Japan Aims to Regain Past Glory Amid Global Shifts

While the "Made in Japan" brand has long been highly reputed worldwide, the country's manufacturers have faced competition in recent decades from regional competitors offering cheaper, mass-produced alternatives to Nippon's high-quality products. Current geopolitical circumstances, however, have boded well for Japan, with supply chain disruptions prompting manufacturers to diversify their supply sources. Renowned for their reliability and high quality, Japanese manufacturers, also buoyed by a weakened yen, are primed to seize the moment.

"International customers now have better access to highly functional, advanced Japanese technologies and products at more reasonable costs, presenting more opportunities for Japanese companies," says Shunji Idei, president of Tayca Corporation.

Niche technology, like that developed by Otowa Electric, has indeed given Japan a competitive edge. "There are supply chain issues, and we consider the 'Made-in-Japan' brand as our weapon," says Osamu Yoshida, chairman of Otowa Electric, the leading developer of lightning protection equipment.

Quality Coating Solutions for a Host of Industries

A company focused on environmental responsibility, Fluorocoat is a specialist manufacturer of high-performance fluoropolymer-coating technology, offering a whole host of innovative, premium-quality products trusted by clients hailing from a variety of business sectors.

Mitsuhiro Suwabe, President, Tokyo Silicone Co., Ltd.

Fluoro Coat 70th Anniversary

www.t-silicone.co.jp

Founded in 2005 as the successor to the surface-modification department at its parent company Tokyo Silicone, the Japanese firm Fluorocoat offers world-class expertise in fluoropolymer-coating technology.

By continuing the advances that the seven-decade-old Tokyo Silicone achieved throughout the second half of the 20th century, Fluorocoat stands as a prime example of one of the strengths of Japanese manufacturing.

"Many of Japan's companies have long histories of up to 100 or even 200 years," explains Tokyo Silicone President Mitsuhiro Suwabe. "This enables them to focus on the development of one thing for a long period of time."

Boasting a portfolio of high-performance products that offer a variety of useful properties – such as resistance to heat, chemicals, sticking and wear – Fluorocoat has become a trusted partner to clients from a range of industries.

"These industries include food processing, automotive and semiconductor parts, as well as the aerospace, defense and medical sectors," Mr. Suwabe says. "We're not reliant on just one sector – that works in our favor."

Fluorocoat's flagship coating technologies include the Adlon L-R Series, which is chiefly used in the automotive industry. Its excellent peelability means it can be applied to the surface of automobile parts – primarily taillights – without

Coating image of Adlon L-R Series

conflicting with the component's mold during production.

Meanwhile, the company's Tosical S coating excels on surfaces prone to sticking. "One of the first clients to adopt this product was a rubber tire maker," Mr. Suwabe notes. "Before processing, rubber is very sticky."

Another notable Fluorocoat product is its Nanocoat technology, which responds to customers' growing demand for thinner coatings. "Our ultimate goal is to use a single-molecule-layer coating," Mr. Suwabe says.

Alongside its commitment to miniaturization, Fluorocoat is dedicated to contributing to a greener future. The firm avoids using contaminants like perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), and is developing a system to recycle and reuse materials that go into its products.

"Unless we do this, it'll be difficult to survive," Mr. Suwabe declares.

HOJUN Supplies Organic Bentonite for Cosmetics and Other Industries

Founded 110 years ago, HOJUN leverages Japanese precision and innovation to meet growing global demands in cosmetics and technology.

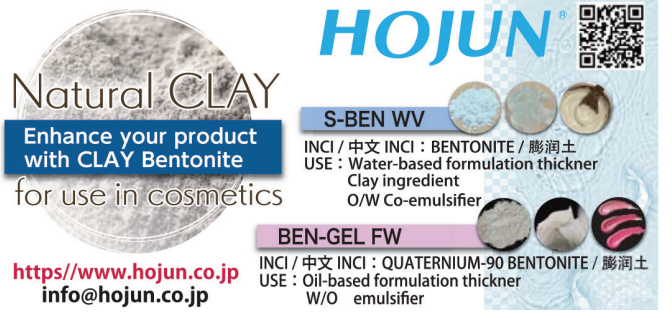
Amidst a shifting global economic landscape, HOJUN, a former mining company that is now a leading manufacturer in the specialized field of bentonite products, is strategically positioned to capitalize on the evolving needs of various industries worldwide.

