The niche purveyors of Japanese monozukuri

Japan has faced stiffer regional competition from the likes of China and Korea in recent decades, as these countries have grown stronger in mass production. But behind the scenes, Japanese SMEs still dominate niche B2B industries, leveraging Japan's *monozukuri* craftsmanship philosophy, which entails the development of superior-quality products defined by unmatchable performance and technology; as well as an acute understanding of customer needs.

"The reality now is that Japanese companies can't replace or surpass the mass production volume and price competitiveness created by these Asian companies. But the Japanese are outstanding in listening to clients' particular demands," says Satoru Toyooka, President and CEO of Nippon Fusso, which specializes in fluoropolymer coatings for a range of industries. "At Nippon Fusso, our know-how and technology that have been built from our long history allow us to provide tailored solutions to clients. This sets us apart from other countries. Globally, we have a limit on taking high volume orders and competing with countries that have high production capabilities, but we can achieve an advantage by focusing on niche fields."

Japan was once the world's top producer of stainless steel, with Nippon Yakin Kogyo (NYK) being one of the most well-known stainless-steel producers in Japan. Now China is producing more than half the world's supply and so NYK has shifted its focus to specialized stainless steels and high-functional new materials.

"Japan still has a strong lead in terms of technology and quality, and this is where Japanese *monozukuri* will help us have international success," says NYK president, Hisashi Kubota. "NYK is now the sixth largest producer in the world of nickel alloys, and in 2019, we were ranked second in the field of flat products such as plates and coils. While we are currently an SME for stainless steel, we are one of the leaders for high nickel alloys, for which it is expected there will be increasing demand as we pursue a carbon-neutral society."

The move towards a carbon neutral society is also shaping the priorities of Kawasaki Thermal Engineering (KTE), which develops highly efficient and environmentally friendly hydrogen-fueled boilers. "By virtue of their long experience in craftsmanship, Japanese firms can produce products of superior quality and functionality," explains KTE president, Susumu Shinohara. "For example, we are currently developing boilers that are more compact, with higher efficiency rates and lower energy consumption. This commitment to functionality and continuous improvement is the reason why our customers highly regard us."

Indeed Japanese companies ability to stay ahead of the competition can also be attributed to their willingness and ability to acutely respond to client needs, as explained by Toshikazu Tanaka, President of Nippon Fruehauf, a leader in truck body and container technology that aims to revolutionize cold chain logistics across Asia. "Japan is consistent when it comes to product development, with the strength of Japanese companies being the ability to create added value for customers," he adds. "We not only listen to customers' demands, but we also propose potential added value to the products for the customers, allowing us to remain competitive."

A conversation with the president of any Japanese SME manufacturer always turns to monozukuri, with Kazuhiko Ueno, President of Ibara Seiki, giving his insightful take, comparing it to the age-old tradition of origami. "Monozukuri, or the art of making things, is symbolized by origami. Japanese children are raised to have a keen interest in making small, beautiful things, such as origami and plastic toys," he says. "This dedication to work from an early age symbolizes Japanese manufacturing, and the love of making things at a high level is a core element of our manufacturing. Education and training are also essential elements of monozukuri. In Japan, as employees grow within companies, they systematically consider improvements that contribute to the country's competitiveness."

A highly efficient heat energy source today for the carbon-free future of tomorrow

For over 120 years, Kawasaki Thermal Engineering has been on the boil in providing world firsts when it comes to package boilers and absorption chillers.

Kawasaki Thermal Engineering Co., Ltd. (KTE) is proud to have launched the WILLHEAT series of compact oncethrough boilers, equipped with low-NOx hydrogen combustion dry burners.

This product was developed based on KTE's experience and technologies in the manufacturing of boilers that

use hydrogen byproducts, which



Low-NOx hydrogen combustion dry burner



through boiler developed a new type of burner fueled by hydrogen, which is a highly promising, environmentally friendly, nextgeneration energy source.

