

Japan's Industrial Revolution: Turning Demographic and Digital Shifts into Strengths

As the world faces demographic shifts and global disruption, Japanese industries are pioneering DX and GX strategies—reshaping resilience, innovation, and the very future of manufacturing. *By Daniel de Bomford and Bernard Thompson*

Japan stands at a crossroads—not of decline, but reinvention. Amid shifting demographics, digital disruption and sustainability demands, its industries are transforming challenges into opportunities, pioneering digital transformation efficiency and green transformation-driven infrastructure renewal.

One factor strengthening Japan's global competitiveness is the weakened yen, which enhances cost-effectiveness and boosts export appeal. Internationally focused companies like Hakudo—a trading and processing firm specializing in metals and industrial materials—are leveraging this advantage to drive growth. "We are now focusing on the U.S. and Vietnamese market. We're also looking into Malaysia, India and the Philippines," says President Koji Tsunoda. "The target: to increase our overseas sales ratio to over 20 percent."

G-Place Corporation, a company specializing in sustainability, innovation and global solutions, is also expanding its international reach. "With 90 percent of our business domestic and only 10 percent overseas, we are trying to enlarge this overseas network," says President Eiju Ayabe. He adds, "Our focus is on countries with growing populations like India and Vietnam." Ayabe sees an opportunity to apply Japan's lessons and technologies as



"We understand good business as providing solutions to social issues as well as proposing new options to mitigate current ones."

Eiju Ayabe, President, G-Place Corporation

preventative measures, turning its experiences into global solutions for sustainable growth.

Boosting productivity and efficiency is essential in today's evolving industrial landscape. Yamashin Filter, a leading manufacturer of filters for an array of machinery, is embracing digital transformation and advanced production methods to meet ambitious sustainability and productivity goals. In the wake of the Covid-19 pandemic, the company has thrived by

leveraging digital tools. "We see huge potential in the use of DX to solve issues apparent in the Japanese market," says President Atsuhiko Yamazaki. Yamashin exemplifies how Japanese companies are redefining efficiency and resilience in an era of rapid change.

Japan's manufacturing supremacy isn't just about precision—it's built on the backbone of its construction and engineering companies like Hamada and Toyo Engineering. As aging infrastructure demands urgent attention, a new era of green transformation-driven development emerges. The real opportunity? Not just building but reimagining and sustaining the industrial future. Toyo Engineering's Eiji Hosoi sees vast potential: "The scope for new development aligned with green transformation goals presents immense growth opportunities." Hamada's Taisuke Boda adds, "New waste treatment facilities aren't being built, but we are extending their lifespan." With foresight and expertise, these firms aren't just constructing the future—they're redefining how industries evolve in a world in flux.

From DX to green transformation-fueled infrastructure renewal, companies are redefining resilience in an era of disruption, pushing boundaries. They aren't just securing their future—they're shaping the blueprint for the global industry's next chapter.

SUS Corporation: Changing the world with aluminum

The Japanese aluminum manufacturer is developing the future of aluminum by advancing factory automation, logistics and architecture. *By Daniel de Bomford, Sean McBride and Paul Mannion*

Reliability and efficiency are indispensable on a production line, a single fault can unravel a system and incur significant financial cost. SUS Corporation provides aluminum-based fabrications, automation equipment, labor saving equipment and services to its clients. With recent geopolitical shifts, manufactur-

ing has begun to return to Japan and company President Yasuo Ishida says they have been preparing for some time. "We were promoting the return of production to Japan, with an emphasis on improving quality, productivity and production technology, and this has ultimately worked in our favor for exports in the environment of a weak yen," he says.

SUS Corporation supplies aluminum frames of various types and applications to fit any production line and is also a popular material for the KARAKURI module, a low-power automation solution. Beyond automation, SUS Corporation has diversified into "ecomms" business producing architecture and furniture made from aluminum, such as platform waiting rooms and smoking booths. It has leveraged its factory automation experience to supply the logistics sector, providing carts, racks and automated equipment. Supporting its business, SUS Corpo-

ration delivers directly to customers. "Having our own courier system enables us to interact with customers repeatedly and it enhances the trust of our customers," Ishida says.

