

Hoffmann Group

TESTS AND OPTIMIZES TOOLING WITH WFL MILLTURN MACHINING CENTER

With over 4,000 employees and an extensive range of tools, operating equipment and personal protective equipment, the Hoffmann Group is one of the major players in the industry. In 2019, its parent company, Hoffmann SE, celebrated its 100th anniversary. The first WFL Millturn complete machining center was also commissioned last year at the Hoffmann Group. This machine takes on a highly unconventional role – rather than producing components, it is used to test and optimize tools. These are ruthlessly pushed to their very limits. The result is a huge amount of chips and valuable tool data.

We don't make tools in this department, they are developed in conjunction with suppliers," explains Dr. Jens Rossaint, director of engineering, who is responsible for the technology department and therefore the quality management of products developed for the catalogue. This is extremely important, as the catalog is key at the Hoffmann Group. The orange 'tool bible' has been published annually since 1978. It is available in 18 languages and now comes in four volumes with a print run of 900,000 copies. In 2000, an online version with over 90,000 items to choose from was also launched with the eShop.

"The process for including a product in the catalog typically goes like this: we define what the tool should be

able to do, draw up a specification, integrate technical ideas. Then there's some kind of tendering process and we narrow down the number of suppliers to a shortlist. These then manufacture prototype tools. This is followed by testing, a comparison with competitor products and benchmarking. The tools are then continuously developed by the supplier. These tools are then only found at Hoffmann in this manner. After testing, the new tools gradually enter the catalogue. We mainly sell standard tools. But we do offer a few special tools too," said Rossaint in regard to their workflows.

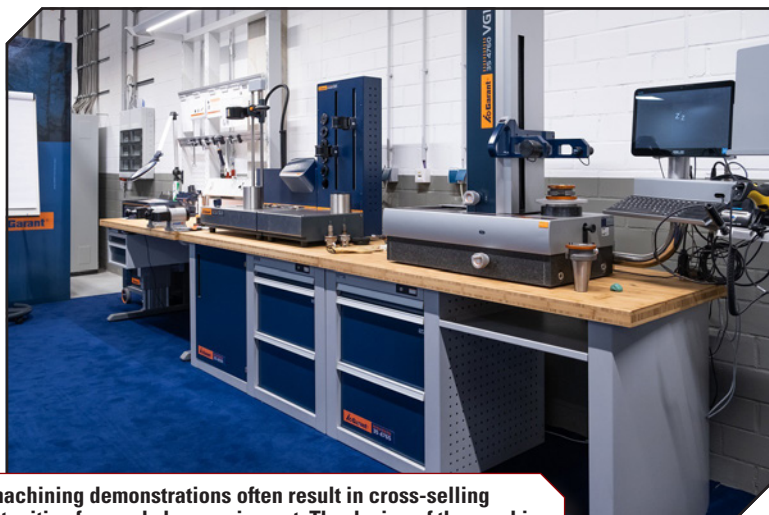
The Technology Center in Munich,

opened in September 2019, has been equipped with extensive measurement and testing equipment as well as numerous demonstration and training facilities. In addition to the measuring room which features a coordinate measuring machine, all conceivable analytical equipment, from a hardness tester to a scanning electron microscope, is available for scientifically examining the properties of the tool's structure. Ultimately, the question is why might a tool be good or bad? The structure allows conclusions to be drawn about the performance and durability of a tool. "We're not interested in blind trial and error, instead we want to take a targeted approach to development and optimization," explains Rossaint. Alongside laboratory equipment, the Munich Technology Center also features operating equipment from the catalogue, which clearly demonstrates the optimum way to set up the machine environment.

Programming is carried out with a CAM programming system. Easier programming jobs are completed directly on the control unit using Millturn PRO, a proprietary WFL programming editor. "We also like to use this for specific tasks," said Thomas Grünberger, an expert in machining and additive manufacturing. "We want to make really great



Having all the tools and equipment in-house proved valuable for the Hoffmann Group.



