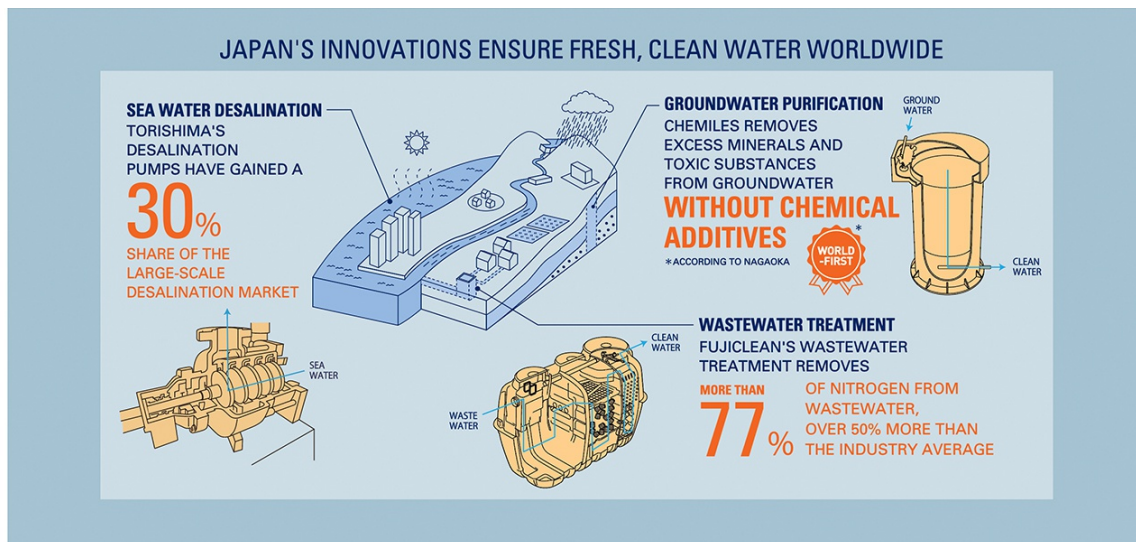


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Japanese Firms are Making Waves in the Global Water Industry

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Estimates say that within ten years, there will be a 40% shortage of fresh water. Nearly 11 trillion liters are consumed each day, with 90% of it going to agriculture and industry. Clean, abundant water is an essential factor in our global economy and vital to our standard of living, and the need for uninterrupted and safe access to water has created an industry estimated to be worth over \$900 billion within a few years. With the stakes so high, it should be no surprise that Japan's innovators, especially small and medium enterprises, have turned their attention to this challenge. Having achieved success domestically, where water quality standards are among the highest in the world, these firms are now bringing their one-of-a-kind technologies overseas, and making Japan synonymous with water worldwide.

A Smart Approach to Purifying Drinking Water without Expensive, Polluting Additives

Less than 0.1% of the earth's fresh water is on the surface, creating a huge market for groundwater extraction and purification. This is what inspired Nagaoka to branch out from oil exploration and apply their expertise to water. "Ensuring that fresh water is available and safe is an extremely important mission, which is why, when I joined Nagaoka I was confident we could make a positive contribution to society," says Umezu Yasuhisa, President and CEO, on the guiding principle that has led to their company being the first ever to receive three awards from the International Water Association. After developing ultra-high efficiency screens for drawing water out of the surrounding earth, Nagaoka turned to filtration, introducing their Chemiles process for treating groundwater. This unique technology is the first of its kind to remove excess minerals and toxic substances without the use of chemical

additives. “The process relies on oxidation and contaminant-consuming bacteria to remove excess iron, magnesium, and ammonium nitrates,” says Umezu. “It’s very low-maintenance, making it ideal in places that need a reliable water supply.” One of their facilities can supply enough clean water for up to 42,500 people at a much lower operating cost and environmental impact, making it very attractive to public and private customers.

Chemiles has already received a positive response from customers in Southeast Asia, including Malaysia and Vietnam, in part because of the strong reputation of Japanese manufacturing. “Water quality standards in Japan are some of the world’s strictest. It sets a very high bar for a company like ours, but demonstrating that we have cleared it makes a deep impression everywhere else. Our location becomes our proof of quality.”