Looking forward, SUS Corporation has a focus on finding new applications for aluminum. "We have been working to make all-aluminum frame systems, including fastening parts such as bolts and nuts," Ishida says. By unifying the nuts and bolts with the aluminum frame the uniform material characteristics and thermal expansion coefficient prevent the bolts from loosening. "I think that screws that do not easily loosen are a wonderful technology," he says. Ishida hopes that they will be able to release the results of SUS Corporation's academic research in 2025.

SUS

<https://global.sus.co.jp>



Automated Karakuri



GF aluminum pipe structural material



Multi Connector and aluminum bolt



"The vision I have for the company is to convey to the world the advantages of aluminum and changing the world"

Yasuo Ishida, Representative Director, SUS Corporation

"The interview for this article was conducted before Mr. Yasuo Ishida passed away on December 15, 2024. We would like to express our deepest condolences to his family and friends, and to publish his last precious words."

Okamura: Oceans of Opportunity

Okamura shows the world the power of an SME with its tailored, flexible approach to engineering. *By Daniel de Bomford, Sean McBride and Sasha Lauture*



Kazuyuki Okamura,
President & CEO, OKAMURA Co., Ltd.



www.okamura-industry.co.jp



Safe tap water is often something taken for granted, with little thought to the marvelous technologies that work behind the scenes. The systems that underpin our drinking water are often energy, resource intensive and require a high level of expertise to maintain. Okamura Corporation, an engineering and construction company, has pushed industrial boundaries for 90 years, leveraging its flexibility as an SME. With the present depreciated yen, company President Kazuyuki Okamura believes there

are an abundance of opportunities for the firm in previously inaccessible markets. "We believe we can now compete with our high quality and higher cost with an acceptable range of pricing and increased cost competitiveness due to the depreciating yen," he says.

With its swift Plan-Do-Check-Act (PDCA) cycle, Okamura can take the needs of customers and the market and quickly adapt, evolve and optimize its service. For water treatment, it is the only supplier who provides chlorine gas treatment in Japan and has been successful in leveraging this service internationally. Mr. Okamura explains, "The reason we continue with this business in Japan is because our customers have full turnkey opportunities outside Japan, from design and procurement to building and operation."

Okamura's comprehensive engineering services are flexible and tailor-made to suit their clients. "We base our design on the requirements of the customer, optimizing our design without deviation from specifications to the extent possible," Mr. Okamura says.

Looking to continue its expansion into international markets, Okamura has two focuses. Servicing the G7 green transformation and expanding into Asia for supply chain enhancement and



Electrolyzer/The most unique system



Chlorinator



Dispatch experienced supervisor to each site



System over view/providing whole system including engineering

dispersion of risk. It already has a 70 percent share of water purifiers in Bangkok and looks to expand further into the region. As Mr. Okamura says, "I would like Okamura to become the core supplier of safe tap water in Asian countries."

Innovation for a Green Energy Future

Toyo Engineering positions itself as a global leader in Green Transformation in the infrastructure and energy sectors. *By Daniel de Bomford and Cian O'Neill*



"Toyo Engineering brings decades of expertise to the forefront of the global energy transition."

Eiji Hosoi, President, Toyo Engineering

Nations worldwide are racing towards net-zero targets, unlocking a world of transformative opportunities along the way. Japan's anticipated green transformation (GX) investments are expected to reach over 150 trillion yen in the next decade, doubling the yearly market size of Japan's construction industry to around 32 trillion yen, according to Toyo Engineering President Eiji Hosoi. "While Japan's aging infrastructure requires urgent attention, the scope for new development aligned with GX goals presents immense potential for growth," he says.

