

# Japan's industry mobilizes to construct a greener future

As two industries responsible for a large portion of global carbon emissions, the construction and energy sectors have been compelled to rethink their modus operandi. In Japan, construction and energy companies have responded by implementing sustainable business practices as the Nippon nation looks to lead the way towards a greener future.

"Our company, and the Japanese construction industry as a whole, is at a turning point," says Hirotaka Takamatsu, President of Takamatsu Construction Group – a company whose sustainability drive is focused on the refurbishment, maintenance and renewal of existing buildings, as well as the switch to renewable energy sources such as wind, solar and biomass.

"We used to focus on building new condominiums, however we are now more focused on how to rehabilitate and refurbish existing buildings. We want to add value to these buildings and make them more sustainable, before selling them to a third party."

In 2020, one of Japan's leading construction contractors with 160 years of history, Sato Kogyo made a commitment to Japan's Ministry of Environment to become an 'Eco-First' company, testament to the firm's commitment to a greener business model. "Our Eco-First targets will be our contribution to a

carbon-neutral society by way of CO<sub>2</sub> emission reductions," says president Hiroshi Heima.

"These targets will directly contribute to the achievement of the U.N. Sustainable Development Goals and help solve ESG challenges. An example of our specific efforts will be the utilization of hybrid-type construction machinery to reduce CO<sub>2</sub> emissions at the construction site, and the use of environmentally friendly design technology like ZEBs (zero energy buildings) or ZEH (zero energy housing)," adds Mr. Heima, who also points to Sato Kogyo's investments in renewable energy projects, including solar and hydropower.

When it comes to carbon capture, usage and storage (CCS/CCUS) technology, JX Nippon Oil & Gas Exploration (NOEX) is leading the way in the energy industry. "There is a strong need to reduce the carbon intensity of fossil fuel power generation. CCS/CCUS technology is one of the major ways in which this can be achieved," says NOEX president Toshiya Nakahara. "We know that we can accumulate and store CO<sub>2</sub> in the seabed around Japan. By 2030, we would like to realize the storage of CO<sub>2</sub> underwater, and by 2050, we would like to expand this business further. In order to carry out and expand CCS/CCUS, we need to first recover CO<sub>2</sub>, transport it, and finally store it. These are the three steps that are required."

In the renewable energy sector, meanwhile, Renewable Japan (RJ) is among the standout

players in the Japanese market. Katsuhito Manabe decided to establish the company following the 2011 Fukushima nuclear disaster in a bid to reduce Japan's dependence on nuclear energy. His background and experience in finance has enabled RJ to develop a unique end-to-end service offering in Japan. "From EPC (engineering, procurement, and construction) to financing, asset management, and O&M (operations and maintenance), this is a unique model in the Japanese renewable energy market," says Mr. Manabe, who serves as the company's president. "So far, RJ has developed or acquired 185 renewable energy power plants with a total capacity of 887 MW. In addition, we have been entrusted with 238 O&M projects totaling 1,140 MW."

Japanese crane specialist Denzai Holdings has also been playing its part in the green energy revolution as a comprehensive platform provider for wind power plants. "We must focus on alternative types of renewable energy sources. Japan has no natural resources, so wind power has become a frontrunner with the greatest potential," says Denzai president Masato Uemura, who sees particular potential in offshore wind farms. "We are aware that the Japanese government has turned its attention to wind power too and we feel that our company has a strength in this field. If Japan can successfully harness the power of wind, it can truly become energy independent."



## The creation of a safe and prosperous society through social infrastructure development

By way of continuous R&D, Dainichi Consultant combines experience and know-how with cutting-edge technologies to deliver innovative and sustainable solutions.



"We want to create new ideas and content that contribute to the well-being of society."

**Ichihashi Masahiro**, President & Representative Director, Dainichi Consultant Inc.

Based in Gifu, Japan, Dainichi Consultant has been providing professional engineering services since it was founded in 1952, and over the last half-century, it has had to adapt to the changing demands in the Japanese construction industry.

"Ever since the Sasago Tunnel collapse in 2012, people in Japan have been more aware of the aging infrastructure," says company president Ichihashi Masahiro. "We must rethink maintenance and repair as efficiently and effectively

as possible, prioritizing activities within the limited resources."

"Japan is particularly vulnerable to natural disasters because of its climate and topography. We have provided the services of disaster response and prevention on roads, bridges, and slopes, as well as innovative solutions such as the 'LIRIS technique', which uses IoT sensors to remotely monitor the movement of damaged bridges and slopes."

For the international market, DAINICHI has participated in JICA and ADB-funded projects and es-

tablished a liaison office in India in 2021 for business expansion overseas. "We would like to provide our know-how and innovative solutions overseas on the maintenance and management of road infrastructure and disaster response and prevention. For this purpose, we are looking for partnerships overseas."

Lastly, Mr. Masahiro has a clear vision for the future of creating new ideas and content, built on human development. Following its management philosophy, DAINICHI seeks to enhance its values by placing sustainability management at the core of its corporate activities and aims to continue to take on the challenge of SDGs.

"We can achieve our plan by improving the capabilities of each employee, our staff being the essence of the company and driving force behind the business, as we continue pursuing SDGs."



Virtual Reality Image of Gyojin Bridge



Remote Monitoring Device on Bridge Pier



Disaster response on National Highway No. 41

**DAINICHI**  
DAINICHI CONSULTANT INC.  
[www.dainichi-consul.co.jp/en](http://www.dainichi-consul.co.jp/en)

# Sanshin Corporation partnering up to provide quality ground improvement

With the world rapidly urbanizing, the need for reliable ground improvement services is growing and Sanshin Corporation is ready to fulfill this demand.



"Our business strategy focuses on the development of new technologies and conveying that to our customers and clients."

**Junichi Yamazaki,**  
President, Sanshin Corporation

"Our strategy is to provide our special geotechnical services to the market in which our technology is helpful," says Junichi Yamazaki, President of

Sanshin Corporation, who confirms that there is "still demand for new construction, mostly focused on redevelopment and rehabilitation projects, especially in urban areas such as roads and railways."



CPG work on an airport runway

For about 70 years, Sanshin has proven its success in various fields, especially with its urban-focused unique technologies, but arguably none more so than its Compaction Grouting (CPG) method.

"Since we imported it from the U.S., CPG technology has been developing as a liquefaction countermeasure of existing facilities

in Japan," Mr. Yamazaki explains. "CPG is one of the default solutions to prevent liquefaction disasters on airport runways and can now be utilized without interrupting airport services. This has been the project with the biggest impact on us."

A constant need to assess the specific requirements of a project drives the innovation to find solutions, says the president.