The machining demonstrations often result in cross-selling opportunities for workshop equipment. The design of the machine environment has a decisive effect on production efficiency.

show parts with it. With the tool turret and turning-boring-milling unit also in use at the same time, of course. And we also have the driven tools on the tool turret. We want to push the machine to its limits.”

If tolerances are very tight, a Renishaw in-process measuring probe is also used. A whole range of WFL measuring cycles are available for this.

The Hoffmann Group needed to be able to test as many different tools and technologies as possible. It was also important that newly developed tools could be represented in the machine. Another requirement was that the company’s own software developments – particularly for tool management – could be integrated into the machine and that they could build upon existing software solutions for future developments. Willingness to work together with the machine manufacturer is essential here.

“It’s a huge advantage to also be able to test large inserts without immediately bringing the machine to its knees. The highly flexible clamping options mean that we can also use larger diameters with ease, to extend the test ever further, obtain even more data and carry it out for a suitable length of time with a high level of machining performance. Ultimately, it gives us the means to test tools more efficiently. With the WFL, we can now perfectly test HSK-63 turning tools and thereby optimize our product portfolio. The B-axis is also a huge plus during turning, as we have great flexibility for adjusting the entering angle. When our field sales staff come back with various customer requests, we can reproduce practically any situation, from VDI40 on the tool turret to any tool in the turning-boring-milling unit at any possible angle. The milling spindle was designed for 16,000 rpm, so we are also well equipped for future requirements,” said Rossaint.

For more information:

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www.hoffmann-group.com

WFL Millturn Technologies, Inc.
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www.wfl.at

NUM

SOFTWARE PROVIDES ‘OFF THE SHELF’ SOLUTION FOR NON-CIRCULAR GRINDING

NUM provides manufacturers of CNC cylindrical grinding machines with an elegant means of adding non-circular grinding capabilities to their products – without incurring significant development time and cost. Non-circular grinding is used in a wide variety of automated manufacturing applications,

such as the production of camshafts, crankshafts, cams and eccentric shafts. However, it is an extremely complex task, because the non-circular contour leads to constantly changing engagement and movement conditions between the grinding wheel and the workpiece.

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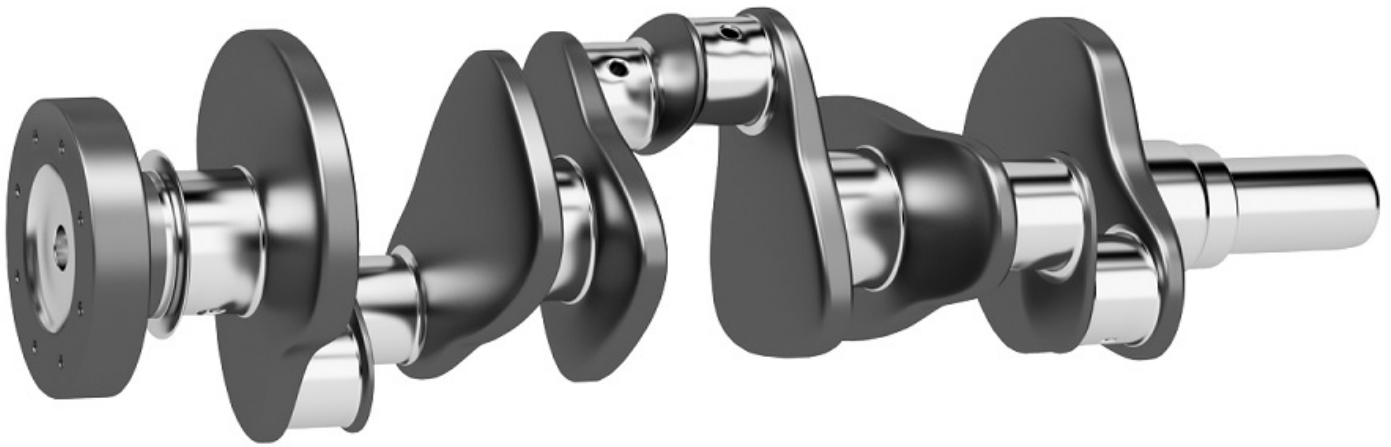
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grinding functionality to its *NUMgrind* cylindrical grinding software, which forms an application-specific element of the company's renowned Flexium+ CNC platform. It is fully compatible with other *Flexium* software, from release 4.1.20.00 onwards.

