75 YEARS

IMPULSE

MAPAL TECHNOLOGY MAGAZINE | EDITION 85

Focus topic:

EMO HANNOVER 2025

Dear business partners,
dear readers,

2025 is a special year for us at MAPAL. We're celebrating the 75th anniversary of our company. My grandfather Dr Georg Kress, a former accountant, acquired "OBA Präzisionswerkzeugbau" in 1950 – even though he knew absolutely nothing about technology, threading tools and dies. From very humble beginnings, he thereby laid the foundation for today's MAPAL Group and its global success.

Above all, acquiring the patent for an innovative single-bladed reamer would prove to be the right decision. Constant developments and further patent applications for reamers made our products attractive high-performance tools. Some of these stories from 75 years of MAPAL are presented in this issue. If you'd like to learn even more about our company's story, you'll find plenty to interest you on history.mapal.com

"MAPAL reamers solve your reaming problems." This advertising slogan from the 1950s is no less relevant to this day. Notwithstanding the fact that our areas of activity have become more extensive over the past few decades, the sentence still highlights that MAPAL products exist for one reason first and foremost: To bring you, our customers, forward. The same applies today as it did back then, as many of the features in this issue demonstrate.

With our innovations and solutions, we're always focused on one thing: Increasing customer productivity. To give just a few current examples: The further development of our milling ranges for the OptiMill and NeoMill series. Or new products and services from the integration of our Italian company X-Pro to drive aspects such as cycle time and process reliability more efficiently in process design.

Our aim is to remain a reliable partner for the next 75 years, too. To do this, we adapt to the changing conditions. The transformation of our company is not a product of the future – it's been in progress for a long time. This becomes visible with the renaming from a KG to MAPAL Dr. Kress SE & Co. KG. And hopefully also tangible for you through things like better availability, higher delivery reliability and shorter delivery times.

Let's get into all these topics. I look forward to discussing with you at EMO 2025 in Hanover. Visit our stand, discover our innovations and solutions, and get talking to us in Hall 4, Stand A20. See you soon in Hanover!

As ever, I hope you enjoy reading our IMPULSE.

Yours

Dr Jochen Kress

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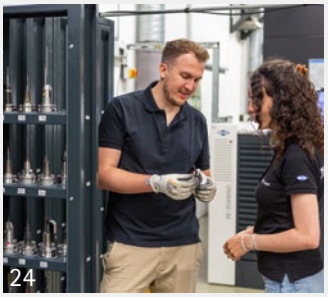

FOCUS TOPIC
EMO HANNOVER 2025

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IMPRINT

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MAPAL POSITIONS ITSELF FOR THE FUTURE

As it celebrates its 75th anniversary, the MAPAL Group is resolutely focussed on the future. With investments in new technologies, digitalisation and in the targeted development of capabilities, the company is strengthening its position in key segments and accelerating its efforts to engage with the market and its customers. This is reflected, for instance, in the activities in the dynamically developing Aerospace segment: MAPAL has pooled its expertise in the field of aircraft final assembly in the Global Organisation for Assembly (GOA) department, founded in 2024 – a decisive step to serve global customers faster and in a more targeted manner. The integration of the subsidiary c-Com and acquisition of the Italian X-Pro S.r.l., a specialist in turnkey projects and clamping fixtures, also highlight the company's commitment to actively shaping technological developments and fully meeting customer requirements.

The future-oriented activities are set against the backdrop of a challenging economic environment. In the 2024 financial year, the MAPAL Group recorded a 6.3 per cent drop in sales to 551 million euros. This was the result of a weak economy as well as lingering uncertainty in important sales markets. Against this backdrop, the outlook for the current 2025 financial year is also very subdued. "After an unsatisfactory first half of the year, we are currently expecting a further drop in sales of up to 5 per cent", explains Dr Jochen Kress, President of the MAPAL Group.

As a result of this development, the personnel structure has been adapted to the changed market conditions. Vacant positions have not been filled, meaning that the MAPAL Group ended the 2024 financial year with 4,850 employees. There has also been a targeted reduction in capacity at the Aalen, Altenstadt and Pforzheim sites in 2025. Compulsory redundancies have largely been avoided thanks to socially responsible measures. "As a family company, we feel a special bond with our staff", explains Dr Kress. "That's why this was a difficult decision to make. But it was necessary to secure the MAPAL Group's long-term competitiveness."

At the same time, the company is focusing on numerous measures to boost its future viability. The generic component approach is yielding results in the automotive industry: for strategic components, MAPAL is developing sample components with the appropriate machining processes on its own initiative and independently of customers and then quickly adapting these to the respective customer's needs. This approach has been implemented, for example, in collaboration with a machine tool manufacturer for producing stator housings, a core component in electromobility. In addition, MAPAL continuously implements product innovations and optimisations for all components related to machining in order to deliver productivity gains for its customers. For example, the HNHX indexable inserts have made the conventional method of machining valve seat rings in combustion engines significantly more efficient. The company is expanding its portfolio in the fluid power technology field to cater even more effectively to customer requirements with intelligently combined solutions. The strategic

Aalen is both headquarters and production site of the MAPAL Group.
The company is investing four million euros here in modernisation and a new production structure.

Dr Jochen Kress, President of the MAPAL Group.

decisions are proving effective in the aerospace industry. Dr Kress: "By pooling all global final assembly activities in the GOA department, we have become much faster and more efficient. Both in the direction of the customer and internally."

Around 4 million euros is also currently being invested to modernise the Aalen site – a clear commitment to the headquarters, which is also a production site. In order to achieve a high level of efficiency, short delivery times and optimum utilisation, MAPAL is redesigning its production structure. The company headquarters is also undergoing structural reorganisation: since June 2025, MAPAL Aalen has been operating as MAPAL Dr. Kress SE & Co. KG. At the same time, René Güntner has joined the MAPAL Executive Team as the new CFO.

The MAPAL Group is resolutely focussed on the challenges of the future with these steps – and remains true to its commitment to actively shape changes and combine customer focus, innovative strength and competitiveness. ■

Change of general partner to MAPAL Dr. Kress SE & Co. KG

MAPAL Fabrik für Präzisionswerkzeuge Dr. Kress KG changed its legal structure. At the beginning of June 2025, the previous limited partnership (KG) was converted into an SE & Co. KG and now operates under the name MAPAL Dr Kress SE & Co. KG.

With the new legal form, MAPAL created the basis for a modern and sustainable corporate structure. The change of name is an important step in the strategic development of the company group and takes account of the increasing complexity of the market environment, the growing international customer base and the need for more efficient decision-making processes.

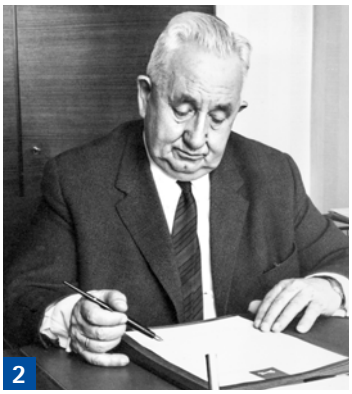
"We made a conscious decision in favour of SE & Co. KG as the new legal form," emphasises Dr Jochen Kress, who continues to lead the company as President. "The new structure simplifies the control and management of the company and strengthens entrepreneurial responsibility within the management team. It also contributes to MAPAL's competitiveness in the medium and long term and thus to its future security. I would like to emphasise that this organisational development does not change the ownership structure of MAPAL: We are and will remain a family business."

