

Axjo Case study: Injection moulding



Robots are helping a Swedish manufacturer of plastic reels for the telecom and cable industries stay competitive on the global arena.

It was only five years ago that Axjo, a manufacturer of plastic reels, bobbins and other specialty products, assembled its products by hand. Today, the company's manufacturing processes – from huge plastic injection moulding machines with 20 robotic cells doing the assembly work – couldn't be more automated.

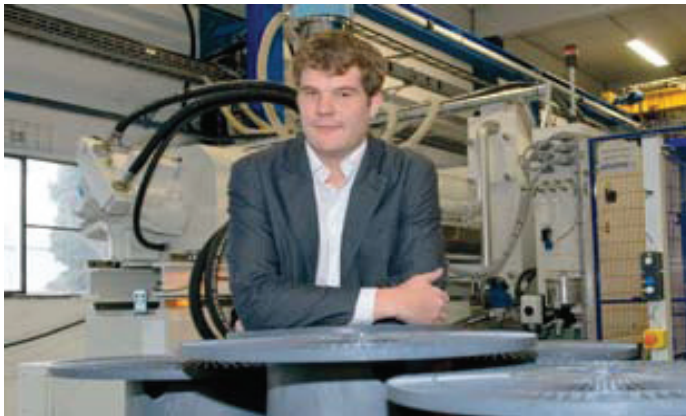
"In five years, we have doubled our turnover to 12 million euro without needing to employ new people," says Axjo part-owner Jacob Nilsson, 29, the newly appointed President of Axjo as of April 2008. He was formerly the technical director. "This says a lot about the robotic technology we have heavily invested in the last five years. Through automation, Sweden becomes a low-cost country."

Polymer alley

Axjo is located in the picturesque little town of Gislaved in southwest Sweden in the province of Småland. Eighty percent of Sweden's plastic and polymer-based industry is located within a short distance from Gislaved. You can call it polymer alley. In Gislaved, you'll find companies producing a range of injection-moulded parts. Alongside are companies making the equipment needed for injection moulding, for local customers as well as for export. But Axjo is in a class of its own.

Reels

Today, 70 percent of the company's products are plastic reels and bobbins that are used by telecom, cable, wire and fiber optic companies to store, ship and distribute cables in various forms. A powerful player in a niche industry, Axjo has become one of Europe's biggest companies in the plastic reel industry. Axjo makes over 400 different models and sizes of reels, in different colors and specifications depending on the usage, up to 1.2 meters in diameter. Customers include global companies such as Ericsson, Sandvik, Haldex, Draka, Habia, Nexans, Rebia, General Cable, NKT and Conduflex.



The other 30 percent of Axjo's manufacturing in Gislaved includes customized plastic products such as baby rubber feeding spoons and baby potties for the Swedish brand Baby Björn.

Axjo's third product group is medical instruments and tools. Production and r&d facilities are located in Tranås, 200 kilometers north of Gislaved. But reels are the backbone of Axjo's business. A reel is an object around which lengths of another material are wound for transport, storage or distribution. Generally a reel has a cylindrical core and walls on the sides to retain the material wound around the core.

Robot solution

Depending on the end user, Axjo's robots assemble these reels in either two or three plastic moulded pieces. While the assembly is quite a simple process for a robot, the designs and customized features for the end user require a lot of innovative thinking on the part of Axjo.

The flexible robotic solution, which includes four production cells for producing both the reels as well as the reel ends, uses IRB 4400 robots. Additionally, two cells with IRB 2400 robots are used for other products such as plastic storage boxes or the baby potties. The cells were developed and installed by system integrator Animex.

And then there is the environmental aspect. Recent legislation in Sweden and Finland is forcing reel users to recycle their reels. And Axjo has been instrumental in this effort, and pays its customers

one Swedish crown per kilo of returned plastic. Axjo has also been smart when it comes to recycling during its own production. The reels are made of only one kind of plastic,

which means they can be recycled without having to be pulled apart or sorted. "Plastic reels or bobbins to transport cables of all kinds are quickly replacing the old plywood ones that one normally associates with building sites around the world. Plastic reels are eminently recyclable. Plywood reels are unfortunately brittle, porous, and contain rashes of unseemly chemicals that ignite like fireworks during disposal," says Jacob Nilsson.

FACTS

About Axjo Plastic AB

- Founded in 1945
- 54 employees
- Privately owned
- Turnover 2008 (estimated) SEK 110 million (USD 17.2 million)
- Located in Gislaved, Sweden
- Website: www.axjo.se

About Animex

- Founded 1985
- 30 employees
- Turnover of SEK 50 million (USD 7.8 million)
- 150 robotic cell installations across Sweden
- Website: www.animex.se

Robots increase efficiency

The ABB robot installation for assembling reels uses four IRB 4400 robot cells and two IRB 2400 robot cells. Benefits include:

- Fast average cycle time of 45 seconds
- Doubled turnover in five years without hiring new people
- Flexible robotic solution that allows for easy changes in products that need to be customized for end customers
- Automation keeps down costs so that Axjo remains competitive even though it is not located in a low-cost country

ABB Robotics

www.abb.com/robotics