

How Japan's electronics dominance shifted to niche B2B fields

While Japan has been surpassed by regional competitors in recent decades when it comes to mass-produced, end-consumer (B2C) electronics, Nippon manufacturers today lead the way in the B2B sphere, producing parts, materials and equipment essential to the manufacture of semiconductors and other electronic components. Often working in high-tech, niche areas, these companies are harnessing Japan's manufacturing, engineering and innovative prowess to deliver high-quality solutions for the latest technologies, such as smart devices, AI, VR/AR, IoT, electric vehicles (EVs) and high-speed telecommunications.

"While Japan continues to be extraordinarily capable and dominates a broad set of materials, equipment, and components that allow the global technology industry to run, its participation in the industry has migrated from a B2C model to a B2B model," explains Scott Callon, Chairman and CEO of Japan Display Inc. (JDI), a company that is developing groundbreaking and unique display technologies such as eLEAP, the next generation of OLED screens. "We've chosen to do things that are hard rather than easy," adds the JDI CEO. "Our engineers are generating first-in-the-world, first-in-history breakthroughs. This is excruciatingly hard. But that is part of our strategy, to do things that are really hard, because then you leave your competitors behind and create unique value for customers by building things that no one else can build."

Creating unique and niche technologies is also the competitive strength of Nissei Electric, a manufacturer of insulation, transmission, and wave motion technology. "We develop, manufacture and sell wires, cables and tubes made mainly from fluoroplastics and silicone rubber, as well as optical components, mainly fiber optics. In addition to the characteristics of our materials, our unique processing methods enable us to meet the demands of a wide range of industries," says Nissei's president Hidehiko Kirino. "Over time, we have expanded into diverse industries such as OA (office automation), telecommunications and factory automation, – making full use of the various properties of our materials and our unique processing technology – and are aiming to further expand into robotics, medical equipment, semiconductor manufacturing equipment, mobility and other fields."

Japan once held the top position in the manufacture of finished semiconductors, but now its competitive edge can be found in the field of semiconductor manufacturing equipment, including equipment used in essential cleaning processes. "Japanese companies have large shares, globally, in terms of semiconductor cleaning equipment," stresses Masayuki Bouno, President of J.E.T., which aims to expand its operations in the fast-growing U.S. semiconductor market. "We have signed an agreement with Samsung Electronics to deliver our cleaning

equipment to their new plant in Taylor, Texas. With that as the starting point, we would like to start expanding into North America so that we can find new customers there."

Meanwhile, Shibuya Corporation – a manufacturer of bottling and packaging systems for a range of industries – supplies products used in the backend of semiconductor manufacturing. "The industry is dramatically changing right now," states company president Hidetoshi Shibuya. "New needs are emerging, with the prevalence of large-scale data centers, AI and new mobility solutions including EVs. We are developing nano-level mounting technologies that are required especially for large-scale chips used for AI and large-scale data centers."

Japanese companies engaged in the manufacture of high-performance materials are also playing their part in the development of the latest electronics technologies, with Toshiko Sakane, President and CEO of I.S.T Corporation, giving an example of what her company is doing in this regard. "One of our collaboration projects involves our low color polyimide film, TORMED," she reveals. "We've been working with print circuit manufacturers in Japan. Through this collaboration, we have successfully created a clear flexible print circuit, which has been used in augmented reality (AR) headsets widely used for virtual training, including by the U.S. Army."

KOA supporting electric and autonomous vehicles with resistors

With more than 80 years of history, KOA is one of the world's leading manufacturers of resistors, which are essential components for electronic circuits.



Ina Valley

KOA was founded by Kazuto Mukaiyama in 1940. Two years later, Kazuto set up a factory in his hometown in the Ina Valley of Nagano Prefecture. He then started his journey toward the ideal of supporting farmers in his hometown by combining agriculture and industry, which later was named "Farming and Manufacturing in Unison". Having overcome some difficulties, the Ina Valley, surrounded by the mountains of the Japanese Alps, is still KOA's main production base. KOA, which has become one of the world's top manufacturers of resistors, supplies customers around the world with a variety of resistors with high precision and high reliability. The spirit "Farming and Manufacturing in Unison" and the management policy



"Trust" have become a foundation of a new industry in the region and are still being passed on as the DNA of the company.

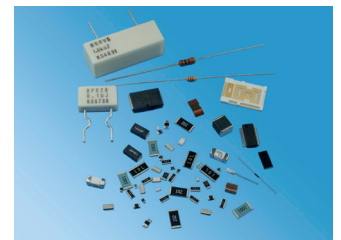
KOA products are mostly used for automobiles, which account for about 40% of sales. Resistors are in great demand worldwide due to the long-term trend of electrification of automobiles. According to the company's research, the number of resistors installed in a typical EV is approximately 1.6 times that of a gasoline-engine vehicle, and the number is expected to increase further

"The largest use of KOA's products is for automobiles, accounting for more than 40% of total sales."

Tadao Hanagata,
President, KOA Corp.

as autonomous driving and other technologies continue to develop in the future. What is required for electronic components in this application is high precision and high reliability that never causes errors. Since the early 2000s, KOA has been making a company-wide effort to improve quality with the aim of making a full-scale entry into the in-vehicle segment. As a result, the company is now recognized by customers in areas that require high precision and reliability. KOA will continue this activity to further strengthen its relationship of trust with customers and business partners.

In addition, as a leading company, KOA is persuading international



KOA products

authorities to update a standard related to thermal design in an effort to make electronic components safer. "So far, a technical report 'IEC TR 63091, Study for the derating curve of surface mount fixed resistors – Derating curves based on terminal part temperature' has been issued by International Electromechanical Commission in anticipation of standard renewal," says president Tadao Hanagata. "By applying the forthcoming standard to thermal design, surface mount components can be used more safely without overheating."

KOA
www.koaglobal.com

Nissei Electric looking to be the number one company in niche markets

As a comprehensive manufacturer engaged in insulation, transmission and wave motion, Nissei Electric aims to address niche market requirements from clients operating in a wide range of industries.



"We want to be a good partner for our customers, working together with them to develop the requirements they want to realize."

Hidehiko Kirino, President, Nissei Electric Co., Ltd.

The Hamamatsu region in which Nissei Electric operates has a mild climate where cotton cultivation flourished in the past, allowing many textile industries to grow there. Nissei Electric's roots can be traced back to the manufacture of braided cotton laces and this braiding technology remains a fundamental technology still evolving today.

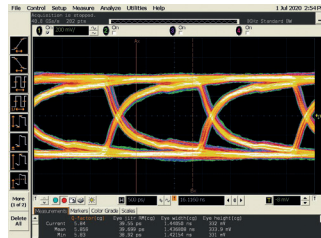


Shoelaces are the roots of Nissei Electric

Car manufacturers Toyota and Suzuki were the predecessors of the loom manufacturers. And manufacturers in the region have since expanded into the fields of 'insulation' using silicone rubber for automobiles, industrial machinery and household appliances, 'transmission' using

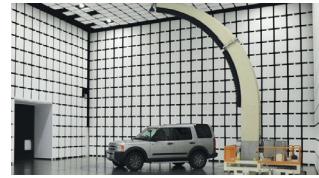
fluoropolymers for communications, mobile equipment and medical applications, and 'wave motion' using optical fibers for semiconductor equipment and sensing. Japanese manufacturers have also been responsible for the innovative development of printers, MFPs and other office automation equipment, especially in roll products used in the fusing process, offering uniquely developed solutions.

