



SIEMPELKAMP GIESSEREI GMBH

Krefeld, Germany

BACKGROUND

Blasting is the most widely used method for cleaning and surface treating cast parts. Blast cleaning involves completely removing sand and cores from the components and also reliably cleaning and compressing the cast surfaces to achieve a specified level of cleanliness and surface quality. Manual blasting is a laborious process that presents hazards for the workers, who are exposed to a high level of physical stress as well as noise and dust.

OBJECTIVES

The requirement was to blast clean various large cast parts such as crankcases both automatically and in manipulator mode.

SIEMPELKAMP GIESSEREI GMBH is a global active technology supplier for foundry technology. The Siempelkamp foundry is one of the world's largest hand-molding foundry producing castings with a weight of up to 320 t.



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SOLUTION

The multi-axle Blastman B20CX robots are mounted on gantries and can reach every corner of the blasting chamber. In combination with a control cabin, they can also be used as manipulators to blast individual or special workpieces. By contrast, when processing mass-produced components, the blasting robots repeat stored sequences of movements. They automatically follow the contours of the component and aim directly at areas which are difficult to access.

The result is a high and reproducible standard of quality with no human input or errors and without the excessive levels of blasting produced by blast wheels. In addition, the robots can operate at a blasting pressure of up to 10 bar, which allows for high speeds of up to 200 m/s.

The robots are programmed using a teach-in or point-to-point process with a handheld touch-screen control panel. Only basic familiarization is needed. Offline programming is a particularly efficient process, because the 3D component data is taken directly from the design engineering department. The simulation shows all the movements of the robot on the screen in the form of a 3D model. The movements can be fine-tuned offline to improve the quality and reduce the time needed for the process.

TECHNICAL INFORMATION

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| Nozzle diameter | 19 mm |
| Number of nozzles | 2 per robot |
| Blasting pressure | 10 bar |
| Blasting rate | up to 200 m ² /h |
| Abrasive | Mix of steel grit & shot |
| Degrees of freedom | 8 axis |
| Programming | Teach-In, PTP, Offline |
| Operation mode | Automatic, Manipulator |

RESULTS

Outsize cast components weighing up to 200 tones can be blasted by a robot in the new blasting chamber at Siempelkamp Giesserei using a fully automated process. As a result, the work can be carried out not only more quickly and safely, but also at a lower cost and to a higher standard of quality.

In addition, the robots remove abrasive residues and dust from the components quickly and effectively using compressed air after the blasting process. This means that the parts can move on to the next production phase more quickly and the blasting chamber is available for reuse much sooner.