Hydrogen is a clean energy source that emits no CO_2 during combustion, but due to its high burning temperature it produces roughly three times the NOx emissions of natural gas fuel. KTE's new products use dry burners, which do not require NOx-reduction measures seen in standard-type burner combustion chambers such as steam-spraying systems and exhaust-gas recirculation.

Features

- NOx emissions are kept at 60 ppm or less (at 0% 0₂) based on the low-air-ratio standards specified in the Energy Saving Act
- Rated boiler efficiency of 98%
- PID continuous control is applied for feed water to control the steam–water separator's water level, which facilitates stable water levels, and this used in conjunction with the separator's rotation function achieves a high level of steam dryness (99.8%)



Kawasaki Thermal Engineering

Kawasaki Thermal Engineering Co., Ltd. Tokyo Head Office · Overseas Project Department Tel: +81-3 -3645-8251 · E-mail: ospd@kte-corp.co.jp





Susumu Shinohara, President, KTE

Green steel for a greener society

Nippon Yakin Kogyo is leveraging its near century of manufacturing experience to create high-performance stainless steels and nickel alloys in high demand by the green economy.



"We are evolving from a stainless-steel manufacturer with a prominent history into a manufacturer of specialized stainless steels alongside high-functional new materials to meet the needs of today's world."

Hisashi Kubota, President, Nippon Yakin Kogyo Co., Ltd.

The strength of Nippon Yakin lies not only in its stainless steels, but also in its wide range of high nickel alloys, which offer excellent corrosion and heat resistance. These products are supported by manufacturing technologies developed over many years, and delivered to customers around the world by a global sales network. Our commitment to the SDGs: Electric furnaces are attracting attention in the steel industry as we move towards a decarbonized society. Our new electric arc furnace, which is scheduled to start fullscale operation in January 2022, is equipped with an Electric Arc Furnace with Rotating Body System, which eliminates the uneven melting of scrap for more efficient operation, and Electro Magnetic



Main gate of Kawasaki Plant

Stirrers for uniform stirring in the furnace to speed up the melting process and ensure uniform temperature and composition, which results in cost reduction by improving energy efficiency. A large enclosure in the furnace body will improve dust collection and soundproofing, while automation of the work in front of the furnace will improve the working environment. Materials essential for a recycling-oriented society: Our stainless steels and high-performance materials have a long service life and are highly recyclable. Their properties, such as corrosion resistance, heat resistance and low thermal expansion, are particularly needed in the field of renewable energy and new energy sources such as hydrogen.



Piers at Haneda Airport Runway

New energy field (hydrogen stations): Hydrogen stations for fuel cell vehicles are in a high-pressure hydrogen gas environment, which poses a high risk of hydrogen embrittlement (a phenomenon in which materials become brittle due to exposure to a hydrogen environment). For this reason, modified stainless steel Type 316L, which has improved resistance to hydrogen embrittlement.

Offshore structures (Haneda Airport Runway D): Our highly corrosion-resistant austenitic stainless steels NAS 185N (UNS S31254) and NAS 354N (UNS N08354) are used in the piers of Runway D at Haneda Airport. We have been conducting seawater exposure tests for decades, and the results of this research have been applied to the development and adoption of new materials.

Polka Plate (stainless steel plate for floor): Polka Plate is a flooring stainless steel sheet with excellent slip resistance, ease of cleaning and design features. It is used as a material for girders, stages, stairs and floors in food and pharmaceutical factories where hygienic environments are required.



Marine exposure test site at Kawasaki Plant

R&D and manufacturing technology: Our technical strength lies in the tradition of developing materials and researching technologies to meet the increasingly diverse and sophisticated needs of customers. As an example of our achievements, we received the John Chipman Award from the Iron and Steel Society in 2002 for our research into the control of inclusions in stainless and high-alloy steels. The award is presented for outstanding academic and industrial contributions to steel technology, and we were the first special steel manufacturer in the world to receive this award.

