The niche purveyors of Japanese monozukuri

While Japan has faced stiff regional competition in recent decades, it has retained a competitive advantage thanks to the SME manufacturers which have excelled in developing niche technologies often impossible to imitate. Working behind the scenes and guided by the *monozukuri* craftsmanship philosophy, these niche players may be small, but they play a huge part in international supply chains, providing high-tech parts and components for tier one companies in Japan and across the globe.

One such niche player is fusemaker SOC Corporation, whose commitment to innovation has enabled it to gain the trust of high-end customers in a range of industries, including Mitsubishi Motors. Having supplied fuses for Mitsubishi's i-MiEV electric vehicles (EVs) series, SOC Corporation aims to play a big role in the EV revolution through the provision of its high-performance fuses.

"We are currently putting most of our efforts into EVs," says SOC president, Ms. Kayoko Arikawa. "However, we strive to create a more balanced portfolio by catering to different sectors. Since our main focus is developing fuses, we aim to deepen and expand our presence in the different sectors."

Indeed, with the changing global market landscape, diversification is necessary for Japan's niche players. While Mitsui Matsushima Holdings (MMH), whose business had traditionally focused on the coal industry, may not be a small company, its diversification efforts have involved acquiring niche companies in a range of industries, including electronics and semiconductors.

"The market is ever-changing but having strongholds in the niche market helps us to promote the best features of our products and show adaptability towards market needs," says president of MMH, Taishi Yoshioka. "The target is not only diverse areas but most importantly focusing on the areas of *monozukuri* manufacturing companies."

One concept found at the core of all Japanese niche manufacturing companies is this *monozukuri* philosophy that underpins the high quality for which Japan is famous. Yasuo Tanaka, president of rebar processing machine manufacturer, Toyo Kensetsu Kohki, gives his take on *monozukuri*.

"Monozukuri starts with working together with our customers to find out what their problem is, identifying it, and then our mission is to give shape to the solution for that problem," he says. "Our relationships define what we need to manufacture for our clients, and we manufacture what each client needs at the cheapest cost possible and then provide those machines for our customers. That is the baseline for monozukuri and we have more than 100 types of machines for cutting and bending."

Like SOC, SPK Corporation, a company specializing in the trading of automotive parts, has its sights set on the shift to EVs, with its vision to become "a comprehensive trading company for mobility". While it continues to grow its support for the EV market by providing vital components, the company aims to strengthen its global presence through its new 'GSPEK Premium' brand, as well as collaboration with overseas firms to enhance its technological capabilities. "We will continue to grow the automotive parts business, while also increasing our global footprint," says president, Kyoichiro Oki. "We are recently working very closely with overseas manufacturers, particularly in Europe. We are learning from their technology and by collaborating with those manufacturers, we are promoting new development."

When it comes to niche, it doesn't get any more niche than space recycling, which is now the goal for recycling firm Chubu Nihon Plastics (CNP). Having cemented its reputation as a leader in the recycling and pelletizing of plastic waste, CNP has now extended its astronautic ambitions beyond earth.

"Our ultimate goal is to save planet earth and be eco-friendly. We are a recycling company that is continuing to advance toward cosmic-scale recycling up to space debris," says CNP president, Makiko Yukishita. With lofty goals like this, the sky is certainly not the limit for Japan's niche players as they look to channel *monozukuri* to meet the global market needs of now and the future.

Steel at the heart of Japanese industry

Steel recycling firm Shin-Ei Holdings is a company that epitomizes Japan's modern economic miracle in the face of mineral resource scarcity.



"We have diversified and are now focusing more on our Shin-Ei Eco Life business, which deals more with the disposal of industrial waste."

Toyohisa Kaneko, President, Shin-Ei Holdings Co., Ltd.

As an island that is scarce in mineral resources, Japan's economic success has long been considered somewhat of an industrial miracle, with the country having had to develop technologies that process and utilize imported materials in an efficient and innovative manner. Shin-Ei Holdings is one such company that has pioneered such industrial processes.



