Go with a better flow. For Swedish die-casting company Ljunghäll AB, a high degree of automation is a prerequisite in the constant endeavor to achieve cost-efficiency.

92 ABB robots in operation
Ljunghäll AB, situated in Södra Vi, Sweden, is one of Europe’s leading die casters, with the automobile and telecoms industries as its largest customer segments. The company is a strong advocate of automation. “We have 92 ABB robots in operation serving almost all our casting machines,” says Nicklas Jaldefeldt, in the company’s maintenance department. Jaldefeldt is “robot daddy” at Ljunghäll with responsibility for a group of six robots.

“All automation is about reducing the number of manufacturing stages and increasing the rate of production,” he says. “Where it previously required seven or eight men to complete a part, the robot cells at each casting machine now do the same job.” Some 15 thousand metric tons of aluminum bars arrive at the smelting works each year to be smelted down in Ljunghäll’s nine ovens and then portioned out to 44 fully automatic casting machines, all of which are operated by ABB robots.

Two decades of robots
“The first robot was put into operation some time during 1986–87,” says Jaldefeldt. Today, he says, Ljunghäll AB has every model of ABB’s 6-axis robots – with the exception of the IRB 7600. “We have no need for such a large robot,” he says. “A lifting capacity that extends from five to 200 kilograms is sufficient for us.” Over the years the company’s robot teams have programmed, aligned and updated all of the 92 ABB robots that are currently in operation at the foundry. For machining of castings there are 57 numerically controlled machines, some of which are part of the 28 automated robot cells for machining and installing parts for finished products.

“It should come as no surprise that there are interesting assignments for the 40 technicians in the maintenance department and our robot team,” says Jaldefeldt. “In addition to keeping the machines in good shape we have to keep our own knowledge up to date about new control systems, the latest refinements in programming and all new industrial engineering processes.”
Ljunghäll AB

All machining and assembly
Ljunghäll realized at an early stage the importance of linking up the flows of material with complete machining into finished products that can be delivered directly to the customers’ manufacturing lines. Good examples of this are the four complete lines for manufacturing oil sumps for cars. The die-cast parts are fed into the robots along with other components that make up the sumps. All machining of castings then takes place automatically, as does cleaning and drying, after which the robots assemble the oil sumps and carry out a rigorous leakage test before the finished products leave the cell.

“These robot cells have led to an extensive rationalization of our manufacturing,” says Jaldefeldt. “They take care of all machining and assembly so that the oil sumps are completely ready for packaging and delivery to our customers who can then use them directly in their assembly process.”

Teamwork pays off
In the vehicle industry, prefabricated products along with high quality and environmental certification are some of the requirements that are most in demand. “To be market leader today it is not enough to have a well-organized production facility with robots and numerically controlled machines,” says CEO Hjerstedt. “In addition we must involve ourselves wholeheartedly and at an early stage in our customers’ development of new products and contribute practical advice about tools and processes,” Hjerstedt says. “Sometimes we carry out a computer simulation of the casting process to provide a better illustration of the interaction between tool and material. Simulation enables the customer and us to see both the advantages and disadvantages in a specific idea and to conduct a constructive dialog about what the best solution is to ensure quality.”

FACTS

Benefits
- Number of manufacturing stages reduced
- Production increased
- Robot cells do the job of seven to eight workers
- Flow of material linked with complete machining into finished products that can be delivered directly to the customers’ manufacturing lines.

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Goeran Hjerstedt, Ljunghalls CEO