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In Japan, the Rise of Machines Solves Labor Shortage

[Yoshiaki Nohara](#)

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Labor shortage cuts barrier to robots and automation
Cyberdyne CEO: "A new era won't come without action"

The rise of the machines in the workplace has U.S. and European experts [predicting](#) massive unemployment and tumbling wages.

Not in Japan, where robots are welcomed by Prime Minister Shinzo Abe's government as an elegant way to handle the country's aging populace, shrinking workforce and public aversion to immigration.



Industrial robots sort items at a distribution center in Kuki, Japan

Photographer: Kiyoshi Ota/Bloomberg

Japan is already a robotics powerhouse. Abe wants more and has called for a “robotics revolution.” His government launched a five-year push to deepen the use of intelligent machines in manufacturing, supply chains, construction and health care, while expanding

the robotics markets from 660 billion yen (\$5.5 billion) to 2.4 trillion yen by 2020.

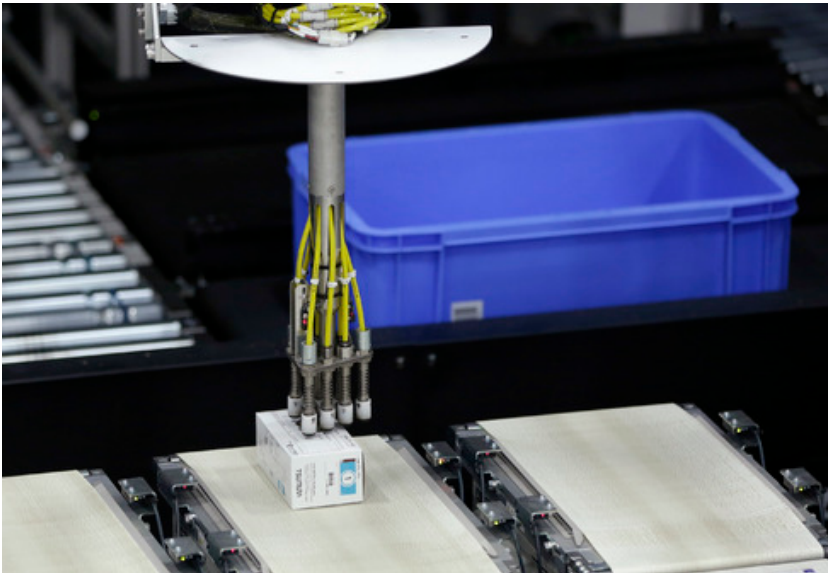
“The labor shortage is such an acute issue that companies have no choice but to boost efficiency,” says Hajime Shoji, the head of the Asia-Pacific technology practice at Boston Consulting Group Inc. “Growth potential is huge.” By 2025, robots could shave 25 percent off of factory labor costs in Japan, according to the consulting firm.

Worker Replacement

Automation also has huge potential for distribution. Toho Holdings Co.'s 10 billion yen distribution center, which became fully operational in January 2014, employs about 130 workers, roughly half the number at another one of similar size. Productivity per worker is 77 percent higher with robots handling 65 percent of item-picking, the drug wholesaler says.

“We wanted to lower manpower requirements by using robots because we already found it hard to recruit people, including part-time workers,” says Mitsuo Morikubo, the company's executive managing director.

Inside a three-story gray building in Saitama north of Tokyo, about 28,000 items such as vaccines, liquid food and suppositories are stored. On the spotless second floor, a handful of people open cardboard boxes and take out items for the machines to handle.



An industrial robot places an item on a conveyor

Photographer: Kiyoshi Ota/Bloomberg

The dexterity of the 16 robots is in evidence when one of them lowers its arm, stopping just above a rectangular box. Eight suction pads stretch down, latch on and drop it on one of the three narrow conveyor belts. “Swish, swish, swish,” its sound blends in with the clacking belts.

Depending on the type, size and weight of an item, the machine alters which pads it uses, how fast it moves and where it puts the item. The robots can pick up to about 10,000 items per hour with almost perfect accuracy. By adjusting the timing of the conveyor belts, the whole system can mix different products and make orders for individual customers.

The humans handle less strenuous work. Asuka Arai also makes up orders, using a hand-held device to read product bar-codes. The scanner then tells her how many boxes to grab and where to put them.