"Japan has faced the challenge of a scarcity of resources for a long time and our biggest mission has been to effectively utilize the resources available to us," explains Toyohisa Kaneko, president of Shin-Ei Holdings. "Of all the materials and resources, Japan has focused on steel the most. There is the saying that 'steel is a nation'. That is why the value of steel has increased."

As steel is a very high-performing recycling material, it is difficult to recycle steel that is mixed with other metals, such as aluminium and copper, and therefore finding ways to separate steel from nonsteel metals has been a core focus for the company. However, with society, economy, and the global environment changing rapidly, many new issues have emerged.

"We have recognized that our mission also encompasses initiatives to solve issues beyond the scope of the recycling business," explains Mr. Kaneko. "Whilst Shin-



Ei Kinzoku – our scrap steel processing business – remains the axis of all of our group companies, we have diversified and are now focusing more on our Shin-Ei Eco Life



business, which deals more with the disposal of industrial waste."

Whilst not all scrap materials are equally valuable, materials such as aluminium, brass, and copper are much more sought after in the international market. In this regard, Shin-Ei Holdings is adapting to focus on these more high-demand products.

"Steel is mixed with so many other different metals, such as copper, nickel and chrome, to make it stronger or harder, so there is a lot of recycling potential for steel materials. In the automotive industry, there is a rapid movement towards electric vehicles under Japan's Carbon Neutral Strategy, so we are paying attention to batteries and coppers, meaning such materials are very much on our radar going forward."



www.shineikinzoku.co.jp/en

митяли матялянима нограмы From coal mining to the monozukuri manufacturing business

Mitsui Matsushima Holdings has shifted from coal to acquire a diverse range of businesses that all share two things in common: the *monozukuri* manufacturing philosophy and the ability to meet market demands with niche technologies.



"I can confirm that it was the right thing to do to acquire these very precious surviving manufacturers in a small market here in Japan."

Taishi Yoshioka, President, Mitsui Matsushima Holdings Co., Ltd.

Faced with unprecedented market changes, such as those brought about by a shrinking and aging domestic population and shifting industry demands due to climate change, Japanese companies have had to adapt to survive. With the Japanese government's goal for Japan to become a carbon-neutral country by 2050, Nippon companies involved in the automotive and traditional energy sectors are faced with the tough challenge of reorienting their business towards new areas such as electric vehicles and renewable energy.

Having seen the changes on the horizon, former coal-focused company Mitsui Matsushima Holdings (MMH) began diversifying its business in 2011 before acquiring straw maker Nippon Straw in 2014. Since then, MMH's M&A activity has extended to include the acquisition of companies operating in a range of sectors, including electronics, semiconductors, paper shredders and order-made suits.

MMH's foray into M&As began when current president, Taishi Yoshioka, joined the company in 2013. Some of his colleagues were apprehensive about his plan to buy Nippon Straw, but the move paid off, paving the way for MMH's



Sansei Denshi's Loading Unit

path towards a thriving future that would no longer depend on its coal-based activities.

"We have been shifting from coal mining towards more stable businesses through M&As and now the coal business is no longer our main business," says Mr. Yoshioka. "The target is not only diverse areas but most importantly focusing on the areas of *monozukuri* manufacturing companies. These are small-yet-top niche companies in each sector."

While these niche companies operate in diverse sectors, what they do share in common is indeed the Japanese monozukuri (craftsmanship) manufacturing philosophy, and the ability to meet market demands with their niche technologies. Boasting a 70% share of the domestic market for telescopic straws, Nippon Straw has developed marine-biodegradable plastic straws that are already distributed to major convenience stores. Turning to electronics: Clean Surface Technology (CST) manufactures mask blanks for electronic components related to semiconductors used for various electronic devices, while Sansei Denshi develops hardware- and software-related crystal devices for high-end electronic manufacturers, and has the capacity to develop machinery for the production of crystal devices at the smallest size possible.