"Japan's reputation for reliability and advanced technology, coupled with the yen's depreciation, offers us a unique advantage," explains Motozo Nakamura, president of HOJUN. Originally mining industrial bentonite, HOJUN has diversified into producing purified and organic bentonite, which are now gaining traction in high-value sectors such as cosmetics and semiconductors.

Mr. Nakamura highlights that geopolitical tensions and supply chain diversification are prompting companies to reconsider their sourcing strategies, benefitting Japanese suppliers like HOJUN. "Many Japanese users have become wary of Chinese suppliers, and with the yen's current value, we are an attractive option for fulfilling domestic orders," he adds.

Focusing on the future, HOJUN is intensifying efforts in research and development, particularly in the organic purified bentonite segment. "We are now looking towards Southeast Asia and have started seeing an increased interest from the cosmetics industry. Our unique R&D process allows us to offer specialized products, like our cosmetic-grade bentonite, which can sell for double the price," Mr. Nakamura states.

In response to global standards and increasing international demand, especially from the cosmetics sector, HOJUN remains dedicated to maintaining high-quality production. "We manage every critical process to ensure our products meet international cosmetic raw material standards," Mr. Nakamura concludes.



Mini light on float

LUMICA: Illuminating Innovation

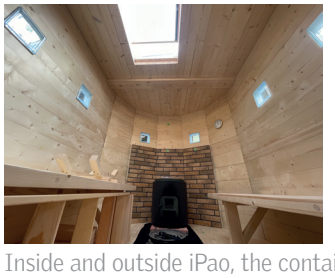
LUMICA has redefined the use of chemiluminescence, expanding into novel products and markets while emphasizing sustainability and innovative technology in a rapidly evolving industry.

> "Photoimmunotherapy is expected to be used in the eradication of cancer. I hope that researchers will apply chemiluminescence as a light source for this purpose."
>
> **Shiro Harada**, Chairman, LUMICA

Founded over 50 years ago with a vision to revolutionize night fishing, Japanese manufacturing company LUMICA has carved out a niche in the realm of chemiluminescence. This technology, which involves a chemical reaction emitting cold light without heat, first found practical applications in the 1970s. From mini light sticks on fishing floats to novelty items like glowing earrings and bracelets, LUMICA's journey has been marked by both innovation and resilience.

Shiro Harada, chairman of LUMICA, reflects on the firm's inception: "We started our company with the goal of bringing a night fishing revolution to the world of fishing by making the top of fishing floats glow with chemiluminescence. That small light traveled along the coastline and spread around the world in an instant."

Despite facing significant challenges in the early '90s with the expiration of key patents and the rise of LED technology, LUMICA adapted swiftly. The company developed light sticks that glowed more intensely than LEDs, albeit briefly, which rejuvenated the market for chemiluminescent products. Aligning with the U.N. Sustainable Development Goals (SDGs), LUMICA also pioneered recycled glow sticks, reaffirming its market presence as the leader in the Japanese chemiluminescence industry.



Inside and outside iPao, the container loadable house

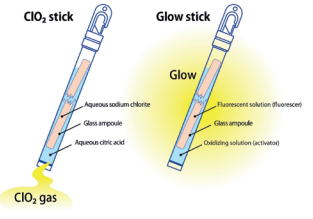
However, the application of LUMICA's core technology extends beyond novelty items. Amidst the COVID-19 pandemic, the company innovated with a chlorine dioxide (ClO_2) gas generation kit. This product transitioned from chemiluminescent light sticks to a new utility, significantly boosting sales and sustaining the company's production line. "Instead of emitting chemiluminescent light from a stick, we developed a stick that slowly releases ClO_2 gas, saving the production line at our factory," Mr. Harada explains.

