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#### Benefits of robotization

- Ljunghäll started with robotic production in 1987 and currently has 106 robots spread out between 80 cells that do everything from grind, screw, grease, trim, glue and assemble
- The benefits are primarily ergonomic as the company produces large unwieldy pieces that weigh up to 30 kilograms, and come out of die casting machines every third minute
- Foreman Nicklas Jaldefeldt, responsible for the robots at Ljunghäll, says that without robots, even doubling the amount of employees to 1,500 wouldn't nearly be enough to meet current production levels
- Ljunghäll's range of robots range from the small IRB 140 to the larger IRB 6650. In general, their uptime lies on average between 60 and 70 percent, although this depends on the surrounding equipment like conveyor belts and die-casting machines
- TrueView is ABB's patented Vision Guided Robotics (VGR) technology that allows robots to identify components based on size and surface area.
- TrueView can be retrofitted on any robot and does not require optimal light conditions.



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# The true view of a naked robot

**Making parts for the automotive and telecom industries is a robot intensive business.**

> After 91 years of blacksmithing, Ljunghäll has become the leading manufacturer of technically advanced aluminum die-cast products in the Nordic region. The company, based in Södra Vi in the Swedish province of Småland, produces primarily for the automotive and telecom industries.

The company runs 106 robots, in 80 different cells, to produce inlet manifolds, oil cooler covers, and engine blocks among other products for clients such as Scania and Volvo, equipment for cell phone towers for Ericsson, and even TV pedestals for Bang & Olufsen. Their specialty: large complex castings.

Ljunghäll has been an exclusive ABB customer since it installed its first robot over 20 years ago. And Nicklas Jaldefeldt, Ljunghäll's own "robot guru," or robot foreman, has been around ever since.

"We buy so-called 'naked robots' and dress them ourselves with our own in-house gripper expertise and cell technology," says Jaldefeldt. "We manufacture hundreds of different parts for different customers. It is therefore important to build a flexible system where a stop in one cell doesn't affect the work in another."

Ljunghäll's 35,000-square meter factory is basically a collection of 39 different aluminum die-casting machines. These take molten aluminum and press them into parts with predetermined nooks and crannies, the biggest of which uses pressures upwards of 3,500 metric tons per square centimeter.

Adjacent to each of these die-casting machines are robotic cells, which depending upon the piece being manufactured either, cut, grease, grind for smoothness, glue, screw, or assemble, for further dispatch on a conveyor belt to an operator, who checks quality and packs them.

"Automation is a prerequisite in our constant striving for cost efficiency," says Jaldefeldt, who credits his eight-man robot team for the smooth operations at Ljunghäll. "And human handling is our last and best quality check."

According to Jaldefeldt, there are two related reasons why the company designs and builds its own robotic cells, and doesn't use a third party integra-

tor. One reason is that Ljunghäll was a family-owned company for many years and was used to doing everything itself.

"But another reason why we dress our robots ourselves is that we have learned what the optimal set-up needs to be next to huge die-casting machines. Handling hot aluminum requires special equipment due to the corrosive environment and our production schedule," says Jaldefeldt.

Despite its preference for homemade solutions, one particular cell at Ljunghäll uses ABB's new TrueView vision guided robotic (vGR) system. The cell consists of two robots – an IRB 6620 and an IRB 6650 – to smooth out the screw holes on a so-called bed plate, which is a 10-kilogram aluminum casing that encloses the crankshaft of an automobile.

The main advantage of TrueView is that the robot can pick up the bed plate from a palette and actually see and adjust itself according to the bed plate's position, (it could have been knocked around on its way into the cell) before picking it up and moving it to another workstation.

"TrueView is a flexible system that works in today's industrial environment where we need to quickly be able to change over to manufacturing other products. TrueView allows the robot to identify different parts on a belt and identify which one is the right one for the job." ◉

## Ljunghäll in brief

- Founded 1917 by blacksmiths Evin and Hilda Ljungkvist to become a leading manufacturer of die-cast aluminum products
- 750 employees
- 37,000 square meter facilities in Södra Vi, in southern Sweden
- Annual production is 15,600 tons of aluminum, of which 100 percent comes from recycled aluminum
- Turnover is SEK 1.14 billion
- In 2002, the CapMan Group, one of the leading private equity investors in the Nordic region, acquired Ljunghäll