For its part, Nissei Electric offers unique products to a diverse range of industries, combining three high-performance materials with fine processing technology.



GigaEx for movable durability and high-speed signal transmission

GigaEx is a generic term for high-speed signal transmission products, comprising conventional metal cables, optical fibers and antenna products for wireless communications. Another strength of the Japanese firm is its ability to handle hybrid products combining metal and optical transmission. Particularly in the fields of FA, robotics and semiconductors, Nissei Electric focuses on the development of next-generation high-speed interface products with functions such as bending, twisting, and noise resistance, as well as flexibility and thin diameter – with solutions such as the AOC optical interface, which is optimized for high-speed transmission at speeds in excess of 10 Gbps.



Gain measurement of large workpieces through a 10m method anechoic chamber

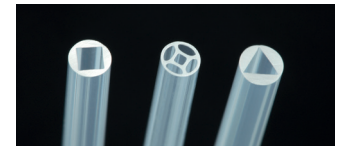
Antenna products are assemblies of coaxial cables optimized for customers' antennas. Nissei Electric provides integrated support from development to mass production of high-frequency antennas for WAN, Bluetooth, LPWA, LTE, 5G (Sub6), UWB, GNSS, etc. High-performance antennas are designed using advanced simulation technology, and gain measurement of large workpieces such as automobiles can also be handled. The company can provide cable-connected antennas with optimum performance, taking into account space saving, multi-band compatibility, and isolation, etc.



Cables with added flexibility, bending resistance and sterilization properties

In the area of ultra-fine diameters, custom cables using wires and coaxial cables with AWG36-48 conductors contribute to the ultra-compactness and lightness of equipment, and provide assemblies with excellent flexibility and bending resistance. The company's unique microfabrication process can also be used for direct connection to FPC boards, as well as in sterilization-compatible specifi-

cations using specially formulated silicone rubber for the jacket. A wide variety of assembly proposals are available, including parallel shapes, round shapes and hybrids of the two, as well as devices that maintain flexibility and binding methods that emphasize appearance, in order to deliver products that meet the required mechanisms and functions. Nissei Electric continues to develop applications for medical diagnostic equipment devices, medical treatment devices and remote cameras.



Unique precision extrusion technologies for special applications

Tube fabricated products are customized products that combine Nissei Electric's fundamental technologies. Liner tubes are formed using its own precision extrusion technology. This liner tube can be covered with a metal braid exterior and a jacket of different hardness, and can also be made in a variety of structures to suit different needs, such as tapered or flared tube ends, multi-layered hybrid products and stretched products. Using microfabrication technology, the company offers a variety of tubing products for use in semiconductor manufacturing equipment, scientific instruments and medical devices.

As president Hidehiko Kirino says: "We at Nissei Electric will continue to provide new functions by refining our unique processing technology based on three high-performance materials to meet the needs of the market and customers."

Wafer cleaning innovation that exponentially reduces cleaning time

Since its foundation, J.E.T. has continued to provide tailored and innovative solutions to the world's leading chip makers.



"We would like to attract good talent to this company so that we can grow as a team, not just with a few core individuals, and continue making new developments."

Masayuki Bouno,
President, J.E.T. Co., Ltd.

The building blocks of all electronics, semiconductors continue to advance at a rapid pace, constantly enabling the development of new technologies. And as semiconductors continue to evolve and become increasingly smaller, the machinery and equipment used to produce them evolves in tandem.

A trusted and reputed industry player, J.E.T. designs, manufactures, sells and maintains cleaning equipment used in the pre-process of semiconductor manufacturing. Supporting the production of high-performing semiconductors with its cutting-

edge technology, J.E.T. strives to keep pace with technological evolution while constantly improving the quality of its cleaning equipment. With subsidiaries in South Korea, China and Taiwan, J.E.T.'s business continues to grow, with sales expanding from 1.7 billion yen in 2009 to 23.1 billion yen in 2022, representing average annual growth of 21.7%.

Since the production of semiconductors is highly precise, the cleaning process is quite important. As such, 30 to 40% of the whole process for manufacturing semiconductors is related to cleaning. Regarding the cleaning equipment types, there are two: batch type, where 25 to 50 wafers are cleaned at a time, and single-wafer type, where a single wafer is cleaned at a time. J.E.T. excels at both methods and offers equipment that can be finely customized according to the customer's required specifications, something which sets the company apart from its competitors.

"Regarding the characteristics of our batch-type cleaning equipment, while our competitor's equipment is quite standardized, our equipment is easily customizable, enabling clients to change the configuration and the number of cleaning chambers," explains J.E.T. president Masayuki Bouno. "Also, for the single wafer type cleaning equipment, we are able to raise the temperature of the chemical solutions on the wafer with an infrared lamp so that we can improve the throughput, and also reduce the amount of chemical solution used."

A concrete example of this is the HT-300 single-wafer cleaning equipment used for high-temperature processing. Aside from supplying high-temperature chemicals, the HT-300 maintains the temperature by heating the back of the wafer with a halo-

gen lamp. In addition, the wafer treatment surface is turned upside down and chemicals are sprayed and supplied to the treated surface. As a result of these measures, the processing time can be reduced to 30 seconds (compared to the 5 minutes needed by competitor's equipment), while the amount of chemicals used to process a single wafer can be reduced to 150 ml (95% less than the 3,000ml used by competitor's equipment).

While many major players in the industry are engaged in standardized manufacturing equipment for semiconductors directed at the global market, J.E.T., as a smaller-sized company, has targeted clients in South Korea, China and Taiwan, meeting customer's various demands with its customizable solutions. The company, however, does intend to expand its global reach, with plans afoot to enter the U.S. market, where the semiconductor industry is growing again at a fast pace after years of decline, in 2024.

"We have signed an agreement with Samsung Electronics to deliver our equipment to their new plant in Taylor, Texas. With that as the starting point, we would like to start expanding into North America so that we can find new customers there," says Mr. Bouno. In order to enhance J.E.T.'s exposure in the North American market, the company will be among the exhibitors at SEMICON West 2023, which takes place in San Francisco on July 11-13.

Among J.E.T.'s core strengths is its long-standing relationship with Samsung, with whom it has maintained a strong relationship since the days of its predecessor, SES, having supplied more than 400 units of cleaning equipment to the Korean electronics giant over that time.



Single wafer type HTS-300

"In particular, they give us an order of the equipment for some processes which are quite intricate," explains Mr. Bouno. "They give the order only to us for that particular equipment because once we receive a concern or problem from Samsung, we work together with them to come up with the best solution, and we deliver that solution to them. This is the kind of relationship we have maintained with them over the past 25 years."

Looking to the future, and as it prepares for an IPO on the Tokyo Stock Exchange Standard Market after having successfully listed on the Tokyo Stock Exchange Pro Market in 2021, J.E.T. aims to secure more partners on the U.S. market while also attracting top global talent to the company. "Since we are aiming at an IPO, we would like to continue to grow as a company for stakeholders as well," adds Mr. Bouno. "To that end, we would like to attract good talent to this company so that we can grow as a team, not just with a few core individuals, and continue making new developments."



