

Monozukuri ensures Japan's niche dominance prevails

The 'Made in Japan' brand has long been synonymous with high quality. And behind the superior Japanese quality that Nippon manufacturers offer is the *monozukuri* philosophy, which focuses on craftsmanship, attention to detail and the constant pursuit of innovation to meet client, market and societal demands. And while Japan has faced stiffer regional competition in recent years, the 'Made in Japan' brand still dominates when it comes to niche B2B fields, where *monozukuri*-made parts, equipment and materials are still the top choice for clients seeking unbeatable quality.

A case in point, Nitto Kohki's unique 'CUPLA' series of quick connect couplings, which are used in a range of industries, have been copied but never matched by competitors. "There are companies in China and other countries utilizing our trademark for pirated versions," says president Akinobu Ogata. "However, our clients really place importance on quality, so in the end, they actually came back

to us and that is why our market share is expanding."

For Kazuhiro Ito, president of automotive parts manufacturer Dynax Corporation, *monozukuri* is all about offering "one-of-a-kind value" and "pursuing unique manufacturing that only we can do", as in its friction materials for the clutch field, for example. He adds: "In addition, all material development, laboratory testing, evaluation testing, paper mill and saturation are all done in-house to meet the needs of our customers. In the past, we used to buy friction materials, but now we manufacture everything in-house and supply our customers with our own one-of-a-kind products."

While the fruits of *monozukuri* are shown in the high-quality products, Takashi Saigo, president and CEO of Starlite, says it ultimately comes down to the people behind it. "When you talk about the strengths of Starlite, it could be said that it is our materials, products, or even manufacturing methods. However, for me, it's people that are our greatest strength. Ultimately *monozukuri*

is done by people. Some parts of the process of course may be automated, but the core of Japanese quality comes from the people that have a passion for manufacturing."

Adaptation and diversification is also key to long-standing *monozukuri* companies focused on ever-changing market demands. Nissin Kogyo, for example, has gone from making tube TV components to parts for new energy vehicles (NEVs). "In the NEV market, it is essential to have high-quality components considering the increased demands for durability and safety. It was not easy to find the next opportunity for us after the TV business. Therefore, we are now very eager to contribute to the NEV industry with our niche core technologies," explains president Takashi Shimizu.

Having started out as an aircraft manufacturer, ShinMaywa Industries has since diversified into a range of industries, with its focus now on expansion in ICT. "We specialize in *monozukuri* in different fields, but we want to add ICT and

big data into the mix so that we can create new businesses," says president and CEO Tatsuyuki Isogawa. "We have to find new insights into achieving customer satisfaction. This is our challenge going forward. We have to develop new systems using ICT and we have to take up the challenge to build new products. That is *monozukuri* for us."

Like ShinMaywa, Hiyoshi Corporation is looking to expand its global reach and leadership with environmental solutions such as its CALUX method, a simple and rapid method for dioxin analysis. "In 1988 Hiyoshi decided it wanted to work on environmental conservation around the world based on its experience, technology, and achievements in sanitation, pollution, and environmental issues in Japan," says president Hiroshi Murata. "Since then, we have accepted a total of more than 1,000 people from 36 countries, including Taiwan, India, Vietnam, the U.S., and Brazil, and have provided opportunities to train environmental experts from around the world."

ShinMaywa Industries: Vision and insight for a sustainable future

Established as an aircraft manufacturer, ShinMaywa has now successfully diversified into five business divisions that provide equipment and machinery essential for today's global, sustainably-conscious society.



TRD701 Automatic Wire Terminating Machine

The acquisition of three foreign companies in five years continued ShinMaywa Group's long-term vision oriented towards 2030, which looks to expand profits and sales with overseas growth through such alliances. "These companies had the technologies we were missing, so



"Our *monozukuri* (manufacturing) was developed over our 100-year history. We now have started to transform into a 'future-oriented' corporate group that can contribute to the realization of a better global society."

Tatsuyuki Isogawa, President & CEO, ShinMaywa Industries, Ltd.

that's why we purchased them," explains company president and CEO Tatsuyuki Isogawa.

"The alliances, whether domestic or foreign, are to acquire unique technology, and while Southeast Asia is a good source for this growth, a sales and distribution partner is required so

that we can maximize our local production capabilities."

Social contribution is the key role of the Group and in North America, ShinMaywa (America), Ltd.'s main products – wire processors, which improve productivity in the automobile industry, and pumps for wastewater treatment – are just



Non-Clog Scroll Submersible Pump

two examples that have garnered an excellent reputation in this regard.

In addition, ShinMaywa constantly strives to discover new insights that customers are not aware of in order to create new businesses that solve social issues worldwide.

As the proud manufacturer of the US-2, the world's only amphibian aircraft capable of open-sea landing and takeoff, which is operated by the Japan's Maritime Self-Defense Force, Mr. Isogawa is clear that his company, twice named Supplier of the Year by Boeing, is so much more than just an aircraft-related business.

"We want to be recognized as a global company providing services to a wide variety of industries."

ShinMaywa

VISION WITH INSIGHT

www.shinmaywa.co.jp/english

Dynax building components for the EV revolution

Though Dynax has been developing friction components for the automotive industry for almost 50 years, and in-wheel motor technology for the last decade, its plans to become an EV manufacturing specialist are only just beginning.



"We aim to be the best company in the world at creating one-of-a-kind value and inspiring our customers."

Kazuhiro Ito,
President,
Dynax Corporation

Price competition is getting tougher globally, but Japanese companies continue to have a large share of niche markets thanks to their multi-product, multi-functional production. One such business is Dynax, a specialist in various components for automotive, construction and agricultural vehicles.



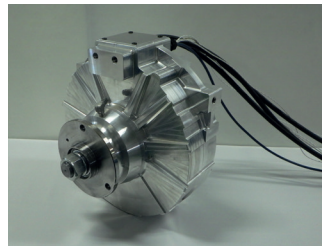
Wind-powered electric generator

"We aim to be the best company in the world at creating one-of-a-kind value and inspiring our customers. One-of-a-kind value means pursuing unique manufacturing that only we can do. In the clutch field, that would be friction materials," says Kazuhiro Ito, President of Dynax.

