Automation

BMW Landshut - Alloy Casting Cells 2006

Projekt:	6 fully automatic casting cells for crank case NG6
Auftraggeber:	BMW Landshut, Germany
Technik:	One Siemens S7-416-2D Controller with decentralized ET200S, DP/DP-Couplers, PILZ Safety Logic PSS3000, Kuka Robot Control, SEW Movidrive, Siemens TP270 as local user interface, Beckhoff-PC with 17" Touch Panel, including In-Touch Visualization (Wonderware) in each cell. Additional pin-printer and camera system for traceability.

One of the revolutionary designs in the new 3-liter motor is the engine block. It is now possible to cast Magnesium and Aluminum in a single process. Aluminum for the sleeves and Magnesium for the outer body.
In this innovative technology the advantages of both alloys can be best utilized. The high tensile strengths of aluminum are necessary for inside of the crank case, where the pistons are shaped by the sleeves and the head is anchored with special bolts. The outer casting houses the oil cooling channels and consists of a lighter magnesium alloy. The overall weight reduction is 10 kilos. Amongst engine designers this is considered a giant milestone.

Six casting cells were designed and engineered. The annual production volume is 550.000 with a cycle time of 128 seconds. The die casting machines have a clamping force of 4000 tons. Each cell has 13 individual control systems which, in turn, are linked to the central processing unit. The CPU is also linked to the BMW central data system.

A relatively rare "hanging robot" Type KR500 is used in each of the casting cells in order to minimize the space requirements.

Once complete, the finished crank cases are stored in a fully automatic production buffer system which can ensure parts are available even in case of down-time or when maintenance work is carried out.

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