Batch type BW3700

JET

<https://globaljet.jp>

eLEAP to revolutionize the global display market

Developed by JDI, eLEAP is a historical breakthrough in the world of OLED technology. In addition to its superior lifetime, brightness, and energy efficiency, eLEAP is more affordable than competing OLED displays thanks to its unique, low-cost manufacturing process.

From the earliest cathode ray tube TVs to LCD and OLED smartphones, innovations in display technology have truly been era-defining. Having retained technology leadership in the global display industry, Japan Display Inc. (JDI) is now developing game-changing GreenTech technologies that deliver better performance, lower cost, and reduced energy consumption and environmental impact.

"JDI was created via the merger of the global display technology businesses of Sony, Hitachi, and Toshiba, which brought together powerful capabilities to deliver world-class products to our customers," says the Japanese company's American Chairman and CEO, Scott Callon. "We believe the fundamental purpose of a company is social contribution. The problem with being a follower as a company is that you are not contributing anything new to the world. JDI is deeply committed to creating breakthroughs that move the world forward."

In line with this, JDI has crafted its METAGROWTH 2026 growth strategy centered on six technology sets where JDI is the Global No.1: eLEAP (Next-Gen OLED); HMO (High-Mobility Oxide); Raelclear (Transparent Interfaces); Metaverse (Ultra-High Resolution Displays); AutoTech; and New Tech, Products, & Businesses.

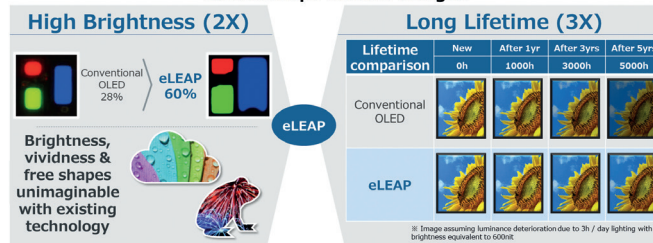
Hailed as one of the best screen technologies on the planet, the benefits of eLEAP are built into its name: environment positive; Lithography with maskless deposition; Extrême long life, low power, and high luminance; Any shape Patterning. By removing bulky metal masks from the manufacturing process, eLEAP displays deliver two times the brightness and three times the lifetime of conventional OLEDs – with lower energy consumption – across all display categories, including automobile displays, smartphones, wearables, notebooks, tablets, monitors, and TVs.



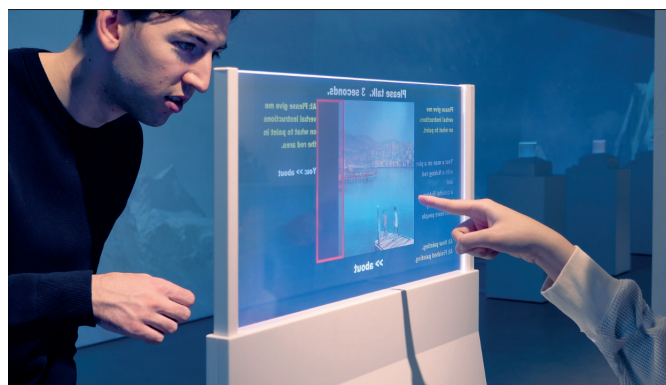
"Our mission is to create breakthrough display technologies that move the world forward."

Scott Callon,
Chairman & CEO,
Japan Display Inc.
(JDI)

2X peak brightness, 3X lifetime with brighter & clearer images & free shape flexible designs



eLEAP



Raelclear transparent display

Displays are composed of frontplane and backplane technologies. While eLEAP is a breakthrough in the frontplane, JDI has also developed groundbreaking technology in the backplane: HMO (high-mobility oxide). Backplanes use thin-film transistor technologies such as amorphous silicon and oxide. Oxide is a mature, low-cost technology that is easy to produce and has low power consumption, but it is not suitable for high-performance displays because of its low mobility. JDI has reinvented oxide

to create HMO, offering higher performance and lower cost while reducing power consumption by 40%.

Raelclear is another JDI breakthrough. It is glass-like, being the world's first transparent interface technology to offer full two-way transparency. "Raelclear can be naturally and fully part of whatever space it is in," adds Callon. "Right now, displays are walls. They should be windows. Raelclear delivers on that vision."

In AutoTech, JDI is confident that eLEAP and its heads-up

display (HUD) technology will be game changers in an era of EVs (electric vehicles). What has stopped automotive OLED display adoption is that organic diodes burn out and lose their ability to produce light over time. However, eLEAP's 3X-longer lifetime means it can meet automotive durability requirements. JDI is also the world leader in HUDs, which are set to become a standard safety feature in EVs.

When it comes to the fifth pillar of METAGROWTH 2026, the Metaverse, JDI is No. 1 globally in ultra-high resolution VR (virtual reality) displays. As Callon explains, "Users' experienced display resolution can be calculated by dividing the resolution by the lens magnification, so if it's a 10X lens and a 1200 PPI display, the experienced image is only 120 PPI to the user. This is why there is a voracious appetite to take resolution higher in the Metaverse."

The sixth pillar of JDI's strategy is further development of breakthrough technologies such as LumiFree, JDI's revolutionary GreenTech technology that allows users to freely and flexibly tailor light realtime, reducing light pollution and energy consumption.

Given its mission to move the world forward, JDI has no intention of keeping its display and lighting innovations to itself, stresses Callon, adding that JDI is working to serve as an R&D engine for the entire industry. "We have invented the world's best display technologies, but we don't have the production capacity and the capital to build every display on the planet. Partnering is the right choice. eLEAP and HMO will allow the global display industry to leverage the capabilities of the existing ecosystem and innovate explosively on top of it."



www.j-display.com/english

ORGANO: Japan's Water Treatment Engineering Company Eyes Global Expansion

A leading Japanese water treatment engineering company with 70 years of experience, Organo Corporation is leveraging advanced technologies to expand its solutions for the semiconductor, pharma, energy and environmental sectors worldwide.



"We believe that our technologies, particularly as they benefit the semiconductor industry, have advantages in the U.S. that will enable the same growth there we have seen in the Asian region."

Masayuki Yamada,
President, Organo Corporation

Organo Corporation was established during the initial flourishing of Japan's industrial sector shortly after World War II. Since then, the company has grown in tandem with Japanese industry to become a comprehensive water treatment engineering company developing purification solutions used in various fields such as semiconductors, energy, and pharmaceuticals. Key to Organo's success in recent decades was the establishment of its own integrated R&D center in 1986, which has served as the hub for its innovation for more than 35 years.

"Along with rapid economic growth in Japan after WWII, there was a huge demand for deionized water. Organo responded to this by developing technology that helped us achieve an impressive track record," says Masayuki Yamada, President of Organo Corporation. "Technology such as ion exchange resin combined with the data and know-how we have accumulated over the years has enabled us to provide a variety of water purification solutions to meet the exact needs of our customers."