No impact on business relationships and labour relations

For customers, suppliers, partners and employees, day-to-day business will remain unaffected by the new legal structure. The change of name will also have no impact on employees. Dr Jochen Kress: "Our success is based on the trusting and long-term cooperation with our employees, customers, suppliers and partners. In the new structure, these relationships will remain the foundation of our actions as well. We look forward to shaping the next steps together."

75 YEARS OF MAPAL

In a history now spanning 75 years, the family business MAPAL has gone from humble beginnings to an international group with a global reputation. From the very beginning, the tool manufacturer's company history has been characterised by continuity and an innovative spirit that was nourished by Swabian ingenuity and creativity, as well as by the entrepreneurial courage of the owner family Kress. Close contact with customers and a reliable sense for what will matter in future continue to shape the company's culture to this day.



1 *Surrounded by proverbial green meadows, MAPAL is initially housed in this long building. The newly build shed hall is added in 1958.*

2 *Dr Georg Kress, the self-made entrepreneur*

3 *The single-bladed reamer is advertised intensively after 1954.*

The foundation of the company in 1950 was quite unusual. Dr Georg Kress held a doctorate in economics and was working as a tax advisor when the opportunity came up to take over one of his clients' companies, which had got into difficulty. Although he knew nothing about technology, threading tools and dies, he bought "OBA Präzisionswerkzeugbau" from Otto Betzler. He sold his successful tax advisory firm in Aalen and became an entrepreneur.

The new name for the business, MAPAL, stood for "Maschinen- und Präzisionswerkzeugfabrik Aalen" and is testament to the fact that woodworking machines were also manufactured in the company's early days. As cost-effective and efficient production of the profile milling machines was not possible in the long haul in the cramped, simple premises on Obere Bahnstraße in Aalen, MAPAL quickly moved away from this area of business. The focus switched to tap drills, thread dies and thread rollers, which marked the beginning of the product range as we know it today.

IT ALL STARTED WITH A REAMER

The purchase of a patent for an innovative reamer in 1952 proved to be a visionary move for the company's long-term success. Unlike previous designs, it does not have four or six cutting edges, but rather only one, which is clamped into a slot and can be adjusted. The Italian inventor promised this would achieve lower manufacturing costs and more flexibility in reaming. When Dr Georg Kress acquired the patent for the single-bladed reamer, he was going against the advice of technicians from his own company, who felt the tool was unsuitable – and they were correct, in principle.

However, Dr Kress drew on research and development to overcome these initial problems. In a painstaking and meticulous process, the reamer was improved. This included inserting two guide pads asymmetrically around the circumference of the reamer body. In 1954, the first single-bladed reamer developed by MAPAL with guide pads made of carbide was patented. Another patent for a reamer with indexable inserts made of carbide followed in 1962. Both innovations laid the foundation for developing the reamers into a highly appealing, high-performance tool in the coming years. The fine machining of bores became MAPAL's calling card.

Dr Dieter Kress (left) and Dr Georg Kress present the MAPAL products at a trade fair around 1960.

75 YEARS OF MAPAL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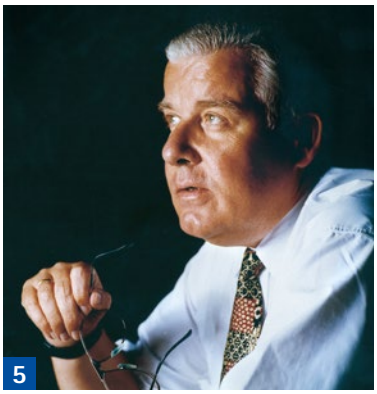
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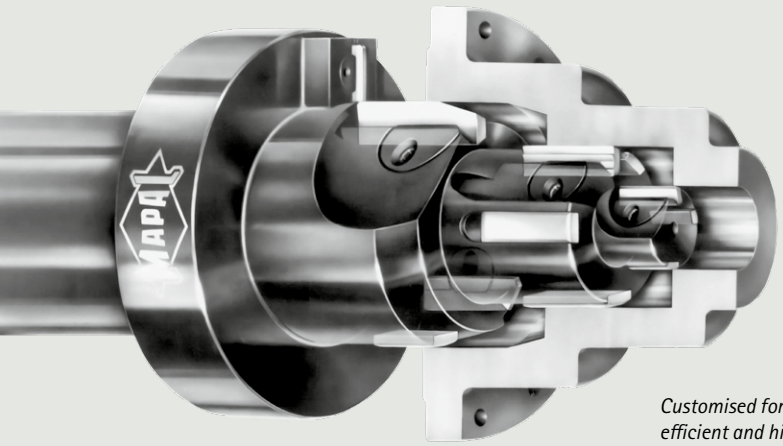
When Dr Dieter Kress joined the family business in 1969, the son of the company's founder was well prepared for his future duties. Unlike his father, he was at home with all things technical. On his very first day working at MAPAL, he designed a new clamping method for indexable inserts. It was patented and in principle still forms the technology for clamping the indexable inserts in MAPAL reamers today.

A FORWARD-THINKING PRODUCT DECISION

When he became president in 1974, Dr Dieter Kress quickly set about redesigning the product portfolio. The tap drill and thread roller area of the business was given up to focus completely on reamer production. This came at a time when two-thirds of MAPAL's turnover came from threading tools. But entrepreneurial foresight lay behind this plan. The long-established products offered almost no potential to differentiate the company from mostly bigger competitors who could also manufacture at a lower price. The single-bladed reamer, by contrast, was something very special, with no direct competition. However, the market had to be developed first.

The reamers were gradually developed until they were suitable for industrial large-scale series production. The coating of the indexable inserts played a role, as did the use of PCD for the guide pads. The tools helped MAPAL gain a foothold in the automotive industry first and foremost, where manufacturing technology was moving from rigid transfer lines to flexible machining centres.

Alongside technical improvements, MAPAL rebuilt its sales concept and focused on maximum customer proximity. Independent sales representatives were replaced with in-house technical consultants whose role was to advise customers on the ideal, customised design for their tools and to support them with their use. In the automotive industry the collaboration became so close that the consultants even became involved in developing new engines by introducing potential precision machining options into the design process at an early stage. They didn't just sell tools – they sold solutions.