JV Business in China (NISCO Nippon Yakin Kogyo Nanjing Co. Ltd.): To meet the increasingly sophisticated needs of Chinese users, we launched a joint venture with Chinese steel company Nanjing Iron & Steel in 2018 with the aim of developing a local production facility and strengthening sales functions. Nanjing Iron & Steel's wide-width hot-rolling mill is capable of rolling high-performance stainless steel plates up to 5m widths.



Polka Plate (polka dot pattern and example of staircase use)

Overseas network: Since the 1960s, we have opened a series of representative offices overseas. In the 2010s, the company began to establish overseas subsidiaries, and as of 2021, it has four sales offices in the USA (Chicago), the UK (London), China (Shanghai) and Singapore. In recent years, the company has also focused on developing the growing markets of India and Latin America. We aim to expand our high-nickel allov business and to become a global supplier trusted by our customers for our industry-leading quality, delivery and responsiveness, in order to become a sustainable company for our 100th anniversary in 2025.

For more information, please visit our website: https://www.nyk.co.jp/en/

k.co.jp/en

UP TO THE CHALLENGE NEW FIELDS, NEW APPLICATIONS, NEW ALLOYS (2) NIPPON YAKIN KOGYO CO., LTD.

Cold chain expertise key to growth as Nippon Fruehauf prepares for future



"Our future target is to meet the demand for a new source of energy for vehicles."

Toshikazu Tanaka, President, Nippon Fruehauf Co., Ltd.

Founded in 1963, Nippon Fruehauf is a leading Japanese transportation technology firm that produces truck bodies, trailers, and containers, with a growing presence across Asia. Over the past decade, it has established joint ventures in China, Thailand and the Philippines.

A leader in Japan in truck body and container technology, Nippon Fruehauf's sights are now also set on other Asian markets.

Environmentally conscious in the manufacture of its transportation units, Nippon Fruehauf is committed to meeting "the demand for a new source of energy" for cargo vehicles, says its president, Toshikazu Tanaka. Indeed, the way goods are transported is expected to undergo a gradual shift, he says: "From inland trucks and aeroplanes to railway and eco-friendly ships."



A specialist in temperature-controlled transportation, Nippon Fruehauf is branching out as it tackles the issue of preserving perishable goods throughout the supply chain from producer to consumer. The company's focus must "not only be on courier refrigeration but also on warehouse storage and customer refrigeration systems", Mr. Tanaka explains.

This approach is central to Nippon Fruehauf's expansion into China and Southeast Asia, he says: "In Japan, most manufacturers and customers have their refrigeration systems; we only had to find refrigeration solutions for the couriers. China and Southeast Asian countries don't yet have the same availability of such kinds of refrigeration."

One product that seeks to fill this gap is the KANTAN small warehouse, a refrigerated storage unit manufactured by the Bangkok-based sister company of Nippon Fruehauf, Nikkei Siam Aluminium. KANTAN, meaning "simple" in Japanese, makes it pos-





KANTAN

sible to build and set up a cold storage unit quite easily.

Meanwhile, at Fruehauf Mahajak, a Nippon Fruehauf subsidiary in the Thai capital, a 'Cold Chain College' has been created, with the goal of increasing expertise in the handling of temperaturedependent goods in Asia. The company is working hard to study for the next step of the Cold Chain with customer and stakeholders in Bangkok, who are welcomed at the college.

Fruehauf Mahajak Co., Ltd.: 67/16 Moo.5 Kokfad, Nongchok, Bangkok 10530, Thailand



Today's Commitment, Tomorrow's Technology: The philosophy of Miyazaki Seiko

By constantly building upon its core technology with new ideas, Miyazaki Seiko continues its challenge to be the very best manufacturer in secondary processing of specialty steel bars and wires.

Japanese company Miyazaki Seiko is a leader in the secondary processing of specialty steel, with four major product lines: cold drawn bars, pipe in coil (cold drawn pipe), cold heading quality wire, and fine slugs.



Cold Drawn Bar & Pipe in Coil (Cold Drawn Pipe)

A firm that chiefly works with the automotive industry - "almost 95% of our products are used for car parts", notes President Motonobu Miyazaki – Miyazaki Seiko embraces continuous innovation and improvement. "Ever since the birth of the company, we've constantly been integrating unique technologies inspired by new ideas with our core technologies," Mr. Miyazaki says.