These solutions include Ultra-Pure Water (UPW) systems for semiconductor manufacturing,

which help to remove impurities in the manufacturing process; condensate polishing systems for power plants, which protect steam turbines from corrosion; distillation and purification water systems for the pharmaceutical industry; decolorization, desalination and separation systems for sugar refineries; and UPW systems for laboratory and high-precision trace analysis.

In the semiconductor industry, miniaturization not only of final components but throughout the manufacturing process has created demand for a high level of purity control in order to remove microscopic impurities between the production stages. Purity control is critical to ensure semiconductor quality and performance, and Organo's UPW systems have proven invaluable in the production process for modern semiconductors.

"Not only do we provide equipment capable of stable production of UPW, but our ability to remove a small number of specific ions or extremely small particles contributes significantly to yield improvement in semiconductor manufacturing," Mr. Yamada reveals. "It's our independently developed analytical techniques that help our systems

detect impurities at concentrations lower than anything detectable by analyzers currently available in the market. By identifying water quality issues early, our customers can prevent manufacturing problems and boost their profit"

All this means that Organo is well positioned to take advantage of the U.S. semiconductor indus-

try boom thanks to major investments and the recently-passed CHIPS and Science Act, which will provide \$52.7 billion for semiconductor R&D, manufacturing, and workforce development. It has already established one foothold, an Arizona office that has provided solutions for a Taiwanese semiconductor customer, and will continue with operation and maintenance there while casting a wider net for opportunities with other semiconductor manufacturers in the U.S.

require very tight controls." A second, growth area is the overseas market for Pure Water (PW) and UPW equipment in laboratories. Research institutes, medical facilities, and industrial laboratories all require small amounts of PW or UPW, and Organo's track record in the domestic market means it already has the know-how to serve these needs abroad.

A third growth area where Organo stands to make a positive environmental impact is Organic



Next generation UPW system at R&D center

As Mr. Yamada explains: "We believe that our technologies, particularly as they benefit the semiconductor industry, have advantages in the U.S. that will enable the same growth there we saw in the Asian region."

"We also see major potential for Organo in the Indian market," he adds.

While it may require some time to accomplish, an increase in investment for the pre-processing of semiconductors will inevitably lead to a significant surge in demand for UPW. Organo also has its eye on other industries overseas in need of its technologies as it looks to continue growing its international operations.

"We are not just a strong ally to the semiconductor industry", Mr. Yamada stresses. "We are also looking at pharmaceuticals, especially the growing industry of biopharmaceuticals. Organo has extensive experience in this field in areas such as validation which

Solvent Refining Systems. "Our technology for recycling NMP (N-Methyl-2-pyrrolidone) contributes significantly to carbon neutrality," notes Mr. Yamada. "In addition, we are exploring purification technologies for organic solvents other than water." He adds that Organo's innovative technology for sewage treatment facilities also has potential in overseas markets.

After years of progress and innovation, Organo now promises to grow even more as it pursues its ambitious goals for global expansion with a laser focus on sustainability. Organo invites investors who believe in its vision and the limitless potential of its water treatment engineering technologies to join its journey.



Benchtop UPW equipment, μ series



www.organo.co.jp/english

Shibuya's technology knows no bounds

From the beverage, food and cosmetics industries, to regenerative medicine and semiconductor manufacturing, applications for Shibuya Corporation's technology continue to expand.



"Through our technologies, we want to support working toward a longer and healthier quality of life."

Hidetoshi Shibuya,
President & CEO,
SHIBUYA CORPORATION

Established in 1931, Shibuya Corporation is a leading supplier of bottling and packaging systems that are tried and trusted by clients in the beverage, food, cosmetics, semiconductor, agriculture and healthcare industries. The Japanese firm started out supplying its bottling systems to a sake brewing company and later expanded its activities in the bottling business, including the manufacture of bottle washers, fillers, cappers, labelers, case packers, palletizers, and the world's first system that could handle a wide variety of containers, from 180ml to 1800ml, on a single machine in the early 1960s.



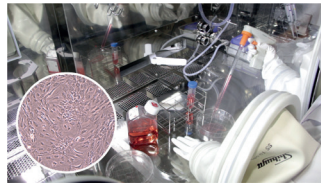
Aseptic/hazardous filling system for anti-cancer drug

With its core technology, the bottling system, forming the basis of its innovative products, Shibuya has been able to expand the applications of its products to several industries over the years, including semiconductor manufacturing and, most recently, regenerative medicine. Company president Hidetoshi Shibuya puts Shibuya's success down to three main factors: "Firstly, our serious attitude towards craftsmanship and manufacturing that always aims to support our customers



Shibuya advanced assembly plant for aseptic filling line

business prosperity; secondly, our after-sales service which supports the stable operation of equipment and systems delivered to our customers over a long period of time after initial purchase; and thirdly, our technological strength to create best-in-class products based on customer needs, supported by our long-cultivated technologies serving a wide range of industries."

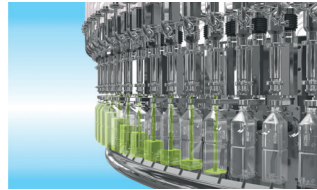


Cell processing isolator for regenerative medicine

Shibuya's 'customer-first' policy guides the company's approach to business and after-sales service. From the company's perspective, selling a machine to a customer should not be considered the end of a relationship, but rather the commencement of one that is cherished for many years to come. "Our company motto is 'Work with Joy', highlighting the importance of motivation. We always pray for our customers' prosperity. The person who makes the products imagines the customers using our products, then employs *shinken* (diligence) in *monozukuri* (manufacturing craftsmanship)," adds Mr. Shibuya. "We have a small Shinto shrine in all our offices, manufacturing, assembling and quality divisions, which allows everybody to pray for our customers' health and prosperity."

Shibuya's proprietary aseptic technology for sterilization and cleaning has been adopted in several fields, with the company having supplied more than 1,200 units of its aseptic systems to clients in the pharmaceutical, beverage and regenerative medicine industries worldwide. "Sterilization and cleanliness technology is one of our outstanding core technologies. My

vision to expand this core technology to new markets worldwide," reveals the president. "We are now making new developments with several business partners in areas such as aseptic processing, which is used for our bottling and pharmaceutical systems. Through collaborative synergies among Shibuya group companies, we have the potential to expand our business in the fields of regenerative medicine, semiconductors, food processing and pharmaceuticals."



Aseptic PET filling system for beverage and dairy products

Indeed, collaboration is important outside the group also, and Shibuya has partnered with several stakeholders, particularly on regulatory matters in the medical field, including: Dr. James Akers, an expert in microbiology and sterility and former president of the U.S. Parenteral Drug Association; Japan's Dr. Tsuguo Sasaki, an expert in sterility GMP (good manufacturing processes); and with Japan's Ministry of Health, Labour and Welfare on government regulation. Furthermore,

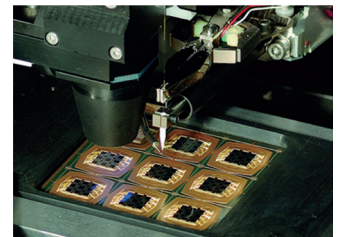


Grading & sorting system for agricultural products

the company has jointly developed a Bio 3D Printer for regenerative medicine with researchers at Saga University and is currently working on a new type of liver regeneration therapy with Yamaguchi University.

