

Robots give 'badge' engineers lead over Far East

2007-11-22 - Leading manufacturer of custom moulded plastic novelties, Characteristix Limited, has boosted its manufacturing performance by over 100 per cent with the installation of an ABB robot-based manufacturing cell at its Wadebridge, Cornwall, factory.

The GeKu manufacturing cell - comprising an ABB six-axis IRB 140 robot, Krauss Maffei plastic injection moulding machine, GeKu beam robot, conveyors, and pneumatic printing press - is helping Characteristix stay competitive, even when pitted against the Far East 'giants' of the industry.

Characteristix, which has a prestigious list of license partners such as 20th Century Fox, BBC Worldwide, Disney, Universal Studios and Warner Bros, has exploited a niche in the market to supply quick turn-round, small-to-medium batch products to UK and European-based customers - companies which would have previously sourced their requirements from the Far East.

The emergence of Characteristix gives its customers considerable flexibility in that they don't have to hold costly stock and can order relatively small batches, which are subsequently manufactured and delivered on a 'fast-track' basis. This compares favourably with supplies from China, for example, where customers are restricted to ordering extremely large batches, can expect three month lead times, and need to closely examine quality and product suitability before proceeding. An additional advantage of using Characteristix is that the company can offer a total turnkey approach, which includes design and artwork.

Solving downtime problems

Characteristix, part of Gemma International Group, was formed in 1997 with Andy Knight heading-up the company. Production was centred around two x 70 tonne, 1980's-vintage Arberg plastic injection moulding machines. After being dogged by unserviceabilities, the machines were finally replaced after 'achieving' 160 hours downtime in a single month.

Andy Knight's problems were not just through unserviceabilities however, another headache was his customers' requirements for ongoing reductions in piece part prices, at 5 per cent per annum.

Two Kraus Maffei machines were sourced and purchased as replacements in late 2002 and early 2003. These immediately brought about 30 per cent savings on set-up and operating time, and have proved to be extremely clean and virtually fault-free in operation. Pay-back from this was used, in part, for capital repayments on the machines, with the rest being passed on to customers in the form of reduced prices.

The requirement to reduce costs by 5 per cent a year was unremitting, however, and Knight had to go to the Manufacturing Advisory Service (MAS), part of the DTI, on how to further improve manufacturing efficiency and reduce costs.

Assessing the company's requirements, the MAS suggested that Characteristix automate at least part of its production, and this led to the company teaming up with ABB preferred partner GeKu, after a product demonstration at the Interplas Exhibition in 2002.

Andy Knight comments: 'What was interesting about GeKu was its expertise in automated plastic injection moulding techniques and at the exhibition we saw them manufacture a key ring with a printed insert, a product we could readily identify with. Nigel Richardson, Joint Managing Director of GeKu, then arranged a visit to the ABB Customer Centre at Milton Keynes for us to witness a demonstration of the IRB 140 robot. This was suitably impressive with its compactness, accuracy and efficiency, for us then to go ahead with a project of our own.'

Productivity transformed

The new cell, which was designed, installed and commissioned by GeKu, produces 33,000 pieces a day, including birthday card badges (10 million pieces per year for Gemma International alone), stand-up figures, pendants, figurines, pencil toppers, fridge magnets and plastic paper clips etc, moulded in the unmistakable shapes of famous cartoon characters such as Bob the Builder, Spiderman and Shrek 2, for example.

The cell operating cycle starts with the GEKU beam robot de-moulding the runner from the Kraus Maffei injection moulder and placing it in the print fixture. A picture transfer is placed on the print fixture, and the transfer image printed under a pneumatic press. The IRB 140 robot takes the moulding out of the print

fixture and places it in a holding fixture. The robot's wrist then rotates to expose a cutting tool, which snips the pieces from the runner – removing 30 pieces in about 18-20 seconds.

Not only has the cell ramped up production for the Cornish badge maker, but it has brought interest and variety to many of the production work force. Andy Knight continues: 'Many of our staff who were previously employed on manual labouring tasks have risen to the challenge of robot-based manufacturing, readily participating in robot programming and operator tuition to enhance their skills.'

Taking on the competition

Summing up, Mr Knight comments: 'An SME enterprise, based in rural Cornwall with 11 employees may not seem like the most likely of companies to install robots and take on the Far East at its own game. However, the GeKu-designed cell and its ABB robot have helped us to be ultra-competitive, while we have maintained and indeed expanded a client-base made-up of some of the most recognised names in the world. I am so impressed with the cell that we will install a second by the end of the year and full 'lights-out' operation will follow that.'