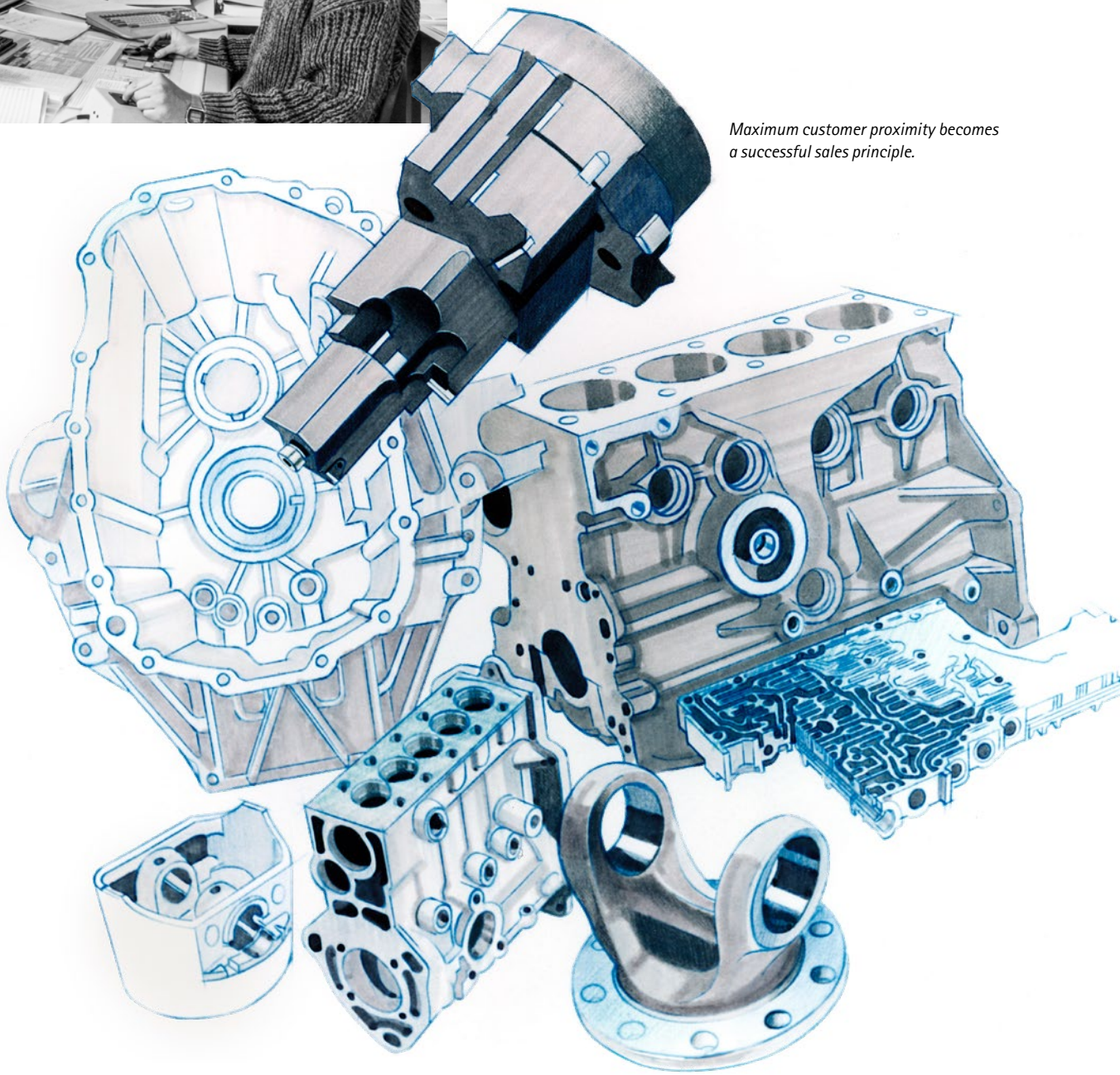
Customised for the automotive industry: MAPAL multi-stage tools enable both efficient and high-precision fine machining.

4 *MAPAL focuses on the in-house training of junior staff at an early stage.*

5 *Dr Dieter Kress led MAPAL from 1974 for more than four decades.*

6 *At the end of the 1980s, PCs and CAD (Computer-Aided Design) are introduced at MAPAL.*

Maximum customer proximity becomes a successful sales principle.



The internationalisation of the company and the expansion of the product range are reflected in the trade fair appearances.

7 *New product segments become part of the growing MAPAL Group thanks to smart corporate acquisitions.*

8 *An image photo from 2008 shows how diverse the MAPAL product programme has become.*

9 *Internationalisation as an opportunity for growth – MAPAL actively expands from the 1990s onwards, with sales representatives in Europe, Asia and the Americas becoming MAPAL subsidiaries in their own right.*

TRANSFORMATION INTO A GLOBAL PLAYER

MAPAL opened its first subsidiary in the US back in 1977. But the global expansion of the company truly took flight in the 1990s. MAPAL established numerous overseas subsidiaries in quick succession. MAPAL's internationalisation strategy was based on following its big customers. As they were setting up production facilities virtually all over the world, the comparatively small company from Aalen had the opportunity to join and leverage market potential. MAPAL is now represented in 25 countries with own locations.

To expand its product and service portfolio, which also followed customer requirements, MAPAL acquired specialist companies in Germany. WWS in Pforzheim expanded MAPAL's offer to include PCD tools with brazed blades for high-speed machining, particularly of aluminium, thus covering a segment that was becoming more and more important to customers. Solid carbide drills and milling tools were added to the range courtesy of Miller in Altenstadt. As drilling from the solid is the production step prior to reaming, this made a perfect addition to MAPAL's portfolio. Weisskopf from Meiningen strengthened the solid carbide segment further.

The purchase of the long-standing Winterlingen-based company August Beck secured MAPAL's position as a leading manufacturer of reamers. Robert Strom and ISOTOOL added ISO and actuating tools to the portfolio. In 2015, the two companies were rebranded MAPAL ITS, which focuses on complex special tools with actuating mechanisms in Eppingen. Clamping tools from WTE in Ehrenfriedersdorf completed the product range. MAPAL made further strategic investments overseas.

75 YEARS OF MAPAL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TRANSFORMATION IN FULL SWING

The third generation joined the family company's executive management in 2008 with Dr Jochen Kress, who had already been working at MAPAL as a development engineer since 2000. When he took the helm of MAPAL Group as president in 2018, the market's transformation was in full swing. MAPAL is proactively engaging with the automotive industry's transition to electromobility and developed efficient manufacturing solutions in this area early on.

There was also a strategic expansion of customer segments beyond the automotive industry, which had been a guarantee of growth over decades. MAPAL now also focuses on the aerospace, fluid power technology, and die and mould segments. Digital solutions are provided by c-Com since its founding in 2017. The start-up has been merged into the MAPAL Group and primarily assists with tool management services. The company takes all aspects of sustainable management into account with an environmental management system – with many individual measures in production and administration at all sites making their contribution.