Nagaoka’s Chemiles purification process is the first of its kind to remove excess minerals and toxic substances without chemical additives, ensuring a reliable clean water supply at a low operating cost.

Tapping an Ocean of Opportunity by Turning Saltwater into Drinking Water

While more than two-thirds of the earth’s surface is water, 97% of it is salt water. In just a few decades, however, desalination of ocean water has grown from an experimental tech into a \$3 billion industry, turning water-poor areas such as Dubai into global economic hubs. “With a stable water supply, the economy develops, which leads to a higher standard of living,” explains Alister Flett, Executive Officer of the Global-Sector Division with Torishima. Like Nagaoka, Torishima was originally involved in energy, but has applied its skill in producing high-pressure pumps to the challenge of reverse-osmosis desalination - in which seawater is pumped at high pressure into membrane chambers that remove the salt. Compared to other methods, reverse-osmosis has become much more energy-efficient, and the cost of producing desalinated water has been reduced by over 50%, thanks in part to Torishima’s innovations. “Our pumps are capable of lifting water as high as 4,000m,” Flett continues. “Additionally, since we’re working with seawater, the pumps need to be specially designed to resist corrosion. Because of our high performance and reliability, we’ve built up a good deal of customer loyalty, especially in markets like the Middle East.” This loyalty has made Torishima a leader in their field, supplying 30% of the high-flow pumps for large scale reverse-osmosis desalination.

Although Japan used to produce more than half of the world’s desalination pumps, demand is much higher elsewhere, so Torishima has been working globally from early on. “As part of our plan to expand overseas, we’ve started a global service network, looking toward providing lifetime support and continual improvements,” explains Flett, noting that this good relationship

overseas has also helped Torishima's R&D: "Building these long-term relationships gives us many more opportunities to improve ourselves. Because of the feedback we gain from our customers, we can better direct our R&D investment and develop product redesigns within 1-2 years instead of decades, putting us well ahead of the competition in terms of performance."



Torishima's high-quality, high-capacity desalination pumps have earned it a leading share of the world market.

A Leading Maker in Household Wastewater Treatment Joins Advanced Technology with Cost Performance

Worldwide, over 60% of people do not have safely managed sewage systems, and providing proper treatment is currently a \$300 billion industry. "In many rural areas, it's not feasible to connect every home to a central sewer system, so we make lightweight household units for treating sewage," says Watanabe Kaichi, chairman of FujiClean, Japan's leading producer with a domestic market share of 40%. "Because the water will eventually go into the rivers, we insist on maintaining the highest treatment standards." Using a unique nutrient removal system not found in any competitor, their unit can extract more than 77% of nitrogen from wastewater, over 50% more than the industry average. Their latest model is now the only one in the world to also feature an electrolytic treatment for removing phosphorus, a key element in algae blooms.

As one of the only makers able to keep pace with the Japanese government's high water quality standards at a low cost, FujiClean dominated the domestic market, after which they began turning their attention overseas. "The process in the US was very different, as our units were tested against those of other makers, and the data made public," says Watanabe. The FujiClean units not only ranked first in these tests for removal of pollutants, they also surpassed the competition in cost-performance, removing nitrogen nearly 25% more cheaply than the average. As a result of this high performance, FujiClean has become the global top seller as well.





FujiClean's one-of-a-kind nutrient removal system extracts 50% more nitrogen from wastewater than competitor models, at 25% lower cost. It is also the only one to remove phosphorus as well, which can cause algae blooms.

Stepping Out onto the Global Stage

Despite their size, these small and medium enterprises are already making an impact outside Japan and have big plans for their future. "Eventually, we want to grow into a one-stop water extraction-purification-transport business," says Umezu. "It's actually been easier to expand overseas. Potential customers are more interested in our one-of-a-kind water innovations. For example, for a brewery customer in Vietnam that needed its own water supply, purity, reliability, and cost performance were all critical concerns, and Chemiles surpassed their expectations." Watanabe also looks ahead to overseas growth: "We're already the number one maker in Japan, but imagine if every person in the world had one of our units, that would be a potential market of nearly \$2 trillion. Of course, that's just a hypothetical, but it illustrates the vast potential here."

Note: All Japanese names in this advertorial are given in the traditional format, with the family name preceding the given name.

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