This philosophy means Miyazaki Seiko is ready for the "revolution" occurring in the automobile industry, "with electric vehicles being introduced and the switch to lightweight materials", Mr. Mivazaki says. In collaboration with its steel suppliers, the company's research and development efforts have enabled car parts made from its products to be "downsized and lightened", he explains.



Cold Heading Quality Wire & Fine Slug

A changing car industry offers up "so many opportunities", Mr. Miyazaki says, but he also concedes that electrification and weight reduction are expected to reduce steel demand. However, Miyazaki Seiko is prepared: it is taking its products into other industries and expanding its client base in the automotive market.

In 2014, Miyazaki Seiko established a plant in Mexico – a country it chose because "future growth is expected" in both population and demand for automobiles, Mr. Miyazaki says, "and we can export to North and South America".

Miyazaki Seiko benefits from a culture of close cooperation with the other companies in Miyazaki Group, he adds. For example, "Miyazaki Engineering has provided support for the introduction of production equipment, including factory automation, and technological improvements."



Mexico Plant (Miyazaki Seiko de Mexico)

Miyazaki Seiko Co., Ltd



"Ever since the birth of the company, we've constantly been integrating unique technologies inspired by new ideas with our core technologies."

Motonobu Miyazaki, President, Miyazaki Seiko Co., Ltd.



Head Office: Nagoya-city, Japan www.miyazaki-seiko.co.jp Plant Location (4 Sites): Nagoya/Jushiyama/chita/Lagos de Moreno, Mexico Products: Cold Drawn Bar/Pipe in Coil (Cold Drawn Pipe)/Cold Heading Quality Nire/Fine Slug

Supplying 2bn high-precision metallic parts to the automotive supply chain per year

With expertise gathered over more than 50 years, Tokai Riki supplies the wiper, valve, and spring needs for everything from mini vehicles to luxury cars.



Plate springs made via the yield-maximizing machining method

Established in 1948 and 1959, respectively, Tokai Spring Mfg. Co., Ltd. and its sister company Tokai Riki Mfg. Co., Ltd, have played a vital role in the Japanese automobile industry supply chain for decades -- with the former manufacturing spring parts and the latter supplying wipers and control valves for Japan's leading car makers.

In 2020, the two companies came together to form Tokai Riki Co., Ltd., combining their exper-

tise in order to enhance innovation, business development, and the ability to address the latest needs of the industry.

With environmental concerns prompting the demand for increased fuel efficiency in traditional combustion engine vehicles and the shift toward hybrid and electric vehicles, automobile manufacturers require lighter and smaller parts.

Tokai Riki is facing the challenge head-on, leveraging its

Stiffening collars inserted into plastic products

proprietary technology, such as its fine wire weaving technology and CAE analysis system, to develop wipers, flow control valves, and springs suitable for the next generation of automobiles. "Many of our major customers in the automotive industry require us to make smaller parts to fit their smaller designs," says president, Yasuyuki Nishi. "We put in a lot of effort to meet our customers' needs."



"We continue to be selected as a trustworthy partner due to our solid product development technology, stable performance, and high quality standards."

Yasuyuki Nishi, President, Tokai Riki Co., Ltd.



Kamiita Sosei: Forging a road to future success

Cold forging specialists Kamiita are geared up for the transition to electric vehicles (EVs) with competitively-priced and high-quality automotive parts.

Through their expertise in cold forged manufacturing technology, Kamiita Sosei ensures high quality while preventing material loss. Using their technology and accumulated know-how, the company specializes in producing various kinds of parts for speakers and automobiles.



"Our motto is to make products that are second to none," says Mutsuko Takeyama, President of Kamiita Sosei. "The essence of *monozukuri* in our company is to strive to obtain something that is one of a kind, and that is of better quality than with what other companies offer. This spirit is embedded within our company." Kamiita has been a leading parts manufacturer since before the 2000s, being the very first company to provide integrated backplates for speakers. However, the

company's main efforts today are in the automotive industry, where cold forging continues to play a vital part in the manufacturing process.