Dr Jochen Kress initiated the transformation of MAPAL into a process-driven, global organisation. Structures and processes are being adapted to the size the company has reached; decision-making processes are being streamlined and accelerated. The reorganisation on management level at headquarters in Aalen is based on core processes and areas of focus. The structural, organisational and cultural changes that Dr Jochen Kress initiated will shape the company in the long term and endure long beyond the anniversary year 2025. ■

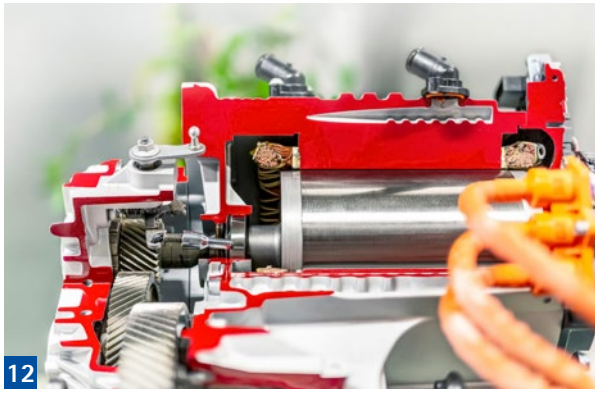
Find out more about the history of MAPAL - and what has been driving us for 75 years.

10 *Dr Jochen Kress has been responsible for the MAPAL Group as President in the third generation since 2018.*

11 *Sustainability measures are part of the corporate strategy and are a responsibility MAPAL lives by.*

12 *MAPAL opens up additional market segments through consistent diversification.*

13 *Digitalisation is increasing the demands for data consistency and rapid availability of data.*



Dr Jochen Kress initiated the transformation of MAPAL into a process-driven, globally active organisation.

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MAPAL presents successful solutions on the market

MAXIMUM IMPACT WITH MINIMAL EFFORT – PATHS TO GREATER PRODUCTIVITY

MAPAL has developed standard processes for the industrial production of strategic components. On that basis, these tool solutions are modified according to requirements, to help customers boost their productivity. Success stories from various market segments show just how well this works.

Productivity is boosted when the same effect is achieved with less effort, or if a greater yield is achieved with the same effort. If more is achieved with less effort, you've reached the peak of boosted productivity: maximum effect for minimal effort. For instance, this might involve the use of fewer tools, which allow higher quantities to be produced in the same amount of time.

ADAPTED SOLUTIONS FOR HYDRAULICS

In the fluid power market segment, for instance, MAPAL can draw on a model process for machining the spool bore in hydraulic valve housings. This bore always has a similar design in hydraulic systems for construction machines, agricultural machines and others. In order to be able to control different oil circuits via the spool position, the bore in which it moves must be very precise. MAPAL generally pilots this bore with a solid carbide drill first and then prepares it with a boring tool for finishing.

THREE CUTTING EDGES FOR HIGH FEED RATES

In this case, MAPAL doesn't just offer one particular solution, but adapts the general tool selection to the respective circumstances. For the hydraulic control of the drive for an excavator, for instance, a pilot drill with three cutting edges was selected. This enabled a high feed rate in the GG25 casting material used for this component. The solid carbide boring tool, which also has three cutting edges, then performs roughing and finishing very efficiently in one machining step, thus reducing process costs. By transitioning from the tools previously used from another manufacturer to the MAPAL process, the customer was able to reduce machining time from 70 to less than 10 seconds. At 3,000 components per month, this meant savings of over 50 hours' machining time – i.e., much higher productivity without using more tools.

Fluid power technology – Hydraulics valve housing:
Process optimisation on existing machinery

Cycle time reduced by 40 %

Fluid power technology – Hydraulics valve housing:
Piloting, roughing and finishing of the spool bore with two tools

Machining time per month reduced by 50 %

ENHANCING PRODUCTIVITY WITH EXISTING MACHINERY

Adapting the process to the existing machine set-up was the focus of another hydraulics project, which also involved spool bores. In this case, the customer often faced large production volumes, making a highest-possible productivity essential for efficient manufacturing. Investment in new machinery was out of the question, however, due to the volatile economic situation. For MAPAL, the challenge therefore lay in achieving a gain in productivity on the existing machine. The aim was a secure process with a reduced cycle time.

The model process could not be applied directly, because it requires the use of a special solid carbide drill for pre-machining in the machining step that follows countersinking. However, the machine did not have sufficient capacity for this drill. Accordingly, MAPAL replaced the drilling specified in the model process with circular milling, which requires less torque. Two additional tools are then used for circular milling of the control edges in the spool bore. MAPAL's guide pad technology is used for finishing, ensuring the best circularity and surface quality. Instead of the seven tools that the customer was using in their previous process, production is now carried out with just five. This allowed cycle time to be reduced by 40 %, resulting in savings of 1,250 working hours for an annual manufacturing quantity of 30,000 components. Costs were reduced accordingly: The customer saves EUR 14,000 every year.

TWO PROCESSES, ONE TOOL

Another case study from fluid power involves the machining of hydraulic cylinders in excavators' retractable booms, where manufacturers use bar material whose internal machining requires exact circularity and a high-quality surface finish. One established process for this is pre-machining with adjustable ISO tools, followed by roller burnishing. A disadvantage of this approach is that the leading inserts must be set very precisely, which requires trained staff and increased effort in the process. In practice, spontaneous insert breakage occurs time and again, leading to increased effort spent on measuring and adjustment as well as scrap.

MAPAL combines standardised components in a newly developed, single tool in collaboration with a manufacturer of roller burnishing tools. Instead of ISO tools, HPR400 tools from MAPAL handle the pre-machining. These inserts do not require setting: The plug & play solution makes them much easier to use. The stock allowance situation can even be adjusted, for instance, to operate with less cutting pressure and thus less energy expenditure. Roller burnishing takes place right after reaming in one machining step. The combination of two processes in one tool enables significant cost and time savings with maximum process reliability due to lower cycle times.

Fluid power technology –
Hydraulics cylinder:
Pre-machining and roller burnishing in one machining step

Significant time and cost savings at maximum process reliability

Electromobility – Stator housing:
Finishing the stator bore with HPR400 technology

Higher output and less handling effort

HIGHER OUTPUT FOR ELECTRIC MOTORS

With the rise of electromobility, MAPAL was able to quickly offer a solution for machining the stator housing using the generic component approach. The focus of this process, which has been established for several years now, is high-precision manufacturing using fine boring tools. As the market matures, it is changing. Motors are now being built in larger quantities for vehicles in the mid-range segment. Accordingly, the industry's desire for greater productivity is growing, too. Initially, it is less about the cutting data achieved than about the adjustment effort for the tools, which should be reduced for the production of larger series.

MAPAL has responded to the changing requirements and now offers a solution with HPR400 technology for finishing. The tools with PCD inserts are not to be set. Unlike the blades of a fine boring tool, they can simply be inserted and tightened with the correct torque. In addition to eliminating the need for setting, the new solution also boasts double the machining speeds, as eight inserts are now used instead of the previous four. Overall, the process delivers higher output with less effort, thus leading to a significant increase in productivity.

MAPAL's model process specifies the use of guide pad technology for this machining step. And this is still justified, as the tolerances specified by premium manufacturers for some models cannot be achieved using other methods. Thin-walled components that are difficult to clamp also need a fine boring tool that exerts less cutting pressure.