V-JET project in Thailand

"We're tackling ground improvement challenges involving jet grout and permeation chemical grout techniques to apply to MRT projects in Southeast Asia. The



V-JET project in Austria

projects require better and more reliable geotechnical proposals under highly complicated situations."

V-JET technology is another area in which Sanshin has demonstrated a competitive advantage. "We've got a technical alliance with an Austrian company, who were really fascinated by our V-JET technology, and that has seen it spread across Europe."

Further overseas expansion remains a key target, and with automation steps supporting efficiencies, the next generation will be well placed to continue in the company's success.

"I would say that customers choose us for our unique technology and the reliability that we provide," concludes Mr. Yamazaki.



# Tenox Kyusyu: Specialists in Ground Improvement Works

Thanks to Tenox Kyusyu's well-developed technology coupled with its intricate knowledge of geology, the company has uniquely navigated the changes in the ground improvement sector.

Koji Matsuo, President of Tenox Kyusyu, a company specializing in foundation work, emphasizes the importance of "Shokunin" (or "craftsmanship") for the continued success of the firm. "Machinery and automation come second," he says.

His priority is to nurture and impart the values and integrity of craftsmanship to the younger generation.

That is not, however, to disregard the importance of digital technologies and digital transformation (DX). Indeed, digitization

has enabled the company to find solutions to problems with increasing effectiveness and efficiency.

Having archived data from the past three decades accessible at the touch of a button will ensure that any potential issues can be quickly resolved. "If you ask me for a specific location (in the Kyushu region of Japan), I can tell you what

"If one encounters a geotechnical problem in ground improvement works, we have a solution. This is one of our strengths, and part of our potential for the future."

**Koji Matsuo,** President,  
Tenox Kyusyu Co., Ltd.

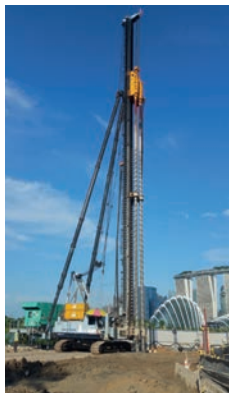


the ground composition is," Mr. Matsuo states.

In-depth knowledge of geology and complex geotechnical behavior of the ground goes hand-in-hand with technology. In rare cases, standard technical methodologies will be applied without refinement or improvement to address the complexity of the differing ground conditions. In response, Tenox Kyusyu has researched the 'Teno-Column' method to amalgamate technology and craftsmanship for more effective and efficient ground improvement, going beyond standard methodologies.

The use of such ground-breaking technology has enabled Tenox Kyusyu to be the leading ground improvement company in Japan, while overseas it has established a firm foothold in the Vietnam, South Korea and Singapore markets.

Moving forward, Tenox Kyusyu will advance with the value of "Shokunin" and continue with the research and development of its refined technology to raise the standard of ground improvement works.





# Sato Kogyo: Total project excellence

With 160 years of history, Sato Kogyo continues to provide top-quality construction not only in Japan, but also in Singapore and other Southeast Asian countries.



"Based on our guiding philosophy of 'total project excellence', we strive to enhance customer satisfaction, build safe, secure and comfortable spaces, and develop high-quality social infrastructure."

Hiroshi Heima,  
President,  
Sato Kogyo Co., Ltd.  
[www.satokogyo.co.jp](http://www.satokogyo.co.jp)

A Company that celebrates its 160<sup>th</sup> anniversary this year, Sato Kogyo is one of Japan's leading construction contractors. Boasting eight branches across the country, as well as international offices in Singapore, Malaysia, Thailand, and Cambodia, the Firm applies its guiding principle 'total project excellence' to a wide range of building and civil engineering projects both at home and abroad.

"We have significant experience in commercial and institutional buildings, and constructions for industrial sectors such as bioscience, pharmaceutical, aerospace, data centers and semiconductors," Sato Kogyo president Hiroshi Heima says. "In civil engineering, we have a commendable record in infrastructure such as bridges, viaducts and tunnels. We've demonstrated our ability to deliver fast-track, large-scale, technically demanding and high-quality projects."

Sato Kogyo's growing global presence has seen its overseas business rise to about 25% of total sales volume. The Company is particularly active in Singapore, where it began working half a century ago.

"One of our competitive advantages in Singapore and other Southeast Asian markets is our 50-year history of business operation and our proven track record," Mr. Heima says. "Thanks to our dedication to meeting the timeline and strong belief in completing projects successfully, we've gained the trust of our customers in Singapore and elsewhere in Southeast Asia."

"Our history in Singapore began with the Benjamin Sheares Bridge, the gateway to the Central Business District of Singapore, a unique and interesting bridge. We've had several bridge and viaduct projects in Singapore and have built approximately 10% of the total line length and numbers of stations respectively for Singapore's Mass Rapid Transit rail network. Meanwhile, one of our prized projects is probably the data centers we built for an American IT company in the west of Singapore. The first building was completed in 2013 and was followed by three more, with the final one completed in 2021, making this client the operator of the largest hyperscale data centers in Singapore."

Sato Kogyo's work in Singapore is prize-winning: in June 2022, the Firm received the 5th Japan Construction International Award by the Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) for the projects of Bedok North Station, Mattar Station, Bencoolen Station and associated tunnels in the Mass Rapid Transit Downtown Line 3 at 43 meters below ground level. Bencoolen Station is the deepest underground station ever built in the country.

As it looks to the future, Sato Kogyo is stepping up its use of technologies such as building information modeling (BIM). This process is key to overcoming the growing shortfall in available skilled workers in Japan, caused by the country's aging, declining population. "We're working on shifting our reliance onto machinery and computerized systems instead of human engineering," Mr. Heima explains. "In some projects, we use BIM to reduce required manpower on site."

Opened in February this year, Sato Kogyo's new Technology cen-

ter is central to this evolution. Fueled by renewable energy sources such as solar and geothermal power, the facility in Tsukuba also reflects the Company's commitment to sustainability. "Compared to typical buildings of the same scale, we're running with only 22% of the energy that would otherwise be required," Mr. Heima reveals.