Bio-straw







Mask Blanks



Telescopic Straw www.mitsui-matsushima.co.jp/english



Sansei Denshi's High-Speed Assembling Equipment

Up to now, crystal device makers have had to use expensive semiconductor equipment as there is no front-end equipment available for crystal devices. In response to the needs of the industry, Sansei Denshi is developing front-end equipment specifically for crystal devices. And Mr. Yoshioka wants to see Sansei collaborate more with CST, which has experience in front-end equipment. "CST has some know-how because their clients are making photomasks using front-end equipment. They have already met a couple of times. I encouraged CST and Sansei to have more meetings to exchange knowledge and know-how," he explains

While a small share of MMH's operations still covers coal, its focus has shifted massively to *monozu-kuri* manufacturing under Mr. Yo-shioka's leadership. And the company's transformation will continue into the future as it looks global, where it has already established its presence in Thailand through two subsidiaries, Thai Systech Kyowa and T SECURE, which manufactures Meiko paper shredders.

"I joined the company eight years ago and it became my belief that we should not count on coal. I thought the right thing to do was to transform," Mr. Yoshioka concludes. "Having served as director of Nippon Straw, Hanabishi, Clean Surface, Meiko Shokai, and now for Systech Kyowa, I can confirm that it was the right thing to do to acquire these very precious surviving manufacturers in a small market here in Japan. It's fun to have them. It's fun to work with them. They are indispensable."

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SPK Corp: playing a vital part in the EV revolution

Car parts trading company, SPK Corporation, is an example of how Japan's automotive sector is gearing up for the switch to electric vehicles (EVs).

With a global value set to exceed \$800 billion by 2027, the fast accelerating electric vehicle market is expected to explode over the next decade. Asia-Pacific is set to be the highest revenue contributor to that figure, meaning Japan's automotive parts industry, alongside its renowned car manufacturing industry, is well placed to capitalize on this modern transport revolution.



SPK Corporation, a trading company specializing in automotive parts, is one such Japanese firm which is already strategizing ahead for this future growth.

"By 2030, the automotive industry is set to change dramatically - and the aftermarket will change correspondingly too - due to the increase of EVs. Currently, 30% to 40% of SPK's exported goods are components for internal combustion engines (ICE). Eventually we will not have any ICE vehicles on our roads," says Kyoichiro Oki, president of SPK Corporation. "This is well represented more widely by the concepts and trends we are also now witnessing in the areas of 'CASE', which stands for Connected, Autonomous, Shared, and Electric. We need to respond to those changes."

So how does a company like SPK Corporation plan to respond to this shifting ground and set about adapting its business model? "Currently we have eight overseas locations, but we will increase those locations going forward so that we can enhance our overseas activities both in terms of the width as well as the depth of our activities," the company president explains. "At our headquarters, we are focusing on investment into the development of the new product lines under our new private brand, 'GSPEK Premium', which we will launch this October to cater to these market trends."

As a trading company, SPK's strategy is also to increase its collaboration and alliances with parts manufacturers and workshops in order to navigate the future challenges and opportunities at stake. "Alongside the Japanese manufacturers, we've recently been working very closely with the overseas parts manufacturers of NEXUS group, particularly in European countries. Also, we started partnerships with workshops," says Mr. Oki. "We are learning from their technology and getting insights into their market trends as well. By collaborating

"The automotive industry is set to change dramatically due to the increase of EVs. We must respond to those changes."

Kyoichiro Oki, President, SPK Corporation



with those manufacturers and workshops, we are promoting the new development of the automotive sector. The vision we are targeting is to become a comprehensive trading company for mobility and we are challenging ourselves to achieve it."

Sincerity Passion Kindness www.spk.co.jp/english/

The trailblazer in plating technology

The first company in the world to industrialize plastic plating technology, Kanto Kasei Kogyo remains at the forefront of surface treatment technologies to this day.



