Smart building: Japan embraces DX

Japan's labor shortages due to its aging population, the need to refurbish and maintain aging infrastructure, the post-pandemic New Normal, increasing natural disasters, climate change and the shift towards carbon neutrality due to environmental concerns. These are just some of the main challenges facing the construction and related industries in Japan today. And in order to tackle these challenges, companies and stakeholders are turning to DX (digital transformation) and the power of new technologies such as IoT and automation. Meanwhile, in the field of building management, as the concept of smart cities continues to take hold, DX is helping companies to advance 'smart' facility management.

"Carbon neutrality is a big theme and we're taking active steps towards achieving it. We have aging infrastructure, reconstruction, redevelopment, and also the fortification of national land to protect it from disasters, together with regional revitalization and carbon neutrality. There are so many things that we need to tackle," says Hidenori Nozaki, President of Oriental Consultants Group, giving his view on the current landscape of the construction sector.

"The Ministry of Land and Infrastructure, which oversees the construction industry, is actively promoting the introduction of DX, including BIM (building information modeling), and next fiscal year many of the consulting firms seem to be introducing BIM in their businesses. In Japan's construction sector, each step of the building process (studies, design, and construction) is conducted by a separate entity (for example, consulting firms, research companies and construction companies). For this reason, it is vital to introduce BIM in order to have a means of comprehensively managing data."

DX and renewable energy are top considerations now for facility construction specialist Sumitomo Densetsu, which has reoriented its business model in order to better focus on both of these fields. "With the introduction of the New Normal and measures such as non-contact offices and medical facilities, a new type of construction business has emerged and this business is booming," says president Makoto Tani. "Demand for energy-saving measures and energy-efficient renovations is increasing as we move toward a carbon-neutral society. At the same time, the need for data centers and telecommunication infrastructure such as AI, IoT, and 5G is increasing as we enter an era of digital transformation. We have spent a lot of time discussing business opportunities related to DX and carbon neutrality."

Predictions have it that due to Japan's demographic issues, the number of workers in the construction industry will decline by 1.2 million by 2030. "As a result, our biggest goal is to increase the productivity and efficiency of our workers. Smart construction has become one of our major solutions to enhance productivity," says Hiroyuki Ogawa, President and CEO of Komatsu. "The smart construction program is a hybrid business model that incorporates the hard OEM infrastructure devices and the soft ICT and software. We have solutions and machinery that can contribute to the goal of carbon neutrality. This layout and plan are designed to provide support to our customers in their manufacturing processes from conventional machinery all the way to digital transformation and carbon neutrality."

When it comes to building management and building controls, companies must think long-term, and provide consistent solutions and services throughout the years, highlights Kiyohiro Yamamoto, President and Group CEO of Azbil Corporation, a leader in automation solutions. "Our company has the system, solutions and technologies to do so. For example, we have solutions that take into account the deterioration of a building over the span of many years as well as the external environment, such as changes in temperature and weather conditions. We connect buildings in Japan across our extensive network in order to ensure and provide stable and consistent quality of service for a long period of time. There are some 4,000 buildings that are all connected this way. This network allows us to gather data to ensure our quality of service."

Another leader in automation solutions, SoftBank Robotics is leading the charge in IoT-enabled robots for smart facility management, with adoption of such technology increasing among SMEs, which have been slower to turn to AI solutions. "With our company, products like AI commercial cleaning robots, such as the Whiz series and Scrubber 50 Pro, and tray delivery robots, such as Servi and Keenbot, are already penetrating into SMEs, and this kind of robotics is something that is incorporated into their business operations and has contributed to both customer and employee satisfaction, as well as improving efficiency," explains president and CEO, Fumihide Tomizawa, who also highlights Softbank's Robot Integrator strategy. "As a Robot Integrator, we not only provide robotics products themselves but consulting services for businesses seeking to introduce robotic solutions."

A leading provider of industrial automation and control solutions and testing and measurement equipment, Yokogawa is also championing DX for smart facility management while bringing industrial automation to new heights. "One of our core approaches is the provision of industrial autonomy solutions that assist our clients in incorporating higher-level AI, robotics and blockchain technology to increase their level of autonomy to maturation," says president and CEO, Hitoshi Nara. "In doing so, safety is enhanced and workers are given more time and room for creativity. Our clients are moving at an accelerated pace in this direction."

Returning to construction: renovation and refurbishment of old buildings and aging infrastructure is an important field in Japan. A company known for high-quality fasteners for multiple applications, Unytite is supplying fasteners and connecting devices to protect and reinforce world heritage buildings. "And that is ongoing in parallel with our new business to support wind power generation and generate clean energy. These are the two axes that we would like to go for in the future," says Jun Hashimoto, President of Unytite. "On the construction side, we have gained more business by providing not just the bolts and nuts, but components and other types of items. We have been involved in more of these jobs concerning the reinforcement of old castles and such buildings. This type of work is important for the construction market. It is a subsector that interests us when it comes to growth."

Indeed when it comes to growth, Japanese companies have had to look overseas to expanding opportunities due to the shrinking domestic market – another byproduct of the country's aging population.

"What we're doing right now is trying to expand our portfolio to cater to mass markets as well as the premium zone on a global scale. For example, in Japan, we have AXIEZ-LINKs, and those are standardized products," says Tadashi Matsumoto, President and CEO of elevator manufacturer Mitsubishi Electric Building Solutions Corporation. "Also, what we do is we change the supply chain management system. By doing so, we provide these AXIEZ-LINKs, and also for local or regional markets, we are producing standardized products whilst suppressing the cost. That's how we want to expand our portfolio.

"Altogether globally, we have 900,000 elevators. In Japan we have 240,000 elevators and we have been providing, and will continue to provide, maintenance services, operational services and renewals. That is going to be where we see our business value."

Meanwhile, niche leader Oshika, which supplies wood adhesives and general construction materials, also aims to spread its wings worldwide. "We are looking to expand in the housing industries of countries that utilize wood as a central material. We want to promote our adhesives in these overseas housing markets which have such government policies," explains Kazuhide Horiguchi, President of Oshika.