“It’s easy for women to work here,” says Arai, 27. “You don’t need to lift heavy things and the system is set up to keep you from making mistakes.”

Further automation is planned for another 11 billion yen warehouse Toho will build in Hiroshima in a few years, according to the company.

Service Robots

Japan has been a leader in factory robots, especially in the car industry, for decades. Now, with China and South Korea making automated machines of their own, the new focus is on service robots. It’s a market the government aims to expand 20-fold to 1.2 trillion yen by 2020 while planning to double the market size of manufacturing ones to 1.2 trillion yen.

Among companies pushing that frontier is Cyberdyne Inc. Its bionic suit [HAL](#) detects signals from the wearer’s brain to their muscles and assists movement, reducing physical exertion. For factory and construction workers, it means less strain. For patients, it helps with physical therapy.



Yoshiyuki Sankai

Photographer: Kiyoshi Ota/Bloomberg

Yoshiyuki Sankai, president of Cyberdyne, thinks robots aren’t a threat but a solution to social issues in Japan. Inspired as a boy by Isaac Asimov’s “I, Robot,” he thinks

robots will someday be so embedded in people's lives that they will forget they're wearing them.

"Our target is to make a new market," Sankai, 57, says. "A new era won't come without action. Somebody has to make it happen."

HAL and other similar power-assist systems are coming to Tokiwa Koutai Co., an aluminum processing firm, this fall. In fact, they're a bit of a recruiting tool. Yutaka Tanikawa, who runs the company his grandfather started, wants them to boost productivity, ease backaches for older workers and most of all, attract younger employees by adding a cool touch to dusty, sweaty factory jobs.

"Looking ahead, everything points to a labor shortage," says Tanikawa, 49, who hunts for recruits at schools and job fairs in the face of the tightest labor market in 23 years.

Tanikawa's company, with 64 employees and two factories in Tokyo and suburban Ibaraki, is relying on government subsidies that cover two thirds of a robot's cost, Tanikawa said. It costs about 90,000 yen a month to rent a HAL.



Employees operate machinery to stack coils of slit aluminum strips

Photographer: Kiyoshi Ota/Bloomberg

On the factory floor, machines process giant rolls of aluminum. In the corners of the room, giraffe-like yellow robots turn the rolls around. Yoshinao Kawasaki, 54, watches cranes hoist the rolls and helps guide them onto pallets. He wears a helmet and a long-sleeve shirt with black

wristbands to keep him from getting dragged into the machinery. His skinny frame is wet with sweat and his waist aches from hernia after years of heavy lifting.

"I can hardly stand on my feet when my back aches a lot - I have to slouch like an old man," Kawasaki says. "I don't know how the robot will work, but I'm looking forward to it."

Getting costs down is key to expanding the use of service robots. They could assist workers at nursing homes, however costs are still high.

"We want to bring down the cost of a robot to 100,000 yen per unit, but it still costs 500,000 or a million yen," Kentaro Okamoto, who works on robot-related projects at the economy ministry. "We don't have an infinite budget."

Still, some facilities are turning to automation and machinery to boost efficiency and lower the burden on their workers.

Caring Technology

At the Good Time Living nursing home in Chiba, east of Tokyo, caregiver Yuki Koriyama carries a tablet that displays the image of a resident. The tablet is linked to a camera in the resident's room which detects their movements, and can alert helpers if assistance is needed. The 500,000 yen system

has helped to halve the number of falls at the 10 facilities where it was installed in the past fiscal year, according to Orix Living Corp., which runs the home.



An automated lift moves an elderly at a private nursing home in Chiba

Photographer: Kiyoshi Ota/Bloomberg

To move elderly residents from bed, Koriyama, 37, relies on a 400,000 yen automated lift. Like many who work in nursing care, she has chronic back pain, often gets massages and wears a support belt to ease her discomfort.

Koriyama slips a green sling under the back of a woman in her 90s and attaches it to the lift. The sling wraps around the woman like a hammock and the machine softly lifts and then lowers her into a wheelchair.

“It’s done,” Koriyama says with a smile, putting a blue blanket on her laps.

Koriyama used to do all this manually.

“I would’ve quit without the lift,” Koriyama says. “I used to take days off due to backache and thought I’d better quit when I burdened others.”