"The plastic plating technology which we developed a long time ago is still very prevalent throughout the world and about 80% of the technology we invented is still used in the same way today."

Takeshi Miyazaki, President, Kanto Kasei Kogyo Co., Ltd. Since inventing the world's first plastic plating technology back in the 1960s, Kanto Kasei Kogyo has grown to become a leader in plastic plating, metal plating and composite plating.

Established as an independent company that separated from Kanto Gakuin Technical School (now Kanto Gakuin University) in the 1960s, Kanto Kasei Kogyo has continued to work in collaboration with universities to develop surface treatment technologies associated with plating technology for a wide range of fields.

Today most of its plating products are used in the automotive industry, ensuring the high-

performance and durability of both interior and exterior car parts. "Lightweight vehicles use more





plating technology nowadays, so that is our focus now," says president Takeshi Miyazaki, in reference to the shift to lighter and more fuel efficient vehicles due to environmental concerns.

Kanto Kasei Kogyo itself has shifted to using chrome free plating products, which are more environmentally friendly, while also aiming to completely eliminate the use of highly-polluting hexavalent chrome from the manufacturing process. As Mr. Miyazaki states: "We are the very first company in the world to implement plastic plating so we also want to be pioneers in eliminating environmentally harmful plating methods."

Moving forward, Kanto Kasei Kogyo aims to diversify into new business areas, including painting and the development of plating products for the amusement and domestic appliance industries.

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https://en.kantokaseikogyo.com/

High-precision casting and prototype production



"The products and services we offer embody the spirit of Japanese monozukuri."

Susumu Asanuma, President, Asanuma Giken Co., Ltd.

From aluminum casting and CNC machining to measurement devices, the three divisions of Asanuma Giken are united through excellence in delivering high-precision to the automotive and aircraft industries. Drawing on its expertise in monozukuri manufacturing, Asanuma offers

superior quality products and services, with its product development always guided by the latest demands of its customers, such as those brought about by a shift towards electric and lighter-weight vehicles.

The essence of monozukuri is the ability to provide the best possible solutions to obtain the products, equipment, or prototypes with the highest capability," says company president, Susumu Asanuma. "Our newest coordinate measuring machine (CMM), Zeiss Xenos, is an embodiment of that spirit. This high-end measuring machine was engineered to provide maximum precision, and it reflects the demand of our customers."

Precision casting has become the company's major business activity, particularly aluminum sand casting and prototype manufacturing. Asanuma has established an integrated production process that combines a series of steps, including casting, machining, measurement



and inspection, thus allowing the company to provide its customers with the most advanced prototype production.

"We have achieved a dramatic reduction in delivery time by handling all processes from casting and heat treatment to machining and measurement through integrated in-house production. We propose the most appropriate method to our customers, taking into account the ease of machining and casting," Mr. Asanuma explains.

With a growing international presence, Asanuma aims to strengthen its foothold in the US and Europe over the coming years, while continuing to develop new products such as its Quality Master-M, an accuracy checking tool for 5-axis machining centers that will soon be delivered to a reputed aircraft manufacturer.



Forging the future of Japanese manufacturing

With decades of accumulated technical expertise, Yamanaka Eng manufactures with all types of forging tools, computer-assisted engineering solutions, and advanced sensors to develop new technologies and services.

Founded in 1961, Yamanaka Eng continues to take a customer-led approach to its necessary innovation in the face of major challenges within the forging industry.

With its large corporate network centered in China, Thailand, India and Singapore, Yamanaka Eng is an expert in its three main but distinct business lines: hardware, consultancy, and software.



The latter line boasts the DEFORM CAE (computer aided engineering) software, as well as the PiezoBolt monitoring system, for both of which Yamanaka Eng is Japan's sole distributor. These and similar technologies and innovations are proving to



provide the company with exciting opportunities in the existing market.

also faces looming challenges on the horizon: it is generally accepted that there will be a marked reduction of

forging parts required in the shift to electric vehicles. President Masashito Yamanaka, however, is not concerned and sees it as an opportunity: "We believe we can utilize our manufacturing, CAE, and sensing technologies... there is an increased demand for them

"The strength of Yamanaka Eng is in our people, who are constantly taking on new challenges and solving difficult problems with our customers."