Radio-controlled LED glow ball

Beyond its traditional offerings, LUMICA is exploring groundbreaking applications of chemiluminescence in medicine and disaster preparedness.

The evolution of the chemiluminescent market is likely to see significant advancements. "Photoimmunotherapy is expected to be used in the eradication of cancer, a long-cherished wish of mankind. I hope that researchers will apply chemiluminescence as a light source for this purpose," Mr. Harada envisions.

Addressing the broader macroeconomic landscape, Mr. Harada discusses the strategic advantages Japanese companies like LUMICA possess, particularly in terms of reliability, advanced technology and quality control. With policies like the U.S. Inflation Reduction Act encouraging diversification of supply chains, Japanese firms are well-positioned to expand their global market shares. "Japan still has a competitive edge in R&D, design, and quality control...we believe it is necessary to join hands with overseas partners to meet price competition effectively," he remarks.



ClO_2 and glow sticks

As LUMICA continues to innovate and expand its product range, it remains committed to exploring new markets and applications for chemiluminescence. Mr. Harada adds: "Whether through enhancing global healthcare or innovating within the entertainment and emergency sectors, I hope that future entrepreneurs will create profitable businesses while keeping focus on public benefit."

LUMICA

www.lumicaglobal.com

DOWA Supports Auto Industry's Green Shift

Kiyoshi Yamada, President, DOWA Thermotech Co., Ltd.

With its cutting-edge heat treatment and industrial furnace solutions, DOWA Thermotech's innovative technologies are spearheading carbon-neutral processes in the automotive industry.

In the battle for a sustainable future, making industrial processes environmentally friendly through new technology is high on the list of priorities. One of the companies pushing this improvement through its heat treatment technologies and industrial furnaces is Japan's DOWA Thermotech.

Founded in 1958, DOWA Thermotech's main customers are in the rapidly-changing automotive industry. As carmakers seek lightweight parts for EVs, DOWA Thermotech's ability to work with the heat treatment of metals such as aluminum is increasing in demand, and its next-generation Z-TKM furnace represents a leap in the sustainability of the automotive industry.

DOWA

www.dowa.co.jp/thermo-tech/en

The Z-TKM is a carburizing and quenching furnace that can be used with hydrogen burners, heat treatment applications for automobiles, construction machinery, and industrial robots. It also allows the utilization of digital technologies for the reduction of maintenance costs. As the company's president, Kiyoshi Yamada, explains "We felt a huge responsibility to convert the energy source and also the operating method to achieve carbon neutrality. The conventional furnace requires a process gas, but we have developed the vacuum-carburizing furnace."

DOWA Thermotech's move towards carbon neutrality has also seen it develop a proprietary, low-temperature gas nitrocarburizing method, which is a nitriding process that can cause less distortion and less pollution. This method does not emit CO_2 and also does not require the use of methane (CH_4) processed gas, which is harmful to the environment. DOWA Thermotech has overcome the issue of the manufactured components being brittle by collaborating with an automotive parts manufacturer to create its HARDERNITE technology, and its more general EV material technology DNTN is set for launch in 2026.

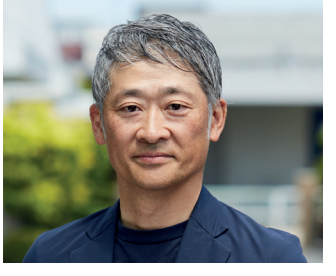
This partnership is indicative of DOWA Thermotech's spirit of collaboration. Indeed, Mr. Yamada reveals the company has partnerships in China, India and Italy and is seeking to strengthen its presence in the European and American markets. The company is always on the lookout for like-minded local partners to work on maintenance of its overseas factories or manage its regional sales channels.

