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The UNISSET-P in Use

Whether housing for drive, gearbox, electric pumps or electric steering – Alupress Berlin GmbH is a specialist for the complex machining of die-cast parts. Alupress manufactures these aluminium workpieces to the μm in large-scale series production. Highly precise tools are required to achieve this goal. If these tools need to be set, Alupress relies on the new setting fixture UNISSET-P from MAPAL.

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Tactile measurement for less machine downtime

75,000 parts, completely machined housings or flanges made of aluminium, leave Alupress Berlin GmbH every week. Over 80 percent of these parts are manufactured using tools from MAPAL. A reamer was the first tool from MAPAL used in the Berlin works over 20 years ago. Why? „In the area of fine machining, MAPAL’s know-how is unique“, says Patrick Wittig, who is responsible for tool management at the works in Berlin.

The highest precision is required in many areas at Alupress. „To some extent we must manufacture bores in large-scale series production within a tolerance of $5\ \mu\text{m}$ and achieve a surface roughness of $R_z = 2\ \mu\text{m}$ “, explains Patrick Wittig. The highest precision is therefore also fundamental for the tools.

During the machining of a flange, the required surface finish was not achieved with a tool with brazed cutting edges. „For this reason we changed to a milling cutter with adjustable PCD inserts“, recalls Burkhard Schimkat, fixture and tool technology at Alupress. However, the axial run-out on every insert on the milling cutter must be set to the μm to manufacture to the μm .

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Challenge of setting to the μm

And it was exactly here that Alupress faced a challenge for a long time. „We only used an optical setting fixture“, says Patrick Wittig. „However, tactile measurement with contact with the cutting edge was indispensable in this case to manufacture to the required tolerances.“ The final accuracy had to be set directly in the machine. And that process was complex, susceptible to mistakes and time-consuming. The machine was stationary for up to two hours for this purpose.

For this reason Alupress looked for an alternative for this process. „It was only natural we approach MAPAL directly with our challenge for setting the tools“, says Patrick Wittig. After all the precision tool manufacturer has maintained a consignment store at Alupress for some time. Once a week a technical consultant from MAPAL is on site, among other things to ensure the tool stocks are correct, to check newly arrived tools or to initiate repairs. „We use the dispensing system UNIBASE-M from MAPAL for this purpose and in this context we became aware of the company's setting fixtures. The PCD face milling cutter that was the trigger for the search for a solution is also from MAPAL“, elaborates Patrick Wittig.

Tactile measurement with the UNISSET-P

Since October 2018 a UNISSET-P has stood in the pre-setting room at Alupress in Berlin. A measuring camera and a back-light source for the optical measurement of tools are housed in the pillars of the setting fixture, which is of a portal design. „The setting fixture for Alupress is equipped with an additional cross-member in the portal“, explains Michael Hils, Mechatronic Systems Product Manager at MAPAL. Attached to this cross-member are both a second camera to be able to undertake rotation centre measurements and cutting edge inspections, as well as an axial measuring probe for measuring and setting axial run-outs tactilely to the μm with contact with the cutting edge.

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Immense time saving

Patrick Wittig is impressed: „We set, for instance, our PCD face milling cutters from MAPAL to 2 µm using the UNISET-P. The additional fine adjustment of the milling cartridges in relation to the axial run-out in the machine compartment is not required thanks to the new setting fixture.“ For Alupress this means an immense time saving.

However, this is not the only advantage that the UNISET-P offers the company. „The procedure for setting the tools can be pre-defined and saved“, explains Michael Hils. This means the operator selects the tool to be set on the monitor and receives step-by-step explanations about the values that need to be set. These values are specified once for each tool, the related measuring program prepared and saved. „The handling is very straightforward. Once a tool has been added, any of the operators can set the tool“, confirms Patrick Wittig. This increases the process reliability because only if the tools are set correctly are the required tolerances achieved during the machining. „Due to the second camera we can also very accurately document, for example the cutting edge inspection“, Patrick Wittig explains a further advantage of the UNISET-P.

Comprehensive setting not only during setting

Alupress is not only satisfied with the setting fixture from MAPAL. „We have received excellent training on the fixture“, says Patrick Wittig. Also the tool management that MAPAL has taken over for projects both in the Alupress site in Berlin and also at the site in Laurens, USA, is a great help. „As a result we no longer have any tool bottlenecks“, says Patrick Wittig. A contact person with technical know-how is always available. „MAPAL supplies us not only with tools, dispensing systems and setting fixtures, but also helps us to manufacture on time“, concludes Burkhard Schimkat. And the partnership-based collaboration is continuing in this vein. Most recently Alupress has been testing the new dispensing system UNIBASE-S for the decentral availability of personal protective equipment for its employees.

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About Alupress Berlin GmbH

Since 2009, Alupress Berlin GmbH has belonged to the global Alupress AG, which was founded in 1965. The company employs 1,200 employees worldwide, of which 180 are in Berlin. On a total of four sites, die-cast parts made of aluminium are cast and machined primarily for the automotive industry. The Berlin works undertakes the mechanical machining of cored parts from the site in Hildburghausen. In this way Alupress provides its customers with the entire process from a single source.

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Captions:



Patrick Wittig at the UNISSET-P, which has been located at the Alupress pre-setting room in Berlin since October 2018.

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MAPAL employees support Alupress directly on the machine.



The tool setting cycle can be pre-set and saved in this machine. Operators are guided step by step, cutting edge by cutting edge, through the setting programme. In the background from left to right: Michael Hils, Burkhard Schimkat and Patrick Wittig.

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Alupress manufactures over 80 per cent of the parts with tools from MAPAL.

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by mail to Patricia Müller
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