"We have a very steady track record in expanding products and technologies related to adhesives in both the housing and non-housing industry. Now, the industry is experiencing a turning point. Oshika is willing to spread our products and technologies more and more."

SoftBank Robotics launches new Robot Integrator strategy

The initiative will help the company to achieve its stated aim of designing and developing robots that connect people and technology to change the way we live.

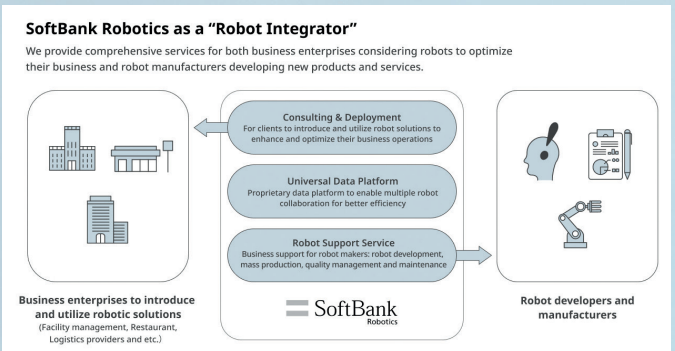
Founded in 2014, SoftBank Robotics Group Corp. (SBRG) has, in a short space of time, become an industry leader in the field of service robotics, a sector whose global market is expected to double between now and 2030, reaching approximately $44 billion.

Drawing a distinction between SBRG and other companies, president and CEO Fumihide Tomizawa notes that though people "tend to regard the installation of robots as a solution to improve work efficiency," it also has the potential to improve the level of service provided to *customers*, "to create synergies between humans and robots."

"Our aim," he states, "is to create a society where humans and robots can co-exist."

AI Cleaning robot "Whiz"

And this, in a nutshell, is why the company has been developing its business as a Robot Integrator (RI), ushering in a new era that goes beyond simply making robots, to offering a suite of customized solutions.



Mr. Tomizawa takes up the thread: "As a Robot Integrator, we not only provide robotics products themselves but consulting services for businesses seeking to introduce robotic solutions. In addition, we offer business support for robot makers which encompasses robot development, mass production, quality management and maintenance support. Finally, we manage a proprietary data platform to facilitate the optimization of the global robotics business."

In order to consolidate its position as a Robot Integrator, the group also operates a diverse network of affiliates including firms such as Smart BX which propose and provide cleaning services with DX solutions to its customers in Japan.

"Smart BX is the company that proposes and provides facility cleaning services with total DX solutions to its customers in Japan. Utilizing the experiences with Smart BX, we also provides similar services in other countries," Mr. Tomizawa explains, "while Iris Robotics, a joint venture with Iris Ohyama, supports robot operation and maintenance by utilizing Iris's network and knowledge."

Looking to the future, Mr. Tomizawa is targeting small and medium-sized enterprises (SMEs,) which, unlike larger corporations, have traditionally been slow to incorporate robotics solutions into their day-to-day business practices.

"With our company," he says, "products like AI commercial cleaning robots, such as the Whiz series and Scrubber 50 Pro, have started being used more widely in SMEs, and the same is true for tray delivery robots like Servi, Keenbot and Delivery X1."

> "The next decade will see exponential changes in the field of robotics."
>
> **Fumihide Tomizawa**, President & CEO, SoftBank Robotics Group Corp.

Tray delivery robot "Keenbot"

The market in China, the U.S. and Europe, appears particularly fertile, with DX progressing quickly in business areas such as food services and cleaning, offering potential for future growth.

And if no one can quite say where the next ten years will lead, it is clear that the field of robotics is developing at an exponential rate.

SoftBank Robotics

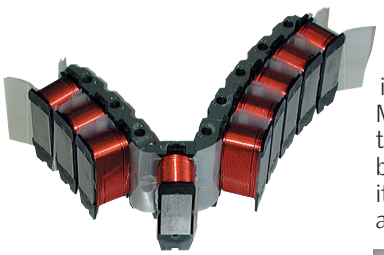
www.softbankrobotics.com

MEBS: Premium elevators that push the right buttons

The elevator business may have experienced its ups and downs, but MEBS has remained a stalwart in the market and can trace its roots back to 1931.

> "To this day, in the premium elevator category, our products are very highly praised around the world."
>
> **Tadashi Matsumoto**, President & CEO, Mitsubishi Electric Building Solutions Corporation

Mitsubishi Electric Building Solutions Corporation, or MEBS, was formed in April 2022 through the merger of Mitsubishi Electric Corporation's building systems business (started 1931), responsible for elevator manufacturing and installation, and Mitsubishi Electric Building Techno-Service Co., Ltd. (est. 1954), which dealt primarily with elevator maintenance services and elevator renewal.

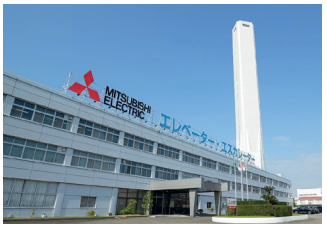


Mitsubishi's proprietary "Poki-Poki Motor" technology: High-performance motor with highly efficient windings

A global presence in 96 countries, with 13 manufacturing facilities and more than 900,000 individual units, MEBS' industry share in the countries where it operates currently stands at around 10%.

MEBS supplies comfortable, high-efficiency and high-performance elevators by utilizing unique technological capabilities such as the "Poki-Poki Motor".

The company has developed and delivered some of the world's fastest elevators, for example in the Shanghai Tower, where it installed an elevator capable of traveling at speeds of up to 1,230 meters per minute in 2016.



Inazawa Building Systems Works: Mother factory of elevators and escalators

And it's not just about speed either. Its elevator operates with such precision that a coin can remain on its side as the shaft moves up and down. The company's technological expertise is applied in creating the group's so-called "comfortable elevator".

So, why depart from such a successful model? It is a question company president, Tadashi Matsumoto, is only too happy to field. "I believe that when we have so many competitors that are offering products at a much cheaper cost, it's really important that we focus on providing goods and services at the same time."

The product, in other words, is no longer necessarily the be-all and end-all. "What's more important for the customers," Mr. Matsumoto continues, "is that this elevator technology should be used for 20 or 30 years; that it will operate in a safe manner and be maintained well."