Toyo Engineering, a Japanese engineering, procurement and construction company, is involved in many energy transformation projects and has established itself as a market leader, particularly with green ammonia. "Unlike coal and oil, ammonia produces no CO₂ when burned, making it an attractive solution for decarbonizing power generation," Hosoi explains.



Pupuk Iskandar Muda (PIM) existing fertilizer plant

Having already executed 87 ammonia projects and having constructed 65 percent of Indonesia's fertilizer plants in the last 40 years, Toyo Engineering is spearheading what could be a world-first initiative for the green energy transition. The GAIA (Green Ammonia Initiative from Aceh) project in Indonesia will primarily support the maritime industry in producing a clean and



Photo of a signing ceremony in the Asian Zero Emission Community (AZEC)

sustainable fuel for shipping. "This initiative represents a major step forward in creating a commercially viable green ammonia value chain," Hosoi says. With the support of both the Indonesian and Japanese governments, the project will be able to leverage existing infrastructure, contributing to its cost competitiveness.

This is but one facet of Toyo Engineering's dynamic approach. With its foresight and expertise, the company is constantly on the lookout for new partners to collaborate with in leading the global energy transition.



www.toyo-eng.com/jp/en

Hamada's Strategy for Japan's Evolving Infrastructure Needs

Japan's population decline brings new challenges and opportunities for companies in the construction sector and Hamada meets them head on with a strategy of acquisitions, investment and sensible development.

By Daniel de Bomford, Bernard Thompson and Megah Bintang



"From design to shipment, we have various sales points, and we are very convenient for customers."

Taisuke Boda, President,
Hamada Co., Ltd.

Japanese construction is iconic, and it powered the nation's industrial boom, pushing it to become one of the world's largest economies. Renowned for its robust design, Japan's infrastructure stands strong in one of the world's most seismically active regions. Even now the skylines and industrial centers of Japan continue to evolve 50 years after the construction boom, pushing the boundaries of architecture and artful function. As the population declines, the construction industry continues to persevere and expand, with scrap and build policies alongside the maintenance of existing infrastructure fueling the sector.

Companies within the construction sector, however, are anticipating a radical shift due to the ongoing demographic challenges. Taisuke Boda, president of Hamada Co., Ltd., says opportunities exist when it comes to maintenance for existing infrastructure. "When we look at waste treatment facilities, new ones are no longer being built, but we have been providing life-extending

construction," he says. Founded over 100 years ago, Hamada is a fixture in Japan's construction and engineering sectors, focusing on heavy chemical industries and general construction. More recently it has become a paragon in the sector for environmental initiatives, especially around water purification and waste reduction.

What sets Hamada apart from its competitors is the very close relationship it cultivates with its customers. Boda explains, "We have a design team that is embedded with the customers, so we design the plant and machinery, we build the chemistry and other equipment, and then installation can be done." It also has the capacity to fabricate piping and machinery on site and provide maintenance and delivery. "From design to shipment, we have various sales points, and we are very convenient for customers," he says.



Project of NAGAOKA

Boda doesn't anticipate large chemical plants, generators or water pumping facilities in the future, rather, as the population decreases smaller more appropriately sized infrastructure will need to be built. He has a local mindset and believes local maintenance is paramount. He explains, "For regional cities or towns, the reduction in the population is so fast, so severe, that there needs to be a new system rebuilt



because it doesn't make sense to maintain the current long water pipes or electric lines."



Prefectural water supply

Sustainable infrastructure is where. Boda sees the largest opportunity for growth and Hamada is investing 4 billion yen into its subsidiary AETEC for biogas power generation. While he believes the plant industry has peaked and demand for petrochemicals in Japan will remain stable, Hamada are working toward increasing their market share instead. Further gains are found by reducing headcount as sectors shrink or become more efficient. To mitigate the effects of Japan's shrinking workforce, Hamada is gaining new employees through acquisitions of partner companies and can move human resources through its group where they are needed. Internationalization is also part of Hamada's recruitment strategy, and the company already employs a number of workers from Vietnam.