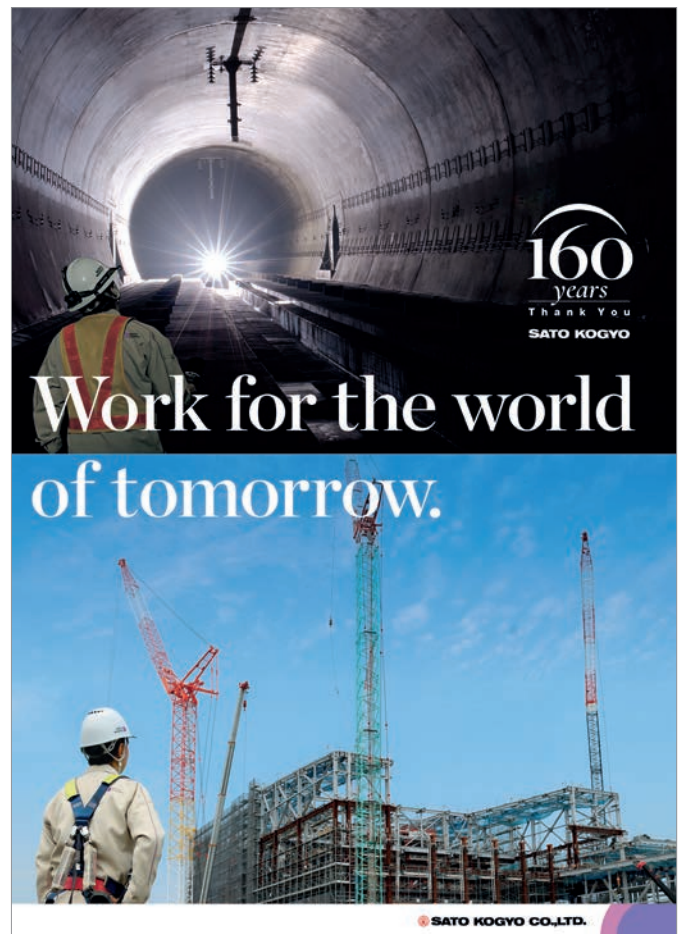
In 2020, Sato Kogyo's dedication to a greener future led to its declaration as an 'Eco-First' company in collaboration with Japan's Ministry of the Environment. "This declaration is raising awareness among our staff that they are members of an environmentally advanced company," Mr. Heima says. "Our 'Eco-First' targets are to contribute to a zero-carbon society by way of CO<sub>2</sub> emission reduction, a recycling society by way of waste reduction and a symbiotic society by way of



Technology center

biodiversity conservation and to promote environmentally friendly behavior by our staff.

"These targets will directly contribute to the achievement of the U.N.'s Sustainable Development Goals. Among the specific examples of our efforts are the utilization of hybrid-type construction machinery, by which we can reduce CO<sub>2</sub> emissions at construction sites, and the implementation of environmentally friendly design concepts like zero-energy buildings and zero-energy housing, through which we can enhance energy-saving performance and reduce CO<sub>2</sub>."





## Takamatsu Construction Group



"We would like to export our expertise and technological know-how in disaster prevention to global markets."

Hirotaka Takamatsu,  
President, Takamatsu  
Construction Group Co., Ltd.

# The synergetic force driving a competitive group of companies

**Sustainability, DX and global expansion are key targets at Takamatsu Construction Group (TCG), whose 19 companies combine to form a market-leading supplier of construction, civil engineering and real estate services.**

Founded in 1917, TCG has grown into an organization comprising 19 companies that work together to deliver industry-leading excellence across four business areas: architecture, civil engineering, real estate and wooden detached housing. The group, which since 2000

specializes both in architecture and civil engineering projects such as dams, tunnels and bridges.

"The basic foundation of our M&A strategy began with Aoki Corporation, who went out of business," TCG president Hirotaka Takamatsu says. "We then acquired Mirai Construction, which also went out of business. These were great opportunities for us.

"Later, we began acquiring companies that were not bankrupt, but that we thought were interesting or could create strong synergy in our group. In other cases, we acquired family-owned businesses which didn't have a successor and were in trouble. We're a public company with values that have



Apricale Nerima Apartment  
(Takamatsu Corporation)

A key value at TCG is a commitment to sustainability, illustrated by the group's efforts to maximize the lifespan of buildings. "The Japanese construction industry is at a turning point," Mr. Takamatsu explains. "Whereas 'scrap and build' used to be the predominant trend, now it's more about maintaining and refurbishing existing buildings and infrastructure."

He adds: "Takamatsu Corporation offers construction that's 15% more earthquake-resistant than construction law requires. Asunaro Aoki Construction's anti-seismic friction dampers account for a lot of the percentage."

DX is also a chief focus at TCG – particularly as Japan's aging population leads to a skilled labor shortage. "The introduction of digital tools will greatly aid the

transfer of knowledge from skilled workers to unskilled workers," Mr. Takamatsu says. "The introduction of software and hardware such as robotics and drawing technology, as well as the adoption of IoT, are our initial improvement targets."



Anti-seismic Friction Dampers  
(Asunaro Aoki Construction)

As TCG would like to work with global partners in its DX drive – for example, collaborating with a Californian company to adopt 3D printing on its construction sites – the firm is also looking abroad to expand its sales reach, with the U.S. a major objective. "We would like to export our expertise and technological know-how in disaster prevention to global markets," Mr. Takamatsu says.

**TCG Takamatsu Construction Group**  
[www.takamatsu-cg.co.jp/eng](http://www.takamatsu-cg.co.jp/eng)



Three-story Pagoda of Nachisan Seiganto-ji Temple/Kongo Gumi has enjoyed a notable period of expansion as part of a concerted M&A strategy, is led by two core companies: TCG, which constructs a range of residential, commercial and institutional buildings; and Asunaro Aoki Construction, which



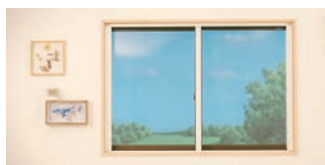
Sakuto Mega Solar Power Plant  
(Asunaro Aoki Construction)

continued over 100 years, so we would like to support companies who share our values."



# Creating the ideal living environment in homes across Japan and beyond

A company that turns 60 in 2023, Nissho is a go-to building materials and home renovations company that specializes in market-leading screen doors and windows.



Roll-type screen door

Specializing in the use of aluminum, Nissho has established itself as one of Japan's leading home-building materials producers since 1963. A company with 25 branches across the country, it offers particular expertise in the manufacture and installation of screen doors and windows found in households nationwide.

"Our presentation screen products are roll-type," President Masaaki Watanabe explains. "They can be rolled out any time you'd like to



Inner window: equipment to protect against the heat

use them. They're very convenient and hard to deteriorate so that makes the product last longer. That's our number-one advantage when compared to conventional products from other companies."

Meanwhile, Nissho also provides a wide portfolio of general renovation services, revamping anything from kitchens, to bathrooms, to home exteriors. "Buildings are experiencing a wave of renovations," Mr. Watanabe says.

"Japan has a disparity of temperatures. For example, Hokkaido is known for its snow, so people need a product that can protect their house from the severe temperatures. In Okinawa in the south, on the other hand, it's a lot of typhoons so customer's needs are different. They want prod-

ucts to protect the house from wind and rain. So, Nissho can help customers to fulfill their needs and live a comfortable life by making a precious home last longer."