NUMgrind is specifically designed to simplify the creation of G code programs for CNC grinding machines through the use of a highly intuitive graphical human machine interface (HMI), conversational-style 'fill in the blanks' type dialogues or a combination of the two.

Unlike conventional CAD/CAM workstation tools for generating CNC machine tool control programs, *NUMgrind* is intended for use in the production environment. It enables shop floor personnel to handle everyday machining tasks very quickly and efficiently – and the work can be easily shared amongst several people and several machines.

The *NUMgrind* HMI can of course also be run on an office PC. Application-dependent projects, and the corresponding ISO part programs, can be created,

tested with NUM's *Flexium 3D* simulation software and transferred to the targeted machine.

The operator simply determines the sequence of the grinding process via the HMI and enters the necessary data for the grinding operations, grinding wheels and dressing operations in the dialogue pages. Programming is further simplified by the fact that the HMI is supported by a comprehensive library of predefined shapes, which includes eccentric circles, hexagons, pentagons, polygons, Reuleaux triangles and rhombi. The CNC program is then created completely automatically and stored in an executable form.

The closed shape of the workpiece is defined in the XY plane. However, grinding is performed by interpolating or synchronizing the X axis with the C axis (workpiece spindle). Axial movement in the Z axis can also be accommodated, by means of oscillation or 'multi-plunge.' The *Flexium+* CNC system's NCK transforms the contour from the XY plane into an XC plane, and calculates the corresponding compensation and in-feed movements, taking the grinding wheel diameter into account. The speed profile is also transformed, so that the speed and acceleration are automatically adapted to suit the physical attributes of the machine.

For more information:

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OFFERS SURFACE CONDITIONING BELTS

Superior Abrasives, LLC introduces Shur-Brite Surface Conditioning Belts which feature an open structure to resist overheating, part discoloration, or loading, to ensure consistent quality over the belt life, making it ideal for treating large surface areas. With repeatable finishes, Shur-Brite belts are ideal for large scale robotic applications. Users can create linear scratch patterns on stainless steel food equipment, and blend or re-orient scratch patterns after repairs. High edge durability and flexibility without chunking, and smear-free removal of oxidation, paint or adhesives make them ideal for many manufacturing and re-manufacturing environments. Ideal for a wide variety of materials including ferrous and non-ferrous metals, stainless steel, exotic alloys, plastics, and composites.

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GWJ Technology

OFFERS DETAILED ONLINE CALCULATION OF PLASTIC GEARS

GWJ Technology has updated its web-based calculation software *eAssistant*. The calculation of plastic gears is now available.

In addition to the common calculation methods for the load capacity DIN 3990, ISO 6336 and ANSI/AGMA 2101, the calculation method VDI 2736 for plastic gears was added to the cylindrical gear module. The first plastic materials were added to the general material database. For this, the temperature-dependent material properties such as fatigue strength and E-module were approximated in detail from available diagrams in VDI 2736 and stored accordingly. These are used to determine the material properties for the calculation of the load capacity using the tooth root and flank temperatures automatically calculated according to VDI 2736.

If the calculated tooth flank and tooth root temperatures exceed the maximum operating temperatures of