Since its foundation in 1973, Dynax has researched, developed and designed products such as wet-type friction plates, clutch pack assemblies and

synchronizer rings. However, with the transition from internal combustion engine (ICE) vehicles to electric vehicles (EVs), manufacturers involved in automotive components like Dynax are having to respond and adapt.

"Countries are declaring their intentions to become carbon neutral, and in order to achieve this, the trend to-



In-wheel motor

wards vehicle electrification is inevitable. For our part, we have to develop friction materials that are compatible with electric vehicles, and we intend to develop motors that can enter the EV market," says Mr. Ito. "In terms of electrification, a motor is a motor but the mechanism is divided into two parts: e-Axle and in-wheel motors. Nowadays, almost 100% of car manufacturers, including Tesla, have gone for e-Axle. Our in-wheel motors are superior in that they are extremely low-cost and fuel-efficient, but they have not yet been adopted by customers."

From the point of view of major car manufacturers, Mr. Ito believes that it will be difficult for in-wheel motors to be adopted now. However, with venture companies that make EVs currently springing up all over the world, inquiries for Dynax's products in this field are racing in. "We have already arranged for an advanced development line to produce the motors so that venture companies can be confident that Dynax will supply them," Mr. Ito explains. "The idea is to

build a production line before the business is finalized. We want to show our customers



Disconnect-cone clutch module for HEV and PHEV

that this in-wheel motor is a product to rely on."

Not only are Dynax's in-wheel motors more fuel efficient, they are also expected to improve the driving experience. "For one thing, you don't need any extra parts in terms of gears. And in the case of in-wheel motors, the advantage is that they fit directly into the wheels, so they are very compact in terms of vehicle construction," says Mr. Ito.

In order to accelerate the transition towards electrification in the future, new research and development is required. Though Dynax has been developing in-wheel motors for 10 years, it is only the beginning in terms of its plan to become a component specialist for EV manufacturers.

"The next step is inverter control," says Mr. Ito. "We are now working together with universities to develop this feature as well, and we are developing solutions where we combine the motor and

inverter and sell the function from a single product. We are also developing a small wind power generator using our motor technology. This combines the issue of car-

bon neutrality in the future with the perspective of infrastructure development to create a small emergency power source. We are developing a small generator which will hopefully be launched in 2023."

Normally, the blades need wind speeds of roughly 7.8 to

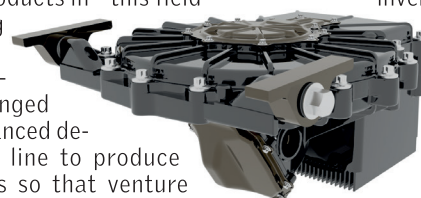
13.6 knots to rotate, but Dynax's generator uses a small turbine with vertical blades that can rotate at a wind speed of 3.9 knots in order to generate electricity. The 7 meter-high turbine can be installed in dense urban environments, like in a street lamp, and used for multiple purposes such as charging smartphones.

With the company set to celebrate its 50th anniversary next year, the Dynax president says the firm's long-term goal is sustainability.

"We feel that we have to sustain ourselves, and although the existence of clutches will not disappear, we will push ahead in line with the move towards EVs," he says. "The other issue is how to secure human resources. One of our initiatives on this front is to develop local townships through social contribution to the community by recruiting people, and to attract people and promote recruitment activities from there. Specifically, we are trying to attract people by creating a wine business and have already grown 110 grapevines in Hokkaido. In 2025, we will build a winery and have finished planting 28,000 grape saplings on 20 hectares."



Inverter



e-Axle



Lightweight parts for the EV revolution

Through its lightweight, high-performance parts, Japanese manufacturer Akashi-Kikai is not only ready for the EV revolution, but is helping drive the construction industry forward as well.

Whenever an industry undergoes a drastic change, solutions are developed which not only respond to that sector's specific challenges, but can also be utilized in a wide range of fields.

Founded in 1946, vehicle parts producer Akashi-Kikai, a subsidiary of Daihatsu, has always focused on creating small and cost-effective solutions which have multiple applications, and the sudden increase in demand for EVs has only sharpened this focus. Many of the company's key components, such as its steering gear and transmission gears, have been developed with weight in mind and will continue to be used in EVs.

The backbone of the company's lon-

gevity has been its dedication to nurturing its human resources. Company president Tetsuo Miura explains: "I like to think of it as building human capability. If you have good engineers and good personnel, you can develop them and, at the same time, evolve *monozukuri* (Japanese manufacturing craftsmanship)."

The EV revolution has not taken the company by surprise. In 2019, envisioning the huge change ahead, Akashi-Kikai crafted a five-year plan to change its business and meet new market demands.

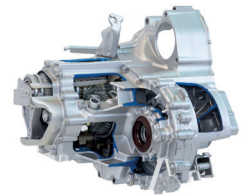
Mr. Miura also understands the potential wider applications for his company's products, with its

award-winning camshaft now being employed in construction machinery as well as in the automotive vehicles it was designed for. Akashi-Kikai sent engineers to major construction companies such as Caterpillar and Kawasaki Heavy Industries, to learn more about the field and has begun working on hydrologic components.

The almost-silent nature of EVs is often the first thing the user notices, and Akashi-Kikai is developing a high-performance noiseless gear which would also have applications in the construction industry. The company's success has allowed it to expand into the Indonesian and Malaysian markets, where it has joint ventures with local partners. No matter how the company continues to expand, Mr. Miura stresses that its employees will be central to its growth.



Tetsuo Miura,
President & CEO,
Akashi-Kikai Industry Co., Ltd.



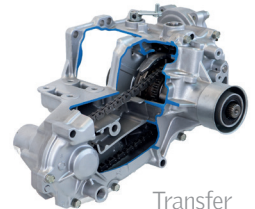
Manual Transmission



Automatic Transmission (CVT)



Steering Gear



Transfer

Pursuing the use of light-weight carbon neutral materials for manufacturing innovation

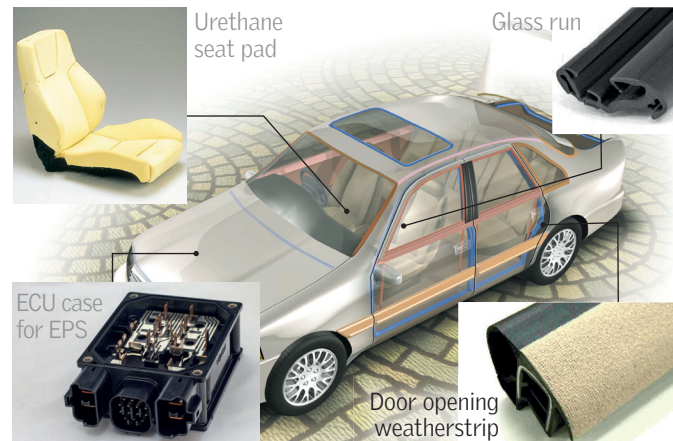


"We want to work with both Japanese and foreign manufacturers for joint development and lower production costs."