Sliding shutter door

Nissho embraces *monozukuri*, the Japanese drive for manufacturing perfection; listening to the customer is key to this pursuit, Mr. Watanabe stresses. "Monozukuri is the reason why Japanese companies make such high-quality products. If people come to us with needs that don't fit



"Monozukuri is the reason why Japanese companies make such high-quality products."

Masaaki Watanabe,  
President, Nissho Inc.

a product we've already introduced, this gives us a lot of energy and we try to come up with new solutions to satisfy their requirements."

Nissho is now also present in Thailand, and is targeting further expansion in Southeast Asia.

 **Nissho**  
www.nissho-grp.co.jp

## Born in Canada, raised in Japan

With its know-how and experience of imported Canadian lumber and wooden building construction, SELCO HOME is quietly helping to change the image of wooden houses in Japan.

Over 60 years in business, SELCO HOME began supplying imported homes in the mid-1990s, choosing Canada as a partner because of its advanced technologies in wooden housing construction and commitment to the circular economy.



House that survived being hit by the tsunami in 2011

A fruitful collaboration has since seen SELCO import both Canadian building materials and housing technology, before customizing them to fit with Japanese regional characteristics and culture.

SELCO has been recognized as the No. 1 Canadian imported house supplier in Japan by an independent market research firm and as a result been officially con-



Show home in Kanazawa

gratulated for this achievement by the Canadian Embassy in Tokyo.

As well as helping the company to avoid some of the logistical issues associated with the COVID-19 pandemic, dealing directly with suppliers has enabled SELCO to keep its prices fair in the face of rising costs.

The quality of the group's product, meanwhile, has never been in doubt. Company president Takashi Aramoto explains: "When Japan was experiencing its economic boom, a lot of wooden houses were built. These have deteriorated over the years, with many that were built 30 or 40 years ago in poor condition today."

SELCO is doing more than most to rectify the image of wooden

homes in the country. "We can guarantee that our homes will have a life cycle of at least 50 to 60 years as long as they are properly maintained," Mr. Aramoto adds.

With a much longer average life cycle than Japanese wooden houses, SELCO's imported homes also stand out for their high durability when confronted



Show home in Fukuoka

with natural disasters. Almost none of the company's houses, for instance, were significantly damaged in recent earthquakes in Niigata or Kumamoto; some even survived being directly hit by the tsunami in 2011.



"When it comes to earthquakes and natural disasters, our houses are capable of withstanding even the harshest seismic activity."

Takashi Aramoto, President,  
Selco Home Co., Ltd.

As for the future, Mr. Aramoto's goals are clear. "I want our company to be known as one that can do anything with wood," he says. "I want to be remembered as somebody that was a 'wood solutions producer'."

 **セルコホーム**  
https://selcohome.jp

# IHI Transport Machinery: Transport as a service

As transport undergoes digital transformation, IHI Transport Machinery is driving innovation by creating value through novel technology.



"If products and information don't move, value isn't created."

**Koichi Murakami**,  
President, IHI Transport  
Machinery Co., Ltd.

The significance of transport has never been more keenly felt across all sectors than in recent years, and the industry is now undergoing significant digital transformation.

One of the companies driving this change is Japanese firm IHI Transport Machinery. Founded in 1973, the company is an innovator in its field, creating Japan's



Jib climbing cranes

first high-rise construction crane and mechanical parking lot. The company's success is based on its ability to combine cutting-edge technology with an understanding of customer and societal needs.

IHI is embracing digital transformation, pushing the transport machinery industry into a world where EVs are automatically parked and charged in digitized parking lots. This parking system will think and act for both car and parking lot owners, using a

network of interconnected devices and people to create value.

The products created by IHI, including bulk handling systems and mechanical and ramp parking systems, create value not only for the customer, but also for wider society. Energy-saving EV charging systems and automated jib climbing crane operations are examples of how the company is leveraging



Tower parking systems



Continuous ship unloaders

IoT and digital transformation to contribute to a more sustainable society. As company president Koichi Murakami says: "Socially-conscious ESG management with even stronger governance has become more important than ever."

IHI has a holistic view on the transport industry, understanding that every stage at a construction or logistics site – from unloading, transporting, and lifting products – is connected; while its "Omotenashi" spirit places a focus on after-care service. The company is continuing to expand, especially in the South-east Asian market, and its customers feel the value of the move into the world of "transport as a service".

**IHI**

[www.iuk.co.jp/english](http://www.iuk.co.jp/english)

# Japan Uniflow opening doors to a wealth of opportunities

Founded in 1965, the company is a market-leading manufacturer of swing, sliding and roll-up doors, as well as products such as strip curtains.



"Our goal is to not only target mass products, but also those that nobody else is making, therefore cementing our position as a leader in the industry for innovation."

**Sayumi Ishibashi**, President,  
Japan Uniflow Co., Ltd.

Based in Tokyo, Japan Uniflow is the go-to manufacturer of swing, sliding and roll-up doors used in

factories, stores, warehouses and many other settings.



Smoother (RX-2)

Among Uniflow's major strengths is its commitment to delivering its high-quality, made-to-order doors within five days of starting production. "When it comes to turnaround times, we're an industry leader," says president Sayumi Ishibashi.

Marrying quality and speed requires expert craftsmanship and supply-chain management, Ms. Ishibashi stresses. A focus on domestic procurement is also key

"Our main products are our swing and high-speed roll-up doors. For those, we need to be ready to go, so we make sure the materials we use are Japanese-produced."

Uniflow's high-speed doors help to control environmental factors such as temperature, dust, insects and humidity – and the firm also manufactures curtain-type par-



Example of use at a convenience store  
titions for this purpose. For example, its strip curtains cover refrigerated supermarket displays.



Smart swing  
(w/colored sheet)

Swing door  
(SCG-3)

"They keep the cold air in and save energy," Ms. Ishibashi explains.

A company with products sold in nearly 20 countries, Uniflow has overseas locations in Shanghai and Singapore – with the latter particularly important to its international aims. "Our Singapore office was established to find partners so we can sell our products and understand the different rules each country has," Ms. Ishibashi says.

While COVID-19 has affected this drive, it's now moving back into gear, she notes: "For instance, our Taiwanese partner displayed our product at a trading show, and there's another show in Taiwan in December."

**UNIFLOW**

[www.uniflow.co.jp](http://www.uniflow.co.jp)



# Wastewater treatment for a sustainable world

Through its proprietary turbo blowers, TOHIN INDUSTRY is able to achieve a 20% reduction in energy costs for industrial wastewater and sewage facilities.



"We will continue to contribute to society and preserve the natural environment through our manufacturing activities."

Yasushi Hamazaki, President,  
TOHIN INDUSTRY Co., Ltd.

