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Basic, Performance, Expert

Tool solutions for e-mobility

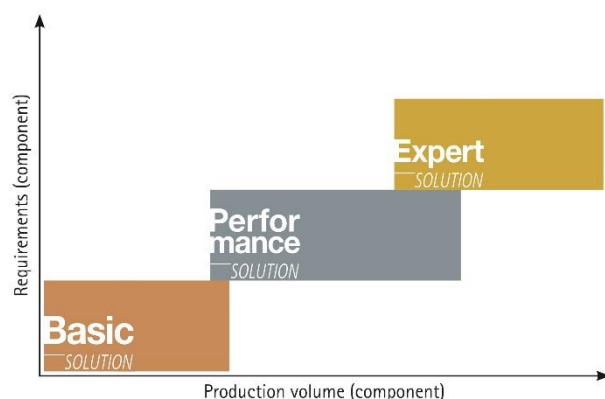
In the years to come, MAPAL expects huge growth in machining solutions for electric vehicles. The tool manufacturer has focused on ambitious components that will be produced in large quantities in future. The new Basic, Performance and Expert classification describes customer-specific solutions for their machining.

MAPAL's strong focus on its customers' needs when developing tool solutions is not new. With the arrangement of machining options into three solution levels – Basic, Performance and Expert – the company now offers a clear classification for tool selection options for a specific part. In doing so, MAPAL gives customers a rough indication, making transitions smoother in practice.

**MAPAL Präzisionswerkzeuge
Dr. Kress KG**
Postfach 1520 | D-73405 Aalen

Contact:
Andreas Enzenbach

Phone: +49 7361 585-3683
Fax: +49 7361 585-1019
E-mail: presse@mapal.com



Pic 1: MAPAL's machining portfolio for electric mobility components is arranged in three solution levels: Basic, Performance and Expert. ©MAPAL

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Three routes to the finished component

Basic versions include solutions with standard tools, which cover requirements in the manufacturing of prototypes or small series in a cost-effective way. The investment required is comparatively low, and the use of tools is flexible. As many changes are often still being made to the component and process at this stage, the flexibility achieved using standard tools is very helpful. Use of custom tools is avoided in the Basic solution where possible.

Performance solutions are designed for series production and focus on machining specific parts using custom tools. Here, multi-stage and combination tools can be used to process the workpiece more efficiently than with Basic versions. The Performance solution enables reliable series-ready production without quite fulfilling the very top requirements for quality and productivity.

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Pic 2: The “Performance” tool package is ideal for medium-sized manufacturing quantities. The image shows the machining solution with hollow shank taper 63 for the stator housing. ©MAPAL

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This is reserved for the Expert version. It includes solutions designed to machine specific parts with the fewest tools possible productively and effectively in short cycle times with the best possible quality. Here, multi-staged tools with multiple cutting edges that combine all functions in a single device are typically used. An example of an Expert solution is the tool set for machining the stator housing for an electric motor, which MAPAL has already successfully established in the industry. MAPAL has taken productivity and quality to their absolute limit with these tools. Basic and Performance solutions are also available for manufacturing the stator housing – which meet the requirements for each level respectively.

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Pic 3: The “Expert” version focuses on large series production. A small number of ultra-productive tools operate in short cycle times to the highest standards of quality. ©MAPAL

Ambitious parts for electric cars

Alongside electric drives, MAPAL is also placing its focus on other electric car components. These include auxiliary units such as the scroll compressor for thermal management and housing for power electronics and battery frames. The latter requires a great deal of milling operations which can also

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be illustrated well with the three-staged Basic, Performance, Expert concept. Comparatively simple standard tools can be used for tests or small quantities. The next level involves special solid carbide tools that combine several machining steps and ensure reliable machining. Accordingly, the Expert level brings milling cutters with special coatings or PCD milling cutters into play in order to take tool life to a higher level.

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Andreas Enzenbach

Phone: +49 7361 585-3683
Fax: +49 7361 585-1019
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MAPAL determines the optimum solution for the relevant situation in direct dialogue with its customers. In many cases, customers will only take advantage of two of the three potential levels. This is because prototype production often takes place at specialist machinists, which means the OEM starts directly with series production. If the quality requirements are met and productivity is sufficient for the quantities to be manufactured, a Performance-level machining solution is used. Under certain circumstances, the demands placed on machine performance may also not be quite as high with this solution, which can be a criterion when converting existing lines to e-mobility. Of course, a manufacturer can also go straight from prototype production to a Performance-level machining solution, if, for instance, the focus is on costs per part above a specific production volume.

Open and goal-oriented communication with the customer remains at the heart of MAPAL's approach. After all, an open dialogue is crucial in providing the right tool solution for every application and every customer.

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If published, please send a voucher copy by mail to Kathrin Rehor
or by e-mail to kathrin.rehor@mapal.com.

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Dr. Kress KG
Postfach 1520 | D-73405 Aalen

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