

ROBOTICS ON THE RISE

Robot use could boost domestic manufacturing, reshoring, industry leaders say

*“I thought automation was keen
Till you were replaced by a 10-ton machine
It was a computer that tore us apart, dear
Automation broke my heart.”*

A

utomation has advanced significantly in the half century since comedian Allan Sherman sang about a computer taking over factory jobs, and robotics leaders say industry growth actually bodes well for workers and manufacturing.

Technological innovations and lower component prices are placing robotics within reach of far more companies now, allowing manufacturers to cut costs, provide better jobs and wages, modernize plants and move production onshore from overseas factories, executives say.

Industry leaders cite research showing that manufacturing jobs have grown at the same time robotics sales increased in industrialized nations, and say the rising adoption rate should translate into many more jobs in coming years. This notion challenges popular, long-held concerns about robots taking jobs from people.

“We believe we will increase the quality of work for workers,” says Mitch Rosenberg, vice president of

marketing and product management for Boston-based Rethink Robotics Inc., a five-year-old company whose flagship product is Baxter, a “low-cost humanoid industrial robot with common sense.”

Baxter, he says, may be the first robot intended to work shoulder-to-shoulder with humans, and can be trained by people with no more than a high school education.

Just as office computers helped secretaries do more work rather than putting them out of jobs, Baxter can do the same for factory workers, enabling them to manage robots on the manufacturing line rather than performing repetitive tasks themselves, according to Rosenberg.

BY DINAH WISENBERG BRIN



“Robotics is one of a few technologies that has the potential to be as transformative as the Internet.”

"We expect a substantial increase in employment in the U.S. as we reshore low-cost manufacturing jobs to the U.S.," he says. Rethink Robotics has sold triple-digit numbers of Baxters since the first customer shipment in December 2012, and is planning an international expansion, he says.

Rosenberg notes that sensor costs have dropped as the components become common in consumer devices, and computing costs have ratcheted down as well, which means robotic

systems are available to far more companies now than the Fortune 200 that dominated the industry's customer base in the 1980s. While it's hard to know whether a tipping point is happening until later, he says, "I'm hoping we'll look back and say we saw a tipping point in 2013. ... I have a lot of belief that it's happening or will happen soon."

The International Federation of Robotics this year released an updated study by market research firm Metra Martech Ltd of London predicting that

robots will create more than two million jobs in the next eight years.

"Our study proves that robots create jobs," IFR General Secretary Gudrun Litzenberger said in a February press release. "It is a matter of fact that productivity and competitiveness are indispensable for a manufacturing enterprise to be successful on the global market. Robotics and automation are the solution. Certain jobs may be reduced by robotics and automation but the study highlights that consequently many more jobs are created."

The study posits that robotics directly created 4 million to 6 million jobs worldwide, or three to five jobs per robot in use, through 2011, a figure that expands to 8 million to 10 million including positions indirectly generated, the IFR says. The study projected robots will produce 1.9 million to 3.5 million jobs in the next eight years.

"When manufacturing jobs are saved, jobs throughout the community where the factories are located also are saved," the IFR says.

An earlier study found that 2011 was the most successful year for industrial robots since 1961 worldwide as the industry recovered from the economic crisis. The most growth occurred in China, the United States and Germany, while Japan and the Republic of Korea remained the largest markets, says IFR, noting that modernization of U.S. production facilities was gaining momentum.

Robots allow companies to provide workers with safer jobs, higher wages and benefits, according to the industry group, which says more than a million industrial robots are in use globally.

American industry has long been seen as lagging Japan and western Europe in automation levels as manufacturers instead shifted factory jobs to Asia, notes Volker Schmitz, president of North American operations for German robotics firm Schmalz Inc.

The United States has less than half the robots per 10,000 employees as Japan and the Republic of Korea, which have more than 300; Germany has 250 robots per 10,000 employees, according to the IFR, which says, Germany, with



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proportionately more robots than the United States, has achieved higher economic growth with almost no reduction in manufacturing employment.

In the past few years, U.S. manufacturers have realized that using factories in Asia hasn't been the catchall solution they had thought it was, Schmalz's Schmitz says.

Rising shipping rates and wages in China, long distances, bottlenecks at ports and problems protecting intellectual property have "made a number of companies uncomfortable with having their production over there," he says.

Companies moving production back to the U.S. or to Mexico "immediately come to companies like us" and say they need to increase manufacturing automation to be more competitive globally, says Schmitz, whose firm produces vacuum-related products.

"If you are able to competitively manufacture in the United States ... you will grow the number of jobs in the industry as a whole," Schmitz says. Rather than paying people \$10 or \$12 an hour to make widgets on the production line, a company can pay a machine operator or attendant or supervisor \$18 or \$20 an hour to start, without the fatigue, carpal tunnel syndrome and back pain, he says.

Schmalz works with automakers, auto suppliers, packaging companies, plastic injection molding businesses, the glass industry, metalworking and woodworking companies and major food companies such as Frito Lay and Coca-Cola, he says.

A look at the "Ask the Experts" page on the website of the Robotic Industries Association (part of a group that collocated its trade show Automate with MHI's ProMat in 2011, 2013 and will again in 2015), reads like a help-wanted section for robots and related machines, and suggests the range of demand for industrial robotics.

One company was seeking a robotic system that can pick up a pair of shorts or T-shirt from a clothing pile, then drop the item one foot away onto a conveyor belt. Someone else was "looking for a robot that can polish and buff a large steel truck bumper." Another sought a "wrist" to grab and rotate a plastic

cube. A forging business wanted to know whether there's a robot that can pull parts from a furnace and load them onto a press.

Robots increasingly are being deployed for purposes beyond manufacturing, however.

In addition to its manufacturing capabilities, Rethink Robotics' Baxter also is a research robot – same hardware, different software – that universities are looking to add to their faculties, according to Rosenberg, who previously

worked for Kiva Systems Inc., a material handling robot company that Amazon.com Inc. acquired last year.

In March, several technology-oriented U.S. universities released a report outlining a "roadmap" for U.S. robotics, which predicts robotics technology eventually will become as ubiquitous as computers in the United States.

"Robotics," the report says, "is one of a few technologies that has the potential to be as transformative as the Internet." ●

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