As Japan's largest manufacturer of rotary vane blower equipment, TOHIN has contributed to the development of the country's environment and industry

over the past few decades, as well as to the current accelerated economic growth in China thanks to its recent expansion in the country.



Tohin Industry headquarters

The company's rotary vane blowers have been used for over 50 years for aeration of on-site wastewater treatment for both industrial and community projects, with an established production of more than 4 million units. In a time of a global energy and climate crisis, the

blowers also provide a critical sustainable solution.

"Our mainstay turbo blowers reduce energy use by about 20% and contribute to a reduction in global CO<sub>2</sub> emissions" says Yasushi Hamazaki, President of TOHIN. Currently there are about 2,000 sewage treatment plants in Japan, and their running cost is



TX Turbo Blower

3 trillion yen. Half of this amount is the cost of electricity, the TOHIN president points out.



Rotary Vane Blower

"If we can reduce electricity costs by 20%, we can achieve a significant cost reduction of about 300 billion yen. Due to the energy-saving effect, this initial cost can be recovered in two to five years, so we are convinced that our products are cost-effective and at the same time greatly benefit society by reducing CO<sub>2</sub> emissions."

In the future, Southeast Asia, India and Africa will also need to build and improve their wastewater treatment systems as well, says the president. "At that time, just as the TOHIN GROUP has done in Japan and China, we will continue to contribute to society through manufacturing."

**TOHIN**  
www.tohin.co.jp

# Kyowa Kikoh: Supporting the demands of an ever-growing construction industry

Through its unique welding technology, Kyowa Kikoh is looking to cater to the varying needs of its customers.

Founded in 1979, Japanese company Kyowa Kikoh, a specialist in high-end welding and experts in industrial and construction machines, knows the importance of putting its customers first and ensuring that their needs are listened to, understood, and responded to directly. And one specific need in Japan is based around how old, deteriorating buildings are removed.



Jack-up barge

"We have lots of equipment that can work on scrapping aged



Stainless steel welded products

buildings," says company president Tetsuo Yamaguchi. "This includes our de-piling machinery and casing rotators, whose job is to unplug the pile foundations that have been established for earthquake resistance. Only urban areas are experiencing new types of construction, and with that, we can cater to the new demands of the industry such as the boring machine."

The wide variety of products made available to construction

firms, which are often custom-based and assessed case-by-case, is a key strength of Kyowa Kikoh, including those related to the growing areas of conveyor belts and automation, and this opens up new markets.

"Our international business operation strategy is collaborating with our customers. We are offering our services in things such as assembly to expedite those processes. By receiving key components from Japan and making them in our Vietnamese factory, we can increase production efficiency. In terms of price competitiveness, we can

help with that and assist our clients in delivering products for the Association of Southeast Asian Nations (ASEAN) market."



Casing rotators



"By receiving key components from Japan and making them in our Vietnamese factory, we can increase production efficiency."

Tetsuo Yamaguchi, President,  
Kyowa Kikoh Co., Ltd.

And intercontinental partnerships have sustainability in mind.

"For renewable energies, our focus is to enter into the construction of offshore wind turbines and we have had meetings with Dutch and Danish companies about this," highlights Mr. Yamaguchi about the ambitious future ahead.

**KYOWA**  
www.kyowakikoh.co.jp

# Asahi Inovex building upon its 'Auto Gate' to protect global societies

Utilizing its flagship product, the 'Auto Gate', Asahi Inovex is shifting its focus to contribute to safety worldwide.

Safety products often go unnoticed to the untrained eye but save lives when they are most needed. Japanese firm Asahi Inovex helps



"Our products are designed to help prevent disaster, assist in alerting people, and save lives."

Mikihiro Hoshino,  
President, Asahi Inovex Corp.



[www.asahi-inovex.co.jp/en](http://www.asahi-inovex.co.jp/en)

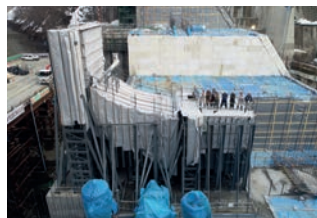
prevent disasters with its construction safety products and prides itself on adding value to highly sophisticated projects.

Founded in 1952, the company has three main pillars: civil engineering and steel structures, architectural steel structures, and housing equipment. One of the company's flagship products is its Auto Gate, an unmanned non-power gate that automatically opens and closes to prevent flooding. The product is currently in its third generation and its applicability has increased to include flat surfaces with the 'Auto Gate Stepless Butterfly Float'. "This enables us to not only increase the installation base and flexibility, but also increase our client's portfolios," explains company president Mikihiro Hoshino.

The Auto Gate system, which was awarded the 5th Monozukuri Nippon Grand Award in 2013, was



Auto Gate



Work at the dam site

proven effective at flood prevention during the 2011 earthquake in Japan and Asahi Inovex is hoping to provide similar prevention measures to other countries by



Auto Gate stepless butterfly float

increasing its international presence, especially in Europe. As Mr. Hoshino says: "We are looking for partnerships to provide the right solutions for the European market."

## Engineering expertise for today's sustainability challenges



"We determine the most effective method and time frame of construction, while taking into consideration the lifespan of the infrastructure."

Nobuhiko Suga, President &  
Representative Director,  
OEC Co., Ltd.

One of Japan's leading environmental and engineering consultancy firms, Original Engineering Consultants (OEC) has developed its business in various fields, including water supply, sewerage works, sanitation and solid waste treatment. Based on its vast experience

OEC has developed its own computer software for water supervisory control, flood prevention, mapping, and accurate and rapid calculation on engineering works.

accumulated over a 60-year period in services related to pre-feasibility studies, investigation, planning, detailed designs, diagnosis, construction supervision and relevant works, OEC is one of Japan's preeminent experts in this sustainable engineering field.



Water purification plant,  
Con Dao Islands, Vietnam

"Our role as water consultants is to appropriately handle and judge complex study items that require a high level of expertise from the standpoint of the local government, and to develop plans, detailed designs, construction supervision, and asset data management according to the municipality's budget, service



Water reclamation facility,  
Maynilad, the Philippines

level, and project years," says Nobuhiko Suga, President of OEC.

The firm has promoted computerization of engineering works since the early days of its establishment, and has developed its own computer software for water supervisory control, flood prevention, mapping, and accurate and rapid calculation on engineering works. In doing so, it has expanded its operations overseas, undertaking various projects in Asia, the Pacific Islands, the Middle East and South America.

In order to continue its expansion, both domestically and internationally, OEC is heavily investing in its recruitment and human resources.

"As one of only about a dozen comprehensive water and wastewater consulting firms in the whole of Japan, our recruitment capabilities have been strengthened by our long business experience of 61 years in operation, providing a great working environment and welfare programmes for employees.



