

Ostnor's new robotic system allows for double the amount of brass parts to be cast, compared to the old manual system.



Doubled without trouble

A robotized foundry enables Sweden's largest manufacturer of sanitary fittings to raise productivity and stay ahead of competitors.

> When Thomas Mangs, production engineer at Ostnor, in Mora, Sweden, began automating the factory's foundry, he could not find the application he wanted on the market.

So he enlisted the help of a local automation company, Marab, to design a highly innovative production cell using four ABB robots.

"The system is unique in this industry," says Mangs. "The whole concept of a fully integrated production line for placing, casting and clipping is new. This is the only factory I'm aware of that picks up hotbox sand cores with robots. They are very delicate, so the robots need precise gripping points and very smooth, accurate movements."

The new robot cell, containing three IRB 4400 robots and one IRB 7600 robot, was installed in

April 2008, boosting the capacity of an older cell, in operation since 2005, and doubling the foundry's output of castings.

While five to six workers used to produce 200,000 pieces per year with manual machines, the robot cells are manned by three operators and produce 400,000 pieces per year. Man-hours have fallen from 168 to 48, and the foundry has reduced operating costs by 10 percent.

The foundry produces more than 70 different products. Eight of the highest volume items are made in the robot production cells, representing 70 percent of total output and helping to improve the working environment.

"It was difficult, strenuous work handling brass ingots by hand," says Mangs. "The manual machines were hotter, dirtier and smokier, and the fumes got into >



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Thomas Mangs, Production Engineer, Ostnor

the foundry. Now the fumes are confined to the robot cells and extracted. The whole foundry is a lot cleaner.”

The robot cell is operated by ABB’s MultiMove system, which controls three robots with one computer, thereby reducing costs, explains Marab’s chief technician, Mikael Johansson. It also reduces downtime.

“With the manual machines you had to stop the process to clean the dies,” he says. “Now it’s automatic. We run two sets of dies and two furnaces around the clock. While one furnace is being cleaned the other is operating. Also, when we change over to a different product, the robots can change appendages automatically within 10 minutes. It took 40 minutes with the manual system.”

The automated casting process has four main stages.

The first robot uses robot vision to locate and pick up sand cores. It places the cores in dies held by the second robot. The second robot closes the dies and places them on the furnace for casting. When the castings are completed it brings them to the third robot, which clips off risers and places them on a pallet for cooling. Finally, the fourth robot loads scrap material from the clippings into the furnace along with new brass ingots.

The entire cycle takes 73 seconds and produces two items, compared with a 50-second cycle for one item with the manual system.

Marab CEO Sten Bastman says he chose ABB

robots because he had good past experiences with them. Before setting up Marab in 1999, he was responsible for automation at the Ostnor factory, where more than 100 robots have been installed.

“Every part of the factory has some level of automation,” he says. “There have been ABB robots here since the late 1980s, and they’re accurate and reliable even in dirty conditions. We also chose them for the foundry because they are user-friendly and easy to adapt.”

Bastman attributes the success of the foundry project mainly to good communication.

“We spoke the same language as Ostnor and understood what was needed,” he says. “And we’re located two minutes away so, we could be up here at short notice to meet face to face.”

Since the installation, ABB has stepped up support to Marab in response to requests for more technical backup and details of new product innovations, says ABB Robotics sales manager Tobias Holmquist.

“We are working together very closely to ensure that the application continues to be a success,” he says.

Since installation the robot cell has run without a hitch, says Mangs, adding that it should pay for itself within 2½ years.

“Competition, particularly from cheap Asian imports, is extremely tough right now,” he says. “But this system brings our costs down and raises productivity. And that’s certainly helping to keep us ahead.”



> FACTS

All about Ostnor AB

- Established 1865
- Produces FM Mattsson and Mora Armatur sanitary fittings for domestic market and export to Europe, the United States and Asia
- Sweden’s largest producer of bathroom fittings
- Produces 25,000 taps per week
- 680 employees
- USD 200 million in revenues

All about Marab AB

- Established 1999
- Produces automation and robotic systems
- seven employees
- USD 2.5 million in revenues



Benefits of robotization at Ostnor

- Doubled output from 200,000 to 400,000 castings per year
- Reduced man-hours from 168 to 48
- Improved working conditions
- Foundry operates without stopping for cleaning
- 10 percent lower production costs
- Cycle time decreased from 50 to 35 seconds per item
- Changeover time for new products cut from 40 to 10 minutes