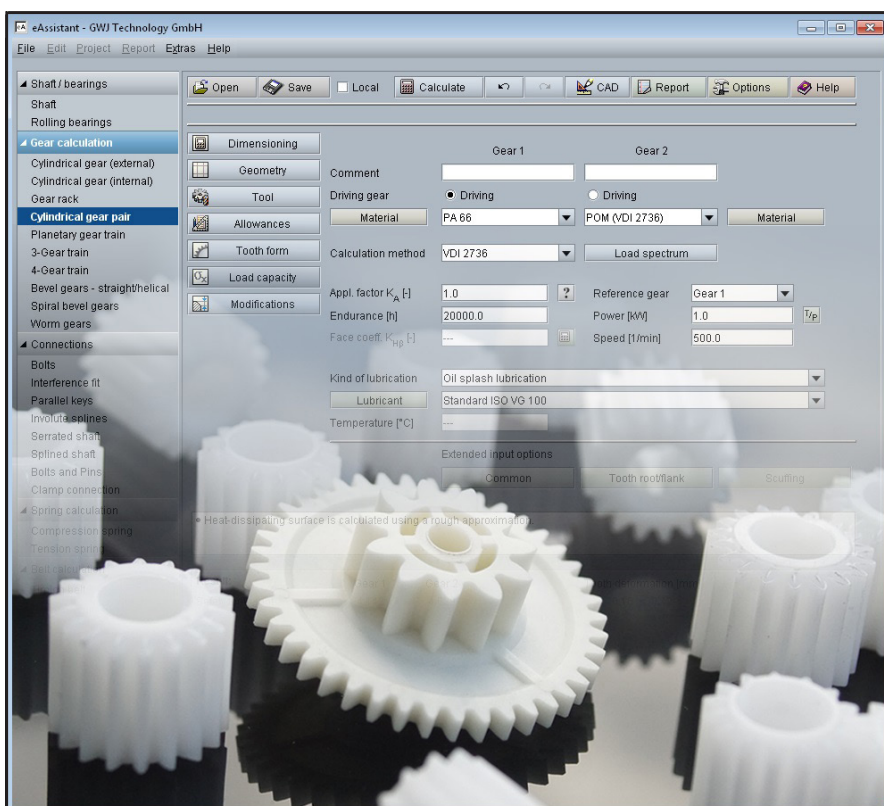
the plastics, a corresponding warning is given.

In order to calculate the tooth flank and tooth root temperature, the user can modify the housing design, the heat-dissipating surface as well as the heat transfer and heat resistance as an alternative to the automatic default settings.

Pairings of plastic/plastic as well as plastic/metal are supported. Furthermore, metal/metal pairings are also available in order to compare calculation methods for metallic gears. The calculation of load spectra is also possible for the load capacity calculation according to VDI 2736. In addition, "Dry run" was added to the lubrication types for VDI 2736.

For more information:

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Helios Gear

INTRODUCES HERA 500 GEAR HOBGING MACHINE

Helios Gear Products announces the Helios Hera 500 CNC gear hobbing machine for the North American market. This machine, built by YG Tech, offers gear manufacturers a versatile vertical gear cutting solution for medium to large parts. David Harroun, vice president of Helios said, "The Hera 500 suits job shops, gearbox repair shops, and gearing for the construction, energy, and off-highway industries due to the wide range of part sizes and types that manufacturers can produce on the machine."

The Hera 500 uses advanced technology such as FANUC 0i MF CNC, servomotors, direct-drive work spindle, X-axis linear scale for accurate repeatable control of size, automatic retract of X-axis at power failure, and more. The machine offers safety features such as electro-mechanical interlock and a splashguard door. Also, the machine's cast iron base provides superior dampening and stability for extreme cutting conditions. With an affordable price, proven domestic support from Helios, and a unique mix of technical capabilities and optional features, the Hera 500 equips manufacturers to make profitable gears for the global market.

Standard features of the Hera 500 include 6 CNC axes (7 with automation), a 12 module (2.11 DP) pitch rating, and rigid construction for the most demanding jobs. Additionally, this machine has a radial travel of 360 mm (14.173 in) from 40 mm (1.574 in) to 400 mm (17.748 in) center distance between the work and hob axes, which accommodates a wide range of part sizes. The Hera 500 also uses long hobs, up to 260 mm (10.236 in) long with shifting up to 240 mm (9.448 in). The machine has a maximum tailstock position of 820 mm





(32.283 in) and a maximum axial travel of 380 mm (14.960 in), so manufacturers can also cut a wide range of part lengths. Thus, this hobbing platform offers a universal solution for gear manufacturers.

Operators enjoy the machine's easy-to-use dialog programming with visual examples that guide and accelerate training. Programming includes cutting one or two gears on a single workpiece using single- or two-cut cycles with radial, axial, climb, or conventional hobbing (or any combination thereof). Additionally, crowning (lead modification) and automatic shifting over a damaged hob section are included in the base package.