Water intake facility,  
Da Nang, Vietnam

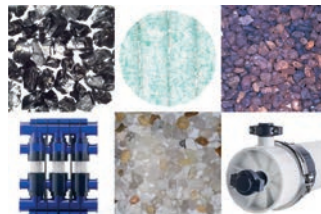
If we can reaffirm our foothold in the current market and continue to recruit and train professional engineers, the future looks very bright for our organization."

**OEC** オリジナル設計株式会社  
[www.oec-solution.co.jp/e](http://www.oec-solution.co.jp/e)





Anthracite filter media production



Various filter media



Chemical pumps



"I'm interested in bringing the technologies and know-how we've accumulated over 57 years in Japanese water treatment to new markets."

Kazuhiko Hosotani,  
President & Representative  
Director, Tohkemy Corporation

# Producing the systems and filtering media required for a continuous safe water supply

A leading total solutions provider in the field of water treatment, Tohkemy Corporation creates end-to-end solutions for companies that focus on new technologies.



Sand filtration system

Founded in 1965, Tohkemy Corporation started life as a supplier of materials and machine parts to engineering companies before moving into the water treatment industry. According to company president Kazuhiko Hosotani, the company's strength resides in its ability to provide high-quality products at affordable prices.

Striking the balance between durability, functionality and affordability can be tricky, but by paying attention to both production volume and transport cost, Tohkemy is more than capable of keeping its customers satisfied.

With six factories already in operation in Japan, the water treatment specialist has enhanced its procurement chain in Southeast Asia to lower handling and transportation costs and has recently established a company in South Korea to facilitate the procurement of quality sand resources.

Such measures have gone a long way to reducing the logistical issues faced by other industries in the Asian region, where lockdown and rising oil prices have wreaked havoc on supply chains.

But Tohkemy has another advantage over its competitors, having moved from sourcing and supplying components to an integrated system that encompasses design, manufacture, installation, maintenance and after sales.

"Our major customers make time to find solutions for users, but not to maintain their equipment. Tohkemy can take care of the whole system, and provide the systems required for a small-scale water treatment plant," says Mr. Hosotani.



Wastewater treatment system

Having shifted its focus to Super Micro Filtration (SMF) technology to meet changing market demands, the company is starting to look beyond Japanese borders for suitable business partners. "Tohkemy," as Mr. Hosotani says, "cannot stand alone."

As well as accepting African students every year as part of the Japanese International Cooperation Agency (JICA) program, Tohkemy is now focusing its attention on the developing world in order to increase the water supply in countries that need it most.



Activity in LDC

"Instead of exporting complete products from Japan," Mr. Hosotani says, "we will proceed with local procurement based on the idea of 'local production for local consumption'," a move which could lower costs for developing countries by half. "You can't expect to sell a product in a country which can't afford it," Mr. Hosotani affirms.

Nothing is more important, it seems, than pursuing new business in the spirit of cooperation, and Tohkemy is looking forward to forging fresh partnerships in ASEAN as well as African countries. To this end, a six-point plan

has been devised to ensure new markets have access to affordable, safe, and secure water purification. Key to the enterprise, as Mr. Hosotani is keen to emphasize, is the ability to find a local partner whom the corporation can trust.

Closer to home, meanwhile, change is afoot within the company itself, with Mr. Hosotani planning to hand over the reins to his son in 2023. Discussing the future president's leading priorities, he says: "In the first instance it is important to solidify our foundation in the domestic market. Second, I would like to expand Tohkemy's business style overseas and establish a joint venture company in at least three other countries."

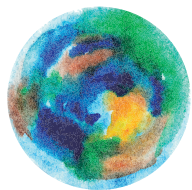


Training acceptance of foreign trainees

Also on the agenda: a commitment to using clean energy sources as an alternative to fossil fuels, thus fostering the shift towards carbon neutrality.



[www.tohkemy.co.jp/english](http://www.tohkemy.co.jp/english)



# Explore the EARTH and Create Value

A company engaged in the development and production of oil and natural gas, JX Nippon Oil & Gas Exploration is opening up new avenues with its environmentally-friendly business centered on carbon capture, utilization and storage.

Created in a 2010 merger between Nippon Oil Corporation and Nippon Mining Holdings, Inc., JX Nippon Oil & Gas Exploration (NOEX) specializes in the development and production of oil and natural gas, currently operating more than 30 projects in nine countries worldwide. The Tokyo-based company, which has offices in Australia, Indonesia, Malaysia, the U.S. and Vietnam, is part of ENEOS Group, Japan's largest energy, resources and materials conglomerate.

"Our main area of operations is Southeast Asia – chiefly Vietnam, Malaysia and Indonesia – as well as Papua New Guinea,"



says NOEX president, Toshiya Nakahara. NOEX's two core production sites are the Block 15-2 project in Vietnam, initially set up by company predecessor Mitsubishi Oil in 1992, and the Block SK10 project in Malaysia, established by Nippon Oil Exploration in 1987 and carried out in partnership with Petronas, the Malaysian state-owned oil and gas enterprise.

"At NOEX, we advocate a two-pronged approach focusing on oil and natural gas development and production as our 'fundamental business'," Mr. Nakahara says, "and as another prong, an environmentally-friendly business centered on carbon capture, utilization and storage (CCUS). We position this as a 'growth business', and have for many years spearheaded progressive measures to reduce CO<sub>2</sub> emissions."



Petra Nova CCUS Project in Texas, U.S.A.

Having successfully implemented an initial CCUS project in Vietnam in 2011, NOEX expanded its efforts three years later. It partnered with NRG Energy, a major U.S. electricity producer, to capture CO<sub>2</sub> given off by a coal-fired power station in Texas, before injecting it into a nearby oil field. Known



as Petra Nova, the project features the world's largest post-combustion carbon capture facility at a power plant. "The system allows us to increase the oil field's daily production by a considerable amount and also reduce the amount of CO<sub>2</sub> emitted into the air," Mr. Nakahara says. "There's a strong need to reduce the carbon intensity of fossil fuel power generation – and CCS/CCUS technology is one of the major ways in which this can be achieved."



As it looks to expand its use of CCS/CCUS technology, NOEX has launched joint study projects with partners in Australia, Indonesia and Malaysia, and with Japan targeting carbon neutrality by 2050, the firm is also planning domestic carbon capture initiatives. "There are no major oil fields around Japan," Mr. Nakahara says. "However, we know we can accumulate and store CO<sub>2</sub> in the seabed around Japan. By 2030, we'd like to realize the storage of CO<sub>2</sub> underwater, and by 2050, we'd like to expand this business further. The government's message is we have to make the utmost effort to achieve carbon neutrality. We have to strive to achieve that."

