By Ben Simpfendorfer & Ivy Ji

Rise of the machines

China's rising wage costs are forcing manufacturers to rethink the country's 30-year-old labour-intensive business model, and consider replacing people with machines. It's an important step towards raising China's productivity rates and avoiding the country's middle-income trap. But automating production lines is harder than it looks. Is China ready for the rise of the machines?

The southern Pearl River Delta has built its reputation selling labour-intensive goods to the rest of the world. Foreign magazines have regularly featured photographs of the region's factories and their long lines of workers, assembling everything from toys and toasters to printers. This was the China of the 1990s and 2000s.

It's not China's future, however, owing to the country's growing labour shortages that threaten China's labour-intensive export model.

"I've cut my labour force from 5,000 to 2,500 by automating production lines. But that's still not enough. And I'm now employing 50-year olds just to find enough workers," a major domestic manufacturer of cigarette lighters recently remarked to us as we visited his factory in the Pearl River Delta's Panyu district.

Automating production lines is crucial to dealing with these labour shortages. But is China ready for the rise of the machines?

CBL Group's robot welder hard at work

Robotic welders operate on three-axis (yaw, pitch, roll) meaning skilled engineers and welders are needed to squeeze the greatest productivity gains out of a machine.

Source: SRA

But there's a problem. Robots aren't people

The factory floor of CBL Group, located in the Pearl River Delta's Panyu region, is a good blueprint for the change needed. Manufacturing a range of goods—from seats for New York's underground to mobile homes for Australia's mines—the firm has achieved strong productivity gains simply by applying best practice and constantly reconfiguring factory lines.

But it's the robot welder sitting at the far end of the factory floor that is most striking: if this is China's future, it's not the future all might imagine.

"The biggest cost savings aren't necessarily related to labour and time. It's instead the ability to download data from the welder", says Gideon Milstein, CBL Group's Chairman. And why does the data matter? It allows a factory to "validate each weld to a strict criteria, and so ensure the reliability of the weld without the need for regular destructive testing," he says.

In short, automating a factory floor isn't about simply replacing people with machines, but rethinking the manufacturing process itself.

So can China automate fast enough?

Gabriel Gomez has a similar opinion. He is head of TXIMIST's operations in Shenzhen, an hour's drive from CBL Group. The Spanish battery operator produces 300 million batteries a year, mainly for sale to European clients. The firm moved its production lines to China in 2008 and is a typical outsourcing story.

A short walk around the firm's three factory floors shows just a handful of people in charge of dozens of large and noisy machines.

"It's easy enough to buy and install the machines," says Gabriel. "What really matters is the maintenance and performance engineering during the machine's operation. If it isn't maintained regularly, then the machine's productivity steadily declines and over time it simply stops." It's a constant battle.

But that's not simple in China. "It's easy enough to find engineers with design experience. But many haven't worked in a factory before," says Gabriel. "And so we have to invest considerable time on training." It helps that the firm can draw on its experienced Spanish engineers, at least in the early stages.

And that's partly why Gabriel isn't worried about local competitors. How hard is it to automate a factory line with little experience? "Very difficult," he replies. "It's not enough to simply replace a broken part; an engineer has to ask what caused the problem in the first place and how to stop it happening again."

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