"We are currently focused on automotive parts, with our best-selling product in Japan and overseas being our brake piston unit. We are also well prepared for the upcoming transition to electric vehicles (EVs), as our parts are focused on steering and the chassis, not the engine," says Ms. Takeyama.

With a strong commitment to producing high-quality products,



Kamiita Sosei has made continuous investment to meet their clients' ever-changing needs.



"Kamiita aims to supply our products faster than ever and continues to offer even higher quality and more competitively-priced products to our customers."



"Producing better quality products than others is the motto of our business."

Mutsuko Takeyama, CEO & President, KAMIITA SOSEI CO., LTD.



Nippon Fusso: In prime position for the new epoch



"We are decisively looking to shift and strengthen our presence in overseas markets."

Satoru Toyooka, CEO & President, Nippon Fusso Co., Ltd.

As the world enters the fourth industrial revolution, the needs of the market are at the cusp of significant change. To meet them, Nippon Fusso, a leading developer of fluoropolymer coatings is perfectly placed; with a synergised R&D and Sales Department, over half a century of experience, as Since its beginnings in 1964, Nippon Fusso has specialized in fluoropolymer coatings and contributed to the development of global industry through the continuous improvement of and dedication to technology, guality and service.



Overseas group companies

well as a talented and diverse workforce, it can be dependably called upon to create an incredibly strong platform to meet its customers' ever shifting and increasingly exact needs.

These needs are met by Nippon Fusso's insistence on providing tailor-made solutions to the various problems its customers face. A success story that empha-

sizes this approach Teflon[®] coated equipment ing our production in

is the EC Series, as recounted by company CEO and president Satoru Toyooka: "Many companies needed coatings with anti-static features to use fluoropolymer effectively. There were no existing solutions available, so we conducted R&D and introduced the EC Series as an anti-static coating series for the first time in the world. This experiment made us realize the importance of product development to meet customer needs, and from that moment we pivoted

and became an R&D oriented company." Part of Nippon Fusso's current

vision lies

in its strong desire to strengthen its presence overseas. Mr. Toyooka is focusing upon receiving more requests from China and Southeast Asia: "HavThailand also opens up our business to countries like Singapore, Malaysia, Vietnam, and possibly China or India; the major focus for our overseas expansion will be in those areas."

In order to knit all the above together, one tenet of Nippon Fusso is not to be forgotten: the fostering of human capital. One person can do a good job, but two can do better, and teamwork

undoubtedly renders better results. As the world moves into a new era, everybody's way of living and working is about to change

drastically, and Nippon Fusso finds itself extremely well positioned to further develop industry all over the world, as it has successfully done since 1964.

Fluoropolymer coating applicator

www.nipponfusso.co.jp

Shishido: A company with its eyes firmly on the future

Shishido, a Japanese company specializing in the manufacturing of ionizers for the removal of static electricity, is entering its eighth decade in operation.



"When it comes to technology and research on the static electricity market, I believe that Japan is already ahead."

Ryuichi Takeuchi, President, Shishido Electrostatic, Ltd.

Shishido leans on one of the key Japanese watchwords to capture its very essence: '*Monozukuri*'. A compound term in Japanese merging together 'make' and 'craftsmanship', it provides Shishido with the philosophy needed for its approach, producing integrated machines that are able to overcome multiple obstacles.

In a rapidly expanding semiconductor industry, naturally, Shishido has to react quickly to potential opportunities. The company manages this by never resting on its laurels. It releases new products every year as well as working on core technologies such as HDC-AC technology – an



"HDC-AC" ionizers



optimal option to guarantee safety and cleanliness in the manufacturing of semiconductors both

for the short and medium term. Shishido can rightfully consider itself at the top of the tree when it comes to static elimination. In order to increase competitiveness in the market, Shishido's R&D and production engineering team started a nextgeneration CAB-series project which resulted in a 30% reduction in the static elimination times as well as the production of a smaller, more manageable



BF-X2ME: Blower-type ionizer

product for the customer. This is the industry's leading static elimination ionizer.