When it comes to the company's core business, NOEX's focus is increasingly on natural gas. "It has a relatively low environ-



"There's a strong need to reduce the carbon intensity of fossil fuel power generation – and CCS/CCUS technology is one of the major ways in which this can be achieved."

Toshiya Nakahara,  
President,  
JX Nippon Oil & Gas  
Exploration Corporation

mental impact, and demand is expected to grow," Mr. Nakahara explains. However, he stresses that oil production must continue: "By 2050, oil demand should be reduced by half, but



demand for oil as a feedstock for the chemical industry and other uses will remain. With regards to fuel sources, alternative energy sources are being explored, but I think the oil industry should be responsible for continuing to produce oil as a material for those industries and as a fuel in areas where it cannot be replaced."



**JX Nippon Oil & Gas Exploration**  
[www.nex.jx-group.co.jp/english](http://www.nex.jx-group.co.jp/english)



# Spreading renewable energy solutions with the advantage of deep financial knowledge and expertise

Renewable Japan provides end-to-end services for renewable energy development, from EPC to financing, asset management, and O&M, which is a unique business model in Japan.



Socovos power plant in Spain

It is not often that a success story begins with a disaster, but in the case of Renewable Japan, that is exactly what happened. Founded the year after the devastating 2011 earthquake and subsequent tsunami which led to the Fukushima nuclear disaster, the company is growing at home as well as internationally, and the man responsible for this tells its story.

"I wanted to spread renewable energy by leveraging the expertise I had cultivated through my long experience in the financial industry," explains Katsuhito Manabe, President of Renewable Japan, who goes on to provide more details of how he got to where he is today.

"My background is in investment banking. I joined Lehman Brothers in Tokyo as a new graduate and have been engaged in the investment banking business for a total of 18 years, becoming the founder of the securitization business in Lehman Tokyo.

"The day after the tsunami hit Fukushima," Mr. Manabe recalls, "I received an email from my U.S. business partner, with an offer to provide solar-powered water purifiers to those affected by the earthquakes in both Fukushima and Tohoku. I accepted and drove to the locations myself to deliver them.

"It was so shocking to actually see the damage with my own eyes. The entire city had been destroyed and I wanted to do something for them. I believe most people, especially Japanese people, felt the same way.

"Ever since the nuclear power plant meltdown, a great number of people have been pushing for more renewable energy, such as

"We will continue to accelerate our efforts to find and acquire projects overseas by leveraging the knowledge and expertise we have accumulated."

Katsuhito Manabe,  
President,  
Renewable Japan Co., Ltd.



Solar power plants and hydro power plant in Japan

solar and wind power. I wanted to do something to help in this effort, but I needed funds. As most of the wealthy institutions were in the financial industry, I thought I could bring money from there into the renewable energy industry through securitization. Using my experience and expertise, I believed I could make this happen and contribute to the reconstruction of Tohoku."

With a company name chosen with a clear and unambiguous purpose, Renewable Japan's business provides end-to-end services for renewable energy development, from EPC to financing, asset management, and O&M (operations and maintenance). This is a unique model in the Japanese renewable energy market and something that has aided the company's growth and international reach.

"When we started our business, we picked up some successful overseas developers in the United States, Europe and in other countries," says Mr. Manabe. "We then tried to imitate their business models.

"Successful companies do everything from land development to obtaining permits, EPC and equity investment," he continues. "And how the financial background contributes is through the approach to financing so as to create the highest equity return. In addition, they conduct O&M, making them more cost competitive and generating higher returns. They implement financial engineering and do asset management in-house. What all global developers have in common is that they are strong in finance."

Despite only a decade of existence, much has been achieved already, including the acquisition of a solar power plant in Spain.

"Renewable Japan has been in business for 10 years and in that time has developed or acquired 185 renewable energy power plants with a total capacity of 887 MW so far," says the president proudly. "In addition, the company has been entrusted with 238 O&M proj-



Socovos power plant wide view

ects totaling 1,140 MW, and has an overwhelming number one share, at approximately 33%, of the Japanese project bond market. This provides it with a significant presence in the Japanese renewable energy market.

"In order to expand the business, not only in Japan but also overseas, Renewable Japan has created a branch in Spain, where we have already hired six Spanish employees, something that is rather rare for a Japanese company. As our first major overseas project, we acquired the Socovos power plant (21.6 MW) in Spain in September 2022."

Although there are issues related to the grid, financing, permitting and off takers, with the Japanese government targeting carbon neutrality by 2050, Mr. Manabe believes the market potential to be huge, and his ambitions to grow further for the benefit of many is clear. This belief also applies to his positive outlook when considering what lies ahead and what his company is striving for.

"Going forward, we will continue to accelerate our efforts to find and acquire projects abroad by leveraging the knowledge and expertise we have accumulated as a renewable energy company and through our local subsidiaries across our local network," he says. "Three years from now, I hope I can tell you that I was right in believing in renewable energy in Japan, and that we will have further solutions for the challenges being faced in the industry."

# Creating green hydrogen through international cooperation

With sights set on its 100<sup>th</sup> anniversary in 2035, MKK looks to provide the means for clean energy based on hydrogen.



"By 2050, we aim to become a corporate group that contributes to the resolution of five social issues: CO<sub>2</sub> reduction/reuse and climate change, resource recycling, water and food, natural disasters, and labor shortages."

Toshiyazu Tanaka, President, Mitsubishi Kakoki Kaisha, Ltd.

The green revolution requires innovative technology developed with sustainability in mind from start to finish. One of the companies providing

these eco-friendly solutions is Japan's MKK.



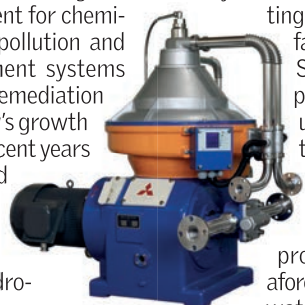
Selfjector factory

Founded in 1935, MKK has grown into a company that provides comprehensive engineering solutions, including the design of mechanical equipment for chemical plants, and air pollution and wastewater treatment systems for environmental remediation plants. The company's growth has been driven in recent years by a focus on the field of environmental sustainability, which is best shown by its HyGeia compact hydrogen generator.

Responding to the need for hydrogen-based clean energy, the

HyGeia is a compact and highly efficient hydrogen generator used in a wide range of industries. Not stopping there, MKK's R&D team is also working on using its HyGeia technology to generate green hydrogen from biogas derived from wastewater sludge. "This is a model that can contribute to the expansion of green hydrogen and is also a model of local production for local consumption," says president Toshiyazu Tanaka.

HyGeia isn't MKK's first cutting-edge product, in fact the company's SJ-H Series of oil purifiers for marine use holds a third of the global market share, and Mr. Tanaka hopes green hydrogen produced from the aforementioned wastewater sludge biogas can have a similar impact both on markets and on the planet.