Yuichi Kimura,
President & CEO,
Tokai Kogyo Co., Ltd.

Founded in 1947, Tokai Kogyo specializes in automotive materials and parts manufacturing, with a focus on superior design. "We want to contribute to and enrich society through our *monozukuri*," says President and CEO, Yuichi Kimura.

Tokai Kogyo is a full-service supplier specializing in material and manufacturing development integrated with superior design, with the company now focusing R&D on plant-based materials for primarily automotive parts.



"Our strength is the assurance and control of high-quality products, enabling us to gain the trust of the international community to compete in the global market."

Collaboration is vital for the company's business model, says the

president, highlighting that "every country has its own culture, language and mindset, so local partners acting on our behalf is crucial."

With such human resource challenges, automation certainly has its place, but is not the com-

plete answer. "Due to AI's limitations in retaining the craftsmanship spirit, we strive to make our company attractive for talented individuals," says Mr. Kimura.

Other changes, in both societal demands for comfort and environmental responsibility, have also played their part. "Product development is carried out to meet requirements ranging from durability to weight reduction, quietness and design," Mr. Kimura explains. "For carbon neutrality, our energy-efficient processes still yield the same quality, with plant-based materials a focus of our R&D."



Dies and precision stamped parts for the next generation of automobiles

A long-time leader in precision stamped parts and dies for ICE (internal combustion engine) components, Nissin Kogyo has emerged as a forerunner in one-of-a-kind battery parts for hybrid and electric vehicles.



"We would like to bring our stamping and core technology to the highest level. It is our goal to keep challenging ourselves in new markets worldwide."

Takashi Shimizu, President, Nissin Kogyo Co., Ltd.

With an industry presence for more than 60 years, Nissin Kogyo initially came to prominence manufacturing electron guns for television sets, establishing an enviable reputation for its niche core technologies. But reputations live and die on a company's ability to adapt quickly to societal change, and with the market for tube TVs in terminal decline, finding the next opportunity has been a challenge.

In the last few years, armed with knowledge of burr control, surface treatment and assembly technologies, and eager to contribute to an emerging market, Nissin Kogyo has successfully repositioned itself as a high-quality manufacturer of



Electric Vehicle

precision automobile parts for the new energy vehicle (NEV) industry, taking advantage of its peerless stamping technology to meet increased consumer demands for safety and durability.



GLOBAL NETWORK

- a** UTSUNOMIYA; **b** OGAKI; **c** OTSU HEADQUARTERS; **d** BEIJING, CHINA; **e** NANTONG, CHINA;
- f** LOYANG, SINGAPORE; **g** BATAM, INDONESIA; **h** OHIO, U.S.A.



Medical Device

Company President, Takashi Shimizu, is keen to emphasize Nissin Kogyo's unique ability to keep pace not only with the type of auto components required, but also the scale of production demanded by a rapidly expanding market. To this end, the company's cutting and grinding method, suitable for dealing with low volumes, has taken a proverbial back seat for now.

As the NEV industry continues to expand – Japan is planning to ban conventional gasoline car sales by 2035 – Nissin Kogyo has also looked to collaborate with its cousin company to consolidate its market position.

Mr. Shimizu explains: "This collaboration maximizes our special tools capability. We do die design and build in-house, and our cousin company makes bespoke machines for special tooling." So far, the venture has seen the companies work together on approximately 20 machines, one of which is being used to manufacture parts for lithium-ion batteries used in electric vehicles (EVs) in the company's Indonesian plant.

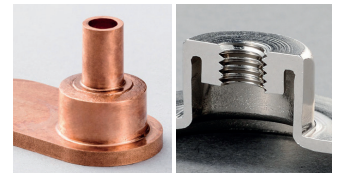
Away from the EV industry, Nissin Kogyo's ability to produce

high-quality components at scale has seen Mr. Shimizu look to diversify into other markets. He sees comparisons between the NEV and medical sectors: "In the near future, our strengths may be best harnessed in the medical industry, and in particular for the manufacture of disposable parts, such as catheters." As with other markets, a certain quantity of orders is required to fulfill the company's machine capacities.

An established international presence, Nissin Kogyo has sufficient global reach to future-proof its status should the automotive component market become saturated in the coming years. With plants in the U.S.A., Singapore, Indonesia and China, Mr. Shimizu makes no secret of the importance of receiving support from the company's original local subsidiaries: "We began our business in the U.S.A. in 1990. Fortunately our first partner is still with us, and still studying new technologies with us."

It is this spirit of collaboration which enables Nissin Kogyo to function on a global scale, and Mr. Shimizu, for one, has no desire for that to change. As the company nears its 70th anniversary, expansion is not on his horizon. Far more important, in his words, is to "bring our technology to the next level by collaborating with our colleagues at Nissin Global."

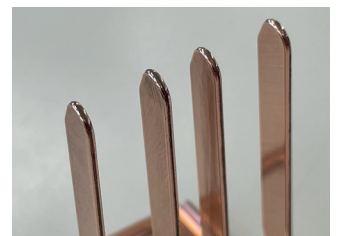
Customer satisfaction is key too, of course. But it will develop organically if the company continues adapting to societal changes,



Sheet Metal Forging



Deep Drawn



Round Trim®

investing in cutting-edge technology, and challenging itself in new markets, in conjunction with its established global team.

NISSIN KOGYO CO., LTD.

<https://nissinjpn.co.jp/en/>

Shoei Kogyo: Helping clients to excel

An industry-leading presence for almost 75 years, Shoei Kogyo continues to thrive in the face of geopolitical and global health challenges, offering a diverse portfolio of solutions to a wide range of companies.