"One thing I learned from a professor in regenerative medicine is that innovation occurs when two or more fields of expertise meet and when chemistry interacts," states Mr. Shibuya. "In order to develop new technology and enter new markets, I believe that it is extremely important to collaborate with partners who have different perspectives."

For the semiconductor sector, the company's main products are utilized in mounting, bonding and wire bonding during the back-end processes. With new needs emerging in the industry, Shibuya has worked to develop nano-level mounting technologies required especially for high-performance chips used for AI and large-scale data centers. "For 50 years, the size of semiconductors has transitioned from micro to nano, so the pitch becomes very narrow and pasteless bonding is required to avoid short-circuiting. Shibuya's high-precision bonders use ultra-precise handling solder pasteless bonding, which is required these days," adds Mr. Shibuya.



High precision wire bonder for semiconductors

With overseas operations in the U.S., China and Asia currently making up 30% of sales revenues, Mr. Shibuya hopes to expand Shibuya's international presence and make further contributions to global societies through its technologies. "The beverage, regenerative, pharmaceutical, agriculture, and semiconductor industries have new ideas as humankind grows and desires a better quality of life. Through our technologies, we want to support working toward achieving a longer and healthier quality of life."

Shibuya

SHIBUYA CORPORATION

www.shibuya.co.jp

A solution-based business resolving the challenges of the semiconductor industry

Focusing on niche fields, such as highly accurate inspection equipment, Ueno Seiki helps its clients enhance their productivity rate while maintaining a high level of quality.



"We want to be the ones that are pushing the outer limits of what is possible and leading the evolution of inspection equipment."

Noboru Ueno, President, Ueno Seiki Co., Ltd.

While Japan long ago lost its dominant position in semiconductor manufacturing, the country remains a global leader when it comes to manufacturing equipment for chips and other electronic devices, thanks to solution-driven companies like Ueno Seiki.

Since 1972, Ueno Seiki has been a reputed manufacturer of visual inspection equipment for semiconductor and electronic components, holding a top share in this niche market. The company offers its



Ueno Seiki Headquarters

clients fully integrated services, including R&D, design, manufacturing and customer support, and has been named a 'Global Niche Top 100 Company' by Japan's Ministry of Trade and Industry, an accolade which is testament to its technology, services and its leading position as a solution-based business.

"We are thoroughly committed to providing a solution-based business, and we are always striving to utilize our technology and our products to resolve the challenges and problems our clients might be facing," says company president Noboru Ueno. "What we are looking to do is not necessarily to be number one in the market, rather we are looking to have the best solutions and the best technologies in certain categories. So, that is essentially where our focus lies

– not to chase profits, but rather to be the best for customers."

He adds: "An example might be the loading power control for damage-free handling or visual inspection technology that makes micro defects that are difficult to detect visible. Even from the beginning, we are looking for those niche areas and leading in those areas. I think that has been the key to our growth and we as a company have prided ourselves on our ability to provide solution-based services."

As the industry looks to create ever-more compact and thinner chips, what is important is the ability to control loading power and still provide the solid external visual inspection required. The challenge, however, is to do this at high speed while avoiding any damage to the chip. Mr. Ueno uses the analogy of an egg: "If I handle the egg and inspect it very slowly the egg should be fine, however, if I handle it very quickly the chances of damaging it increase." To address this issue, Ueno Seiki developed equipment that allows the inspection of components at speed while leaving the device completely damage free.

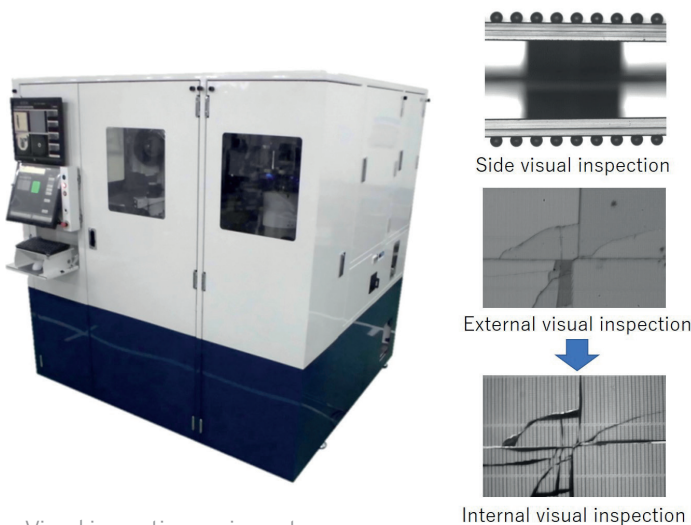
"Basically, we provide high-speed, high-precision inspection services to our clients," adds the president. "I think this is overlooked often, and at times very misunderstood. There is an importance to doing such high levels of inspection because it lowers the total cost involved. By reducing the required number of machines

you can cut your operating costs, running costs, and even energy consumption costs. It can even go to save space within the fabrication plant itself."

A case in point: last year, a leading telecommunications device company asked Ueno Seiki to supply its inspection equipment for an important device used in one of its latest product models. As a result of using this high-speed visual inspection equipment, the client was able to minimize the amount of inspection equipment needed for inspecting 1-micron level defects. "It is important to understand how expensive these devices are, and we were able to help the customer cut down on used space in the plant as well as electric power consumption and inside running costs. I think this is a fine example of what our company can offer," the president explains.

Turning to Ueno Seiki's product line-up: the company produces the LT-evo, which is designed for ultra-small devices and features a six-sided vision inspection system, laser marking ability, and a patented Z-axis power loading system; and the recently-launched upgrade, the LT-neo, which can operate at speeds of 120,000 units-per-hour (UPH), compared to the 70,000 UPH of the LT-evo. "With our product lineup, we have four major models, the LT, RS, RP and WS lines. The big differences between the four lines are the product inputs, which for RS, RP, WS are wafers and LT has some other input methods."

So what has and will continue to drive Ueno Seiki to develop best-in-class-solutions for its clients? "I think it comes down to our confidence; we truly believe that we are the top manufacturer in the field," Mr. Ueno responds. "We want to be the ones that are pushing the outer limits of what is possible and leading the evolution of inspection equipment."



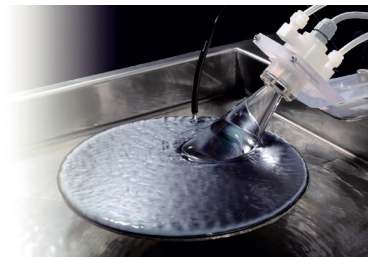
Visual inspection equipment



"Honda Electronics has always focused on developing new technologies as an R&D-oriented company."

Yosuke Honda,
CEO & President,
Honda Electronics Co., Ltd.

What do the marine industry, semiconductor industry, and the sport of camel racing all have in common? All have tried and trusted in the ultrasonic technologies developed by Honda Electronics.



W-357-1MQG-SKC

Established in the 1950s, the Japanese firm started out as a manufacturer of ultrasonic fish finders and this area remains a key one for its business today. Among its range of state-of-the-art marine products, for example, is the HDX-10C, a GPS-enabled digital fish finder with a 10.4 inch LCD screen. However, over the years, the applications for Honda Electronics' ultrasonic technology have and will continue to expand to other industries and applications.