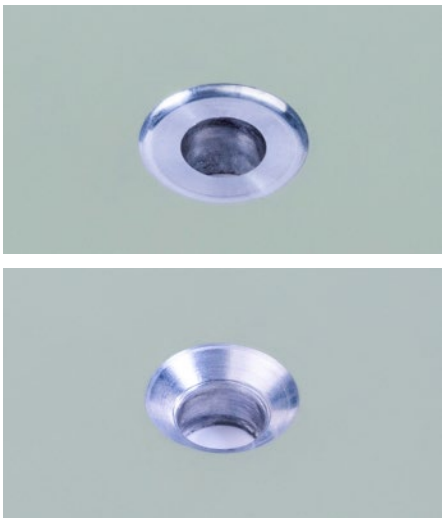
MACHINING MILLIONS OF RIVET HOLES WITH MAXIMUM CONSISTENCY

Final assembly in aircraft construction calls for productivity and high quality in equal measure. When the segments of a commercial aircraft are drilled with millions of bores for riveted connections, the continuous accuracy of the machining operations, which are mainly carried out using hand-held machines, is a challenge. Depending on the connection, the bores need chamfering, countersinking or simple deburring.

MAPAL's spotfacing tools with microstop cages constitute a depth stop and ensure that the same result is achieved irrespective of the worker involved. The tool manufacturer handles the pre-configuration so that nothing else needs to be adjusted in manufacturing. With different cutting materials, the spotfacing tools with microstop cages are suitable for machining aluminium, CFRP or titanium. Customer-specific colour coding prevents tools from being mixed up and errors in the process. Optionally, dust extraction can be carried out directly on the tool.

In addition to rivet preparation, mirroring or metallising the area around bores on aircraft's outer skin is another case for a spotfacing tool with microstop cage. In this process, paint is deliberately removed to ensure electrical conductivity between the parts and thus protection in the event of a lightning strike. The spotfacing tools with microstop cages demonstrate that very good effects can be achieved even with supposedly simple tools: Preventing errors in the process also contributes to higher productivity.

Automotive, aerospace or fluid power – smart solutions and close contact to the customer often open up huge potential for productivity. As a technology partner, MAPAL offers its customers comprehensive advice and support encompassing all technologies with the aim of achieving the required result and more. ■



Aerospace – Rivet bore machining:
Spotfacing tools with micro-stopp cage

High productivity through absolute process reliability

MAPAL AT THE EMO 2025

Shaping the future with partnership, productivity and precision

The EMO is the perfect platform for MAPAL to showcase new solutions, nurture ties and establish partnerships. Personal interaction with existing and new customers at trade fairs is a key part of the precision tool manufacturer's company philosophy and remains firmly rooted in its marketing strategy.

"The EMO plays a key role in our customer relationships and is an important venue where we unveil our product innovations for the coming year", explains Jacek Kruszynski, Chief Technology Officer at MAPAL. MAPAL is presenting its latest solutions and innovations at stand A20 in Hall 4.

ENHANCING PRODUCTIVITY IN CUSTOMER PROCESSES IS THE GUIDING PRINCIPLE OF THE TRADE FAIR APPEARANCE AND 2026 INNOVATIONS

MAPAL is a holistic solutions provider. Customers are supported throughout the entire process chain – from turnkey solutions with process and tool design, to technical support during production to tool management and digital services. The aim is to systematically enhance productivity in customer processes. This is also the premise behind the 2026 innovations in the areas of reaming, fine boring, boring, milling, clamping and setting. Highlights among the new products include the OptiMill-Uni-HPC and the new chip-breaking geometry for reaming and fine boring blades.

CONTINUED FOCUS ON ALUMINIUM MACHINING

Another focus of the trade fair appearance is aluminium machining. With the slogan "Empower Your Aluminium Machining" MAPAL underlines the fact that smart tool solutions make maximum precision, process reliability and cost-effectiveness possible when machining aluminium components. MAPAL has decades of materials expertise in the area of aluminium and offers a wide range of high-performance tools for highly productive processes.

INNOVATIONS AND SOLUTIONS AT A GLANCE

MAPAL is presenting its 2026 innovations in a compact brochure. It is available for download on the MAPAL website - as well as on the official EMO website. The new products brochure will also be available to take away from the MAPAL stand. ■

NEW

More information on the innovations and solutions for 2026:

UNIQ DirectCool

The new DirectCool option for the UNIQ hydraulic chucks enables precise decentralised cooling along the tool shank right up to the cutting edge by means of three cooling channels.

UNISET-V basic plus

Tools with guide pad technology with a diameter of 100 to 400 millimetres and a maximum measuring length of 750 millimetres can be set with high precision using the UNISET-V basic plus.

Innovations in the field of NeoMill indexable insert milling cutters

The new NeoMill-16-Finish raises the efficiency of finishing steel and cast iron materials to a new level. The NeoMill-16-Face complements the programme for economical pre-machining. The NeoMill-Alu-Rough is a new addition to the range for maximum performance when roughing aluminium.

New solutions with HPR400 technology

Powerful, precise and easy to use - these are the key features of the four new solutions. The HRP400 reaming system increases productivity in specific applications in vehicle construction and fluid power technology.

Pre-machining the spool bore in hydraulic valve housings

Pilot drill with three or five cutting edges as well as a solid carbide boring tool realise pre-machining of the spool bore with high productivity and bore quality.

The third generation of the solid carbide milling cutter OptiMill-Uni-HPC has been specially developed for modern, automated manufacturing processes. The focus is on maximum process reliability.

NEW

REDEFINING PROCESS RELIABILITY IN MILLING

MAPAL's third generation of the versatile OptiMill-Uni-HPC for steel, stainless steel and cast-iron machining has been specifically developed for the requirements of modern, automated manufacturing processes. The milling cutters impress with maximum process reliability – a key factor in the era of unmanned shifts, robot-assisted machining and growing complexity in component manufacturing.

The third generation of the solid carbide milling cutter OptiMill-Uni-HPC brings together all requirements asked of a milling tool today: stability, flexibility and resistance to wear. A newly developed cutting material ensures high ductility and significant resistance to impact strain as a result. The risk of tool break is greatly reduced, protecting expensive components from damage. Combined with wear-resistant coating and adapted geometry, this ensures a high degree of reliability – even for very dynamic loads.

A version with an integrated chip breaker is a new addition to the range. This creates short chips that are easy to remove and thus offers clear advantages for air cooling and high chip removal rates and enables high infeed depths. The result: long machine running times and reduced monitoring efforts – ideal for automated processes.

The third-generation OptiMill-Uni-HPC is available in three versions from the start of September 2025: as short design without chip breaker (diameter 3–20 mm), long design without chip breaker (diameter 3–25 mm) and long design with chip breaker (diameter 6–25 mm). In this way, MAPAL is pursuing a clear path: the targeted optimisation of a tried-and-tested tool aimed at further improving process reliability, stability and versatility.

With the third-generation OptiMill-Uni-HPC, MAPAL presents a milling cutter that is not only technically impressive, but also economically viable – a true all-rounder for modern manufacturing. ■

With the third generation of the OptiMill-Uni-HPC, MAPAL is combining requirements for stability, flexibility and wear resistance with the increased ductility of a newly developed cutting material.