Masahito Yamanaka. President, Yamanaka Eng Co., Ltd.

> in other industries such as for computers where the use of aluminum

and copper is being optimized by forging technologies as opposed to cutting." Another issue,

especially pressing for Japanese companies, is that of an aging population.

For Yamanaka Eng this can mean losing aged but skilled craftsmen. Again though, Mr. Yamanaka sees an opportunity in this challenge: "We can provide automation and robotics knowledge that we have been accu-



mulating, for example our monitoring sensors, and CAE that could replace the ability of the craftsman and make the production line continuous."

This family-run business has organically curated an atmosphere in which employees think together with their customers to achieve their goals and to overcome challenges. Yamanaka Eng puts innovation first, an approach which makes the near and distant future less daunting. This company will always adapt by identifying and catering to the needs of the market as they develop.



Yamanaka Eng

CONTENT BY THE WORLDFOLIO

FYH: the future of bearing technolog

Since its establishment in 1950, FYH Inc. has set the standards in bearing technology.



In a world where cheap, inferior products are flooding global markets, quality has become the cor-



Stainless series

nerstone for Japanese manufacturers, and this is embodied by bearing producer FYH. Since the creation of

"We are trying to achieve better precision and accuracy for our production. That is our competitive edge and capability."

Yasukazu Kobayashi, President, FYH INC.

> its revolutionary Pillow Block Units in 1950, the company has been synonymous with high-performance bearings, but president Yasukazu Kobayashi knows that quality alone will not keep his company at the forefront of the market.

Instead, Mr. Kobayashi ensures customer needs are at the focus of every aspect of product development at FYH, and the evolution of the Pillow Block Units shows this in a microcosm. The product has been adapted to clients' demands to be able to survive guite high temperatures, high-speed rotation, and exposure to water. As Mr. Kobayashi says: "Unless we listen to the customers' needs and respond accordingly, the products will not be accepted."

This philosophy is the driving force behind FYH's ZK model bearings, created for ease of use and installation to ensure customers can work with the product without the need for highly-skilled engineers, as well as the Bullet Point set

screw, which as Mr. Kobayashi explains: "is а one-piece ball point set screw with superior holding power especially where vibration is present. This saves money for our

customers because it causes less shaft damage."

FYH's attention to detail and customer centricity has enabled the company to expand across

Asia and into the European



and U.S. markets. Indeed, the company now has a production plant in China, equipped with Japanese machinery and production management system, a subsidiary in the United States, and is looking

to further ex-

pand its network

of distributors

in the Euro-

pean market.

This expansion

is underpinned

by the belief that innova-

tion is driven

by connect-

ing knowledge

Broad range of FYH products

make these connections a reality.

FYH FYH INC. www.fyh.co.jp/en

Toyo Kensetsu Kohki: the rebar processing machine manufacturer creating made-to-measure solutions

Toyo Kensetsu Kohki understands that every customer has different needs and creates tailored machines to develop customized solutions.



"We have over 100 different types of machines, and these machines can respond to new trends."

Yasuo Tanaka, President, Toyo Kensetsu Kohki Co., Ltd.

Japanese craftsmanship has built its reputation on guality and attention to detail, but companies like rebar



Automatic rebar bending machine

processing machine manufacturer Toyo Kensetsu Kohki are showing that responding directly to the customers' needs is now a central part of the monozukuri philosophy.

Founded in 1959, Toyo Kensetsu Kohki develops specialized machines to create tailored solutions for each client's specific needs. This commitment to understanding the customer is reflected in the company's impressive 111 patents for rebar processing machines, and its team of sales representatives who can also carry out simple repairs when visiting clients.