As the industry shifts to EVs, DOWA Thermotech is well positioned to provide both the heat treatment technology and environmentally friendly furnaces of the future for automotive companies around the world.

Z-TKM furnace

Japan's Innovative Leader in Niche Stainless Steel Containers and Vessels

Through its various products and customized designs, MONOVATE caters its services to a wide range of industries, including chemical and pharmaceutical.



> "We aim to contribute to the innovation of customers by being a monozukuri-oriented company."
>
> **Masanori Oyama**, President, MONOVATE

Japanese firms find themselves at a crossroads of opportunity and transformation, and the current macroeconomic environment presents a unique advantage for them to expand their global market shares. The depreciation of the Japanese yen, coupled with Japan's renowned reliability and advanced technology, has positioned the nation as an increasingly cost-effective option for international partners.

"Our products are big and bulky like tanks and there weren't many overseas companies that considered us economically viable to purchase our products," says Masanori Oyama, president of MONOVATE. "However, now, with the depreciation of the yen, we are receiving many more inquiries from overseas."

Central to MONOVATE's success is its commitment to customization and flexibility in catering to diverse industries. With a staggering 70 to 80 percent of sales derived from custom-made products, the company thrives on continual innovation and adaptation to meet evolving customer needs.

"Our major products are custom-made on a daily basis," Mr. Oyama explains. "Realizing the vision of providing optimal solutions to our customers determines our quality."

As MONOVATE navigates various sectors, the pharmaceutical and chemical industries emerge as focal points for future growth. While the pharmaceutical sector remains a cornerstone of its business, the expansive potential of the chemical industry underscores a strategic shift towards niche applications and high-mix/low-volume production.

"The growth potential is not that big in the pharmaceutical industry," the president says. "The chemical industry, though, has a huge market size with plenty of room for expansion."

MONOVATE's unique electrode polishing technology, tailored to meet the stringent regulatory standards of both the pharmaceutical and semiconductor industries, positions the company as a trusted partner in ensuring product safety and efficacy.

Looking ahead, the company remains poised for international collaborations—including with a German powder transportation solution company—and expansion into emerging technologies such as 3D printing and metal printing. With a steadfast commitment to innovation and customer-centric solutions, Mr. Oyama envisions a future where MONOVATE continues to drive the evolution of its customers and industries alike.

MONOVATE

www.monovate.net

Navigating New Horizons: Tayca's Tech Innovation

Amidst evolving global markets and demographic shifts, Tayca Corporation harnesses cutting-edge Japanese technology to stay at the forefront, leading in innovation and adapting to changing economic conditions.

"Our advanced technology exceeds customer needs, ensuring the best product fit."

(left) **Shunji Idei**, President, Tayca Corp.
(right) **Masahiko Tauchi**, President, TFT Corp.

In an era where economic and demographic changes reshape industries, Tayca Corporation and TFT Corporation stand out through innovative resilience and technological prowess. Shunji Idei and Masahiko Tauchi, presidents of these leading entities in the piezoelectric and chemical sectors, share insights on effectively navigating these transformations.

The landscape for Japanese manufacturers has been dramatically altered by global policies and economic factors, including the U.S. Inflation Reduction Act and the COVID-19 pandemic. These challenges have compelled companies to diversify supply chains and continuously innovate. Mr. Idei highlights the dual impact of these shifts, saying: "The JPY has been weaker since the COVID-19 pandemic. During that period, supply chain disruptions were also a big issue. These two factors have significantly impacted Japanese businesses and the economy. However, companies producing high-functionality products using advanced Japanese technologies have expanded their global customer bases."

