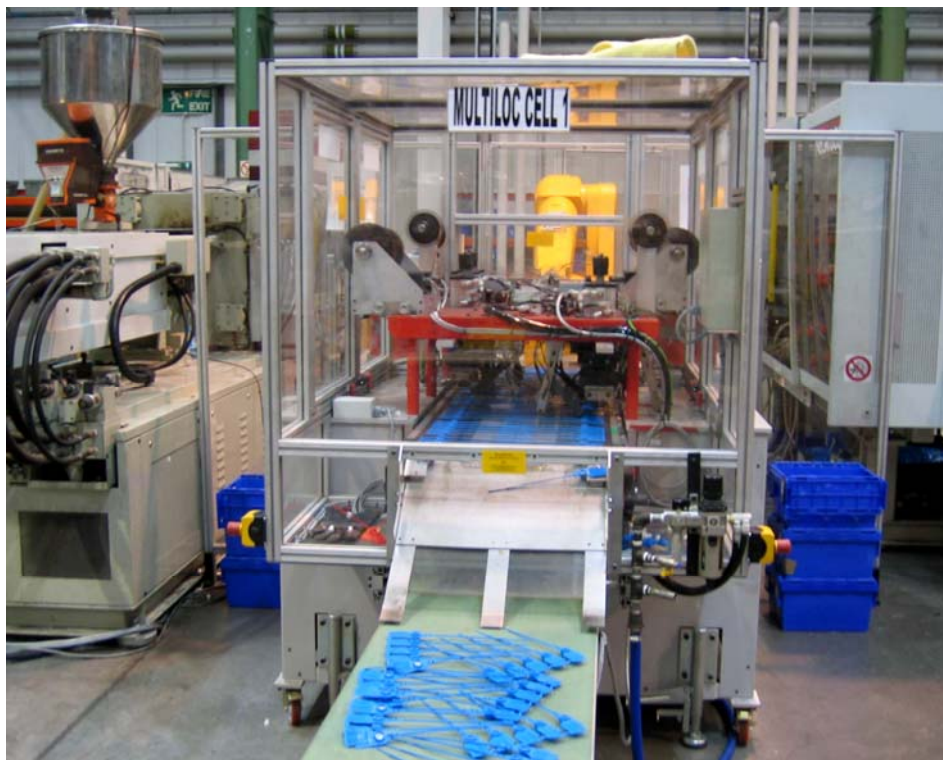


[Dramatic productivity improvements achieved at ITW Envopak using Stäubli RXplastics robots](#)

Six axis robotics are increasingly being used in injection moulding shops, bringing more flexibility and additional functionality to automated demoulding. Using one robot to service two independent IMMs is rather unusual, but this is how security product specialists, ITW Envopak, have dramatically improved productivity at their main moulding facility in Seaham, near Sunderland.

Security and identification of packages in the post and freight handling systems are normally taken for granted; only becoming a concern when items are delayed or go missing. ITW Envopak manufacture a wide range of reusable security packaging and security seals that provide identification, evidence of tampering and tracking for freight handlers such as DHL and TNT in a wide range of applications in the commercial, industrial, healthcare and leisure sectors.

ITW Envopak's main manufacturing plant is in Seaham, Sunderland, where all plastic security products are produced, some in quantities up to 1.5 million per month. This high production rate needs fast, reliable and adaptable automation systems, Envopak had previously installed Cartesian automation systems on their IMMs but realised that major improvements in productivity could be achieved through the use of 6 axis robotics and selected Stäubli as the supplier of robots for their new generation of manufacturing cells.



The new Multilok cell at ITW Envopak's Seaham factory

Moulding of their widely used 'Multilok' plastic security seals was previously spread across 3 cells, each comprising a Negri Bossi 210 IMM serviced by a Cartesian beam robot. Assistant Manager, Westley Jones, was tasked with improving the productivity of this line and decided that a move to one 6 axis robot serving two adjacent IMM's could provide the optimal solution. At this point Stäubli were called in to advice on the robotics. A visit to their Telford base, allowed Westley to view a simulation of the movement sequences required. Concern that the six axis robot would not be able to match the demoulding speed of the dedicated Cartesian beam robots was soon dispelled and a decision to install a RXplastics 130L robot was taken.