In terms of international acquisitions, Vietnam is the likely choice, according to Boda. "If we are to have any partnerships over-

seas, it will be in Vietnam because we have a lot of Vietnamese workers, so if we can collaborate with a chemical plant in Vietnam, it will be easy to communicate," he says. Its acquisition of Nippon Shokubai has given Hamada access to foreign markets in Indonesia and Belgium. "Their chemical plant is unique and specialized in a way nothing like any other company, so we have a niche know-how about this area, and our customer is requesting us to go to those countries," he explains. This has opened the door to local acquisitions to assist in optimizing Hamada's operations and oversee those plants.



CHEMILES in operation
Project of NAGAOKA

The anticipated shift in Japan is around the corner, with 2040 expected to be the year where the population decline becomes fully apparent. Hamada will be instrumental in preparing and maintaining the next generation of infrastructure to service the evolving needs of Japan.



Solar power generator



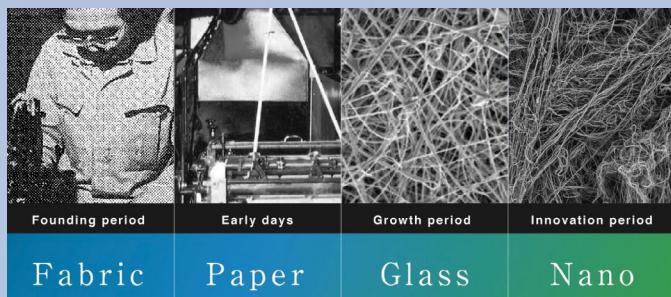
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From Filter Media to Conductive Fabric: Yamashin Nano Filter Leads Innovation

By Sasha Lauture and Bernard Thompson

Yamashin Filter Corporation, established in 1956, stands as a trailblazer in the filtration industry and is proudly listed on the Tokyo Stock Exchange's prime market. Renowned as a Tier 1 manufacturer, Yamashin dominates the global market for hydraulic filters in construction machinery, delivering high-quality solutions to industries worldwide. Unlike most competitors who rely on external suppliers for filter media, Yamashin's unique strength lies in its end-to-end expertise—developing and manufacturing proprietary filter media that drive unparalleled performance. This innovative approach has solidified Yamashin's position as a leader, shaping the future of filtration technology.



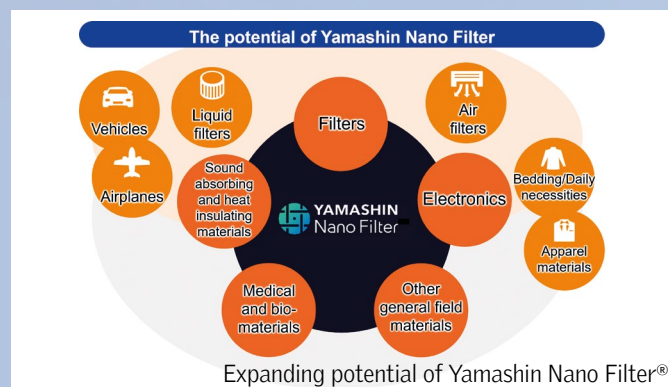
History of Filter Media

In 1978, Yamashin revolutionized the filtration industry by becoming the first company globally to use glass fiber as a filter medium, establishing a de facto standard in the field. Now, Yamashin has taken a bold leap into the future with its groundbreaking "Yamashin Nano Filter®," a next-generation filter medium crafted through a proprietary nanofiber manufacturing process. This patented innovation stands out with its ultra-fine fiber diameter and exceptional porosity, setting it apart from conventional fiber-based materials.

In hydraulic filters for construction machinery, Yamashin Nano Filter delivers an impressive three to four times longer service life compared to traditional glass fiber filters, earning widespread adoption by leading construction machinery manufacturers. In air filtration, the Nano Filter excels further, powering MERV14-certified products sold in Japan through its Group company, AQC Corp. These advanced air filters not only surpass the MERV13 standard, the pinnacle for building air conditioning, but also highlight Yamashin's commitment to pushing boundaries in filtration technology.