AXIEZ-LINKs: Standard elevators for the Japanese market

The merger, therefore, enables an integrated business operation system from new installation to maintenance and renewal, and includes the development and manufacturing of elevators, escalators and building systems.

What's more, all the qualities that make MEBS a first-rate component manufacturer – field knowledge, experience of the domestic market, advanced technologies, the strength of the components themselves – provide an invaluable insight into the field of maintenance.

Inspection in elevator shaft

The relationship between these two fields is evolving beyond mere symbiosis. By combining component technologies and knowledge gained in the maintenance field with new information technologies such as cloud computing and AI, it is possible to provide integrated solutions. For instance, a cloud service called Ville-feuille can be linked to elevators, robots, and access control security systems.

Cooperation between OKI robots and Mitsubishi elevators

Indeed, the company's component know-how, along with its knowledge in the field, has recently enabled it to establish a new system where robotics is combined with building security entrance systems.

Looking to the future, sustainability is of course a primary concern. MEBS has already started collaborating with a division within Mitsubishi Electric with a view to enhancing the value of buildings by catering more to energy and expanding the possibilities of building management.

Information center that monitors your building facilities 24 hours a day, 365 days a year

Growth is on the agenda too. "Our vision for 2025," Mr. Matsumoto confirms, "is to become a top-level building solutions provider." With an established presence in Southeast Asia, East Asia, South America and the Middle East, MEBS is now looking to expand its business in the US and European markets.

To this end, the group has recently acquired Motum AB, a Swedish elevator and escalator business company that engages mainly in maintenance and renewal. By utilizing not only their maintenance stock but also their know-how and network, it is hoped the acquisition will strengthen the company's business management base both in Sweden and the rest of Europe and beyond.

If all comes to fruition, the company aims to achieve its growth target of more than 650 billion yen in net sales, and an operating margin of more than 10% in the fiscal year 2025.

The key, as Mr. Matsumoto states, will be to "view all stakeholders related to buildings as our customers and focus on the best ways of generating value for them."

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www.mitsubishielectric.com/en

Facility construction specialist eyes global expansion

As Sumitomo Densetsu strengthens its international presence, the company has shifted more of its focus to renewable energy projects and the construction of data centers.

> "We are now taking the lead in proposing energy conservation and renewable energy installations to our clients."
>
> **Makoto Tani**, President, Sumitomo Densetsu Co., Ltd.

As the world's industries shift to renewable energy, new digital transformation (DX) technologies such as big data and the IoT are transforming business and society. From a construction perspective, Sumitomo Densetsu is taking initiative in both fields, with renewable energy and DX set to be major pillars of the company's expansion strategy over the coming decades.

Oita solar power, Japan

The new focus on renewable energy and DX has prompted a reorientation of the Japanese company's business model, as explained by president Makoto Tani. "Our business model has always been to work as a subcontractor for general contractors on construction projects, However, we are now taking the lead in proposing energy conservation and renewable energy installations to our clients."

Sumitomo Densetsu's portfolio can be divided into four main segments: electric power, general electrical, information and communication, and plant HVAC (heating, ventilation, and air conditioning). Moreover, the company has provided services in environmental fields such as solar power generation and energy conservation systems, and in IT-related fields such as information networks and data centers.

Sumitomo Densetsu's electric power construction division is developing the power infrastructure and renewable energy businesses by teaming up the wire and cable technology of its parent company, Sumitomo Electric Industries, Ltd. (SEI), and its own engineering capabilities. "We have particularly high expectations for the growing renewable energy market and hope to capture significant business in this field through the synergetic force of SEI and Sumitomo Densetsu," adds Mr. Tani.

Bangkok international airport

"In general electrical work, our strength lies in our commitment to provide consistent good quality and services, from design and construction to maintenance. We believe that our costs may not be that much different to other competitors, however, we strive to provide the highest quality to our customers.

"As we are not a manufacturer of telecommunications equipment, we choose the best types of equipment and systems available on the market and then perform the information and telecommunications-related installation. We have received high appreciation from many universities and hospitals.

"The plant HVAC division is still in its growth phase, so we do not yet have a strong position in this area. However, we are cooperating with leading HVAC manufacturers and have established joint ventures with them in order to design, sell and install HVAC equipment."

Turning to DX, Sumitomo Densetsu has developed its SEM Cloud system to facilitate integrated construction and its related services to its customers. Services currently provided to customers through the SEM Cloud include facility management and inventory management systems that utilize IoT and sensors to monitor the status of facilities and equipment. Furthermore, the company is also promoting the digitalization of its internal business operations.

THAI SEMCON technical center

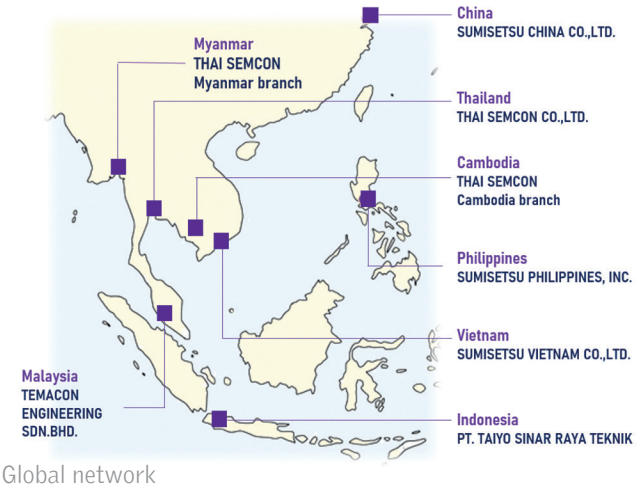
"Currently, we are in the first phase of our mid-term strategy and it will continue until 2024," Mr. Tani explains. "The second phase will focus on leveraging the collected data and applying it to enhance our business operations. We want to find overlooked needs and connect them to our business."

Sumitomo Densetsu has expanded with overseas branches earlier than other companies in its field, and currently has bases in seven Southeast Asian countries (Indonesia, Thailand, Cambodia, Myanmar, the Philippines, Malaysia, and Vietnam) and China. "Our main business is electrical and HVAC work for factories and offices, and our overseas subsidiaries provide high-quality work that cannot be replicated easily by local competitors." states Mr. Tani.

