

Industry: Plastics (injection moulding)

Products Used: Industrial Robots (articulated-arm, RV-6S series)

Small Robots Enhance Production Flexibility

At the injection moulding plant of Rodinger Kunststoff-Technik GmbH, parts are removed from the moulding machines by articulated-arm robots from Mitsubishi Electric. Automating the process with these agile industrial robots has brought significant benefits.



RKT develops, designs and manufactures advanced injection-moulded components for the motor industry, the electrical and electronics sectors, medicine and telecommunications. Innovative products and flexible manufacturing facilities ensure that the medium-scale company remains internationally competitive.

Every year the over 70 injection moulding machines at the plant manufacture around 500 different products with production runs between 100,000 and a million units. Robots are now used to handle the delicate moulded parts to prevent expensive wastage. In the past RKT used linear robots for this task, but they were slow and inflexible and increasingly unable to cope with the wide product range, high output and frequently-changing production tasks.

Articulated-arm robots with 6 degrees of freedom (DOF) were found to be a better alternative. These robots' movement capabilities predestine them for tasks like inserting and removing parts into and from injection moulding machines. RKT gradually replaced the linear units with artic-

ulated-arm robots. Today these handling tasks are performed by 15 small robots, most of them RV 6S models with up to 6kg payloads and a reach of 696mm. The robots were delivered by the Robtec GmbH of Ergolding, which also handled the system planning and the integration of robots in the manufacturing cells.

The robots are installed on the injection moulding machines. When the mould opens the robot's arm reaches in at high speed, removes the parts using a vacuum gripper and then places them on a conveyor belt or in a collection bin. Often the robot must remove up to 48 parts simultaneously and place parts precisely in a variety of different cavities.



The faster removal of the moulded parts alone has increased our production rate by 10%.

Dr Rainer Bourdon
Head of Quality Management and Marketing at
Rodinger Kunststoff-Technik GmbH



In addition to making the injection moulding plant very flexible – a robot can be reconfigured for a different moulding machine in just an hour – the articulated-arm robots also bring concrete economic benefits: The faster removal of the parts alone increased the production rate by 10 per cent. When it comes to acquisition cost the linear units are also unable to compete with the price-performance ratio offered by the modern articulated-arm robots. Furthermore, the robots are extremely reliable: So far not one of the 6-DOF robots has failed in the six years that they have been in round-the-clock operation.

First published in June 2006 by Mitsubishi Electric, based on information provided by Rodinger Kunststoff-Technik GmbH, Rodingen.