At the touch of a button

RobotWare Machine Tending software allows faster and more flexible programming and results in higher productivity.

Text: ABB Robotics **Photo:** Günter Meier

The ABB industrial robot reliably performs its task in the die-casting cell: It removes the aluminum parts – double or quadruple parts for throttle bodies – from the die-casting machine, moves them over a parts inspection device to check them for completeness and dips them into the cooling basin. The next two stops are a blow-out station, where the water is blown out of the boreholes, and a break-off device for coarse deburring. Subsequently, the IRB 4400 places the parts into the punching machine, which removes the remaining burrs. If the robot recognizes any defective parts, it will pass them out of the cell.

The robotic cell in Pressmetall GDC Group GmbH's factory in Gunzenhausen, Bavaria, mainly produces parts for the automotive industry. In February 2015, Pressmetall switched to ABB RobotWare Machine Tending, an innovative option for the IRC5 Robot Controller designed for the commissioning and operation of ABB robots.

"With RobotWare Machine Tending we have access to various program steps of the robot during automatic operation. And we can change them without having to stop the robot. If we find out, for example, that the casting needs to cool down longer or that blowing it out once is not sufficient, we can simply make changes during operation," says Rafael Heider, process technologist in the foundry. Re-teaching of positions for the break-off device and the punch can also be avoided using the software.

Important basic functions for production such as starting and stopping, the stop at the end of a cycle and the collision-free return to the home position in case of an error (HomePos Running) are already integrated in the software. Rafael Heider and his colleague Robert Hagel consider the HomePos Running function a particular advantage as it allows even less experienced operators to move the robot into a pre-defined home position without the risk of a collision.

In case of a malfunction, the operator simply touches the HomePos icon, and the IRB 4400 automatically moves out of the cell – collision-free and without having to be maneuvered out manually with the joystick, allowing a fast restart of the plant.

At the robotic cell, the RobotWare Machine Tending user interface is displayed on the hand-held operator unit FlexPendant. Using easy-to-understand symbols, it shows the cell's individual stations – die-casting machine, cooling basin, blow-out station, break-off device and punch – as well as the robot positions and the current states of the handling processes. In addition, freely definable information such as cycle times, component information or cycle count can be displayed. Program messages appear in the title bar, and further details can be called up at the touch of a button.

The software provides the plant operator with an intuitive access to robot operation. "Three quarters of an hour were enough for me to understand the user interface. It is very well structured," Rafael Heider says.

Prior to the implementation, ABB calculated that Pressmetall will save half an hour per day if the robot does not have to be stopped in automatic operation. This way, the investment in RobotWare Machine Tending will pay for itself within one to two months. Pressmetall has decided to integrate the software in further plants in the Gunzenhausen factory, and a framework contract for 18 licenses has already been signed.

The ABB robot lifts a still steaming throttle body out of the cooling basin.

Scan the QR code (right) to see ABB RobotWare Machine Tending.