Senayan apartment tower C&D, Indonesia

"These days many companies have been focusing on data center-related construction, especially in Southeast Asian countries. Since the electrical work for data centers is more complicated and requires higher-spec than other electrical work for ordinary buildings, we are planning to dispatch experts with extensive experience in data center construction from Japan to the local subsidiaries in order to provide adequate technical training."

As the company expands its international operations, Mr. Tani says his goal is to place Sumitomo Densetsu among the top five companies in its field within the next three years. "We would like to lay the foundation for the next generation to be able to aim for the No. 1 position in this field."



Global network

SUMITOMO DENSETSU CO.,LTD.

www.sem.co.jp/english

Azbil: 'Human-centered automation' for the next generation

Azbil supplies automation solutions which ensure worker safety and reduce environmental impact for its clients.

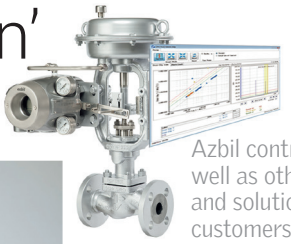
New laboratory building at Azbil's main R&D base in Fujisawa

Industrial production is undergoing an automation revolution, but this change must be human-centered if it is to benefit both businesses and the environment.

One of the companies at the forefront of this revolution is Japan's Azbil. Founded in 1906, the company is made up of three business divisions: building automation and management, industrial automation of production sites, and life automation based around medical production bases and laboratories.

The common thread between these three divisions is a focus on human-centered automation, which company president Kiyohiro Yamamoto says is designed to "provide people with safety, comfort, and fulfillment." An example of this is Azbil's "early warning system" for production plants which predicts anomalies in advance, ensuring worker safety while reducing downtime and wasted energy. Azbil's use of operational data allows it to create optimal working environments for plant operators, accounting for temperature, humidity, and other factors.

Its building automation solutions focus on the long-term, accounting for the building's life cycle over the span of many years as well as the external environment. The buildings Azbil manages are connected in a 4,000-strong network which produces data to ensure quality and to provide a balance of comfort and energy saving.



Azbil control valves, as well as other products and solutions, help customers solve problems at their sites

The company has a presence across Asia, North America and Europe and is always looking for new partners especially in markets which require the energy-saving technology it provides. This expansion has been driven by Azbil's dedication to combining human ingenuity with technology, and as Mr. Yamamoto says, "The objective of human-centered automation is to reveal the potential inherent within each employee."

azbil

www.azbil.com

Noble Electronic Industry: Control panel specialists with international expansion in their sights

Having widened its range of services to become a one-stop shop, the 56-year-old Japanese company is now eyeing global growth.

"I'm very interested in seeing how we can expand internationally, not only in Southeast Asia but also in the U.S., Europe, Africa, and even Australia."

Koichi Dobashi, President, Noble Electronic Industry

Manufacturing factory of control panels for building HVAC

Founded in 1967, Noble Electronic Industry is a specialist supplier of control panels for complex heating, ventilation and air-conditioning systems in large buildings. The firm's technology is also used in factory automation.

Noble initially focused only on the manufacture of control panels, but has since expanded its scope of expertise to offer a fully integrated service: from software and hardware development, to installation and maintenance.

"When we branched out from manufacturing, we were just thinking about what was best for the clients," Noble President Koichi Dobashi says.

"It's so much easier for them if they have to provide just one order sheet. If we can take all those little details off the client's hands, that's to their benefit."

Mr. Dobashi adds: "It's through this sort of integrated service that we've been able to sustain ourselves in recent decades, despite various economic crashes and cataclysmic world events. We haven't felt a hit in our sales."

Having established an overseas subsidiary in Vietnam in 2014, Noble is targeting global growth in the years to come. "I believe our company is in the stage of warming up to become more international," Mr. Dobashi says.

"In order to really expand, we chose Vietnam as an initial jumping-off point – a place where we can begin to flex our muscles and become a global firm."

NOBLE

www.noble-ele.co.jp

Oriental Consultants Group targets infrastructure development in emerging nations

Oriental Consultants Group has brought the strengths of Japanese infrastructure to the developing world since its establishment in 1957.

An internationally renowned consulting firm which specializes in public infrastructure, Oriental Consultants Group has recently celebrated its 65th anniversary.

According to company president, Hidenori Nozaki, Oriental Consultants Group has retained its advantage over competitors through its "long-standing history in overseas business" and its "accumulation of high-end technologies that provide optimal services to each and every region of the world."

That starts, of course, with the group's home country of Japan, where low fertility rates and labor shortages pose challenges in a number of different sectors.

Take construction, for instance. Mostly dating from the early 1960s, Japanese infrastructure is aging. Refurbishment, reconstruction and protecting the land from the onset of natural disasters will all have a crucial role to play in the years to come.

"With the country's decreasing population," Mr. Nozaki explains, "there's a need to revitalize rural areas, and in order to do so, connecting cities has become critical. Connecting those cities to a network is important, which means that there's a growing need for transportation, which, in turn, means more transportation construction."

Not easy, perhaps, in the face of the country's well-documented demographic issues. But here the group has a three-pronged strategy to ensure its work force continues to operate at the highest level possible.

"First," Mr. Nozaki confirms, "we are focusing on women. Even after having children they can come back and work, so we're trying to create a system to let women work longer and more comfortably. The second strategy addresses the working environment for senior generations. We have increased the retirement age to 70 years old now. The third strategy is to try and diversify working styles so people can do teleworking or have more flexible hours."

Jakarta's MRT (winner of 2021 FIDIC Project Award)

Digital Transformation and other IT initiatives such as the introduction of Building Information Modeling (BIM) will also prove vital in a sector that, historically speaking, hasn't always willingly embraced change. With each step of the building process in Japan conducted by a separate entity, BIM, in particular, offers a comprehensive solution to the management of data.

Staying with construction, it is clear that Oriental Consultants Group's structure offers it a unique platform to provide high-quality services.

