generator
This is a microwave generator produced by integrating inverter, high-speed digital control, and digital network technologies used on vacuum plasma processes in semiconductor factories.

Full digital controlled DC power supply
This power supply is controlled full-digitally, and can be connected in parallel up to ten units (up to 100 kW).

Quality is the most important factor for gaining the trust of customers.

Specific and proper quality management is required for transformers, switchgears, power supplies, water heaters, and dies. Professionals who are experts in products and quality management are closely observing the production to confidently deliver high quality products to customers.

Registration of ISO9001

- Transformer
- Switchgear
- Electric water heater
- Industrial power supply
- Power supply for lighting
- Precision dies
Environmental conservation activities

We are actively working on environmental conservation activities.

Environmental management

Shihen Technical Corporation aims to enable sustainable economic development and become a company that helps local communities coexist with the environment by providing products which benefit both people and nature under the company policy of “Serving through creation.” A part of our Environmental management includes green procurement which prioritizes in purchasing products, parts, materials, and packaging materials with low environmental loads.

Examples of Environmentally friendly product

- **Power supply for LED lighting**
  Improving the efficiency to convert the household AC power supply to DC power supply assists further improvement of the energy efficiency of LED lighting.

- **Heat pump water heaters**
  We are developing high-efficient heat pump water heaters.

- **Top-runner transformer**
  We have been broadening the sales of products which company with top-runner secondary standard starting in 2014.

- **Silicone oil-immersed transformer**
  This transformer uses silicone oil as insulation oil. The silicone oil has self-extinguishing property and dissolves in water into harmless substances in case it leaks into the ground.

Registration of ISO14001

Compliance

**Code of conduct**

- We prioritize in customer satisfaction and provide products and services which are beneficial to the society while fully paying attention to the safety with sincere attitudes.
- We aim to improve corporate value for the long-term and in continuous ways to engage in healthy and transparent business activities.

**Specific activities concerning compliance**

- We established “compliance committee” in the company to promote compliance activities and investigate concerns submitted to the compliance consultation section.
- We regularly provide compliance education to all employees to make sure that they have correct understanding and recognition concerning compliance. We also ensure that compliance is strictly followed.

CSR (corporate social responsibility) activity

Companies need to actively fulfill social responsibilities rather than only ensuring compliance to coexist with local communities and the environment for continuous development.

Shihen Technical Corporation is implementing CSR activities based on the CSR activity policies of Shikoku Electric Power Co., Inc. and Daihen Corporation as a member of the Shikoku Electric Power Group and Daihen Group.

We respect all laws and regulations relevant to our business activities and fulfill social responsibilities.
We have constructed factories near the head office for efficient operation.

**Subsidies**

- **Shikoku Kosho Co., Ltd.**
  - 1-82 Sakuragawa 2-chome, Tadotsu-cho, Nakatado-gun, Kagawa 764-0012
  - Nature of business: switchgear (design and assembly) ● mechanical assembly ● design and assembly of FA devices

- **TADOTSU UNSOU CORPORATION**
  - 1-97 Sakuragawa 2-chome, Tadotsu-cho, Nakatado-gun, Kagawa 764-0002
  - TEL: +81-877-33-4001 FAX: +81-877-33-3629
  - Nature of business: transportation of vehicles in general cargos ● collection and transportation of industrial wastes ● delivery, installation, and dismantling of transformers and switchgear

**Affiliated companies**

- **Minami Electric Co., Ltd.**
  - 15 Nishiminatomachi, Tadotsu-cho, Nakatado-gun, Kagawa 764-0017
  - TEL: +81-877-33-4224 FAX: +81-877-32-7286
  - Nature of business: production of transformer cases and sheet metal processing ● Product painting

- **Yoshino Denki kogyo Corporation**
  - 1-74 Sakuragawa 2-chome, Tadotsu-cho, Nakatado-gun, Kagawa 764-0012
  - Nature of business: winding and assembly of mid-to-small-size transformers ● maintenance of electric equipment including installation and adjustments

- **Sone Kougyo Corporation**
  - 769 Hijdai, Toyonaka-cho, Mitoyo-shi, Kagawa 769-1501
  - Nature of business: press and assembly

- **Tadotsu Chubo tekikosho Corporation**
  - 5-79 Kitagamo 3-chome, Tadotsu-cho, Nakatado-gun, Kagawa 764-0022
  - TEL: +81-877-33-2244 FAX: +81-877-33-4282
  - Nature of business: sheet metal processing and assembly ● pressing and assembly

- **Shikoku Tosho Corporation**
  - 1-40 Sakuragawa 2-chome, Tadotsu-cho, Nakatado-gun, Kagawa 764-0012
  - TEL.: +81-877-32-3746
  - Nature of business: painting of transformers and switchgear
Overseas plants are based on advanced quality and cost effectiveness and venturing into the giant Asian market.

