



Press release

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Campaign Trust in Technology

High-precision solutions for aerospace

Aircraft and helicopters transport passengers and freight around the world quickly and reliably. The components used in these vehicles must therefore meet the highest standards of safety, efficiency, and sustainability. KAPP NILES offers tailor-made solutions for the precision grinding, measuring, and documentation of gears and profiles – presented as part of its Trust in Technology campaign.

“We have been focusing intensively on gears for the aerospace industry for over 40 years. Thanks to this extensive experience, we understand the specific challenges of this sector,” emphasises Matthias Kapp, Managing Director at KAPP NILES. “As a market leader, we are proud to work closely with our customers to develop machines and technologies that precisely meet their requirements and enable first-class quality.”

Whether for drives or planetary gears in engines, for flap actuators, helicopter main drive gearboxes, or for drive and adjustment mechanisms used in Mars rovers, KAPP NILES solutions enable the high-precision grinding and measurement of essential, flight safety-critical components for aircraft, helicopters, and spacecraft.

Meeting the highest quality standards

The aerospace industry’s stringent, safety-driven production standards encompass both the final quality of manufactured gears and complete process documentation. Machines in the VX series are specifically designed to meet these demanding requirements. High-quality guide systems with scraped guides ensure maximum precision and consistent quality for decades of operation.

Using the integrated measurement system (AMS), workpieces are measured before and after the grinding process and evaluated in



terms of quality. All results are comprehensively documented, ensuring full traceability of part quality even many years later.

VX machines can be equipped with one or two interchangeable grinding spindles, allowing up to six grinding wheels to be used simultaneously. This makes it possible, for example, to grind multiple gears in a single set-up. Additional carriers for grinding arms can also be mounted on the same interfaces to machine internal gears. Both dressable and non-dressable CBN roughing and finishing tools from KAPP NILES can be used. Equipping the optional zero-point clamping system, set-up times for grinding spindles and additional grinding heads can be reduced by 85 per cent.

VX machines have been used worldwide for decades and consistently deliver the highest workpiece quality – even for a batch size of one. Approximately half of all grinding machines supplied by KAPP NILES to aerospace customers over the past 40 years have been VX machines or their predecessor models. In addition, machines from the KNG master, ZE and KX series are also used in the aerospace sector, for example by customers machining workpieces with tip diameters greater than 630 millimetres or requiring generating grinding capabilities.

Tools for special requirements

The new CBN pro tools from KAPP NILES are particularly well suited to aerospace applications. While standard CBN tools previously achieved surface qualities of $R_a < 0.4 \mu\text{m}$, these new grinding wheels enable surface qualities of $R_a < 0.2 \mu\text{m}$ on the workpiece. In addition, an optimised profile shape with $f_{ra} < 1.0 \mu\text{m}$ can be achieved on the tool. Improved reproducibility of surface finish and profile geometry reduces adjustment effort during tool set-up and significantly increases process reliability for customers.

KAPP NILES also offers comprehensive solutions for gear measurement in the aerospace industry. The KNM 2X, 4X, 6X, and 9X measuring machines cover a wide range of measuring tasks. Thanks to a flexible tailstock, even very long workpieces – such as main and auxiliary shafts – can be measured with high precision. A special quick-clamping system allows secure mounting of special geometries as well as standard components, while minimising set-up and non-productive times.

“From tools and grinding machines to measuring technology, we offer complete precision solutions for the aerospace industry,” summarises Matthias Kapp. “Our many years of experience and tailor-made technologies enable our customers to achieve outstanding gear quality.”

About KAPP NILES

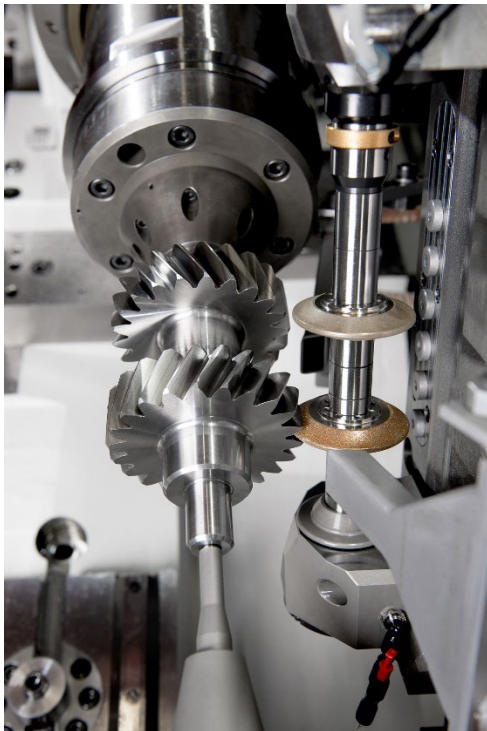
KAPP NILES is a globally operating group of companies with high-quality and economical solutions for finishing gears and profiles and is partner for companies from numerous industrial sectors in the mobility, automation and energy segments.

The perfect interaction between machine, tool, technology and metrology enables extremely precise machining to a thousandth millimetre.

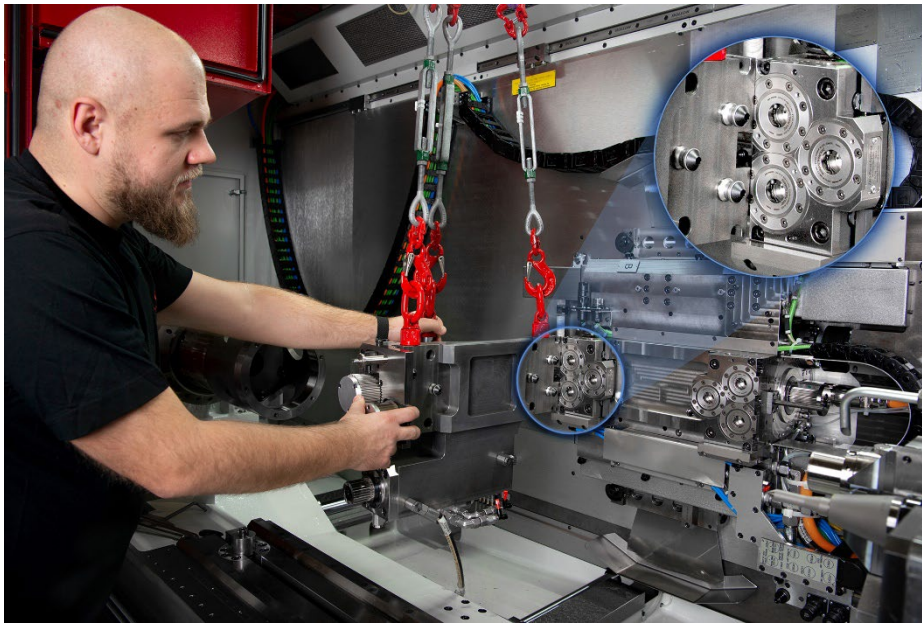
Picture 1: Profile grinding machines from the VX series by KAPP NILES deliver the highest workpiece quality even for a batch size of one.



Picture 2: Several grinding wheels can be used simultaneously on the grinding spindles of the VX machines.



Picture 3: Thanks to the zero-point clamping system, set-up times can be reduced by 85 per cent.



Picture 4: With CBN pro, the new tools from KAPP NILES, surface qualities of $Ra < 0.2 \mu\text{m}$ can be achieved on the workpiece.



Picture 5: All relevant components for aerospace can be analysed on KAPP NILES measuring machines.



Picture 6: Matthias Kapp, Managing Partner at KAPP NILES.



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