



"tool drives" woodworking system to première at LIGNA 2013

30% more efficiency, 70% less energy consumption, up to 300% longer tool life, optimized use of materials and integrated condition monitoring leading to maximum availability – these are the compelling arguments that are helping "tool drives", the modular, direct drive woodworking system from WITTENSTEIN motion control GmbH, to convince a growing number of machine builders and end customers in the woodworking and furniture industries. The tool drives system will be demonstrated live for the very first time at the LIGNA 2013 trade fair in Hanover.

The "tool drives" system is a mechatronic system construction kit that is revolutionizing CNC woodworking in many respects. It is comprised of four different components:

1. The machining modules with direct drive spindles in several possible variants,
2. An individual frame in which the machining modules are mounted and simultaneously attached to the machine's Z-axis,
3. The Control Box with integrated power and control electronics as well as special control software for the machining modules, and
4. Integrated "Life Cycle Management" functionality to support process monitoring by optimizing tool life, maintenance intervals and plant availability.

A comparison with conventional machining technologies for wood materials – which mainly involve systems with pinions, belt drives, deflection gears and rigid drilling heads – underlines just how radically WITTENSTEIN motion control is charting new paths in CNC woodworking with its tool drives system. The system promises around 30% better efficiency than belt driven tools. With its variants, it also opens up totally novel technological options for processing other materials such as compounds, plastics or aluminium.

Modular spindle head concept provides maximum flexibility

Each individual spindle is driven by its own high-speed servo motor – at exactly the required speed. What's more, each sawing, milling or drilling spindle is only driven when it is actually needed for a particular machining step

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High-tech products made by WITTENSTEIN fly into space and win Formula One races. Intelligent drive systems – from the world's smallest high-performance servo drive to the latest state of the art in medical technology – are developed, produced and marketed by a team of around 1700 employees. With a blend of dedication and enthusiasm, we set benchmarks – every day – worldwide.



Première at LIGNA 2013:
Mechatronic system construction
kit for CNC woodworking from
WITTENSTEIN tool drives

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– resulting in up to 70% lower energy consumption in woodworking applications. The tool drives system allows the complete drilling head to be configured absolutely flexibly: it makes no difference whether the machining spindles are arranged in a square, rectangle, matrix, L, T, U or any other shape – they can be positioned in the frame in any way at all and later changed, or new modules added, simply by removing or inserting them in the desired configuration.

Integrated investment security

Maximum investment and future security was a key priority when "tool drives" was developed as a mechatronic woodworking system. On the one hand, this is reflected in the flexible spindle head concept, which enables quick and easy reconfiguring at any time without removing the drilling head. The electronics, too, are designed to permit expansion at a later stage: the integrated dual servo controllers mean that each Control Box can operate and control up to fourteen spindles. Furthermore, in the maximum configuration a total of eight Control Box units can be connected together in the tool drives system, so that the latter can be extended to an awesome 112 spindles.

WITTENSTEIN motion control has optimized the tool drives system in a number of ways with maximum availability in mind. The machining modules, for instance, were tested and specified during the development phase for more than thirty million drilling cycles under simulated extreme conditions – radial and axial forces, large amounts of dust and chips in the atmosphere and drilling quality with different materials. This is equivalent to an estimated three years of system operation at high loads. And owing to the IP65 protection of the housing, the electronics in the Control Box are likewise capable of enduring the frequent heavy loads for a very long time.

Condition monitoring prevents "unpleasant surprises"

Optimal availability rather than unexpected drill breakage or similarly unpleasant surprises – the integrated Life Cycle Management functionality of the tool drives system enables all machining processes to be monitored intelligently. Amongst other things, users can minimize the load on the tool by determining the most efficient drilling, cutting and feeding forces. The speed, torque, power consumption and operating time of each individual module are continuously monitored and analyzed, so that mechanical wear is detected before it becomes critical. Preventive maintenance work can thus be carried out selectively and in good time. The advantages are significantly less production scrap, more efficient use of materials and optimized plant availability.

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Perfect performance in practice

Throughout the design and project planning phases WITTENSTEIN motion control subjected the tool drives system to a thorough scrutiny aligned to real situations at an institute of technology, in pilot plants and particularly in-house. The insights gained in this way were systematically applied and incorporated into the woodworking system. The success of the first practice projects, for example in a fully automatic window production line belonging to a leading manufacturer with several international facilities, was clear confirmation of this thorough approach. The customer was not only impressed by the flexibility and precision of the tool drives system; he testified without hesitation that "thanks to the optimized drilling and cutting forces, even small drills that are otherwise particularly liable to break are now up to three times more durable at high speeds".

tool drives system also suitable for other materials

The tool drives system is not only suitable for woodworking; the underlying principle can also be used to process a wide range of materials such as compounds, plastics or aluminium. Completely new options are opened up for cutting profiles very efficiently while making sparing use of resources.

The WITTENSTEIN tool drives concept unites all the features of a successful future technology – lower capital and operating costs, higher productivity and optimal value creation.

Photo:

Première at LIGNA 2013: Mechatronic system construction kit for CNC woodworking from WITTENSTEIN tool drives

Texts and photographs in printable quality can be downloaded from <http://www.wittenstein.de/presse.html>.

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WITTENSTEIN AG – being one with the future

With around 1700 employees worldwide and sales of € 233 million in 2011/12, WITTENSTEIN AG enjoys an impeccable reputation for innovation, precision and excellence in the field of mechatronic drive technology – not just in Germany but internationally. The group comprises eight pacesetting Business Units with separate subsidiaries for servo gearheads, servo actuator systems, medical technology, miniature servo units, innovative gearing technology, rotary and linear actuator systems, nano technology and electronic and software components for drive technologies. Through its 60 or so subsidiaries and agents in approximately 40 countries, WITTENSTEIN (www.wittenstein.de) is additionally represented in all the world's major technology and sales markets.

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