Mr. Nozaki takes up the thread: "Regarding public construction work, in Japan there's the national level, prefectural level and the city, or municipal, level. Recently there's been a growing need to combine different sectors, such as mitigating the effects of natural disasters in combination with carbon neutrality, regional revitalization and the implementation of digital transformation. By having multiple group companies which work together in different fields, we can create an optimal solution and provide optimal services to our clients."

Highlighting a 2021 incident in Atami which led to mudslides, he explains that Oriental Consultants Group presented a proposal to the local municipality regarding countermeasures and mitigation.

Outside of the group structure, meanwhile, a recent collaboration with Intelligence Design Corporation has allowed Oriental Consultants Group to use object analysis and AI to manage the flow of people on a construction site.

The ability to forge strong *domestic* partnerships, naturally enough, also feeds into the group's activities overseas. "When we join an overseas project," Mr. Nozaki states, "it tends to be a big project, and we often collaborate with overseas consulting firms to provide the optimal solution together."

He cites the group's recent collaboration with SoftBank as evidence of its ability to work with both domestic and international companies and enter new fields.

Seto Shuzo (a historic sake brewery acquired and successfully re-branded by Oriental Consultants Group)

Having already brought its influence to bear in a number of countries seeking to mitigate the effects of natural disasters, Oriental Consultants Group is now focusing on the Asian market in the Philippines, Indonesia, India, Thailand and Vietnam.

> "We will continue to make further contributions to society in order to realize our mission of 'creating dreams and enriching lives' for people around the world."
>
> **Hidenori Nozaki**, President, Oriental Consultants Holdings Co., Ltd.

"After Asia," Mr. Nozaki says, "it will probably be Africa. At the same time, South America is an attractive market for us, so we want to enlarge our overseas business slowly but surely by providing bases in new regions."

Looking further into the future, Oriental Consultants Group is turning its attention to social issues with the launch of its slogan "Establishing and Creating New Social Values", a move that promises to cement the group's status as a responsible corporate citizen embracing integrity and promoting openness, honesty and respect for all laws, and community standards.

First, however, is the mid-term plan, and, by way of conclusion, Mr. Nozaki is keen to emphasize three of the group's core strategies. "First there is innovation. We are actively engaging in high-end research and development with regards to the latest technology. Second is digital transformation – introducing DX. And last but not least is investing in our group companies to take on the challenge of tackling social issues."

ORIENTAL CONSULTANTS HOLDINGS COMPANY LIMITED

www.oriconhd.jp/english

C.E. Management Laboratory looking to develop unique technologies to contribute to society

Building upon its already existing technologies and techniques, C.E. Management Laboratory is looking to collaborative efforts to contribute to society.

Our test site

C.E. Management Integrated Laboratory was established in 1985 as a company for testing construction soils, and has since expanded its business to include concrete, steel, and environmental fields with the aim of contributing to society.

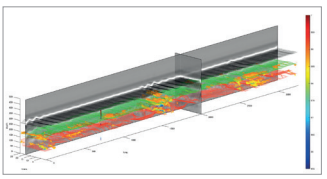
We have been developing technology for efficient subsurface inspection using GPR (Ground Penetrating Radar). To validate and enhance the technology, we have constructed a test site that simulates subsurface damage for data acquisition and analysis.

"We're interested in developing new technology with various institutes."

Yuji Shimodaira, President, C.E. Management Integrated Laboratory Co. Ltd

We have continued to validate and improve this algorithm, mainly for bridge slabs due to high demand for non-destructive measurement of damage which is not visible because of the pavement. Our technology is unique in that it detects the damage based on signal processing, rather than AI-based damage detection.

In addition, we are currently studying its application for airport pavements since they are more susceptible to damage due to the impact of an airplane taking off and landing. Furthermore, there is a limited amount of time available for inspections. Therefore, we believe that our technology allows inspections to be performed in less time and at lower cost than conventional manual inspections.



GPR scan data of bridge slab

It can also locate the damage on the pavement and its depth, helping to determine the appropriate approach to the damage.

Our goal is to help the management of social infrastructures by providing an efficient and accurate algorithm.

An airport measurement

株式会社土木管理総合試験所
C.E.Management Integrated Laboratory Co.Ltd
http://dkweb.dksiken.co.jp

Building a new sustainable foundation

More than just a trading company, Ishihara has established a total support system to reduce construction time, cost and environmental burden.

"All gypsum board cut in our factory is 100% recycled. This is one of our strengths."

Noriyuki Ishihara, President, Ishihara Co., Ltd.

Trading company Ishihara continues to support the construction industry with efficient practices and sustainability in mind. Company president Noriyuki Ishihara is clear about the growing scarcity of resources, both in nature and the local population, where he believes optimization, sustainability and automation are going to be key.

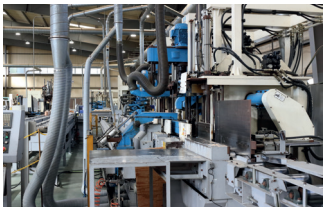
"As an environmentally friendly company, we make a point of using all of the materials when we produce plywood, and not only do we avoid the use of by-products, we also recycle everything 100%," he says.

Headquarter office

"Due to the labor shortage these days, it is difficult to secure human resources, and it is difficult to improve work efficiency, so we have to introduce new technologies such as robots. All companies now have to come up with new technologies such as robotics, while CAD and CAM software continue to aid customer satisfaction. If you are a company that embeds multiple sources of data accurately then the whole process can be simplified."

The company's new housing brand, Fularika, is seen as an important aspect of keeping pace with the industry.

"The idea behind this came because we have so many divisions related to construction," the president explains. "There was always a thought of 'how can we combine all of the products into one service,' and from that we made the decision to go with this idea. Fularika combines all the best features of our company, including the manufacturing capabilities, to create a concept house."



Precut machine

Showroom Ishihara Living Square

In terms of the future, Mr. Ishihara is determined to revitalize the region between Shizuoka and Aichi prefectures.

"We want to treasure them and provide them with the best services possible. When the time comes we would like to take that strength of ours and introduce our business overseas as well."

ISHIHARA
www.ishihara-group.co.jp

Oshika: Japan's wood solutions leader looks to expand globally

With its expertise in wood adhesives and joinery, Oshika offers sustainable building material solutions for the needs of our climate-conscious world.