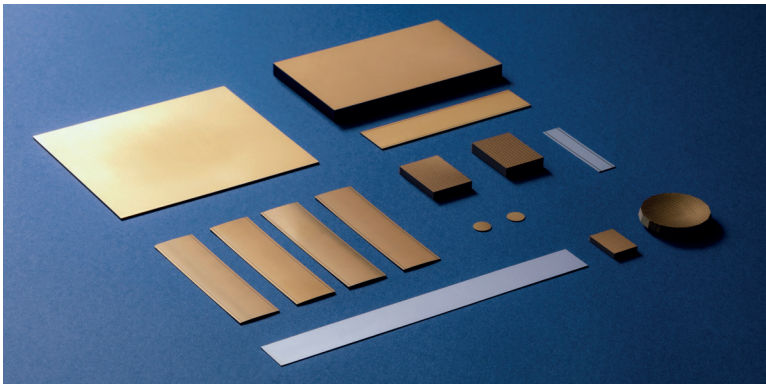
Japanese firms are known for their commitment to quality and innovation, traits Mr. Idei and Mr. Tauchi see as crucial for maintaining a competitive edge. "Our main strength is our technology," Mr. Tauchi emphasizes, noting the development of products that meet customer needs perfectly.

A critical area of advancement for Tayca is the development and production of sunscreen and piezoelectric materials, essential for supporting comfortable human living. Tayca's innovative efforts underscore its leadership in global manufacturing excellence through both products.

Regarding piezoelectricity, despite vulnerability to environmental factors, Tayca has innovated to enhance the durability and performance of these materials. "We have applied our own ideas and know-how to the handling conditions of our products and have succeeded in overcoming the challenges of corrosion and fragility," explains Mr. Tauchi.

Facing a demographic shift with a declining and aging population, Tayca has implemented strategic human resource measures. "We are extending employment terms and focusing on developing our human resources to support knowledge transfer and innovation," shares Mr. Idei. As Tayca approaches its 110th anniversary, its commitment to leveraging technological strengths ensures its leadership in the Japanese and global markets, focusing on advancing piezoelectric and chemical technologies to meet dynamic industry needs.

The global market for piezoelectric devices is expected to grow significantly, driven by advancements in medical technology and the increasing demand for precision equipment. Tayca's innovation in piezoelectric ceramics positions it well to capitalize on these trends. In addition, Tayca is focusing on



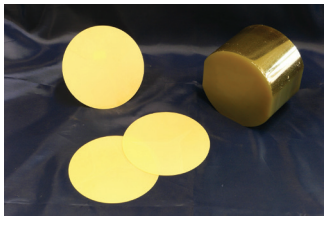
newly developing conductive polymers for the electricity-related market that can withstand higher levels of electric stress and environmental conditions. This conductive polymer is also expected to expand its application range into new sectors such as renewable energy and automotive systems, where both materials can be used for energy harvesting and sensors.

The integration of digital technologies into manufacturing, known as Industry 4.0, presents another opportunity for Tayca. The company is exploring the use of artificial intelligence and machine learning to optimize production processes and predict maintenance needs. This technological integration extends to their supply chain management, where real-time data collection and analysis can lead to more efficient operations and reduced downtime.

Moreover, Tayca is committed to sustainability, a crucial aspect as global industries face increased environmental regulations. The company's research into environmentally friendly materials and processes is not only a response to regulatory demands but also aligns with a broader market shift towards sustainable practices. For instance, Tayca's development of lead-free piezoelectric materials is particularly noteworthy, as it addresses the environmental concerns associated with lead-based products.

Community engagement and corporate social responsibility initiatives are also integral to Tayca's strategic approach. By supporting local communities and investing in education, the company aims to not only enhance its corporate image but also foster a supportive environment for technology and innovation.

As the market continues to evolve, Tayca's proactive strategies in technology development, sustainability and community engagement are set to keep the company at the forefront of the industry. Looking forward, the Japanese firm is positioning itself as not just a leader in technology but as a model for corporate responsibility and innovation.