"Our strength is in our collaboration with customers in every field; our strategy is not to develop new products, but new methods to manufacture them."

Hiroyuki Iguchi, President & CEO, Shoei Kogyo Co., Ltd.

Though known as a manufacturer of automobile and electrical components since its foundation in 1946, Shoei Kogyo has also had notable success in the medical sector.



Press and welding equipment

Company president Hiroyuki Iguchi, however, is keen to emphasize that his firm is neither focused on a specific industry nor does it offer a specific product.

Rather, the company's strength is in providing solutions, and in particular streamlining the research, design and development process by integrating depart-



ments that would otherwise operate independently of one another.

As Mr. Iguchi explains: "We don't just translate designs into products, but develop the design proposals in collaboration with the customer. We propose ideas that increase productivity and reduce costs to help clients excel against competitors, allowing



SHOEI MEXICANA

them to be more competitive in terms of quality and price."

It's an approach that has reaped dividends for the company, with an established base in China and plans to expand current operations in Mexico. Changes in the automotive industry, meanwhile, represent a significant opportunity to bring in new methods and ways of doing business.

For Mr. Iguchi the most important thing is growth. For the company itself – but also for the people who work for it.



www.shoei-kg.co.jp

Takenaka: The bolts and nuts of industry



"When it comes to adding value to our products, we are pursuing the aspects that will provide advantages for our customers."

Saeko Takenaka, President, Takenaka Seisakusho

Formed in 1935 as a manufacturer of nuts and bolts for ships, today Takenaka Seisakusho's products support critical physical and social infrastructure, including nuclear power plants, railways, expressways, bridges and hospitals.

"When it comes to adding value to our products, we are pursuing

The industrial bolts and nuts made by Takenaka Seisakusho hold in place the backbone of Japan's physical and social infrastructure.

the aspects that will provide advantages for our customers," says Saeko Takenaka, President of Takenaka Seisakusho. "One of those advantages we've pursued is the TAKECOAT®-1000, which was designed to prolong the life of the metal used in bolts and extend the time before they start to rust. This is just one example of the problems that our clients brought forward for us to solve with our technologies."



After a 2000-hour Salt Spray Test: TAKECOAT®-1000 (right), Electro-Galvanized (left)

One of the industries which benefits from such advanced technologies developed by Takenaka is the renewable energy sector, to

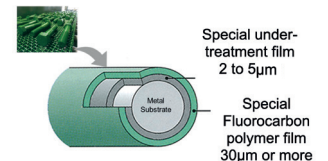
which it supplies special bolts for wind energy plants. "Those wind energy plants are on land right now, but with the increased government support, we will see more and more wind energy plants and



Offshore wind farm

wind farms move to the ocean," says Ms. Takenaka. "When a wind energy plant is built in the ocean, you need to have components that are anti-corrosive. There we can bring our TAKECOAT® technology, so we are actively pursuing the manufacturing processes needed for offshore wind farms."

The main advantage provided by TAKECOAT®-1000 is the reduction in maintenance required,



TAKECOAT®-1000 film thickness with clients requiring just one-tenth of the maintenance effort associated with conventional zinc-coated bolts.

"As found in salt spray tests, where conventional zinc bolts rusted completely within 500 hours, TAKECOAT®-1000 lasted over 6000 hours and had still not rusted. When it comes to the initial investment, of course, TAKECOAT®-1000 is more expensive than conventional cheap bolts, however, when you take into consideration the costs over the lifecycle of the product over ten years, customers can really save a lot of money and time."



Coupling the future

With its unique CUPLA products, Nitto Kohki has made itself indispensable to some of the world's largest firms and industries.

In an era where regional competitors are replicating the concept of *monozukuri* and threatening to push Japan out of mass production markets, it would be easy to conclude that, for some companies, quality plays second fiddle to cheap labor costs.

For Nitto Kohki president Akinobu Ogata, however, nothing could be further from the truth. In recent years, he says, customers the company had previously thought lost have returned and helped increase the coupling giant's market share. The pursuit of excellence not only obliges Nitto



"HHV CUPLA" fuel coupling for high pressure hydrogen

Kohki to invest proper time and money in research and development, but also helps to differentiate the firm from its competitors. Having a reputation for quality, meanwhile, means Nitto Kohki's coupling products continue to be used in leading-edge industries, such as semiconductors, where reliability is by far more important than cost.

Operating behind the scenes sometimes means that Nitto Kohki's work slips under the radar, but Mr. Ogata isn't interested in global acclaim. It is far more important to be "contributing to society" which the company does in various, often unheralded, ways. Many manufacturers, for instance, use Nitto Kohki couplings for handling electrolytes used to fill lithium batter-



"MEDOMER" air massager

ies, and, as Mr. Ogata points out, a contribution to the advancement of electric- or hydrogen-powered vehicles also represents an important contribution to carbon neutrality in general.

But Nitto Kohki doesn't only contribute to society through its products. There are, as Mr. Ogata emphasizes, "actions that can be taken as well". One such



"CUPLA" quick connect couplings

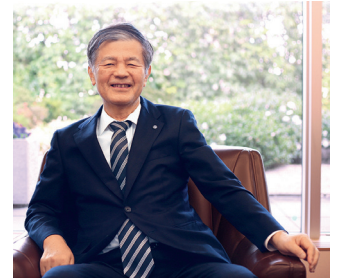
action was to develop equipment to suck out the sputum of patients with dyspnea. Mr. Ogata adds: "Large-scale black-outs occurred in Hokkaido when the area was hit by the 2018 Hokkaido Eastern Iburi Earthquake. I sent our aspirators and dry cells to the stricken area two days after, as I thought



"AUTO-HINGE", for quiet and smooth door closing

our dry cell drive equipment was useful when electricity was not available. Our aspirator was also required by many hospitals that were looking after Covid patients. I was glad to see it was helpful for healthcare workers and patients."

People are at the heart of Nitto Kohki's company philosophy, whether they are employees or not. Take engineers, for example. There is concern in Japan that the country's aging population will lead to the rapid spread of automation, placing human jobs at risk. Mr. Ogata, however, does not see engineers' jobs as precarious; it is more a question of reimagining their role.



"Nitto Kohki has placed importance on energy and labor saving, and also on producing good products."