R&D center in Tokyo

A manufacturer and a vendor of over 1,000 types of wood adhesives and general construction materials, Oshika Corporation is a company of international standing that can draw on over 100 years of industry experience since its foundation.

Certainly, president Kazuhide Horiguchi is in no doubt that the group provides something unique to its customer base: "Oshikaism". This, he explains, not only concerns the selling or supplying of products to clients, but also involves both parties working together during the manufacturing and development process to provide the way on how to best utilize the products.

It is an attitude that has helped the company overcome some recent challenges, including, but not limited to, Japan's well-documented demographic issues, which have dealt a significant blow to everyone involved in the housing industry.

While such challenges have forced Oshika to expand their business into non-housing industries, they have also provided a clear incentive to focus on wood and wood-based technologies.

Mr. Horiguchi explains: "We believe in the regeneration of wood itself and using more and more wooden materials is a very eco-friendly step. Wood naturally has a carbon storage effect. Incorporating wood into building materials such as plywood and engineered wood contributes to a sustainable society."

He is also keen to emphasize that engineered wood such as Cross Laminated Timber (CLT), which is "currently attracting a lot of attention in Japan", can be manufactured using non-formaldehyde adhesives.

Wooden storehouse at Oshika's Osaka office which features a pillarless space and has an open feel

And if the move towards a more sustainable world is a goal that cannot be achieved in isolation, then Oshika's unique business model gives the company impressive scope for collaboration.

Mr. Horiguchi again: "We have both a chemical division, which produces our adhesives and other such materials, and a building materials department. Among other things, our model allows for an accelerated roll-out of different products to the market."

R&D of adhesives

Citing the example of lignin phenol resin, he explains how Oshika was able first to manufacture the resin adhesive and then apply it to its plywood manufacturing (which is handled by a company within the Oshika Group), thus enabling a streamlined process that allows products to be introduced to the market at greater speed. The ability to carry out inspections and testing in-house, meanwhile, has proved advantageous when it comes to adapting to the differing policies and standards in place within the industry at large.

As for staying on top of the latest developments, open lines of communication between Oshika's construction materials department and other professionals within the housing materials industry help ensure the company is "always aware of the latest trends within the market and capable of making quick decisions".

An established presence in Indonesia since 1995 with much of its business centered in the east of the country, Oshika has successfully maintained a top share in the domestic market there, especially in the field of emulsion polymer isocyanate, where the quality of its adhesives is ensured to be on a par with those produced in Japan. The company doubled production capacity in 2022 to meet local and global demand. "Not only in Indonesia," Mr. Horiguchi states, "we would like to expand into other countries that utilize wood as a central material and the countries which have government policies that actively promote using wood."

Looking to the future, the goal is for Oshika to consolidate its position within the Japanese market while taking proactive steps to expand overseas.

Here, Mr. Horiguchi is careful to highlight the need for the company to change its procurement strategy: "When it comes to business continuity planning, it is vitally important that we expand our procurement channels. Current global circumstances in China and Ukraine pose a risk to the supply chain, and for some raw materials, we need to mitigate this risk by finding alternative channels."

> "We are looking at ways to expand sustainable social contribution globally through collaboration with overseas partners."
>
> **Kazuhide Horiguchi**, President, Oshika Corp.

Emulsion polymer isocyanate adhesive for export

With Japan "attracting more attention than ever before" in incorporating wood and wood-based technologies into the construction process, moreover, it is time for a new era of collaboration. "It is my goal," Mr. Horiguchi concludes, "to expand our network globally, and develop partnerships, especially with those who feel empathy towards Oshikaism. I want us to have a broad network of people whom we consider to be friends."

Opening the windows to a greener future supported by energy efficient buildings

A pioneer in aluminum-based window sashes, Fujisash is playing a clear role in making buildings more energy efficient.

Fujisash Philippines (FPI)

Having provided the curtain walls on Japan's first-ever skyscraper, the New Otani Hotel in 1964, Fujisash has grown to become a leading manufacturer of window sashes and curtain walls found in high-rise buildings across Japan and Southeast Asia.

Committed to providing its clients with high-quality and high-performing solutions, the Japanese firm today has leveraged its more than 65-year experience in the industry to ensure its products are top-of-class when it comes to insulation technology – a key consideration for buildings in our climate-conscious world. As such, Fujisash – a go-to partner for some of Japan and Asia's leading construction companies – is playing a clear and decisive role in making buildings ever-more energy efficient.

With major projects like the Grand Front Osaka and Kuala Lumpur's new international airport making up its extensive portfolio, the Tokyo-headquartered enterprise is "a pioneer of aluminum-based sashes in the industry", president Tsutomu Yoshida proudly declares. Although the company has branched out to offer hybrid solutions combining aluminum and plastic resins in recent years.

"We are catering more to high-rise buildings rather than individual homes and private housing. These buildings have really high standards, and we need to meet really high specifications in terms of environmental regulations, energy consumption savings and so on," Mr. Yoshida explains.

"Aluminum is certainly good for insulation, but what's even better are plastic resin-based materials, so what we've been doing is creating a combination of aluminum with resin by fusing them together to create a material that is very high performing when it comes to insulation. We've actually been rolling out this aluminum resin infusion-based product for Sekisui House [one of Japan's largest homebuilders]."

Fujisash's pioneering spirit has seen the company develop innovations like Winbreath. "One of our flagship products when it comes to environmental considerations is our Winbreath window sash. Without electricity or power to support ventilation, it moves in accordance with natural wind power, so just using natural pressure, it opens and closes when required," says the company president. "I think the motivation behind Winbreath was the idea that there could be windows that don't require power to be opened, and that could support good ventilation, especially in Japan with the difference in the four seasons."

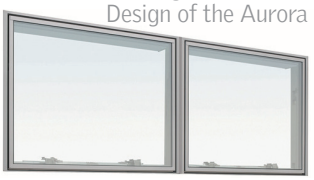
> "I truly believe that partnerships will become even more crucial in order to expand and be able to provide the type of products and services that our company may not be strong in, or that we might be lacking."
>
> **Tsutomu Yoshida**, President, FUJISASH CO., LTD.