The newly developed chip breaker technology not only enhances the quality of the machined workpieces – it also boosts the cost-effectiveness of production hrough low tool wear and machine downtime as well as high dimensional accuracy.

NEW

Innovative machining solutions for P and M steels set new standards

STANDARDISED CHIP BREAKER GEOMETRY FOR LONG-CHIPPING STEEL MATERIALS

Machining long-chipping steel materials like stainless steels has always been a challenge. With the development of a new, standardised chip breaker geometry for fine boring blades, MAPAL has achieved a crucial breakthrough that has both technical and economic benefits.

In metal machining, chip formation plays a key role in process reliability, tool life and surface quality. Controlled chip formation is particularly crucial to the fine machining of unalloyed, alloyed and stainless steels.

MAPAL presents a brand-new approach to chip breaking for fine boring tools. It combines a precisely defined lead and rake angle geometry with optimally adapted cutting data and cutting depths. This precise adaptation enables perfect chip formation, even for challenging materials. The result: optimal chip removal, reduced heat development and much greater process stability.

The benefits of this technology can be seen not only in the quality of the finished workpieces, but in the cost-effectiveness of manufacturing. Less machine downtime and tool wear and greater dimensional accuracy make this approach a real leap forward in machining technology.

Chip breakers are not a new invention – but the idea of implementing standardisation for long-chipping steel materials in fine boring is. The chip breaker geometry developed by MAPAL combines decades of experience in this area with a clear focus on cost-effectiveness and user orientation. Until now, MAPAL has used chip breaker technologies for custom solutions. With the innovation presented at EMO 2025, the company is taking a big step towards standardisation and efficiency.

The fine boring blades with chip breaker geometry for unalloyed, alloyed and stainless steels are available from stock with defined geometries and coatings from autumn 2025. ■

RENÉ GÜNTNER
NEW CFO OF THE MAPAL GROUP

René Güntner has been the new Chief Financial Officer (CFO) of the MAPAL Group since June 2025. In his role, he assumes responsibility for the areas of financial accounting, controlling, purchasing and facility management. "With his many years of management experience and in-depth expertise in international companies, René Güntner will contribute valuable impetus to the strategic development of the MAPAL Group. We are very much looking forward to working together," emphasises Dr Jochen Kress, President of the MAPAL Group.

"I see myself as financial officer as well as sparring partner for all areas of the company," Güntner says. "Open dialogue and cross-divisional collaboration are key success factors."

PARTICULARS

STEPHAN KÖSTLER NEW SENIOR DIRECTOR PRODUCT & SERVICE MANAGEMENT

With effect from 1 September 2025, Stephan Köstler took over the management of MAPAL's product and service portfolio as Senior Director Product & Service Management. In this role, he is responsible for the strategic and operational management of the merged Product & Application Management (PAM) and Machines & Services divisions.

Stephan Köstler has been with MAPAL for many years, most recently as Global Head of Machines & Services. In this role, he was responsible for the product strategy and operational management of the associated business unit. Köstler has extensive experience in product management and, with his technical expertise and proximity to the market, has made a decisive contribution to setting up the product and service offer for the future.

Köstler's focus is on the sustainable further development of the portfolio along the entire product life cycle - from development and market launch through to support in the field.

MICHAEL LOEFFLAD NEW MANAGING DIRECTOR OF MAPAL THAILAND

Beginning of May, 2025, Michael Loefflad took on the role of managing director of MAPAL Thailand and now heads two East Asian branches in a dual role.

Michael Loefflad has been Managing Director of the MAPAL KK subsidiary in Japan since January 1, 2024. He took over responsibility for MAPAL Tooling (Thailand) Co. Ltd. from James Tan who retired at the end of April. James Tan has been an important pillar for MAPAL since 1995 and contributed significantly in the establishment of MAPAL Malaysia and MAPAL Indonesia. In 2017, Tan took over the management of MAPAL Tooling Thailand.

Michael Loefflad can draw from more than 20 years of professional experience in Asia and brings extensive expertise and industry knowledge from various management positions to the company.

Custom solutions for modern manufacturing requirements

PRODUCTIVITY SUPPLIER WITH A FULL RANGE OF SERVICES

Products and services at MAPAL are always aimed at supporting customers in increasing their productivity. Services so far have ranged from tool design and tool management to production line support. Now the tool manufacturer is going a step further and offering complete turnkey solutions for process design through to the achievement of process capability. AI is also just around the corner.

The process design lays the foundation for the costs incurred for a component. Key framework conditions are cycle time and process reliability. While MAPAL has had the necessary tool expertise for a long time, but experience from many customer projects showed that there was still potential to be realised in the areas of clamping fixtures, programming and process acceptance.

By acquiring the Italian company X-Pro, that gap has been filled in the past year. MAPAL is now in a position to profoundly assist customers with component industrialisation at an early stage using feasibility studies and optimum planning of machining steps and thus achieve the required cycle times and quality specifications without fail.

"The aim is an efficient and stable manufacturing process", says Stephan Köstler, Senior Director Product & Service Management at MAPAL. He adds: "As early as the conceptualisation phase, clamping fixtures are designed to meet requirements for quality and process reliability – tailored to the stresses and strains involved in the machining process. A simulated and optimised NC program ensures that all machining steps can be achieved collision-free before the first component has even been produced. The installation and commissioning of the process under real conditions on the production line with proof of process capability is the final step."

Projects have already been successfully implemented using the new capabilities, where MAPAL took full responsibility and was able to fully meet customer expectations within eight to twelve weeks.

TOOL MANAGEMENT FOR OPTIMISING THE MACHINING PROCESS AND TOOL CYCLE

This holistic approach also shapes tool management – a service concept that goes far beyond the mere supply of tools. At its heart is the continuous optimisation of machining processes and the entire tool cycle, from procurement, storage and pre-setting all the way through to reconditioning. In the machining processes themselves, the use of the latest tool technology ensures gains in productivity. MAPAL focuses on digital processes, standardised workflows and close collaboration with production here. The full integration of the cloud-based platform c-Com into the MAPAL Group in 2025 underlines this approach: data, tools and processes are brought together in one system – transparent, secure and available worldwide. Customers benefit from permanently high tool availability, optimised invento-

The continuous optimisation of the machining process and the entire tool cycle, from procurement, storage and pre-setting all the way through to reconditioning, are at the heart of the holistic approach that forms the foundation of MAPAL's tool management services.

ries and inhouse logistics that are vastly more efficient. At the same time, the central database enables a sound analysis of consumption, costs and performance – in real time and across production facilities.

MAPAL sees tool management not as an additional service, but as an integral aspect of modern manufacturing. With more than 100 ongoing projects worldwide, a main centre of competence in Aalen and decades of machining experience, MAPAL is a strong partner for companies looking to boost their productivity beyond the start of production.