Akinobu Ogata,
President,
Nitto Kohki Co., Ltd.



electric screwdrivers. To this end, the company has recently entered into a collaboration with a major robot supplier to attach 'delvo' to robotic arms. On the other hand, there is Europe and the U.S. Nitto Kohki is not a name most Western firms currently recognize –



"delvo" electric screwdriver

a by-product, no doubt, of the company's much valued discretion – but Mr. Ogata is confident that will soon change. More generally, he is open to overseas collaboration: "If any overseas firms have an interest in our technology and want to have a discussion with us, we are always willing to engage."

Whatever happens, it is unlikely that Nitto Kohki's company values will change. The key is people to contribute to society. Employees should feel happy about the work they do. If, in turn, society values the work that Nitto Kohki does, the company will continue to develop. That relationship, of course, is symbiotic. Working for the good of society drives excellence; selfless excellence paves the way for success.

"At Nitto Kohki," Mr. Ogata says, "we have a corporate motto: 'development provides corporate insurance'. That 'development' encompasses four important meanings. Firstly, the development of products that contribute to society. Secondly, the development of the sales market. Thirdly, the development of human resources. And fourthly, the development of a system for organization management."

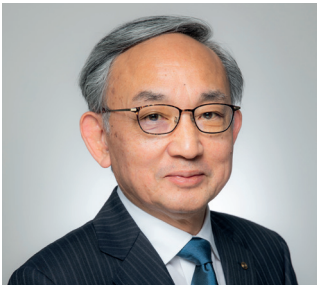
It is the last of these that appears to be presently the most significant. "From now on," Mr. Ogata continues, "I think it is going to be important for engineers to engage more in process management." That is, ensuring company products meet standards of safety, security and quality through machine maintenance and an increased focus on research and development.

Looking to the future, Mr. Ogata is keen to build the company's reputation overseas. On the one hand, there are global needs for labor-saving where Nitto Kohki can contribute with its 'delvo'



Yuken: Diversifying for society's needs

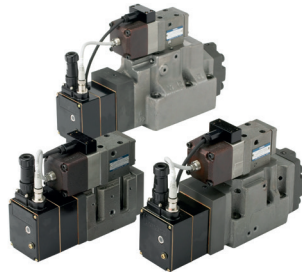
The hydraulics company is shifting its business model to respond to globalization, digitalization and sustainability trends.



"Our hydraulic products can contribute to wind power generation and electric vehicles."

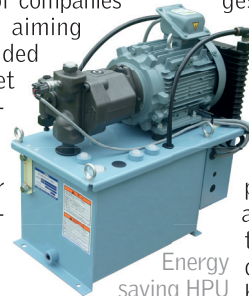
Hideharu Nagahisa, President, Yuken Kogyo

Founded in 1956, Yuken Kogyo specializes in hydraulics, supplying its hydraulic equipment and systems to various industries. Starting with the establishment of its overseas manufacturing base in Taiwan in 1969, the company has built a group network for manufacturing and sales throughout Asia.



Linear servo valves

"Today the business environment is changing at an accelerated pace due to the Fourth Industrial Revolution," says Hideharu Nagahisa, President of Yuken Kogyo. "Our group of companies is therefore aiming to create added value to meet our customers' needs, whilst improving our global production system to support our growth."



Energy saving HPU

Though the company deals primarily with oil hydraulic products, the group president stresses how Yuken Kogyo – like all Tier 1 businesses – must respond to globalization, digitalization and sustainability trends. "Therefore, we need to expand our business into other areas, through partnerships or through mergers and acquisitions. That will be the source of our future growth," he says.

"We often receive suggestions for overseas partnerships, and we are proactively considering those offers. For example, we are considering entering the mobile market in India. We are also considering expanding our business into the aerospace industry, as well as the water hydraulics and hydraulic robot industries. It can be difficult to create synergies



KIRIKO shaving compactor

between companies in the same sector, however, it is possible for companies in different sectors to do so. That is our vision."

With decarbonization a key global trend for the future, energy-saving products are in greater demand, and thus Yuken Kogyo is transitioning its strategy to focus on more environmentally friendly products. "Our hydraulic products can contribute to wind power generation, as wind power generators use a hydraulic system," says Mr. Nagahisa. "Another example is society's shift to electric vehicles (EVs). The EV body materials are varied, so we are responding to this trend too. There are many opportunities for us to explore."



Approaching 60 years of grinding wheel excellence

Since its foundation in 1967, New Registon has garnered a global reputation for producing depressed center grinding wheels of the highest quality.

"Data is the new oil" has almost become a cliché, but when we think of data not just as a mass of figures but also as useful feedback, it's true that its value becomes clear. One company that is truly dedicated to using this feedback as the cornerstone of its business is Japanese grinding wheel producer New Registon Co., Ltd.

Founded in 1967, New Registon specializes in high-performance grinding wheels for cutting, grinding, and polishing metals. As is often the case with Japanese producers, B2B specialist New Registon's strength is in the added value incorporated into its products; value that is ultimately derived from its customers.



Kenji Yamauchi, President, New Registon Co., Ltd.

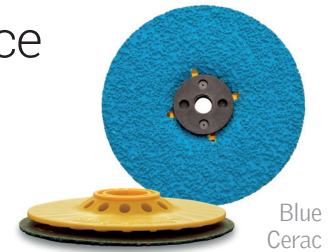
NRS NEW REGISTON
www.newregiston.co.jp/en/

As company president Kenji Yamauchi explains, traditionally it has been difficult for engineers in the grinding wheel industry to obtain feedback from the end users. To combat this, New Registon regularly sends members of its sales teams to visit end users and distributors to gauge any issues or requests. "This has helped us to improve the quality of our products, and it gives us a competitive advantage in this industry," adds Mr. Yamauchi.

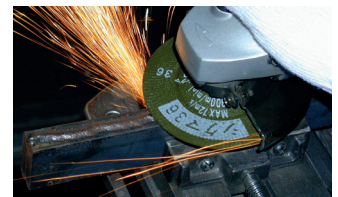
Thanks to this feedback, the company has been able to develop ceramic grinding discs with supplementary pads, as well as its Super Green series. This series

of grinding discs has increased elasticity and provides a softer product for the end users, while New Registon's electroplating technology adopts the use of synthetic diamonds embedded into a base metal and allows for a hard abrasive grinding force in its Metaridge Burr.