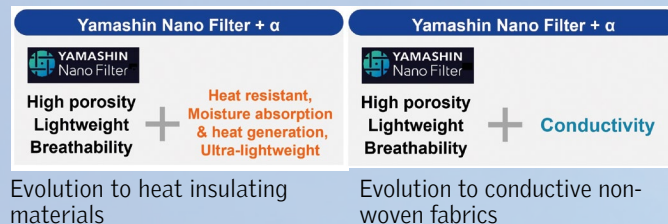
Yamashin Nano Filter is revolutionizing the filtration industry with its cutting-edge nanofiber technology, now offering advanced solutions for global air filter manufacturers. The series includes NanoWHELP™, designed for MERV 14-15 class air-conditioning filters, and Yamashin Nano Air™, engineered for HEPA and Semi-HEPA applications. These innovative materials not only deliver superior filtration performance but also address critical environmental and regulatory concerns.

The filters significantly reduce energy consumption up to 23 percent in air-conditioning systems thanks to long-lasting, low-pressure drop technology. Their extended service life minimizes waste, contributing to lower CO₂ emissions. Free from PFAS, PFOS and boron, these filters meet global safety standards and are perfectly suited for clean-room environments, particularly in semiconductor manufacturing.



Yamashin Nano Filter® stands apart with its high porosity, ultra-fine fiber diameter, and flexibility in raw material selection. Beyond filtration, the technology offers immense potential for diverse applications, including heat insulation, heat resistance and conductivity. Yamashin is actively seeking partners for technical collaboration, specification development, and sample evaluations to bring these groundbreaking innovations to market.

In the field of heat insulation, Yamashin is pioneering advancements by selecting innovative resins for apparel and bedding wadding, enabling the creation of thin, lightweight products with exceptional heat insulation. By incorporating moisture-absorbing and heat-generating properties, these materials can achieve superior heat retention, redefining comfort and efficiency. Leveraging advanced melt-spinning technology with highly heat-resistant resins, Yamashin is setting its sights on the transportation and fireproof-clothing markets, offering cutting-edge heat insulators with unparalleled heat-resistant functionality.



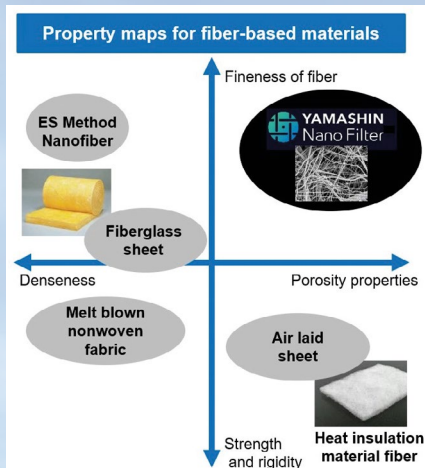
Evolution to heat insulating materials

Evolution to conductive non-woven fabrics

In terms of "conductivity," in addition to the excellent flexibility, air permeability and light weight of Yamashin Nano Filter itself, the company aims to use it as a wearable sensor by acquiring conductivity through various methods including the coating of conductive polymers. If we can add

even higher conductivity, we are confident that we can provide a product of an electromagnetic wave shielding material that also has heat resistance and sound absorption, and that can replace similar products currently available in the market.

Yamashin invites inquiries and sample requests from innovators seeking cutting-edge solutions with Yamashin Nano Filter. Designed for air filtration, heat insulation, heat resistance and conductive nonwoven fabrics, this revolutionary material unlocks new possibilities across industries. Explore how Yamashin Nano Filter can transform your applications connect with them through the link below to learn more and request samples.