MOVING INTO AN AUTOMATED FUTURE WITH PRODaaS@SCALE

Productivity as a Service (PRODaaS) enables even greater digital integration into customers' processes, which includes connecting to live data from the machine tool. An initial research project was successfully completed last year, and now there is an even further-reaching sequel. "With PRODaaS, the aim was to allow the experiences with productivity gains made in ongoing series production to flow back in a structured way, in order to get much closer to the ideal point in the initial component design", reflects Stephan Köstler. To achieve this, a digital assistant continuously evaluated data from the machine environment and made specific suggestions for potential optimisations.

The new PRODaaS@SCALE project goes a step further into a more automated future. Köstler: "With PRODaaS@SCALE, the assistant becomes a self-regulating system. It incorporates experience gained in application directly into the process design." In this research project, the use of AI is meant to bridge the gap between theory and practice. Even during the planning stage, significantly better settings for the machining processes are expected with AI systems with individual customer-specific training than would be the case without this feedback curve.

Implementation is guided by the "Manufacturing-X" initiative that was launched and is coordinated by players from German economy, politics, ➔

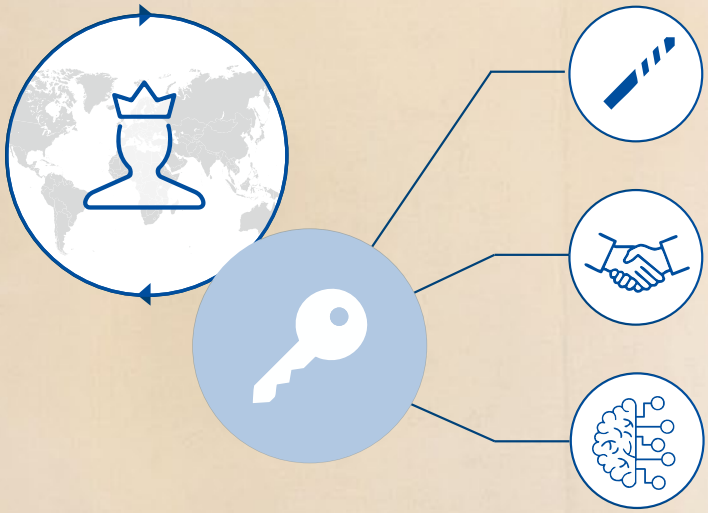
and science and the initiative's flagship projects. "Many digitalisation projects in the past ten years haven't got past the pilot phase", says Köstler. "The challenge lay in scaling the shared use of data."

For PRODaaS@SCALE, setting up new data infrastructure is the key to shared data use without risking data sovereignty. Partners on the project are the company Zoller, which is making a major contribution with measurement technology and tool diagnostics, Walter Formenbau as the pilot customer as well as the Fraunhofer Institute for Manufacturing Engineering and Automation and the VDMA. New is the approach of envisaging the application and use of this system in the woodworking industry with the woodworking machine manufacturer Weinig as a further project partner. As was the case in the PRODaaS research project, MAPAL is also assuming the role of consortium leader in the scaled version.

With its expanded offering, MAPAL is positioning itself as a leading provider of pioneering manufacturing solutions. Future themes such as artificial intelligence and digital integration boost productivity and efficiency for customers. With turnkey solutions and c-Com integration, production processes are optimised and continuous gains in productivity are achieved. With MAPAL's customized and innovative solutions, customers are well equipped to successfully meet the increasing demands of modern manufacturing. ■

MAPAL is now in a position to assist customers with component industrialisation at an early stage and achieve the required cycle times and quality specifications without fail.

KEY ELEMENTS OF MAPAL'S RANGE OF SERVICES IN EVERY PHASE OF THE CREATION OF THE CUSTOMER COMPONENT



Solutions that fit
Precisely coordinated products for stable, efficient processes.

Ease of collaboration
Direct contacts with high solution expertise, strong service offering

Shared process understanding for customer processes
Partnership on equal terms – analog and digital

Minimum quantity lubrication makes "green" production possible

ONE-OF-A-KIND SERVICE FROM MAPAL INDONESIA

MAPAL in Indonesia has paved new trails to modernise a major client's production. The Aalen-based tool manufacturer's subsidiary not only supplies an automotive supplier with tools for use with minimum quantity lubrication (MQL), but has also taken over distribution and service for the facilities.

Astra Otoparts is one of Indonesia's biggest automotive suppliers. Founded in 1976, the company's clients are primarily numerous well-known automotive and bike manufacturers from Japan, South Korea and Europe. The group consists of 54 manufacturing and trading companies in total. One of these is Astra Otoparts' Nusametal division, which manufactures components starting with aluminium die casting through to mechanical machining all the way to the finished product.

Like many other companies in the country, Astra Otoparts is faced with growing requirements for environmental action. The government is pushing industrial companies, particularly the automotive industry, towards "greener" production. This fits perfectly with Astra Otoparts' image. The company has set itself apart time and again in recent years with environmental initiatives for causes such as clean water, reforestation and biodiversity. Species conservation efforts focused most recently on protecting the Javan gibbon.

HIGH PRODUCTIVITY IN A COMPACT SPACE

Stricter environmental requirements were not the only cause for concern for Astra Otoparts' Nusametal division when considering the future of production, however. Like Astra Otoparts' headquarters, this plant is also located in North Jakarta, one of the island nation's most densely populated areas. Although the company is growing, the demand for more efficient processes with better quality and increased production capacity with existing machinery remains a challenge. That's where MAPAL came in.

The Indonesian MAPAL subsidiary was founded in Jakarta in 2014 and now provides its services at three further locations on Java. Clients are primarily from the automotive sector, with scooter manufacturers a major focus in Indonesia. MAPAL Indonesia often assists machine manufacturers in projects for Japan and India, too. Solutions developed in tandem with au-

➔

A view of the premises of Astra Otoparts' Nusametal division in North Jakarta.
©Astra Otoparts, Nusametal division

Finish machining tool with diameter 32 mm and PCD cutting edges for finishing the fitting bore with a P7 tolerance.

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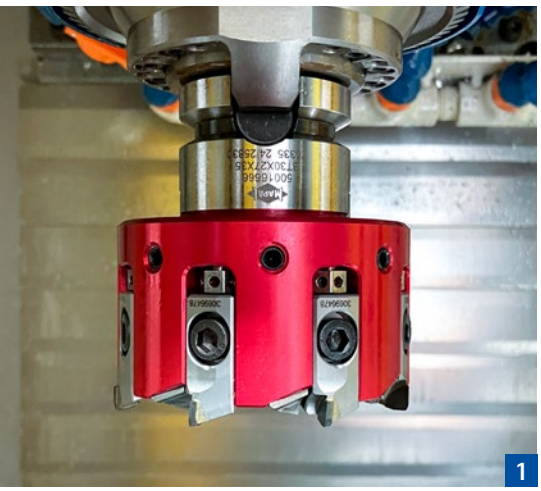