The family company has previously worked with European partners to develop its products, and with a 30% domestic market share, it has expanded its sales network to include the United States, China, Italy, UAE and many more. As this expansion continues, New Registon is always looking for new end-users and distributors with niche needs that the company can meet with its specialized wheels. As Mr. Yamauchi puts it: "While some people may say that only the price matters, we try to add value to our products for our end users."



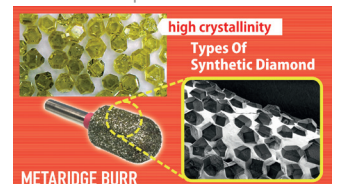
Blue Cerac



Super Green Sigma



Osaka headquarters



METARIDGE BURR



Entrance to Starlite's Ritto Plant

Pursuing innovation for a sustainable society

Starlite is a company committed to working toward the creation of systems that do not place an excessive burden on the planet by deepening its understanding of usability and continuously improving products for more sustainable use.

Founded in 1936 as a venture business to develop original phenolic resin sliding materials, Starlite has since diversified into a wide range of fields, including the steel, shipbuilding, industrial machinery, automobile, telecommunications and housing industries, by utilizing various materials such as high-performance engineered plastics and advanced tribology (friction, wear, lubrication engineering) technology.

"We are a technology development-oriented creative group that supports the safety and security of people's lives and provides solutions for social issues through *monozukuri*," explains Takashi Saigo, President and CEO of Starlite. "It is Starlite's mission to provide support for an enriched life in harmony with nature, and every moment we strive to fulfill this mission means growth for us. We do not merely pursue convenience and comfort, but provide

In doing so, the company is committed to working toward the creation of systems that do not place an excessive burden on the earth "by deepening our understanding of usability and continuously improving products for longer use," says Mr. Saigo. "In addition, we hope to pursue spiritual enrichment by focus-



Active Grille Shutter (AGS)

ing on serious problems such as social disparity, natural disasters, climate change, environmental pollution and mental illness that we are facing as a result of recent economic development."

When it comes to sustainability, Starlite plans on moving into bioplastics and advancing recycling technology, with recent research and development focused on looking into the adjustment of temperatures used to melt materials for recycling. "We are working very hard with our R&D department to achieve a circular economy," says Mr. Saigo. "When you talk about sustainability, many people automatically jump to recycling. However, I feel it's important to keep using existing things also and to find new uses for them."

As the automotive industry transitions towards electrifica-

tion as part of the low-carbon agenda, the company is looking at how it can apply some of the technologies it is developing to serve the sector with innovative solutions. Since 2009, Starlite has had a technology alliance with Röchling Automotive and developed various products, one example being the active grille shutter (AGS) which manages aerodynamics and thermal systems in cars. "We would like to further expand this original technology of theirs in the Japanese market through the joint venture," adds Mr. Saigo. "We are also working on reducing the weight of a lot of our components. We believe that there is room to develop components that use lightweight plastics rather than heavy metals such as steel."



eMET

Compounding experience of material technology developed over many years, combined with evaluation and analysis technologies, has enabled the development of new functions suited to various operating environments and performance requirements. Starlite's

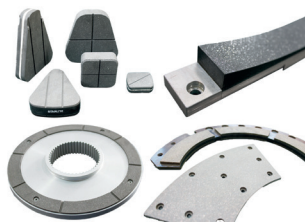


"We are working tirelessly with our R&D department to achieve a circular economy."

Takashi Saigo,
President & CEO, Starlite

products range from damage and heat resistant aprons for rolling mills and rudder bearings for marine applications, to brakes for various equipment and miniature peel-off claws for multi-functional printers. In recent years, Starlite has contributed to ensuring the safety and efficiency of on-site work operations by developing 'eMET', a helmet with an IoT-based remote management system. Furthermore, the company released Japan's first-ever biomass-based helmets in June this year.

Moving forward, Starlite aims to mobilize the power of the group to tackle a wide range of problems for the future of the planet by addressing today's social issues with its technologies and ideas, and by co-creating with like-minded people.



Clutches and brakes

experiences and services through our products that are truly necessary for the planet and society."

Eight Tool's hexagon wrenches providing quality across multiple industries

While manufacturing is becoming more automated, some processes can never be handled by machines. Eight Tool provides the tools to ensure these processes are done with the highest level of precision.



"Our Excellent series of products have specific quality standards to ensure superior performance."

Yasuhiro Oka,
President, Eight Tool Co., Ltd.

"We provide high-quality products for superior performance and work-cost efficiency," says Eight Tool president Yasuhiro Oka. "That is why they've been accepted by industry professionals for over six decades."

This is best demonstrated with its unique alloy steel, SNCM+V, which "provides the ideal balance of hardness and torsional resistance that is specifically suited for hexagon wrenches," explains Mr. Oka, while another critical strength is the 'fitness' of the wrench heads to bolt walls, "aiding wear resistance and torsional power transmission."



Excellent series from Eight Tool
"A unique and popular feature is Taper Head, an enhanced ball-point function that enables



Supporting industry professionals globally

a wrench to be inserted into a bolt cap from tilted angles. Countless tests and redesigns, along with our skilled engineers, result in products in which our customers can feel the difference."

With a new production management system to maximize workflow efficiencies and an eye on automation, this small company with big dreams is striving forwards, for continual product

improvement and even more global reach through new sales and promotional partnerships.



Eight manufactures 2,000+ products to meet diverse needs

"With our international partners, we try to learn local demands and make sure to provide the best suitable products possible, one customer at a time."



<http://eight-tool.co.jp/en>

Creating the lightweight steel cables pulling the automotive industry forward



"We strive to be an attentive company that provides detailed care, sensing what our customers need."

Hisashi Kikugawa, President,
Chrysanthemum Co., Ltd.

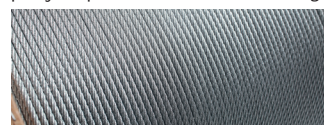
In the automotive industry, the ability to produce the lightest, most streamlined products possible while ensuring strength is paramount, especially as the transition towards electric vehicles (EVs) marches on. One of the companies working to make high-quality yet lightweight components is Japan's Chrysanthemum Co., Ltd.