**SHIHEN (THAILAND) Co., Ltd.**

527 Moo2, Klongjirg, Bang Pa-in, Ayutthaya, 13160, Tailand
TEL +66-35-221-377  FAX +66-35-221-376
Website: http://www.shihen.co.th/

Production category:
- Electronic ballasts
- DC stabilized power supply
- Power supply for LED lighting
- Small transformer

Introduction of the company:
Since the company opened in 1996 as the first overseas plant of Shihen Technical Corporation, this company has accumulated production technologies for the long term and supplying high quality products in a stable supply.

**SHIHEN VIETNAM Co., Ltd.**

Lot 2-T57, Tien Son IZ., Tu Son District, Bac Ninh Province, Vietnam
TEL +84-241-3734-246  FAX +84-241-3734-249

Production category:
- Electronic ballasts
- DC stabilized power supply
- Power supply for LED lighting

Introduction of the company:
Since the establishment in 2007, Shihen Vietnam has been implementing production activities as the second overseas plant of Shihen Technical Corporation. Employees have advanced skills and are producing low cost and high quality products in a stable supply.

**SHIHEN Precision Mold Trade (Dongguan) Co., Ltd.**

Room 610, Mingdian Building, No. 118 Changzhong Road, Chang’an Town, Dongguan City, Guangdong Province, China
TEL +86-769-8702-9980  FAX +86-769-8258-5935

Nature of business:
- Sales of precision dies
- Outsourcing production of local Chinese manufacturers and providing technical instructions

Introduction of the company:
This company is located in areas with many automobile manufacturers in China. A precision die sales base was established in Guangdong Province in South China where the largest market of dies is located. The operation started in August 2013.
Profile

Overview of the company

Company name: Shihen Technical Corporation
Address of the head office: 1-97 Sakuragawa 2-chome, Tadotsu-cho, Nakatado-gun, Kagawa
Establishment: August 31, 1946
Nature of business: Main operations include the production, repair, sales/purchase, and import/export of transformers, other electric machinery and equipment, mechanical equipment in general as well as design and contracting of relevant constructions.
Capital fund: 318.5 million yen
End of fiscal year: End of March (once a year)
Banks: Chugoku Bank, The Hyakujushi Bank, MUFG Bank, Mizuho Bank and The Iyo Bank
Number of employees: 474 (as of July 1, 2020)
Lot space: 115,474 m²
Building: 49,487 m²

Permission for specified construction business

Permission number: #3641, permitted by the governor of Kagawa (Special-28)
Date of the permission: November 28, 2018 (effective for five years)
Type of construction business: Electric work

Registration, etc.

Electric construction work (general purpose, electric construction for in-house uses): Governor of Kagawa registration #13010
Type I cargo transportation work: Shikoku Transportation Bureau Shikoku Transportation Cargo #343
Electric heating device manufacturing work: Director of Shikoku Economy and Industry Bureau
AC electric machinery and equipment production work: Director of Shikoku Economy and Industry Bureau

Board members

Tadashi Kojima, President
Minoru Fukuda, Executive director
Shuji Ohira, Executive director
Hiroshi Takai, Director
Katsuhiro Fujiwara, Director
Ichiro Tokai, Director

Susumu Yamaji, Director
Norio Takahashi, Director
Kazuo Kamo, Director
Isao Kobayashi, Director
Masana Morioka, Auditor
Hiroshi Kawahara, Auditor

Ratio of sales by equipment

- Transformer: 42.1%
- Electric water heater: 6.2%
- AC electric machinery and equipment production work: 17.6%
- Precision dies and pressed parts: 9.2%
- Power supply for industrial purposes and lighting: 24.9%

Total: 15.1 billion yen (FY 2019)