



# Injection Moulding

Case study: Foot care products, McKechnie, UK

## Applications in Plastics

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

A technology partnership between Kettering-based Hi-Tech Automation and ABB has led to the development of two state-of-the-art automated manufacturing cells for the East Yorkshire, England, operations of McKechnie Plastic Components, situated in Stamford Bridge. The two cells, commissioned in April this year, manufacture flagship products for Scholl Foot Care, a division of SSL International PLC.

## PLASTICS MANUFACTURER IN-STEP WITH MOVE TO FULLY AUTOMATED PRODUCTION

In 2003, SSL invited McKechnie Plastic Components, which had a long history of investing in automation technology, to bid for the design, development and manufacture of two new types of foot file.

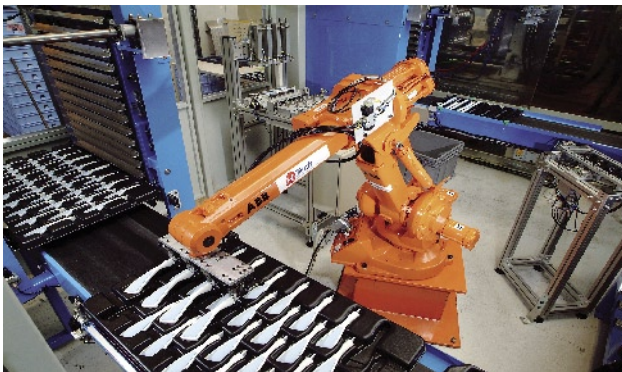
### Crucial elements

For the bid to be successful, McKechnie had to consider two crucial elements: a design that would eliminate risk of the product's metal foil insert being displaced during continued use and an extremely competitive unit price.

The first element was achieved when McKechnie developing a process whereby the periphery of the metal insert could be encapsulated during injection moulding.

To fulfill the second element, McKechnie needed to consider implementing a new automated manufacturing procedure, which, within tight budgetary acquisition constraints, was capable of ramping up efficiency while, at the same time, slashing manual labor costs, reducing waste and handling product throughput in a hygienic manner.

Having worked previously with ABB, with surface finishing robots, McKechnie's automation manager, Allen Clovis,



approached ABB Senior Account Manager Colin Jakes about the project and how the necessary automation could be implemented. ABB has a wealth of expertise in the field, having already supplied some 10,000 robots to the plastics industry.

Jakes enlisted one of ABB's preferred partners in the plastics industry, integrator Hi-Tech Automation, along with its co-founder, Gary Probert. The team had already worked together on another successful project for McKechnie, developing an automated cell for the transfer and packaging of plastic cases for razor-blade cartridges. This project was one of the first that allied a Sytrama beam robot with an ABB -6-axis robot on the same application.

For the new Scholl product cells, Probert and his team at Hi-Tech Automation, working closely with the McKechnie and ABB people, devised a fully automated solution that eventually met all customer requirements and eliminated the need for human intervention at any stage of the product cycle.

"The new process threw up considerable mechanical design and positioning problems for us, although through intense development work by our engineers, backed up by close liaison with both McKechnie's automation department and ABB, effective solutions have been found," Probert says.