Chrysanthemum has over 60 years' experience developing streamlined cables and demand for them is set to boom as the automotive industry seeks lighter weight solutions.



HQ (Japan)

Founded in 1960, Chrysanthemum manufactures products in two categories: stranded inner cables and coated cables. The stranded cables are mainly made of two materials, high carbon steel and stainless steel, and finished with zinc plating (galvanizing) or the company's special KIKU-GT finishing.



Steel cable

The cables are then coated with resin in response to customers' need.

Chrysanthemum works to ensure its cables are as thin as possible,



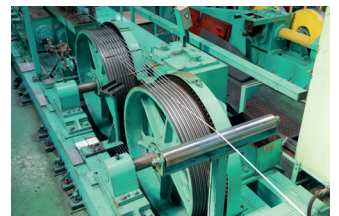
Vietnam plant

sible, as company president Hisashi Kikugawa explains: "Cables can transmit significant power without taking up space, contributing to making cars lighter."

The company's best-selling product-line is its stranded cables, which are soft, flexible and durable, and its cables have a wide range of uses, from window regulator systems to sliding doors.

In 2014, Chrysanthemum expanded by establishing a plant in Vietnam, and works on a two-pronged strategy: developing high-end value-added products in Japan whilst also meeting mass-production needs from its base Vietnam.

As it continues to develop thinner, lighter products, Chrysanthemum is seeking to work with global Tier 1 companies to discover their specific needs and demands. As



Mr. Kikugawa says, the company's slogan, 'Be Attentive', is at the foundation of all it does, from product development to customer service, and ensures its business remains as strong as the cables it produces.



www.chrysan.co.jp/english

Asahi Tekko: The *kaizen* kings leveraging data for manufacturing innovation

Under the stewardship of President Tetsuya Kimura, auto parts manufacturer Asahi Tekko has embraced DX to make changes that have transformed the company.



"Since my 2013 arrival, the company has transformed through DX technologies. We've already curtailed the annual labor cost by 3 million dollars and electricity use by 22%. In addition, we've begun a transformation process from an auto parts manufacturer for TOYOTA to an IT-focused enterprise."

Tetsuya Kimura, President, Asahi Tekko Co., Ltd.

Since his arrival at Asahi Tekko, a major automobile parts manufacturer with over 80 years' experience, President Tetsuya Kimura has set about implementing *kaizen*, or continuous improvement, through digital transformation (DX).

"When I came from Toyota in 2013, I realized there were some management problems, and the company was in a deficit," Mr. Kimura explains. "Without change, I knew our company would not survive."

He continues: "My basic philosophy is to let people do value-added work. What I want for this company is to develop the means to attain that. The reason why we do *kaizen*

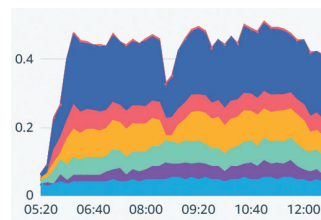


Asahi Tekko's forging process is to make a person's work easier. DX sounds complicated, but simply put, it is using digital means to make a person's work easier.

"One great example is our internet of things (IoT) system iXacs.

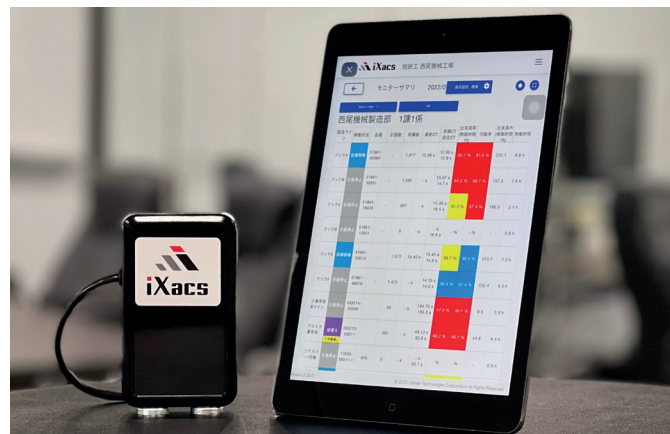
We needed a lot of effort to improve factory efficiency: employees had to take a lot of data, cycle times, operating ratios, the reasons to disturb production, and so on. I wanted them to do only value-added jobs and sought to gather such data automatically.

"Now, using IoT technologies, iXacs automatically collects the data we need 24 hours a day, seven days a week. And it analyzes the data to visualize issues in our production lines. It accelerates *kaizen* drastically. As a result, we've already



A visualization of CO2 emission data by factory area

and electricity usage," Mr. Kimura notes. "This data is used for improving factory management. For example, we found that some fa-



iXacs transmitter and monitoring screen

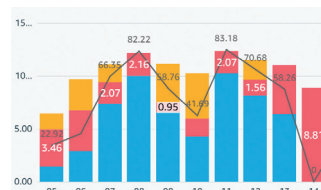
curtailed the annual labor cost by 3 million dollars (vs 2013)."

As many countries, including Japan, target carbon neutrality by 2050, Asahi Tekko's *kaizen* activities are contributing to this drive. "The global trend is to have new facilities that are more efficient when it comes to electricity, or to change to a renewable energy source," Mr. Kimura says. "The cost for both of these options is very high. This leads to less competitiveness, so companies are hesitant.

"However, we've noticed that *kaizen* activity to improve productivity also reduces energy consumption as a by-product because it reduces the standby power at the same time. By having this buffer, we're able to invest in purchasing renewable energy. For further reduction, we've started to visualize electricity consumption in real time."

Digital data collection has been key to Asahi Tekko's lower electricity consumption. "We're able to directly measure each building and area, to determine their gas

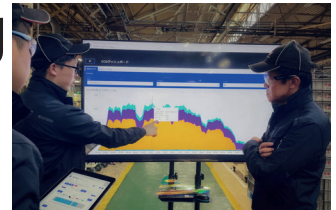
facilities supplying compressed air to production machines had excessive performance at night, and so we introduced more appropriate facilities to reduce extra consumption."