As Toyo Kensetsu Kohki's president, Yasuo Tanaka, succinctly says: "Our relationships define what we need to manufacture for our clients, and we manufacture what each client needs."

Not only does the company have a long history in the rebar processing industry, it also has an eye on the future with its unique TLINKS V-Spec IoT technology which collects



Automatic rebar cutting and bending machine

data from its machines. Mr. Tanaka aims to use this data to improve the productivity of rebar fabrication



Finished goods

factories around the world where TOYO machines are delivered, as well as reduce material waste.

The company is looking to expand into the ASEAN market, where it can use its centralized, off-site rebar processing system to improve accuracy and safety, something Mr. Tanaka believes strongly in as "it is a basic human right to live in a safe place, and that right should be guaranteed in other countries, not just Japan."



from around the world, and FYH is continuing to

Molding Japan's manufacturing growth



"Our Juken production system enables reliable production with original molding machines and is optimized for precision micro molding."

Naoki Matsuura, Chief Executive Officer, Juken Kogyo Co., Ltd.

Juken Kogyo fully leverages its expertise in micro- and nano-precision technologies to produce plastic components, offering micro-gram (one millionth of a gram) gears and nano-machined products through its precision injection molding. Founded in 1965, today many of With its precision molding technology, Juken Kogyo contributes to key sectors of the economy that require such meticulousness and quality.



Demo-products for trade shows

the company's plastic parts are used for various products that support the Japanese manufacturing industry, whilst also supplying micro parts to manufacturers all over the world.

"Our Juken production system enables reliable production with original molding machines and is optimized for precision micro molding," says Naoki Matsuura, president of Juken Kogyo. "Getting to where we are today was a huge challenge and it took us more than 10 years to develop the production system. But we thought, by utilizing this technology to create plastic molds, maybe we can serve society in many ways and create solutions for many people."

By concentrating on precision technology, Juken Kogyo is now fulfilling this vision, contributing to key sectors of the economy that require such meticulousness and quality in their products, such as optical, medical, household appliances, automobiles, and even food manufacturing.

Its business strategy also means that Juken Kogyo is well placed to adapt to and address some of the main trends affecting the global plastic manufacturing sector, which include demand for greater sustainability, cost efficiency, and advanced lightweight products.

"Our defect rate is about 1 ppm (parts per million)," says Mr. Matsuura. "We produce 3,000 different items every month and our defect rate is extremely low, which is very nice for us, but great for our customers too."

> JUKEN en.juken.com

DAISEN: offering limitless possibilities through foaming resin



"Our strategy will continue to pursue foamed resin applications by supplying the best molding machines and peripheral systems."

Akira Hayashi, President, DAISEN CO., LTD.

Foaming resin technology will be essential in future manufacturing applications for industries such as electronic home appliances, construction and civil engineering, food containers and automotive. Foam resin is also contributing to the realization of sustainable development that balances a low-carbon society and a recycling-oriented society in

the face of environmental issues such as the need to reduce CO2 emissions and increase recycling.

A leader in its field, DAISEN is one of Japan's foremost molding machine makers, having fostered extensive research and development of better molding processing technology.

"Our strategy will continue to pursue foamed resin applications by supplying the best molding machines and peripheral systems," says president, Akira Hayashi. Responding quickly to the changing times, DAISEN offers a wide range of development proposals to meet its customers' product and component design requirements. For example, Asahi Kasei Corporation's SUNFORCE (m-PPE resin foam beads) excels in flame retar-

dancy, heat resistance, and heat insulation, and is expected to have high functionality in battery components. Foam beads

developed by taking advantage of polyamide-derived heat resistance are expected to improve impact resistance and sound absorption, and to bond with different materials such as metals and GFRTP. Moreover, highcycle molding is possible using steam foam molding machines.