In the daytime (LED)

Night time (LED)

Night (LED) Design of the Aurora

Winbreath opened state



Winbreath closed state

Another of Fujisashi's pioneering steps was its move into the LED lighting business, with the company adding thin LED chips to its window sashes, marrying haute interior design aesthetics with high technology.

Giving his vision on the future of lighting, Mr. Yoshida says: "I think the kind of light fixtures you see today will slowly be phased out as the years progress. I believe that in future, lighting will be installed and integrated in such a way that it wouldn't be obvious that there was a light in the room. We thought maybe that we could replicate the way billboards work, but in interior settings. The interior designers that we approached with this subject thought it was very interesting, and we started to create lighting that doesn't feel like lighting."

Having initially established an overseas presence back in Malaysia in 1990, followed by The Philippines in 1994, the 'Glocally'-minded firm continues to strengthen its presence in fast-growing Southeast Asia, where it relies on local staff and production sites in line with its sustainable business practices.

"We're putting our focus on ensuring that the local company offices are able to work to their highest capacity, not needing to rely on any support from Japan per se, but able to run everything locally," Mr. Yoshida reveals.

"For example, we have a factory in The Philippines which manufactures various products. We're looking to have the Philippines plant manufacture curtain walls that can then be supplied to Taiwan, where there is high demand for these curtain walls in high-rise buildings, so creating that integration and collaboration between the different overseas points will be the next step in our strategy.

"Currently, our largest manufacturing plant for curtain walls outside of Japan is operated through a partnership that we have with a Chinese company called Endai, and we're looking to see how we can expand our supply chain by increasing the functionality of the factory in The Philippines."

Indeed partnership and collaboration such as that with Endai are crucial to Fujisash's international growth ambitions, and Mr. Yoshida stresses the company is always seeking new partners who share its goals, values, and vision for a greener future supported by energy efficient buildings.

FUJISASH

www.fujisash.co.jp/hp/english

Automotive products

"We have been involved in more jobs concerning the reinforcement of old castles and such buildings."

Jun Hashimoto, President, Unytite Corporation

Unytite looking to contribute to the longevity of world heritage sites

With its high-quality fasteners for multiple applications, Unytite is supporting the reinforcement of historical buildings and driving construction forward.

Manufacturing and construction often involve the bringing together of huge amounts of individual parts designed and created by thousands of different companies. When it comes to fastening solutions it is vital that these parts are perfectly in-sync, and this leads to the desirability of holistic solutions.

Japanese manufacturer Unytite has built its reputation on its ability to provide not just the nuts and bolts needed by its customers, but entire fastening solutions to fit specific situations. The company's products include nuts, bolts, and washers, and it prides itself on also providing services for fastening problems across a range of industries including automobiles and construction.

Structural products

Unytite manages to provide these holistic solutions thanks to its wide-ranging production methods that include hot forging, cold forging, machining, grinding, and heat treatment. These products, all assembled to ISO 9001 and ISO 14001 registered standards, include high-strength bolts utilized for structures, hexagonal bolts for friction joining, and its UNY Torisia tension control (TC) bolts. These TC bolts are especially useful for construction as they can fasten themselves automatically and feature a pintail that shears off when proper torque is achieved, ensuring dependable and repeatable tension levels.

As company president Jun Hashimoto explains, Unytite can not only offer the part of a drive shaft that a customer orders, but also the peripheral components and joints. "From the customer's perspective, it is easier if they can perceive the total solution rather than only a part of the component."

The ability to produce these holistic solutions under one roof also has the advantage of allowing Unytite to quickly find and resolve any assembly or quality control issues for its products, rather than the testing of individual components from different suppliers.

Applications where Unytite's products are used

The company's products are now being used to reinforce and protect world heritage sites, such as Japan's Nijo Castle, while also driving forward the industries of the future through its support of wind power generation. With regards to working on the reinforcement of older buildings and bridges, Mr. Hashimoto says: "We are trying to get involved in more of these types of old building reinforcement projects. It is still in construction, but more of a niche sector. It is a subsector that interests us."

Parallel to this growth into new sectors, Unytite has also expanded its international presence through mergers and acquisitions, not least in the U.S.A., where it has acquired a distribution company in Houston. The company is also open-minded to more international partnerships, especially in Southeast Asia where it can help in construction projects and in Europe where its products can serve in the remodeling and protection of aging buildings.

Structural heavy hex bolt

Unytite's customer-centricity is behind its holistic solutions, and Mr. Hashimoto says it will continue to drive the company forward: "We focus on our customers' problems – what they want, what they are suffering, what they need – and address those not only with our products, but also with the additional value of our services."

UNYTITE

http://unytite.com

Progress through the power of people

Japanese firm EMAR harnesses the knowledge and expertise of its employees to provide high-quality construction manufacturing and high-performance staffing for its clients.

> "We don't limit ourselves to design, but also handle the staffing required to implement those designs."
>
> **Hideki Hayasaka**, President, EMAR Co., Ltd.

The fundamental premise for any company is to find a need in the market and provide for it. Japanese firm EMAR is a prime example, being able to provide both manufacturing capabilities and temping staff on an OEM and ODM basis for its clients.

One of EMAR's vast network of companies

Founded in 1999, the company has diversified its portfolio from supplying windows to providing temporary staff in light of Japan's aging population and demographic challenges. With its windows, EMAR focuses on the Japanese principle of *monozukuri* to ensure the sealing material and the glass are of the highest quality. Indeed, the company's commitment to performance has allowed it to grow to become the producer of one-third of all of Japan's double-layered glass windows.

EMAR's dedication to the *kaizen* philosophy sees it hold monthly meetings with all its employees to improve the business and encourage new ideas to reach fruition. As company president Hideki Hayasaka explains: "It's an opportunity to connect your ideas with those of a colleague while brainstorming, allowing employees to reach new heights."

This dedication to employee improvement applies to EMAR's temp staffing work as well. The company provides workers, often from outside of Japan, on an OEM and ODM basis. EMAR dispatches experts to act as an intermediary between foreign workers and clients to mediate any cultural differences and ensure as smooth a transition as possible. Mr. Hayasaka reveals EMAR's main clients are in the construction material sector, where it can provide both temp staffing as well as production capability, and that the company is always looking for new clients to work with in the field.