CO2 emissions of a production line every hour

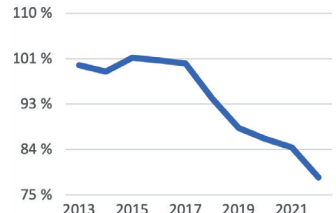
"Based on the TOYOTA Production System philosophy, we can distinguish net CO2 emissions from waste by combining operational data and electricity data. It shows us many emission issues clearly. The blue bars (in the above graph) show net CO2 emissions and the red and orange ones show waste. The black line shows net rate*," adds Mr. Kimura.

"Now we are gaining a lot of data like this to reduce electricity



Discussion about an electricity consumption graph through *kaizen* activity, and we've already reduced electricity by 22% compared to 2013 levels without buying renewable energy or high-efficiency machines.

The impact iXacs has had at Asahi Tekko has led the firm to create *Smart Technologies*, which it sells to other businesses as well as providing them with consultants specialized in supporting *kaizen* processes. "The mission is to promote and transfer the success enjoyed by Asahi Tekko to other Japanese companies through IoT," Mr. Kimura says.



Asahi Tekko has reduced electricity consumption by 22% since 2013

"We provide our services to several different industries such as screw manufacturers, chemical manufacturers and electrical component manufacturers. Regardless of the industry, these *kaizen* activities are basically the same."

Ultimately, the changes Mr. Kimura has made at Asahi Tekko are all about creating a happier, more productive workforce. "As I mentioned before, my philosophy is to let people do the work that is value-added," he says. "People's working hours could be reduced, but there could be more value added during that time. Through our systems and technologies, we'd like to contribute to that, so people can go home early and be with their families."

He concludes: "The company culture has changed, and people are enjoying their work more. That's something that's lacking in many Japanese companies. Hopefully we can change that."

*net rate = net CO2 emissions / (net CO2 emissions + waste emissions) x 100



旭鉄工業株式会社

www.asahi-tekko.co.jp

Hamaya Corporation: The recycling company of the future

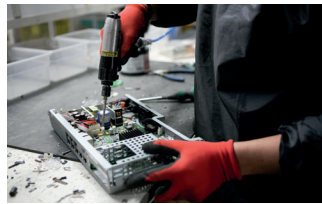
As recycling becomes an ever-more important issue in today's society, e-waste specialist Hamaya Corporation is providing quality reuse and recycling solutions.

The digital revolution has led to an explosion in the number of electronic devices we use on a daily basis, but what happens when these devices become obsolete? Japan's Hamaya Corporation, founded in 1991, is one of the companies leading the way in the recycling of 'e-waste'. The Japanese firm, which also focuses on used home appliance exports and scrap metal, works to ensure the uncountable number of electronic devices being produced are properly managed through both reuse and recycling.



Printed circuit boards

Hamaya has been handling printed circuit boards from scrap electronic devices for several years and expanded its purchasing from Japan to markets including Brazil, the



Dismantling e-waste at NPO Hamaya

Philippines, Hong Kong, Singapore and Brunei, among others. Company president Shigeru Kobayashi understands the importance of working with local companies in foreign markets such as India and

"We want to develop advanced recycling technology and introduce it into our business sector in the future."

Shigeru Kobayashi,
President,
Hamaya Corporation



Hamaya's analysis center

Africa as "the most efficient strategy" and aims to move into markets with high population densities to ensure Hamaya can have the highest impact possible.

Hamaya has its own high-tech analysis center and result quality



Hamaya's large crusher machine database, which are used to ensure the printed circuit boards it buys are optimum quality. These circuit boards are then crushed and delivered to a refining company, or in the case of its NPO arm in Japan, scrap electronic circuit boards are dismantled. Mr. Kobayashi's vision is to use Hamaya's strong standing in the business of e-waste to help create an environmentally friendly and sustainable society as global commodity use skyrockets. As he says: "E-waste needs to be properly handled, so we carry the responsibility of being a socially aware, eco-friendly company."

HAMAYA
www.hamaya-corp.co.jp

CALUX tackles cancer-causing dioxins

CALUX bioassay (Chemically Activated Luciferase Expression) is a simple and rapid method for measuring dioxins and is attracting global attention as a green biotechnology that reduces CO₂ emissions by 92% as compared to the conventional method.



"The CALUX method can tackle cancer-causing dioxins globally once it becomes the international standard method for dioxin measurement."

Hiroshi Murata, President,
Hiyoshi Corporation

One of the major causes of environmental and social damage globally is pollution. And there are some environmental pollutants such as dioxins that are hazardous to human health. Dioxins are called persistent organic pollutants (POPs) as they take a long

time to break down once they are in the environment and so are found throughout the world, particularly in the global food chain. Indeed, today more than 90% of human exposure is through food, mainly meat, dairy products, fish and shellfish. Highly toxic, these compounds have been linked to reproductive and developmental problems, as well as being a cause of cancer.



CALUX Bioassay for Dioxin Testing

In Japan, dioxins became a major social issue in the 1990s, and the conventional HR-GCMS method for analysis was expensive and time consuming. Hence there was a need to find a simple and rapid method for

dioxin analysis. Hiyoshi Corp. – which specializes in environmental services – was one of the first to address this issue by introducing the CALUX bioassay in Japan. "In particular, we focused on the field of measurement to visualize dioxin emissions and pollution," explains Hiroshi Murata, President of Hiyoshi Corporation.

Compared to the traditional HR-GCMS method, the CALUX method is rapid, sensitive and inexpensive. It can measure dioxins in a wide variety of media, including waste samples such as emissions from incinerators, soot, and cinders; general environmental samples such as water, soil, air, and sediment; biological samples such as blood, breast milk, and fat; and food and feed samples.

In recent years, CALUX (HIL6.1c2) and LUMI-CELL (VM7LucE2) have been introduced in California, U.S.A., as methods to measure AhR and ER activity in recycled water. CALUX is also being used in other applications



New Testing Building

besides dioxin measurement, such as in the development of new drugs. Having become an official method in the United States, the EU, Japan and Taiwan, CALUX is now in line to gain international standardization (ISO) certification.

"For developing nations in Asia, constant monitoring of various hotspots like open solid waste burning sites, informal e-waste recycling sites and industrial zones can be achieved through CALUX bioassay as it is a cost effective and rapid screening technique thereby tackling the dioxins issue globally," says Mr. Murata.

HIYOSHI
www.hiyoshi-es.co.jp

908 Kitanosho, Omihachiman, Shiga, Japan