Press Release

WITTENSTEIN alpha presents its new generation of HIGH SPEED gearboxes

November 24, 2026

WITTENSTEIN alpha will premiere the SP⁺ HIGH SPEED Generation 3 at the Smart Production Solutions SPS exhibition in Nuremberg (Hall 4, Booth 4-221) from November 24 to 26, 2026. These innovative planetary gearboxes achieve impressive nominal speeds of up to 5,500 rpm and increase continuous power output by around 20 percent. They also offer optimized control characteristics, significantly enhanced thermal performance and noticeably reduced power losses. The results are improved machine performance, a more streamlined machine design, more stable processes and consistently precise product quality.

The WITTENSTEIN group develops, produces and sells gearboxes, motors and electronics as well as high-precision drive systems and solutions, nanotechnology and specific software solutions.



SP⁺ HIGH SPEED Generation 3

With its considerably improved nominal speed and continuous power, the third generation of low-backlash HIGH SPEED planetary gearboxes from the alpha Advanced Line satisfies the latest requirements for increased productivity, thermal limits and efficient drive train design. The new SP⁺ HIGH SPEED Generation 3 planetary gearboxes from WITTENSTEIN alpha therefore unlock the potential to rethink machine designs – and even create new generations of machines.

More output, more productivity, lower unit costs

HIGH SPEED precision gearboxes from WITTENSTEIN alpha are typically used in custom solutions for special tasks, such as high-speed applications and drive axes in continuous operation. They have a specified service life of more than 30,000 hours. This corresponds to nearly 3 1/2 years at a 100 percent duty cycle. Since these gearboxes achieve continuous speeds that are roughly double the current industry standard, machine output increases and productivity climbs. Operators can produce more parts in the same time span and reduce their unit costs.

Optimizing the entire drive train

In addition, SP⁺ HIGH SPEED Generation 3 gearboxes offer the opportunity to make improvements to the machine's entire drive system. The high input speeds enable the use of higher gear ratios. The resulting lower motor currents and torques mean that motors can be smaller and controllers more compact. This downsizing – achieved with no power losses – makes the

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entire drive solution lighter, more compact and often more cost-effective as well.

Improved control characteristics in machine operation

The higher gear ratios that can be achieved with the SP⁺ HIGH SPEED Generation 3 bring yet another advantage: they significantly reduce the load inertia ratio (λ), allowing controllability to be significantly enhanced. This can both optimize positioning accuracy control and deliver more uniform motion. Combined with the HIGH-SPEED gearboxes' excellent synchronous running performance, machines run more smoothly, processes become more stable and end product quality improves.

High thermal reserves for better performance and greater robustness

At higher speeds, many motors can work at a more efficient operating point. As demonstrated by WITTENSTEIN alpha's in-house simulation models, when combined with the new gearbox generation, drive axis losses can be half that of servo axes with a standard gearbox. At full load, the gearbox temperature is up to 30 Kelvin lower than that of industry-standard gearboxes. The drive system therefore stays cooler and offers significant thermal reserves. In many cases, it is even possible to cut back on heat dissipation and cooling methods, or dispense with them altogether. This makes machines more robust and ensures higher availability in day-to-day operation.

Pictures (source: WITTENSTEIN SE):



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The innovative SP⁺ HIGH SPEED Generation 3 planetary gearboxes achieve impressive nominal speeds of up to 5,500 rpm and increase continuous power output by up to more than 20%.

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Texts and photographs in printable quality can be downloaded here.

WITTENSTEIN – one with the future

The WITTENSTEIN group is a globally active family-owned company headquartered in Germany. Around 3,000 employees generated a turnover of 544 mEUR in the 2025/26 fiscal year. As a partner to its customers, WITTENSTEIN shapes the world of cybertronic motion – with passion for innovation, unconditional excellence and an attitude that promotes holistic, sustainable thinking and action.

The WITTENSTEIN group develops, produces and sells gearboxes, motors and electronics as well as high-precision drive systems and solutions, nanotechnology and specific software solutions. Its products, solutions and services drive motion in mechanical and plant engineering, automation and robotics, aerospace, the electronics and semiconductor industries, and numerous other sectors.

The WITTENSTEIN group is represented at 35 locations and in 46 countries. Find out more at www.wittenstein.de.

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