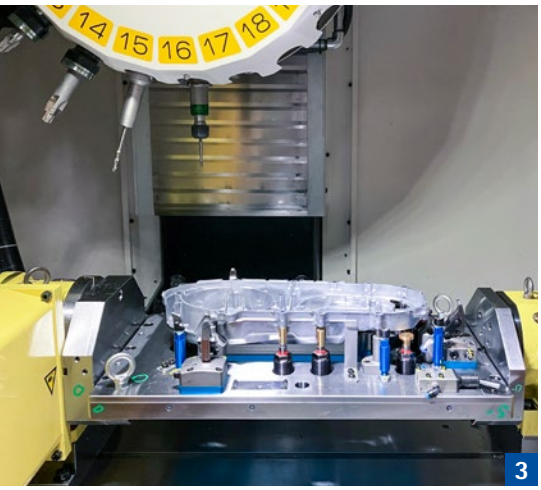

1 *PCD face milling cutter NeoMill-Diamond Power for finishing the sealing surface.*

2 *Solid carbide step drill for core drilling of threads.*

3 *A look into the engine room.*

At the official signing of the distribution partnership, from left: Walter Divisi (CEO DropsA), Claudio Gabos (CSO MAPAL), Dicky Abdurakhmat (Sales Manager MAPAL Indonesia).

tomotive specialists in Jakarta have also been carried over to production facilities in Taiwan, Vietnam and Thailand.

MINIMUM QUANTITY LUBRICATION AS A PRODUCTIVITY LEVER

At a seminar, Astra Otoparts' Nusametal division became aware of the MQL technology. MAPAL was presenting the use of PCD tools with MQL, which promised a huge improvement in aluminium machining. For besides the known advantages of MQL machining, it results in better surface finishes particularly during the precision machining of aluminium alloys compared with machining using conventional cooling lubrication with emulsion. Reasons for this are the better lubricating effect of the MQL media and the absence of small particles that a conventional cooling lubrication system cannot filter out.

Minimum quantity lubrication has enjoyed a boom in the industry for a few years now in the spirit of resource protection and energy efficiency. MAPAL offers almost all its tools also in versions for MQL and labels them with a green mark. Aspects of these "green" tools include modification of the cooling channels to ensure optimum supply of the MQL liquid to the tools' cutting edges and guide surfaces.

THE MQL SWITCH PROJECT

At Astra Otoparts' Nusametal division, the potential of the technology for the company's own production was recognised immediately. The use of MQL would cut coolant costs, increase productivity, reduce the consumption of water and improve the condition of the production floor, which is rare on Java Island. Lower energy consumption also reduces the company's own carbon footprint. Nusametal's strong interest culminated in a joint project with MAPAL Indonesia aimed at re-tooling existing machinery to MQL. The company DropsA was also involved as the MQL equipment manufacturer.

The fact that DropsA has no presence in Indonesia was initially a major stumbling block. After some consideration, MAPAL Indonesia ultimately took over the import and installation of the MQL equipment. Up until this point, the team in Jakarta had no experience whatsoever with minimum quantity lubrication. "We knew this would be a challenge, as we first of all had to get to know the device and acquire knowledge on its installation, use and repair", says Andreas Wasisto, Managing Director of MAPAL Indonesia. At DropsA in Frickenhausen and Milan, employees of Nusametal and MAPAL Indonesia got to grips with the technology.

For DropsA, like the tool manufacturer, the partnership is unusual and hitherto unique in this form. Sales Director Frank Müller describes a fruitful collaboration and good relationship between the two companies. "MAPAL is a very good partner for us, because the tool manufacturer is very close to the client and the experts there contributed a great deal of know-how", he says.

Connecting the 1-channel MQL systems to the existing BT30 machines from Fanuc Robodrill proved relatively unproblematic. Chip removal, chip cleaning, MQL device placement, maintenance and the use of appropriate lubricants also needed to be taken into account. This aspect was achieved in close collaboration between MAPAL Indonesia, Nusametal and their sister firm Astra Otoparts Division Winteq.

CRANKCASE COVERS PRODUCED FASTER

The pilot project was a success. Astra Otoparts' Nusametal division initially used the re-tooled machines to manufacture crankcase covers for scooters made by a Japanese manufacturer. Every day, the company produces around 11,000 of these aluminium components on a total of 24 machines, which are configured in six production lines. The MAPAL tools are used for pre-machining and fine machining and are each equipped with several PCD cutting edges. Face milling cutters with exchangeable PCD inserts and PCD-tipped form cutters are also used. Drills and forming taps are made from solid carbide. In comparison to competitors' tools, the machining time could be reduced by around 20 percent using the MAPAL tools.

Rachmad Basuki, Engineering Department Head at Astra Otoparts' Nusametal division, states: "The collaboration between engineers from Astra Otoparts' Nusametal division and MAPAL Indonesia has played a pivotal role in enhancing tool design and driving internal improvements at Astra Otoparts' Nusametal division. This partnership has boosted overall production performance, showcasing the power of cross-functional engineering synergy. The advanced technologies and

Astra Otoparts' Nusametal division uses devices with a 1-channel MMS system from DropsA. ©DropsA

innovative solutions introduced through this collaboration have become a catalyst for further improvements across the production area. These include layout optimisation, automation initiatives, and the development of jigs and fixtures, among other enhancements. The use of PCD tools with MQL has led to faster machining times and thus higher output, improving daily production volume considerably."

Even more benefits of the switch to MQL were also evident in production. The workspace stays much cleaner. The components are dry after machining, which means the laborious washing process can be omitted. Longer tool life and the associated reduced machine downtime contribute to higher productivity and reduced tool costs.

"The MQL project at Astra Otoparts' Nusametal division is one of our company's most valuable projects ", underlines Mr. Willy, deputy Chief Operation Officer of Astra Otoparts' Nusametal division, explaining that the implementation which began on the CVT Transmission Cover production line has since been further expanded to other production lines. Currently, 24 of 150 machines operate with the MQL system which is set to expand annually. Mr. Willy adds: "The excellent collaboration between MAPAL Indonesia and our engineers resulted in an innovation combining MQL technology and PCD cutting tools on the BT30 CNC machine. This has significantly increased productivity and reduced production costs, enhancing our company's competitive advantage. We are very grateful to MAPAL Indonesia for their excellent service and support, and we look to continuing our long-term cooperation and collaboration to innovate in our tooling systems and tooling management."

MAPAL INDONESIA IS DROPSA'S OFFICIAL SALES PARTNER

MAPAL Indonesia is now DropsA's official sales partner and can therefore offer complete manufacturing solutions with MQL equipment and the right tools. A corresponding agreement was signed at MAPAL's stand at AMB 2024. Andreas Wasisto hopes the result will be more widespread use of MQL technology. DropsA and MAPAL are already discussing applying the Indonesian model to more countries. ■

Working closely together, from left to right: Rachmad Basuki (Engineering Department Head, Nusametal), Andi Gunanto (COO, Nusametal), Markus Beerhalter (Global Project Engineer, MAPAL Germany), Dicky Pratama (Sales Engineer, MAPAL Indonesia) and Dicky Abdurakhmat (National Sales Manager, MAPAL Indonesia)

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