The RXplastics 130L with Stäubli's CS8 controller was positioned between two of the NB 210 IMM's and the system integrated with the moulding machines through a Euromap interface and cell structure provided by one of Stäubli's system integration partners – Geiger Handling of Eccleshall, Staffs. The ability of the RXplastics robot to accommodate easily the differences in height and key positions between the two IMM's was particularly important. Other key issues that had to be addressed were safety and the ability to run either of the moulding machines without the other. This was achieved by utilising light curtains and logic safety relays. Under normal conditions the robot demoulded each IMM sequentially in turn, using a gripper mechanism specifically designed for the task in house by Envopak. Each batch of tags was then placed onto the exit conveyor all within the cycle time of each machine. Should production from either IMM be interrupted the system would automatically continue to run with the remaining IMM.



One Stäubli RXplastics 130L robot servicing 2 injection moulders

The new 'Multilok' cell performed better than expected. The target demoulding cycle time of 2.5 secs was reduced to 1.4 secs and production increased dramatically from 20/25,000 tags per day with the Cartesian robot systems to

75/80,000 per day with the Stäubli six axis cell. Payback on the investment which was originally expected to be only 9 months was actually achieved in 6. Nine employees were saved (1 from each of the original 3 cells, all operated on a 3 shift system).

This performance is typical of RXplastics robots; they are ideal for fast, accurate and meticulous types of tasks, including operation in clean environments (RXplastics robots are approved to class 100). They feature high speed and acceleration with the precise control to follow complex trajectories at joint speed ranges up to 1125degrees per second. At the heart of each RX robot is the patented, unique, JCS gearbox providing zero backlash, smoothness in movement and consistent, reliable performance. The movement in 6 axes provides an extremely large work envelope. RXplastics robots are available in three models (RX60, RX90 and RX130) with load capacity up to 25kg, a maximum reach at the wrist of 2185mm.

With results this encouraging, not surprisingly, Jones looked for other areas where Stäubli robots could bring similar benefits. Production of the 'Superflag' plastic security tag was running at 800,000 per month from 3 operator manned cells, each with a NB 300 IMM and Cartesian beam automation. A similar automation solution using a Stäubli RXplastics 130L robot serving two adjacent IMM's working as one production cell was planned. The robot demoulded each machine in turn, placing the tags directly into boxes on a conveyor belt, all within the moulding cycle time.



The "Superflag" cell with Stäubli RXplastics 130L robot at ITW Envopak

Again the new system performed better than expected. 3 operators were saved and floor space released for new production. An important additional advantage of the system was the direct control provided over the quantity of tags placed in each box using the robot to count the 500 tags required.

Previously extra tags would be added to a box of nominally 500 to avoid undersupply; these tags now became part of the saleable production quantity resulting in an extra 7,000 tags per day. Payback was achieved in just a few months.

The ability to easily reposition the Stäubli robots into new cells as future production requirements at Envopak demand and reprogramme them to perform new movement sequences brings a degree of adaptability into the automation systems that Cartesian robotics would not be able to accommodate. Automation of the remaining production cells at Seaham is now under consideration with Stäubli RXplastics range and the new powerful, compact and rigid TX range of robots being central to ITW Envopak's future automation plans

Many injection moulders are standardising on Stäubli for all their automation requirements. They are realising the benefits that flow from a comprehensive understanding and appreciation of the wide-ranging capabilities of these highly developed machines. New model introductions such as the 6 axis TX range in 2004 and the acquisition in January 2005 of Bosch SCARA robots ensures that the changing demands of the marketplace continue to be fully reflected in the range and capability of robots available from Stäubli.

Stäubli is an international family owned group founded over 100 years ago in Switzerland employing over 3500 world-wide. Robotic production is centred south of Geneva in the French Alps, with facilities across Europe, North and South America and the Far East, the UK base is in Telford.

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