The YG Tech Co., Ltd., has constructed gear cutting machine tools since 1963, and the Hera series started in 2004, having grown to hundreds of installations around the world. Helios Gear Products brings 30+ years of experience in machines, tools, engineering, and technical support. Together, the two companies supply the Hera line of hobbing machines in North America with a proven combination of technical and engineering support.

For more information:

Helios Gear Products
Phone: (847) 931-4121
www.heliosgearproducts.com

CAS DataLoggers

OFFERS VIBRATION MEASUREMENT SYSTEM

The Delphin vibration measurement system is highly accurate because it captures vibration frequencies, phase changes and amplitudes before analysis is performed. The Expert Vibro records time domain data and also calculates Fast Fourier Transform (FFT) spectral analysis for frequency domain results. The Expert Vibro can even control the

shaker through analog or digital outputs by triggering shut-off procedures, delivering email notifications, or performing other tasks if an alarm event occurs outside of the set points assigned by the user. Meanwhile configuration and measurement data are shown on the touch-screen display for added convenience.

The Delphin Expert Vibro solution



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represents a leap in technology because it provides users with high speed data acquisition, intelligent signal processing, analysis functions, local data storage and versatile communication options in a single device. With continuous sampling even the smallest of irregularities can be recorded to the internal 32 GB data storage capability, making it especially reliable and secure.

Using the latest dual-core FPGA processor technology for extensive computations and analysis, the compact Expert Vibro supports high sampling rates of up to 50kHz per channel while the 24-Bit A/D converter ensures high-precision measurement. All channels have galvanic isolation to prevent transverse distortions and the analog inputs can accept voltage or current inputs, direct IEPE sensors or digital rotation sensors with full configuration ability present in the ProfiSignal software.

As part of its research and development, a manufacturer of cooling and refrigeration equipment is using an Expert Vibro system for shaker test stand measurements. Users acquire data from multiple synchronous accelerometer sensors and evaluate them using the ProfiSignal software. ProfiSignal is a



complete software system for data acquisition, analysis, visualization and automation. The software is user-friendly and combines professional functionality with easy operation.

After data is measured and recorded, the optional ProfiSignal Vibro module provides evaluation of the recorded and real-time data using FFTs, cascade, time signal and orbit diagrams.

Expert Vibro data loggers can be connected to PCs via LAN or USB or various serial standards and Modbus TCP/IP and Profibus can connect to PLC

systems. For large applications multiple Expert devices can be synchronized to process vibration data from many channels.

Optional integrated Wi-Fi, GSM, UMTS or LTE modules are available to extend the communication options for remote condition monitoring applications of operating rotating equipment.

For more information:

CAS DataLoggers
Phone: (800) 956-4437
www.dataloggerinc.com

SMW Autoblok

OFFERS SELF-CENTERING POWER CHUCK

SMW Autoblok recently introduced the SJL 6-jaw (2+2+2) equalizing and self-centering power chuck.

Ideal for CNC machining applications, the SJL provides the highest accuracy for thin-walled and deformation-sensitive



workpieces. Unique to the SJL is the ability to be switched from a 2+2+2 lever equalizing chuck to classic 6-jaw self-centering chuck depending on application requirements.

Utilizing the 2+2+2 lever balance capability provides high concentricity and axial runout accuracies by ensuring that the grip force of each jaw set equalize as pairs and are in contact with the workpiece continuously. This minimizes any deformations or inaccuracies of raw materials.

The 6-jaw self-centering option provides a concentric clamp locking plate for all sequential six jaws allowing the chuck to hold round, machined diameters and thin-walled workpieces that require equal wall thicknesses.

Specifically designed with centrifugal force compensation, this feature provides constant gripping force at higher speeds and feeds, vastly reducing production time. The SJL is Proofline sealed and interior protected from contamination while providing consistent lubrication allowing for long maintenance intervals. This advanced power chuck accepts either tongue and groove or metric serrated top jaws and is available in sizes from 225-400 mm.

For more information:

SMW Autoblok
Phone: (847) 215-0591
www.smwautoblok.com