Characteristics diagram of Yamashin Nano Filter® vs. other materials

Hakudo: Material Supply in the Digital Age

Hakudo looks to modernize materials supply with its ambitious online strategy, bringing the industry into the digital age. By Daniel de Bomford, Cian O'Neill and Sasha Lauture



"The philosophy of our company is to provide our customers with convenience and peace of mind along with our products."

Koji Tsunoda, President, Hakudo

The digital age has brought about a radical shift to commerce. Online platforms like Amazon have created a new paradigm for consumer goods, opening new pathways for businesses and customers alike. Hakudo Co., Ltd. is bringing materials supply and *monozukuri*—Japanese craftsmanship—into that digital age. President Koji Tsunoda says their goal is to become a global go-to platform for materials. "Our goal is to become the Amazon of *monozukuri*, and we

are enhancing our digital platform to offer more comprehensive online services to our customers."



Japanese manufacturing is known for its reliability and high quality, driven by the capability of manufacturers in conjunction with traders like Hakudo. Tsunoda says that Hakudo's role is not only distribution, but also to convey customer feedback to the manufacturer, which is invaluable in maintaining Japan's competitive advantage. Currently Hakudo primarily services semiconductor manufacturing equipment and OLED flat-panel displays but is diversifying into the high demand industries of automotive, aircraft, food and medical. Aluminum represents 60 percent of materials sales, driven by the EV sector's demand for lightweight materials needed for energy efficiency.

Through its online platform, Hakudo receives around 80 percent of its requests, totaling around 20,000—approximately half of which

become orders. Furthermore, it receives 40 percent of its orders online. Hakudo's capability is supported by bases all over Japan with over 5,500 items and 7,000 tons of stock on hand and through its digital platform, offers more than 100,000 items handled by its partners. Tsunoda says Hakudo processes orders received by 5 p.m. that night and delivers them the following day.



Hakudo is currently looking to expand into the international market, with systems being set up in the U.S., China, Thailand and Vietnam and are looking to form partnerships in India and the Philippines.



Tokyo Byokane Takes Kaizen Global

Japanese companies are looking outward for continued growth and Tokyo Byokane is leading the way bringing a Japanese manufacturing ethos to the world. By Daniel de Bomford, Cian O'Neill and Sasha Lauture



"Our strength is our commitment to high quality."

Toshimasa Tsukihiji, CEO & Chairman, Tokyo Byokane

Japanese manufacturing is becoming more competitive with a depreciation of the yen and shift towards automation and efficiency in the wake of the shrinking population. Tokyo Byokane Co., Ltd., have long been instrumental in high-tech manufacturing

and are capitalizing on opportunities arising from advancements in IT and AI, especially in the global market. President and Chairman Toshimasa Tsukihiji says that 40 percent of their sales is coming from automotive sector, and they expect that number to grow. "In the current automotive industry's trend toward automation, distinguishing between the electronics and automotive domains has become increasingly challenging," he says.

One focus of Tokyo Byokane is finding new solutions for automation and inspection equipment to meet the challenges of the declining population. "Our research and development strategy centers on responding to our customers' new products, making our operations inherently aligned with addressing new product needs," Tsukihiji says. These services are offered to companies within its group and Japanese manufacturing firms also facing labor shortages.

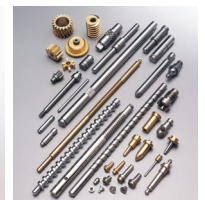
Tokyo Byokane also has a diverse workforce with 70 percent of its employees being non-Japanese working within its group companies. As the population continues to decline overseas sales, which already account for 50 percent of its total, will continue to increase. "By becoming a company that is even more utilized by non-Japanese com-

panies than it is today, we aim to address Japan's structural issues," Tsukihiji explains.

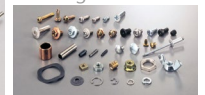
By working closely with its clients and maintaining its commitment to the fundamentals of manufacturing, Tokyo Byokane is set to continue being a leader in Japanese manufacturing.



Springs



Cutting



Screws and others



Vietnam factory



www.byokaneworld.com/en



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