



Injection Moulding

Case study: Boat trims at Holmgrens Plast, Sweden

Applications in Plastics

- Cutting/Finishing
- Glueing/Sealing/Dispensing
- Flaming/Painting
- Assembly
- Packing/Palletizing
- Inspection/Quality control
- Machine Tending

Holmgrens, a Swedish injection moulding specialist, has 10 robotized production cells, of which four feature 6-axis systems from ABB. Production is run around the clock, seven days a week. Today, Holmgrens works in many markets. The investment in two robotized cells that make plastic trolley boards saved the costs of hiring twelve new employees and paid for itself within the first twelve months.

SPLASHING OUT

On most Tuesday mornings throughout the year, a group of men gather at the local pool in Anderstorp, a quiet town about 450 kilometers south of Stockholm. They swim for about 1000 meters; take a sauna and talk about business. Not an unusual activity for Swedes, you may think. But these men mostly work in the dozens of injection plastics companies that have grown up in the surrounding area. And few of them see each other as rivals: they use the time to exchange ideas, talk about meeting present-day production problems and how to meet future challenges. One idea that has just borne fruit is to create a dedicated educational facility in the area to provide students and employees with an academic and practical course in polymers and plastics. Kenneth Klint, plant manager at Holmgrens Plast ad in Gnosjö, is both a member of the Tuesday Club and a rector of the new college. Why the focus on plastics in such a small area? Klint says the region was once big in metal-casting, and as that industry died out, there was a natural progression to injection moulding with plastics. The moulds that are used in both industries are similar. Many members of the Tuesday Club have worked together at some point in their careers. And they are equally determined that their plastics expertise should not go the way of the iron works. A visit to Holmgrens Plast shows why it might be better placed to survive: Robotized production gives it the flexibility it needs to stay competitive. Housed in a gleaming white building with smoked glass, the place looks more like a James Bond film set than a plastics factory. Stefan Holmgren, the managing director and sole owner, founded the company single-handedly in 1989.

Growth took off between August 1999 and the beginning of 2001, when turnover rocketed from sek 18 million to sek 50 million. This year it has topped sek 65 million, and suddenly the 3400-square-meter palace is feeling cramped. Holmgrens is now looking to double the amount of space by expanding the factory. There are 10 robotized pro-



duction cells, of which four feature 6-axis systems from ABB. Production is run around the clock, seven days a week. Today, Holmgrens works in many markets. Industrial companies make up around a third of its production capacity. It makes component parts for ABB among others, and manufactures and assembles an award-winning boat-trimming system for Volvo Penta, a fuel-saving device that enables a boat to stabilize much quicker under acceleration. Holmgrens' own product ranges account for another third of its output – its plastic refuse collectors are incorporated into most Scandinavian and German fitted kitchen systems. The last third of its current output is actually for the biggest client. It makes “buggy boards,” little two-wheel trolleys that can be hooked behind baby strollers and for young kids to hitch a ride on. The investment in the two robotized cells that make the boards saved the costs of hiring twelve new employees and paid for itself within the first twelvemonths.

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The production of the boat trim system illustrates how one of the cells works. Essentially, the trim system is a box that is secured to the back of a boat, and which houses a retractable blade that can be raised or lowered via an internal gearbox. When lowered, the blade creates upward pressure on the boat's stern, which brings the boat into plane much sooner than normal, thus saving fuel. The various parts are cast and then assembled together with the blade and the gearbox by robot, which then places the entire unit in a heating unit, so that the foamed polyurethane reacts to form a soft, water-tight gasket. But the unit does not represent a big-volume production at the moment, so the robot could be used for other tasks at the same time. This is where Xflex comes in – the modular solution supplied by technology partners Animex, who supplied the abb robots. Normally, six units are used for injection moulding, and are placed in a semi-circle around the ABB robot. Each of these modules can then be moved between different production cells to improve flexibility. And this process is further simplified through ABB's RobotWare Plastics-Mould, a software product specially designed for easy program-ming and operation of ABB robots.

The buggy boards use a combination of 3- and 6-axis robots in two cells that were designed by Animex. The plate of the board is injection moulded and additional parts are brought into the cell for assembly by the 6-axis robot. The simpler 3-axis units are used for picking the plate out of the mould, and finally stacking the completed article for palletization. There is also a vision control system for checking component quality as part of the cell.

Automation, reckons Klint, is the only way to survive in Europe and to stand up against the competition. "The parts that will be made in Scandinavia will be produced by companies that are very skilled, efficient and flexible. You have to be fit to survive. It's a law of business. It's a law of nature." Certainly, the Tuesday morning swim seems to help.



Holmgrens Plast AB

- Founded 1989
- Located in Gnosjö, Sweden
- Plastic injection moulding specialists
- Managing Director: Stefan Holmgren
- Turnover (mid 2005) SEK 65 million
- No. of employees: 29

ABB and the Plastics Industry

ABB's wide range of plastics robots can handle most of the tasks involved in and around injection mould machines, regardless of required cycle time or size of the machine. Together with our partners, we provide automation solutions for most manufacturing processes in the plastics industry.