Increasing profitability with 6-axis robots
Case study: Injection Moulding

The process for unloading injected parts using a robot is very well-known in the industrial world. In the majority of facilities, the robot removes the part, places it on a conveyor belt and waits to receive authorization in order to unload again. It is normal for the total injection cycle to take much longer than the handling time, which is why the manipulator remains inactive for a long period of time. ABB has automated a new facility in which the unloading of injected parts is just one of the many tasks carried out by the production cell.

Efficient use of moulding time
The process for unloading injection moulded parts using a robot is very well-known in the industrial world. In a lot of facilities, the robot removes the part, places it on a conveyor belt and waits to receive authorization in order to unload again. It is normal for the total moulding cycle to take much longer than the handling time, which is why the robot remains inactive for a long period of time. Detailed analysis of the production process, taking into account tasks prior to and subsequent to the unloading of moulded parts, allows for optimized profitability. The aim is to increase the work load of the robot, assigning it additional tasks to be carried out while the injection moulding machine is producing new parts. In this case, the flexible 6-axis robot becomes really useful, and you can do more with your moulding time.

On the basis of the above, ABB has automated a new facility in which the unloading of injected parts is just one of the many tasks carried out by the production cell. The final result is a production cell in which, during the moulding time, the robot carries out different additional tasks, thus increasing the profitability of the work station equipment and the autonomy of the production unit.

The facility in question has an ENGEL 350 Tn injection moulding machine with an ABB IRB 4400 robot. The parts are moulded in a four-cavity mould and, prior to the injection moulding process, a screw needs to be inserted into each cavity.

When the injection moulding machine has been unloaded, the parts are placed in plastic cases, with six parts in each layer and a divider between each layer. Once the robot has carried out the entire process, an operator places a pallet with plastic cases upside down.

From this moment onwards, the robot carries out a series of tasks and, 75 minutes later, the pallet can be found at
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the exit point of the work cell containing cases loaded with perfectly injected parts. All tasks in the work cell are carried out using one single 6-axis robot. The design and conception of robot encompasses the needs of the different, varied processes carried out in the production cell.

The robot stations in the work cell:
- Picks up and turns over the plastic case in which the parts will be placed.
- Places case in the corresponding palletizing position.
- Prior to the moulding process, it feeds the injection moulding machine with inserts (screws).
- Unloads the injection moulding machine.
- Places the parts inside the case.
- Places a divider on top of each layer of parts.

FACTS

ABB and the Plastics Industry

ABB’s wide range of plastics robots can handle most of the tasks involved in and around injection mould 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.

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