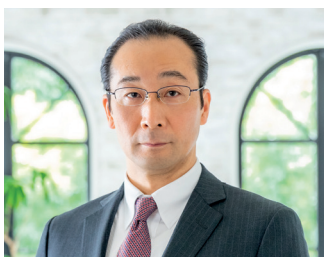
EMAR front desk

The working environment

EMAR GROUP
www.emar.co.jp/en

Koyo Sangyo looking to support new fields with unique technology

Taking advantage of its core technology in gas valves, Koyo Sangyo is looking to expand its horizons.



> "Our company is very strong in the high-mix, low-volume market and the demands of that market match a company like ours."
>
> **Kenjiro Oyama**, President, Koyo Sangyo Co., Ltd.

Japan's domestic market has presented major challenges for Japanese companies, and for Koyo Sangyo – which specializes in the manufacture of gas valves and fittings – this is no different.

"We are fully aware of the challenges, including market shrinkage and the difficulty in obtaining and retaining talent, and for this we are taking two approaches," explains Kenjiro Oyama, the company president. "Firstly, we're expanding our business areas, and secondly, we're adding value to our products so they are further improved."

Equipment connection gas valves

In terms of business expansion, Koyo Sangyo is applying its technology and expertise acquired from decades operating as a gas fittings manufacturer to multiple different fields, adapting its products to customer needs in sectors such as the medical, air conditioning and rail infrastructure industries.

Unwelded joints for refrigerant piping

"The second social challenge is the aging population and difficulty with the workforce. Of course, we are short on workers, but our customers are similarly short of workers. So, we are developing products to resolve this issue," says Mr. Oyama. "Construction workers have to install our products, so our product needs workers, but with the industry aging, it's difficult to get those resources. We have therefore developed a product for efficient installation with the limited resources available."

Luer lock connector for medical (patented)

Based on both ideas of business expansion and added value improvement, Koyo Sangyo has developed and commercialized products in new fields such as the Luer lock connector for medical and joints for refrigerant piping.

"We heard about some of the challenges these sectors faced, and we thought our products might solve their issues and problems, so we started development to resolve their issues. Usually, common sense in our field is not necessarily the same as in other industries, so we are not providing something direct, but we can help our customers by supplying joints, valves and that type of equipment."

KSK KOYO SANGYO
www.koyosangyo.co.jp

Roadside stores' comprehensive construction partner

ASAHI ETIC Co., Ltd.
www.etic.co.jp

With a wide network of locations and seven decades of experience, Asahi Etic covers clients' every need, including construction, signage, electrical and painting services.

A company that turns 70 in 2024, Asahi Etic specializes in the production, installation and upkeep of signage for roadside stores – in addition to providing a range of other

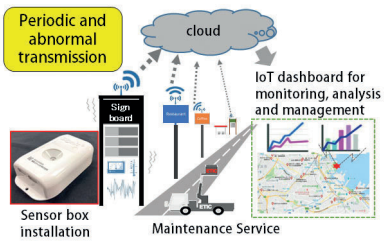
Osaka factory

services that make it a one-stop shop. The Osaka-based firm, which boasts locations across Japan and abroad, also offers store construction, electrical and painting solutions, and more.

"We're focused on large roadside stores like car showrooms, restaurant chains and fueling stations," president Tomoyuki Higuchi says. "Currently, there's a need for more of these stores, and for the reconstruction and renovation of older ones. Construction needs to be finished quickly – and thanks to our integrated business model and extensive network of offices, we can meet this demand."

In Asahi Etic's manufacturing division, whose comprehensive output includes not only signs, but also LED light fixtures, partitions and construction components such as iron and steel metalwork, the ISO 9001-certified company ensures that the materials it uses, and the products it creates, adhere to strict quality standards.

Such is Asahi Etic's commitment to excellence, indeed, that the company has earned industry prizes. For example, its state-of-the-art IT system for sign maintenance, Signit, was the first prize winner at the 2022 Mobile Computing Promotion Consortium Awards. "Signit uses sensors and an IoT network to remotely and constantly monitor the condition of outdoor advertisements," Mr. Higuchi explains.



Signit

Having expanded to Vietnam in 2010 to bolster its position in Southeast Asia, the company is now strengthening its online sales platform as it seeks business growth beyond Asia. "By doing so, we can better respond to requests that may come, for example, from American and European car companies," Mr. Higuchi notes.

Large sign production

When it comes to global clients, Asahi Etic is also targeting firms that are looking to establish themselves in Japan. "If you're an overseas company and are thinking of expanding into this country, please contact us," Mr. Higuchi says.

Towards a century of comprehensive communications solutions

> "We would like to work with local partners to enter local markets, and we would like to open up our know-how to them."
>
> **Masayuki Okumura**, President, OS CO., LTD.

From cinema projection screens to integrated AV x IoE systems, OS Group has been quickly developing technologies that meet demands in various communication fields.

Off-grid self-powered pole with network connection

Closing in on its 70th anniversary, OS Group is plugging technological gaps across communication activities, and president Masayuki Okumura is acutely aware of the need to have a global vision and one that is focused on advancement.

"A Japanese solution previously revolved uniquely around the Japanese market," he says. "But we cannot be competitive just by pushing our values onto others.

"We have developed an original system called TerraSerde for remote monitoring and maintenance and we're also looking to provide a new intelligence operating system to other SMEs trying to bring about digital transformation. This can connect the supply chain, save costs and standardize the know-how, all of which raises the bottom line."

The company has been supporting amusement parks and Team Lab's art museums through virtual reality, a technology that can also aid schools and hospitals with remote teaching and global interpreters.

"Education is going to make the world peaceful," says Mr. Okumura. "Our events, held by the Monozukuri Dr. KidsKey Academy, help provide content to youngsters in both advanced and developing countries."

Going forward, as well as increasing overseas transactions, the president has clear objectives in mind linked to sustainability.

"We would like to increase the number of students in our academy, allowing us to contribute to children's education at home and abroad. This, along with the introduction of our TerraSerde solutions, can see us achieve our SDGs."

OS
www.os-worldwide.com/eng