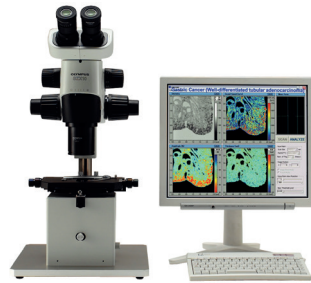


HLF820

"Ultrasonics and its usages have been broadening. When we developed this portable fish finder, the need existed just in the marine industry," says president and CEO,

Applications for Honda Electronics' ultrasonic technology continue to expand

As a pioneer in ultrasonic technology, Honda Electronics is looking to support international markets with its unique products.



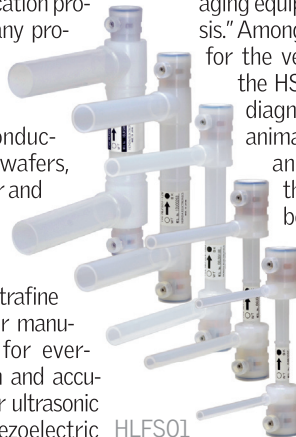
AMS-50SI

Yosuke Honda. "Over time, several clients and needs from various kinds of industries have emerged. Our company is trying to evolve within these industries as well as the progressing needs and requests of different enterprises which we never could have imagined 50 years ago."

Compared to radio waves and optics, the business of the ultrasonic industry still takes up a small share of the market. However, its potential applications are almost endless, stresses Mr. Honda. "Ultrasonic technology can correspond to various kinds of needs to fit the times, such as measuring, cleaning, cutting, binding, and mixing. The possibilities for ultrasonic technologies can be found in our daily lives and many industries. We are looking optimistically toward the future and discovering new areas where ultrasonic technologies can be applied."

One example is the semiconductor industry, where Honda Electronics' ultrasonic technologies are widely used in the fabrication process. The company provides ultrasonic cleaning equipment designed to clean semiconductor masks and wafers, both single wafer and batch type.

As semiconductor miniaturization and ultrafine processes in their manufacturing calls for ever-greater precision and accuracy, the need for ultrasonic cleaning and piezoelectric



HLFS01

sensors is expected to grow. With the best ultrasonic technology on the market, Honda Electronics is ready to take advantage of this opportunity, but it is not the only industry where applications for its technology have great potential. "Our technology can be used in areas other than semiconductor manufacturing, and we can see potential in all of those fields. We have the best ultrasonic technology and application know-how to fit these expectations," the president reveals.

In the medical industry, Honda Electronics provides ultrasound imaging systems and probes suitable for use in catheterization, orthopedics, general medicine, obstetrics and gynecology, among other areas. While it is difficult for an SME like Honda Electronics to position itself in the medical industry where there are already major players providing ultrasound and imaging diagnosis equipment, the company has found a niche for itself in the domestic market in the fields of orthopedics and general medicine.

"Our products can also be used for ultrasound diagnostic equipment for animal pregnancy and breeding for cattle, equine and camels," adds Mr. Honda. "In some Islamic countries, medical screening and diagnosis have to be done for camels used in racing, so we provide our ultrasound imaging equipment for the diagnosis." Among its range of products for the veterinary segment is the HS-103V, an ultrasound diagnostic probe for large animals such as cattle, sheep and equine, which offers three frequencies that can be independently selected according to the depth of the diagnosis site.

Turning to its strategy for business growth, Honda Electronics is working on a five-year midterm action plan which fo-

cuses on overseas expansion, with Southeast Asia the main target.

"We are looking at economically developing countries in Southeast Asia. They are more attractive for us since we expect more ultrasonic needs coming from those markets. We will need reliable partners and connections that can work with us in promoting our ultrasonic business overseas," adds Mr. Honda. "A reliable distributor would not only need to create sales proposals for our products and techniques but also solutions for maintenance or design. We expect our distributors not only to resell our products but also to provide extra services."



HDX-10C

Meanwhile, Honda Electronics will continue to work with partners when it comes to innovation, product development and opening up new market opportunities – that includes fellow private companies as well as academic institutions such as Toyohashi University of Technology in Aichi prefecture and Shinshu University.

"Although we are positioned as a manufacturing firm, we are more of a technical-oriented company that opens brand-new markets through our technical capabilities," the company's top executive proclaims. "Having a chain of reliable partners with no capital relation, we rely on other companies' manufacturing capabilities to introduce and take our products to other industries.



HS-103V

It is also important to have industry-academia relationships. There are many things that we are trying to do through our R&D activities because it is vital to prioritize what we do here. We truly believe that our company is based on technological know-how."



HONDA ELECTRONICS CO., LTD.

<https://en.honda-el.co.jp/>



"Our employees have diligence and tenacity. That has led to the strength of our precision technology."

Atsumi Hayashi, President, HAYASHI-REPIC Co., Ltd.



Luminar Ace, Hi-Matic Screw Driver

HAYASHI-REPIC: supporting cutting-edge technology with reliable manufacturing

Since its establishment in 1930, HAYASHI-REPIC has continued to refine its core technologies in support of a growing number of industrial sectors.

For over 90 years, HAYASHI-REPIC has developed precision processing and assembly technology cultivated through its experience in watch manufacturing. Today, its technology is used in various fields, including semiconductor manufacturing, control systems, lighting equipment and precision tools. "Based on our experience gained through the manufacturing of a high variation of precision parts and products, HAYASHI-REPIC can offer solutions that are developed and designed from the viewpoint of users," says president Atsumi Hayashi.



Peltier Electronic Cooler

HAYASHI-REPIC comprises five divisions and the first business division provides precision processing and electronics technology. Its main products, the optical fiber-type, high-brightness cold-light lighting system 'Luminar Ace' and the high-brightness LED lighting system, are used in semiconductor manufactur-

ing, liquid crystal manufacturing, automatic inspection equipment in the medical and bio industries, and image processing equipment. Another flagship product of the division is the 'Hi-Matic' series of screwdrivers used to manufacture watches, hard disk drives (HDD), mobile terminal devices, and other electric and electronic equipment.

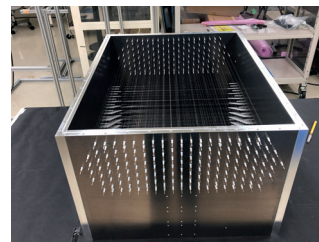
The second division develops, manufactures, and sells cooling equipment that make use of the company's electronic cooler technology. In addition to refrigerators and humidifiers for medical equipment, HAYASHI-REPIC handles everything from the design to manufacturing of original units according to user requests, while also developing a variety of control devices.



Precision Component Assembly

Established in 2010, the third division is engaged in the assembly and inspection of precision electronic equipment. Thanks to its extensive experience in ultra-

high-precision manufacturing and advanced facilities, HAYASHI-REPIC has advanced into the fields of semiconductors and optical communication equipment. "Our size is relatively small, so when we work together with major companies, we make semiconductor prototypes for them or receive a small lot for high variation products that could not be done on their main mass production line," adds Mr. Hayashi.