As Tayca Corporation approaches its 110th anniversary, its commitment to leveraging technological strengths and embracing strategic innovations continues to position it as a leader in both the Japanese and global markets. With a focus on advancing piezoelectric and chemical technologies to meet the dynamic needs of its industries, Tayca is setting new standards in the manufacturing sector, ensuring its place at the cutting edge of technological advancement.

TAYCA CORPORATION
TFT CORPORATION
www.tayca.co.jp/tft/english

Atect: Shaping Tomorrow's Innovations

As a dynamic Japanese company excelling in semiconductor materials, sanitation equipment and pioneering power injection molding technology, Atect is committed to innovation and sustainable growth.

> "We shouldn't just be a market player; we should be an incubator that develops businesses."
>
> **Makoto Ohnishi**, President, Atect Corp.

In the 55 years since it was first established, manufacturing company Atect Corp. has produced buttons for clothes, made objects from plastic molds and even worked on the development of submarines.

Today, however, it is best known for its work around three main pillars: the semiconductor industry, the manufacturing of sanitation testing equipment and, more recently, the power injection molding (PIM) business.

Company president Makoto Ohnishi explains the boom in the sanitation testing equipment industry: "As society grows, people start to seek more diversity in products and foods, meaning there is more variety, a high-mix volume, which involves more inspections. The population in Japan may be declining, but we still want to make our lives richer. More types of food therefore come in low volume, presenting opportunities for increased testing and for suppliers to diversify their services to ensure customer satisfaction."

Atect's PIM business, meanwhile, uses a new manufacturing method that combines metal, fine ceramic powder and organic binders to produce sintered products with exceptional precision and processing resistance. This, according to Mr. Ohnishi, differentiates Atect from other competitors, and means the company can expect "big league growth" in the sector. A commitment to research and development and the Japanese concept of *kaizen*, or continuous improvement, will also prove instrumental here.

Looking to the future, Mr. Ohnishi hopes to expand the company both internationally and at home, with new hubs appearing in Hokkaido, Kyushu and Kumamoto.

Equally important, and moving beyond merely increasing sales, is employee wellbeing.

Sanitation testing products

"I believe," Mr. Ohnishi states, "that a company that doesn't seek the happiness of its employees should not exist. To make this happen, I want to find a business to support this philosophy. In five years, PIM will no longer be a new business, so I want to find the seed of the next new business. Being an incubator that develops businesses will elevate our profile in the years to come."

atect

www.atect.co.jp

DIXCEL: Redefining the Brake Parts Industry

With its pioneering performance and innovation in aftermarket auto parts, DIXCEL's president, Eisaku Onda, unveils the company's strategy for success.

Brake discs and pads

In the realm of aftermarket automobile parts, where competition is fierce and innovation is key, Japanese firm DIXCEL stands out as an example of success. Established in 2003, DIXCEL has swiftly risen to prominence in the automotive manufacturing sector, specializing in brake parts that epitomize performance, durability, and innovation.

Eisaku Onda, president of DIXCEL, elucidates the company's unique approach, stating: "In the case of automobile parts, if we deal with only high-end products we can do business. However, I don't think this is sustainable because, at some point in the future, we will hit a wall."

Eisaku Onda, President, DIXCEL Co., Ltd.

DIXCEL ADVANCED BRAKE TECHNOLOGY

www.dixcel.co.jp/en

DIXCEL's strategy involves catering to a wide range of car models, from entry-level to high-end users, akin to Toyota's business model. This approach ensures broader market coverage and sustained growth, distinguishing DIXCEL in an industry where specialization is key.

One of DIXCEL's groundbreaking innovations is the M-Type brake pad, engineered to address the perennial issue of brake dust. Mr. Onda explains: "We solved this problem by changing the mix of materials to maximize one of the two friction mechanisms, adherent friction, the other being abrasive friction." The result is an ultra-low-dust brake pad that not only enhances braking performance but also prolongs the lifespan of brake discs, offering customers both performance and cost-effectiveness.

