

## Cover story

# Robots: Lagging behind, but catching up

FROM PAGE 1

Last year, 57,000 robots, one-fourth of the robots sold worldwide, were sold in China. That figure represents a 55-percent increase in sales in the world's second-largest economy since 2013.

Foreign companies made about 40,000 of the robots sold in China last year — 70 percent of total sales — but Chinese domestic manufacturers now have serious skin in the game, says Pan Wei, an analyst for China's Ofweek Industrial Research Center.

The telling factor on where market share is heading is not current sales, he says, but growth trends.

"Foreign robot (sales) growth in the Chinese market rose from 2 percent in 2012 to 48 percent last year. Chinese robot sales are growing about 60 percent a year."

In March, Pan says, 815 Chinese robot companies were operating in nine provinces and cities: Guangdong, Zhejiang, Jiangxi, Shandong, Shanghai, Beijing, Anhui, Liaoning and Chongqing.

"Most have been set up this year. Take Dongguan, Guangdong province, as an example," Pan says. "Before last year, the city had 41 robot companies; now it has another 53."

However, despite promising gains, Pan says Chinese robotics manufacturers are still playing catch up.

China's development of its robotics industry started more than three decades after Japan's did, he says. "In 1982, Japan produced 24,000 robots; in 2012, China produced only 23,000. China's robot industry faces problems such as the lack of a good industrial foundation, lack of technology about core robot components, and a lack of talent."

He Guotian, a professor with the Chinese Academy of Social Sciences, says Chinese robot companies will catch up with their foreign counterparts technologically "in 10 to 15 years."

To speed up the rise of Chinese robots, the government is spending millions of dollars in areas including education and research and development, he says.

"China needs 10 to 15 years to be the global industry leader," He says.

"The competition has already begun. Chinese companies can provide good-quality products at lower prices. Eventually China will be the future of the robotics industry, worldwide."

Industrial robot manufacturing is one of 10 key sectors that will receive a push under a new national plan launched by the government.

The plan, Made in China 2025, falls under the direct supervision of Premier Li Keqiang. It is designed to make breakthroughs in bottleneck areas so the country can play an even more important role in the global manufacturing chain.

Song Xiaogong, secretary-general of China's robot industry alliance, says strong policy support and huge mar-



Technicians test robots in Harbin, Heilongjiang province.

PHOTOS PROVIDED TO CHINA DAILY

## THE ONWARD MARCH OF AUTOMATION

Annual supply of industrial robots to China 2005-2014



\* Preliminary figures

Source: IFR Statistical Department

ket potential makes him confident.

"We predict that China can become one of the strongest industrial robot makers by 2030," he says.

By that time, Song says, the country will have a complete industrial chain and will be a world-leading research and development center, as well as a high-end manufacturing base for robot bodies and key components.

Arturo Baroncelli, president of the International Federation of Robotics, says that 10 to 15 years is an entirely "reasonable" estimate for the time it will take China to technologically catch up to established industry leaders such as Germany and Japan.

The potential for market growth in China is huge, Baroncelli says.

"China is already a big part of industrial robotics. They have overtaken step by step the US, Europe

as a whole, Japan and South Korea. Today they are the biggest consumer in the world, and they are developing their own Chinese industry. Of the 56,000 robots (sold in China last year), 16,000 were made by Chinese producers."

One of the key indicators that Baroncelli says shows the growth potential in China is something the International Federation of Robotics calls robot density.

"Robot density is the number of robots divided by workers (in any given country). The worldwide average is 60 robots per 10,000 workers. In the US it's 152 robots per 10,000 workers; in Germany it's 182 robots per 10,000 workers; in Japan and South Korea it's more than 300 robots per 10,000 workers. How many are there in China? Thirty robots per 10,000 workers. One does not need a PhD in

mathematics to understand what this means.

Robot density in China will increase, because it increases with industrialization in any country. And since this is the ratio between robots and workers, and there are a huge number of workers in China, there is huge potential in the country."

Pan says there are a number of reasons why China's government and industry are pushing for more robot integration and development, but ultimately it boils down to economic survival.

With China's workforce shrinking steadily since 2012, and dire estimates that one-fourth of the nation's population will be of retirement age or older by the early 2030s, automation is increasingly becoming both cost-viable and necessary for many businesses.



**China is already a big part of industrial robotics. They have overtaken step by step the US, Europe as a whole, Japan, and South Korea.**

ARTURO BARONCELLI,  
PRESIDENT OF THE INTERNATIONAL FEDERATION OF ROBOTICS



In Dongguan, where authorities say industry is suffering from a shortfall of 800,000 workers, the shifts that are taking place in China's manufacturing are of tectonic proportions.

More than 505 Dongguan factories have invested 4.2 billion yuan (\$1.9 billion; 1.6 billion euros) to replace more than 30,000 human workers with robots. The most recent, electronics giant Shenzhen Evenwin Precision Technology Co, announced last month that it is installing 1,000 robots to cut its human workforce of 1,800 by 90 percent.

In the once-cheap labor heartland of the nation, Guangdong provincial capital Guangzhou, government officials recently set a target of having 80 percent of manufacturing done by robots by 2020.

Pan says at the low end of manufacturing China is now losing business to Southeast Asian countries, where production costs are lower. At the other end of the spectrum, high-end manufacturing is being dominated by the likes of Germany and the US.

"China's robot industry started booming around 2010, when the growth of China's population of those aged 15 to 64 started to slow down," Pan says.

"In 2012, the number of workers actually decreased (by 3.45 million). The demographic dividend of China's manufacturing industry is gradually weakening. China's manufacturing industry not only faces the challenge of many companies transferring their business to Southeast Asian

>> PAGE 7