Particle Detector

Division four handles import and sale of industrial electronic products, such as coaxial cables transformers, and optical-related and EMC-related products. As a result of its relationship with KEK, one of Japan's leading research institutes focused on high-energy physics and particle research, this division is also engaged in the development of particle beam detectors.

The company's fifth division is responsible for everything



Parts Supply Equipment

from the design to the sale of automatic feeders and automatic assembly processing machines for the assembly, inspection, and secondary processing of minute parts such as electronic parts, as typified by its own product, the Dyna Feeder. In addition to the five divisions, HAYASHI-REPIC also has a manufacturing subsidiary in Hinai, Akita Prefecture, and sales subsidiaries in Hong Kong and Shenzhen.

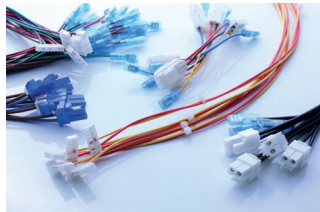
"The strength of our company is in the precision," says Mr. Hayashi. "Our employees have diligence and tenacity. That has led to the strength of our precision technology, as well as the attitude towards product evolution."



Yukita: connecting the world with best-in-class cable technology

Founded back in 1923, the Osaka-based company provides quality products and end-to-end manufacturing capabilities that make it a go-to supplier of electric wires and cables.

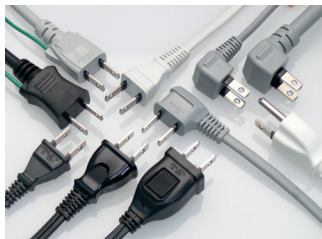
A Japanese manufacturer of top-quality electric wires and cables, Yukita is celebrating a big birthday in 2023. "We're now 100 years old," says President Shiro Yukita. "The reason we've enjoyed such a long history is that we've had a habit of making the right decision in every difficult moment."



Wire harness

production capabilities. "Competitors are either specialized in making electric wires or processing harnesses after procuring electric wires," Mr. Yukita says. "We can do both: we offer end-to-end manufacturing processes."

Yukita also stands out from the crowd thanks to its pursuit of innovation. For example, it has developed a leading-edge stretchable cable called NOVEEL. "The product can be applied to wearable devices," Mr. Yukita explains.



Power cord

Yukita, which chiefly supplies electronics and water-heater manufacturers, boasts comprehensive

"We can incorporate it into a T-shirt for instance, allowing us to connect with heart monitors."

Yukita's R&D processes are also focused on its commitment to a greener future. "A material called PVC is commonly used for coating electric wires, but depending on the method of disposal, there's a risk of generating hazardous substances,"



Power cable

Mr. Yukita notes. "We're working to develop more environmentally-friendly materials."



"We'd like to pursue our uniqueness so that we can further develop technologies that set us apart."

Shiro Yukita, President, Yukita Electric Wire Co., Ltd.

As the company seeks to grow, it is out to broaden its products' scope of application. "Automotive and factory automation comes to mind as potential future targets," Mr. Yukita says. An increased international presence is also an aim: "We have a solid foothold in Asia, but we'd like to expand into the European and U.S. markets."



Seavac: the PVD coating specialists



"We try to offer applications that other companies do not know about."

Hiroyuki Shimizu, President, Seavac Co., Ltd.



www.seavac.co.jp

With decades of experience serving Japan's automotive industry, Seavac continues to provide industry-first solutions that are indispensable to its clients.

Founded in 1949, Seavac specializes in surface treatment, heat treatment and coatings for molded parts, dies, components and tools used in the automotive, aerospace, medical and other industries. Molding parts and dies account for 40% of the company's business, while drill bits and cutting tools account for 30%. Parts and components make up 20% of its market, with the remaining 10% comprising other parts.

Having built its know-how and cultivated its technology serving Japan's biggest automobile manufacturers, Seavac is today a leader in PVD (physical vapor deposition) coatings, which have begun to replace CVD (chemical vapor deposition) coatings that now make up a significantly smaller portion of the company's business.

"Right now, PVD coatings are 90% of the coatings that we do, with CVD TD coating only standing at 10%. This represents a huge change in the last 20 years," says president Hi-

royuki Shimizu, before explaining the benefits of PVD over its predecessor. "CVD TD is only one kind of coating. TD is Vanadium Carbide. CVD is Titanium Carbide (TiC). However with PVD coating, if you change titanium, titanium aluminum or chrome for example, you see the color change because of the mixture used. It can do many types of chemical varieties. Also, PVD cycles are shorter when compared to CVD TD cycles."

As the company adapts to changes in its main market, the automobile industry, Mr. Shimizu aims to continue developing industry-first solutions. "We try to offer applications that other companies do not know about. That is my focus. I want us to have our own market, which our competitors cannot serve. I do not like price competition, so we are aiming to create unique applications for our customers."

Having helped steer Seavac through a difficult time following the Lehman Brothers crash and to the

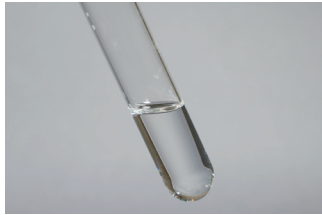
successful position in which it finds itself today, the 53-year-old president is adamant that continuous improvement – both on an enterprise and personal level – will help ensure the company's survival beyond its 100th anniversary in 2049.

"When I became president in 2010 after the Lehman Shock, I changed the organization and the rules of the company. As a decision maker, it is necessary to improve your knowledge and experience. By improving myself, I can improve the company," he says. "When I step down as president, I will pass this company to the next generation. I want our directors and chiefs to think for themselves and find ways to improve the company, as it will be passed on to them in the future. I want them to have a long-term view. In 2049, for our 100th year anniversary, I will be 80 years old. Even though I will not be the president, I want to see a strong and prosperous company at that time."

Honjo: the right formula for global success

With technological prowess in functional lithium compounds and zinc products, Honjo Chemical Corporation is set to expand internationally.

Honjo Chemical, a prominent player in Japan's chemical manufacturing industry, develops zinc and lithium-based solutions for a host of industries.



Lithium bromide water solution

"Lithium is mostly used for producing lithium-ion batteries used in electric vehicles and mobile devices. In the future, one possible use of lithium is in lithium air batteries for electric vehicles and home-use rechargeable batteries as well as nuclear fusion," says Nahoko Honjo, the company's chairwoman. "We were founded as a maker of zinc, then we developed technology to produce



"We would like to expand our businesses to other parts of the world."

Nahoko Honjo, Chairwoman & Representative Director, Honjo Chemical Corp.

lithium, and now we continue to evolve our technology to the next stage. With our technology, we want to continue to develop new products beyond lithium."

Semiconductors, EVs, medical materials and fine chemicals are among the industries Honjo has targeted for future expansion, while the company also aims to secure more global partner-

ships to support its plans to grow internationally.

"As the first step, we are planning overseas business development focusing especially on lithium compounds and zinc, among our products," explains Ms. Honjo.

"Presently, we are looking for new partner firms especially in overseas markets. We are actively promoting business development overseas."