Despite being a relatively new entrant, DIXCEL's commitment to research and development has been pivotal in its success. Mr. Onda emphasizes: "We have cultivated this new trend utilizing our R&D abilities," citing the development of the M-Type brake pad as a testament to the company's innovative capabilities.

Dynamometer testing

DIXCEL head office

Engineering Comfort, Efficiency and Growth

A firm focused on the challenge of environmental sustainability, Suiden specializes in expertly-crafted industrial fans, providing clients with innovative ventilation solutions that enhance companies' working environments.

"We're not just making fans; we're creating solutions that redefine comfort and performance, one innovation at a time."

Yuji Kawai, President, Suiden Co., Ltd.

Suiden

www.suiden.com

A specialist manufacturer of industrial fans, Suiden crafts innovative, premium-quality products that help companies to create the ideal working environment.

Customers can also count on the Japanese firm as a supplier of expertly-made technology such as spot coolers, dust collectors, floor sweepers and vacuum cleaners – but its world-class fans are, without a doubt, its flagship product.

"Their main purpose is to enhance work efficiency," says President Yuji Kawai, who adds: "As a company, our slogan is to give shape to comfortability."

Although aimed at industrial clients, Suiden's fans meet a host of other needs, too. A prime example of this versatility is the L-Series, a portable exhaust fan.

"Its main target was factories," Mr. Kawai explains. "However, it's also used in places like school gyms. Air conditioners don't really work in such a large facility, so it's more efficient to exhaust the heat by a large volume of airflow."

The L-Series also reflects Suiden's drive to foster a greener future, as the fan's newest version consumes 44.7 percent less power than its predecessor. "Going forward, we're focusing on zero-carbon or energy-saving types of solutions," Mr. Kawai says.

Another priority at Suiden is to increase overseas sales, as Japanese population decline leads to a shrinking domestic market. "My target is Africa, because they have a lot of issues with heat," Mr. Kawai reveals. "We also see potential in India."

Come 2027, when Suiden turns 80, Mr. Kawai hopes such efforts will have helped the company to reach its ambitious goal for revenue growth.

"To achieve this, we're working hard on development and are dedicated to diligent manufacturing."

Otowa Electric: The Lightning Experts

With 78 years of research in lightning protection equipment and testing facilities that accurately reproduce lightning, Otowa Electric is able to offer best-in-class solutions for when lightning strikes.

"We are a very unique company. We can meet any special need, including high and low voltage."

Osamu Yoshida, Chairman, Otowa Electric Industry Co.

Electricity is indispensable in all aspects of daily life, and many state-of-the-art technologies, including semiconductors, are vulnerable to lightning surges. Therefore, essentially, all products that use electricity need lightning protection devices such as surge protection devices (SPDs).

"As the use of electricity increases, so does the demand for SPDs. The mainstay of our business is to meet these special needs," says Osamu Yoshida, chairman of Otowa Electric Co.

OTOWA's uniform

Otowa Electric is a leader in this niche industry and has been in business for over 78 years. While its passion for research has contributed greatly to the development of lightning protection technology, years of cooperation with academic institutions and partner companies in Japan has also been an important factor in the company's success.

Otowa Electric is a unique company that works with both low and high voltage. And the company's competitive advantage stems from the wide range of engineers who are experts in their fields.

Specializing in test equipment that can reproduce lightning, Otowa Electric's research facilities are even more unique. "No other facility in the world can reproduce lightning strikes as accurately as ours," Mr. Yoshida says. "We have a history of over 78 years. And this is a good example of the expertise that we have accumulated over our 78-year history."

OTOWA museum

While Otowa Electric aims to use its technological prowess to expand into new businesses and overseas, the company is also working to establish strong ties with stakeholders. Mr. Yoshida adds: "We value human relations, not only domestically but also overseas, as evidenced by our activities in Rwanda, where we do not seek profit. And this has led to deep relationships and success for our company and the outside world."

Activities in Rwanda

OTOWA

www.otowadenki.com