"We will continue to develop our own molding technologies



EPS-EPE Molding MC

in conjunction with material technologies to deliver 'Only One Technology' with innovative production methods and 'Only One Service' in order to provide customers with new value in molding performance," says Akira Hayashi.



https://www.aasen inc.co.jp/cng/ https://www.asahi-kasei.co.jp/ infofoam/sunforce/



Chubu Nihon Plastics: taking plastics recycling from land and sea, and onto space

CNP CEO, Makiko Yukishita, sees this relatively small company playing a big role in changing mindsets on recycling, while her ambitions also extend to not only handling plastic waste from land and the ocean, but also space.

There is no denying the fact that plastic is an extremely useful material, which is why it has become so ubiquitous in our everyday lives. However, 40% of plastic is used only once before being thrown away. And as the consumption of plastic continues to grow, particularly in emerging economies, dealing with plastic waste has become one of the biggest challenges of the 21st century.

Like the climate change crisis, the plastic waste crisis has forced us to examine our consumption habits, but a much bigger change in mindset is required to really tackle the problem, believes Makiko Yukishita, president of Japanese recycling firm Chubu Nihon Plastics.



"We need to think of the longterm effects of our actions. Many people still need to realize the urgency of recycling for the ecology," says Ms. Yukishita.

"Our ultimate goal is to save planet earth and be eco-friendly. We are a recycling company that is continuing to advance toward cosmic-scale recycling up to space debris."

For the past 50 years, CNP has been engaged in the business of collecting defective or waste products discharged from plastic molding manufacturers associated with the automobile and electronics industry, which it then grinds and pelletizes into recycled raw plastic materials.

But over the years the company has flexibly changed its business in accordance with the times, with its focus having shifted more towards compounding technology.

"From a broader perspective, we seek to contribute our best efforts towards expanding our business as an ecological company. And the

compound business is a step further than the conventional recycling and pelletizing of plastic waste, and provides raw materials that meet customers' requests," explains Ms. Yukishita. "Currently, we

are using our long-standing technology to compound optimum raw materials and additives and stably supply high-quality materials to molding manufacturers." "We are not only pelletizing the

"We are not only pelletizing the waste material we acquire, but we also utilize the waste from the ocean," she adds. "As an archipelago, Japan has a scarcity of certain resources, but it has abundant access to clean water, forestry, and greenery. It also possesses top-notch technology for re-

cycling towards e c o - f r i e n d l y projects. Therefore, we want to take advantage of these and play an active role in changing people's outlook towards preserving the earth."

Ms. Yukishita's ambitions also extend to not only handling plastic waste from land and the ocean, but also space. As such, she established a jointventure company with Shizuoka Univ. in December 2020. Prof. Nohmi of Shizuoka Univ. has been researching space tethers, which are expected to be applied to space elevators, for more than 10 years, and has

launched six microsatellites for demonstration experiments. As the world's space industry continues to grow rapidly, the problem of space debris becomes an increasingly bigger issue. Ms. Yukishita believes that with her

track record in recycling plastics combined with Prof. Nohmi's track record in satellite development, the pair can cooperate so something new can be done to tackle the growing problem.

"There are no good prospects for recycling methods or legislation in space. Therefore, we would like to take on the challenge of space recycling which still has many issues.

It may sound crazy that we are trying to challenge space recycling but with our long track record of more than 50 years of experience, we are always thinking about other assignments and problems that we can solve," she explains. "Our target areas

are the land, the ocean, and space. Realistically, we need a lot of support to make our dreams come true. It takes a lot of processes and time to



"Our target areas are the land, the ocean, and space. Realistically, we need a lot of support to make our dreams come true."

Makiko Yukishita, President, Chubu Nihon Plastics Co., Ltd. and Stars Space Service Co.

develop technology to solve difficult problems in space. We can't magically solve the problem right now, however our company will continue to pursue different business approaches and



provide the impetus needed to attract interest in space activities. We need to find people who are interested and believe in the business and activities that we propose. If you are interested, please contact our company."

CHUBU NIHON PLASTICS https://www.cnp.co.jp/ Stars Space Service: https://stars.co.jp/