Zinc dust



Neyagawa plant

The company already has a successful and growing technical partnership with Indonesian firm PT Indo Lysaght and established a subsidiary, Kyokuto Metal Singapore, which will serve as Honjo's hub to expand into Southeast Asia, India and Africa.

Through this subsidiary in Singapore, Honjo will carry out both research in the local market and analyze mid- and long-term trends in different markets. "Based on this information," Ms. Honjo adds, "we would like to select the most promising country and find a potential partner we can work with to enter that specific country or market."



www.honjo-chem.co.jp/en

Japan's hidden champion of environmental energy equipment

Since its foundation in 2009, SoftEnergy Controls has strived to provide top quality equipment related to battery production and EV infrastructure.



"We are committed to expanding our operations and staying ahead of the curve in this dynamic market landscape."

Yuji Eguchi, President, SoftEnergy Controls Inc.

Founded in 2009 to provide environmentally-friendly renewable energy solutions, SoftEnergy Controls' core product and technology are power supplies using bidirectional inverters and converters.



Development center in Saitama

With Japan moving towards carbon neutrality, company president Yuji Eguchi underlines how the firm's charge/discharge inspection equipment plays an important role in secondary batteries: "Our power supplies offer a distinct advantage in their high regenerative efficiency, resulting in less energy consumption and making a significant contribution to addressing the energy problem."

In order to optimize efficiency, SoftEnergy Controls' equipment uses fewer cables, which reduces energy loss and simplifies maintenance, a state of affairs which has helped the company establish its "unique brand identity."

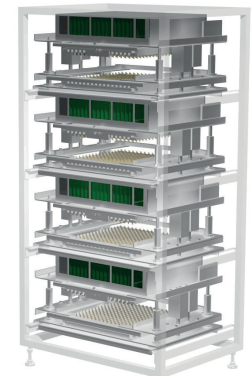
But power supplies are only one type of component in its celebrated charge/discharge equipment. Mr. Eguchi again: "In order to fully optimize the capabilities of our power supplies, we are also focusing on developing other key components, which are tailored to client specifications in terms of dimension, price and quality."

The group's core strategy, of



Power supply

course, goes beyond simple client satisfaction. "Our aim is to contribute to society by showcas-



Battery formation equipment

ing our technological advancements and creativity," Mr. Eguchi confirms.

To this end, the electric vehicle (EV) market could prove crucial to the company's continued success. "The EV industry is rapidly emerging as a significant sector, and we are committed to capitalizing on this trend. As a pioneering firm, our goal is to make meaningful contributions to society through our business operations."



www.softenergy-controls.co.jp/en

Asada Milling: showcasing the importance of talc in today's world

From cosmetics and pharmaceuticals to agricultural pesticides and ceramics, Asada Milling's talc products provide the basis needed to ensure quality.



"Our strength as a manufacturing company is having a wide range of products and serving different industries."

Hatsue Asada, President, Asada Milling Co., Ltd.

"The environment is an important factor in our business operation," she explains. "We are developing a biodegradable resin talc masterbatch, for which there will soon be a growing need. We are also trying to use recycled resin in our production to further contribute to the environment, making it vital for us to persist in the research and development of new technologies."



Liaoning Sheng talc lump

A small, research and development-based company with an international presence, Asada Milling was first established almost 80 years ago and today its products are used in a wide variety of industries.

Now more than ever, company president Hatsue Asada foresees "huge growth" in their talc used for resin compounds and, accordingly, the firm is looking to expand its presence in new fields.

One target industry is electric vehicles (EVs). "With the ad-

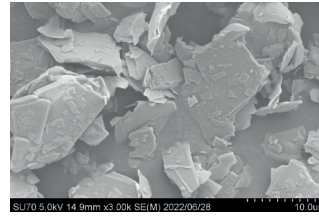
vent of EVs," Ms. Asada explains, "more resin is used in vehicles because the body and components need to be lighter, and we are looking to develop a new high-performance talc that is both strong and heat-resistant."

The plan, as it stands, is to mass produce in China, where the company has had a base for 20 years, and bring the new products to Japan for Japanese automotive manufacturers.



Fine particle talc

Free from the logistics issues created by the pandemic, the future looks bright in the cosmetics industry too, which



Fine particle talc SEM

is predicted to return to pre-pandemic levels, achieving a value of USD 450 billion by the year 2028.

"We are seeing increasing demand for our products," Ms. Asada confirms. "And we export to countries such as the U.S., Korea, China, Southeast Asia and Europe."

Though the company is not currently seeking potential new partners, Ms. Asada has a clear plan for the future.

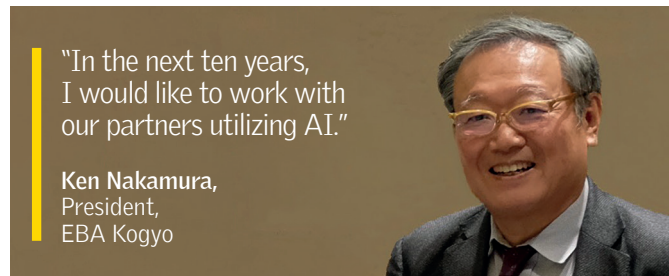
EBA supports smart factories

EBA offers automation solutions to a wide range of industries, including machine tools, semiconductors, automotive and renewable energy.



VPP series for overnight automation

Established in 1953, EBA Kogyo serves the machine tool industry with its high-performing factory automation solutions, which include pallet stockers, tool stockers and tilt loading stations. With over 50 years of experience developing and manufacturing custom pallet and tool stock systems for leading companies around the world, today the Japanese enterprise is harnessing the power of AI and IoT to support its clients in

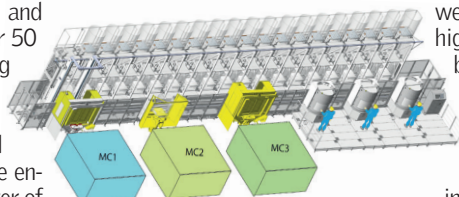


"In the next ten years, I would like to work with our partners utilizing AI."

Ken Nakamura, President, EBA Kogyo

building smart factories, while diversifying the industries that it serves.

"In response to global market changes and customer needs, we have developed and improved our pallet system series by saving energy, space, and resources, improving durability and maintainability, handling 50-ton heavy workpieces, reducing installation time, and making the sys-



VPS series for weekend automation

tem compatible with robots," reveals company president Ken Nakamura.

Cultivated over 70 years, EBA's expansive manufacturing capabilities include mechanical and electrical design, welding and casting material, machining and surface treatment, assembly, commissioning, and inspection capabilities, as well as its capacities for welding large objects weighing more than 10 tons and high-precision machining capabilities of less than 10 microns.

Utilizing this manufacturing expertise, EBA has taken on the challenge of extending its operation to clients in emerging industries such as robotics and electric vehicles (EVs).



RPS series round pallet stocker

"In Vietnam, we are working on renewable energy generators from wind turbines. We are also working on bonding machines for semiconductors," says Mr. Nakamura.

"The fusion of robotics and machine tools is very important, and that is the another challenge that we are working on right now. Currently, there is a major transition in the automotive industry from internal combustion engines to EVs. We can be of help to the automotive makers as they shift their activities. We will be able to help them to increase their automation ratio."