Mitsubishi selfjector SJ-H series: Mitsubishi oil purifier

MKK wants to spread the positive impact of harnessing green energy beyond its domestic shores and is focusing its international efforts on Southeast Asia, where it is already present in China (Shanghai), Thailand, Taiwan, Indonesia and Malaysia.



HyGeia-A: small-scale on-site hydrogen generator

"We are looking for partners who are interested in similar fields to us, such as clean energy and waste treatment, and with whom we can collaborate," says Mr. Tanaka. "We are confident that these partnerships will be a driving force for achieving a carbon neutral society."

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www.kakoki.co.jp/english

## Denzai Holdings: Driving a sustainable future together

Since its foundation in 1972 as one of Japan's leading heavy haulage companies, Denzai has now become a comprehensive platform provider for wind power plants.

The move towards renewable energy is undeniably gathering pace, but the practicalities of harnessing the power of nature represent a challenge as well as an opportunity. The sight of wind turbines has become increasingly normal for many of us, but the construction and deployment of these huge structures requires expert knowledge.

Japanese crane specialist Denzai Holdings is one of the companies enabling the green revolution through its expertise in transporting and mounting wind farms. For 50 years the company has understood the importance of adding value to its primary business of heavy lifting cranes, providing specialized solutions for each client's specific needs.



Masato Uemura, President, Denzai Holdings Inc.

**DENZAI**  
www.denzai-j.com/en

A good example of this is Denzai's recent work on an onshore wind power generation plant in Japan's Aomori prefecture, where the height of the site was too much for any crane. The company's innovative solution was to raise the ground level of the site on an egg-shaped steel stand. As company president Masato Uemura says: "We succeeded where many others would fail."

Denzai's work is not limited to erecting wind farms, with its Data Care system providing an all-in-one wind power monitoring system. Developed in South Korea, the system provides data on temperature, vibration levels and noise to ensure windmills are

continually working optimally and to minimize costs. Mr. Uemura explains: "If a manufacturing company constructs a wind turbine, and there is no wind, the profitability of that project is zero. We can also preempt issues with this data and prepare any prospective parts for repairs."

The company has recently completed several domestic and international M&As as it expands its presence in Korea, Vietnam, Taiwan and India, among others. Indeed, Denzai was the first Japanese company to do offshore wind farm construction in Taiwan and has its sights set on more offshore installation in Vietnam. Through its spirit of early adoption of new types of machinery and constant pursuit of new fields to work in, Denzai Holdings hopes to continue this trend of expansion through M&As as the world continues its shift towards renewable energy.



Tower transportation



Nacelle transportation



Blade lifting





"Compared to other competitors, the quality of our quick-charger technology is top-notch."

**Takashi Ichinose,**  
President,  
Takaoka Toko Co., Ltd.

The Takaoka Toko Group has continually supported a stable supply and efficient use of electric power energy for more than 100 years, providing various products and systems – including power substation and distribution facilities, monitoring and control systems, and metering equipment – to the electric power utilities, public infrastructure, and general industry.



ATS

"We have made cutting-edge efforts to respond to increasingly sophisticated and diverse power utilization needs, such as quick chargers for electric vehicles (EVs), and energy management systems," says Takashi Ichinose, President of Takaoka Toko. "Electric power energy is said to be the infrastructure that supports social infrastructure, and from that perspective, our group takes pride in true infrastructure companies supporting the electric power distribution network and use of electric power itself."

The global energy market is currently undergoing a momentous transition towards decarbonization amid rapid climate change. In line with the U.N. Paris Agreement, last

# Powering the future of EVs

As a company that supplies electric power apparatus and GX (green transformation) solutions, Takaoka Toko is now looking to utilize its unique technologies to realize an EV society by providing easily accessible quick chargers for EVs.

year Japan declared its commitment to reaching carbon neutrality by 2050, with the aim of a 46% reduction in CO<sub>2</sub> emissions, relative to fiscal 2013 levels, by 2030.

"There is likely to be further acceleration of efforts to achieve decarbonization, through such means as broader mass adoption of solar, wind, and other renewable energy, full-fledged popularization of EVs, and progress with energy storage batteries and hydrogen technology," explains Mr. Ichinose.

In the EV charging infrastructure field, Takaoka Toko is a major player in Japan, holding a 40% market share for quick chargers in the country. "We delivered the first quick chargers for public and corporate use in May of 2009, so we entered the market at an early stage. That is the reason why we were able to be one of the pioneers in this field within Japan. Compared to other competitors, the quality of our quick charger technology is top-notch," says Mr. Ichinose.

To expand its market share, the company is now focusing on enhancing its product line to cater for different charging needs, handling the higher wattage of devices from 50 kilowatts to 120 kilowatts. These can fill general EVs up in 30 minutes, but the company also created a 15-kilowatt, reasonably priced middle-speed quick charger that can fill EVs up in 2 to 3 hours, releasing it as a new product this fall. Takaoka Toko can also respond to market demands such as accelerated EV charging stations for business use and charging stations for light vehicles. The entire array of Takaoka Toko's products can cover the full spectrum of needs for EV charging and it continues to enhance convenience through its one-stop service ranging from installation to maintenance and the implementation of the cloud system.



EV quick charger

The Group is also now investing heavily in its next-generation distribution service. In addition to the model of conventional electrical power supply that is based on high voltage power-transmission lines, Takaoka Toko aims to utilize and combine different energy sources such as solar, wind or other renewable energy sources, and is seeking out new models of electrical power supply which serve as alternative systems to larger power grids in case of natural disasters.

Efforts to achieve disaster resilience through this microgrid technology is in line with the enhanced efforts of local communities and companies in Japan against the increasing severity of recent natural disasters.



P2G (Power to Gas) system

"A microgrid is a new kind of power grid system used that serves as protection against natural disasters, expanding the introduction of renewable energy at the core in the model of local production and consumption," explains Mr. Ichinose. "I think maximizing the use of renewable energy on the base of each region contributes to carbon neutrality and I believe that we are going to see a steady rise in these microgrids around Japan. Our group sees these environmental changes



Middle-speed charger

as a tremendous business opportunity, and we have formulated and announced our 2030 VISION to indicate the targeted shape of the group for the next ten years."



3D inspection system

By further deepening, evolving, and integrating the technologies, the group is advancing and aiming to develop six new businesses such as EV infrastructure, next generation distribution, and global alliance, in addition to the core business, power equipment.

"We are going to accelerate ambidextrous management through "revolution" – refinement and restructuring of our existing core businesses – with our right hand; and "development" – pioneering new areas, creating new businesses and markets, and value of supply – with our left hand. As an integrated energy business provider, we will strive to enhance our corporate value while contributing to the realization of a sustainable society."



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