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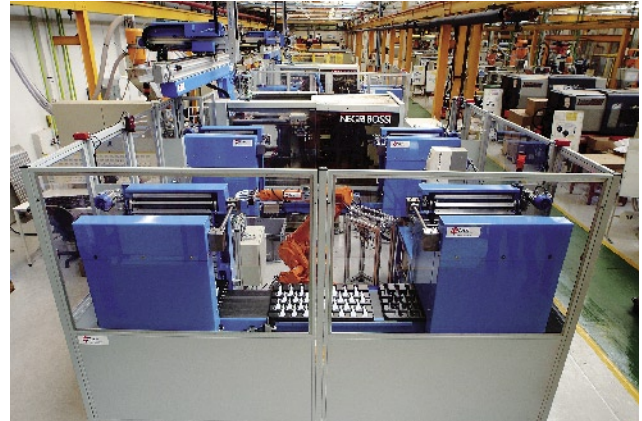
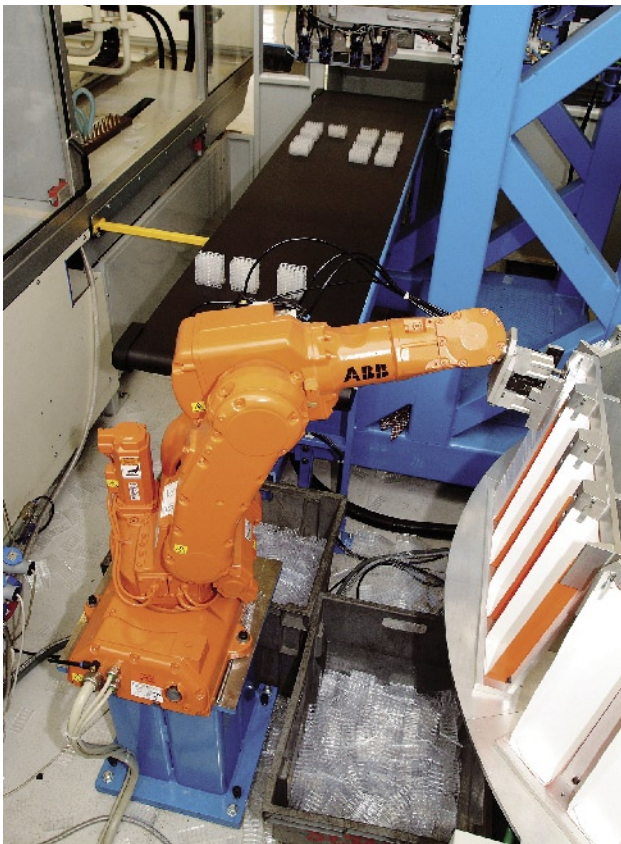
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The two cells, adjacent to one another at the East Yorkshire plant, are each dedicated to a single product. One cell manufactures products incorporating an abrasive coated pad, while the other cell manufactures a similar product incorporating the metal foil insert.

Hi-Tech opted for the configuration already used on the razor-blade case application, integrating a Sytrama beam robot for carrying out loading and unloading requirements for the injection moulding operation and an ABB IRB1400, six-axis robot for downstream distribution of the product.

### Six-axis solution

Since the foundation of Hi-Tech Automation in 1996, Probert has incorporated countless beam robots into his customers' production lines, but he is increasingly looking at six-axis robots as a solution to flexibility requirements in the production of high-volume products. Six-axis robots are ideal for complex injection moulding jobs where cycle times have been reduced and post-moulding processes need to be performed rapidly — a task particularly suited to a fast and flexible robot. Six-axis robots can be quickly adapted to different applications and product design variants and can be used for a range of tasks from insert loading to assembly and packaging.



As well as the beam robot, six-axis robot and injection moulding machinery, each cell also incorporates a bulk feed point for the inserts, a robot-to-robot transfer station, ultrasonic welding equipment and an out-feed conveyor.

Even though each cell is currently undergoing two to three months integration before being expected to realize optimum cycle time, system malfunctions are now minimal.

Says Allen Clovis: "To compete we have to provide a superior product design and then automate, however complex or difficult that might be. To this end, the Scholl project has been a real team effort... The innovative product design and pro-automation culture within McKechnie was a driving force, ably complemented by the 'can-do' efforts of Hi-Tech Automation and its technology partner ABB. All participants have worked long and hard to bring a technically demanding application to a successful conclusion."

### Facts about High-Tech Automation, UK

Hi-Tech Automation was formed in 1996. The company specializes in automated solutions tailor-made for any mainstream make of beam or floor mount robot. Hi-Tech Automation focuses on customer support and well-designed solutions. Nearly 15 percent of the turnover comes from places as far away as India and Brazil.

### ABB and the Plastics Industry

ABB's wide range of plastics robots can handle many of the tasks involved in and around injection moulding 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.