A company such as Shishido will always have its eyes fixed ahead. To be able to head in that direction confidently, Shishido has collaborated with academic institutions and other entities to achieve ever more precise measurement. With such an approach and over 80 years' experience at the head of the industry, Shishido will no doubt be increasingly recognized in North America as a top ionizer and electrostatic-related equipment company moving forward.



Teflon[®] coated Qz for SPE

Qz for SPE ing is a lesire to drastically, and Ni is pres- itself extremely w as. Mr. further develop i

Ensuring people's happiness by pursuing monozukuri in various forms

Sanka is not only an integrated manufacturer of industrial components, it serves society by expanding and adapting to provide diverse solutions within its products.



"Customers have changed their requirements for our components. Therefore, through our relationships with our clients, our products have been changing to cater to environmental needs."

Iwao Kagoshima, CEO, SANKA Co., Ltd. Businesses across all industries have been hit by the volatile nature of the past 18 months, and many are seeking to widen their portfolios to increase their adaptability. Japan's Sanka is a great ex-



squ⁺ ROOM'S shade

ample of the resilience that variety brings, growing from a component provider into an OEM and manufacturer of original products.

Company president Iwao Kagoshima reveals that understanding the diversity of customer needs has been key to this growth, explaining: "If another company is doing ten versions of a product, we increase the variations to twenty or thirty so we can provide more variety to our clients."

From heavy industrial processes to the production of OEM lifestyle goods, and its original Royal Drawer, Storanti and Natura brands, Sanka applies its motto of "living in the future" across its business operations. Working with local communities, in Japan and across the world, enables Sanka to understand both the current and future needs of each market.

With a manufacturing plant and strategic locations across Japan, Sanka can minimize logistics expenses and is always looking for innovative mergers and acquisitions to help carry out its mission of making its custom-



squ⁺ ROYAL DRAWER

ers, communities, and employees happy. As Mr. Kagoshima says, this happiness can be achieved by "pursuing *monozukuri* in various forms," and as we all know, variety is the spice of life.



'3S Segment Method': To protect social infrastructure

A leading manufacturer of plastic products since 1948, the Shonan Plastics has developed an innovative method for pipeline rehabilitation.

A firm that specializes in plastic molded products, plastic mold design and non-excavation construction methods, Shonan Plastics is dedicated to *monozukuri*, the spirit of innovation and perfection that's a core philosophy for Japanese businesses.



2000mm L224.2m

For Takao Kamiyama, the company's president, *monozukuri* is also about responding to the demands of the market. "I think the essence of manufacturing in Japan is to produce what is needed by customers and society with high quality," he says.

"My father, our founder, foresaw the potential demand for plas-



tics after the war and started the plastics business in 1948," Mr. Kamiyama continues. "Since then, we have been designing and manufacturing plastic parts for electrical, mechanical and automobile-re-

lated equipment. Based on these basic technologies, we have also focused on the renewal of pipelines, such as sewer pipes in the aging social

infrastructure."

2600mm L102.2m

"The essence of manufacturing in Japan is to produce what is needed by customers and society with high quality."

Takao Kamiyama, President, Shonan Plastics MFG. Co., Ltd.

Key to Shonan Plastics' pipeline rehabilitation is its cutting-edge '3S Segment Method', which involves assembling translucent plastic segments on the pipe's inside wall and injecting a cement-based filler

between the segments and the inner surface.

The process is twice as quick as conventional excavation, Mr. Kamiyama notes, adding: "Since it does



2000mm L224.2m

not require large-scale equipment during construction, the number of trucks will be reduced, so it also has the feature of being environmentally friendly."

Having already established a factory in Thailand, Shonan Plastics' plans for international growth are focused on Southeast Asia, in addition to the United States. "Currently, we are in the process of developing a strategy to sell our products in these countries," Mr. Kamiyama says.

