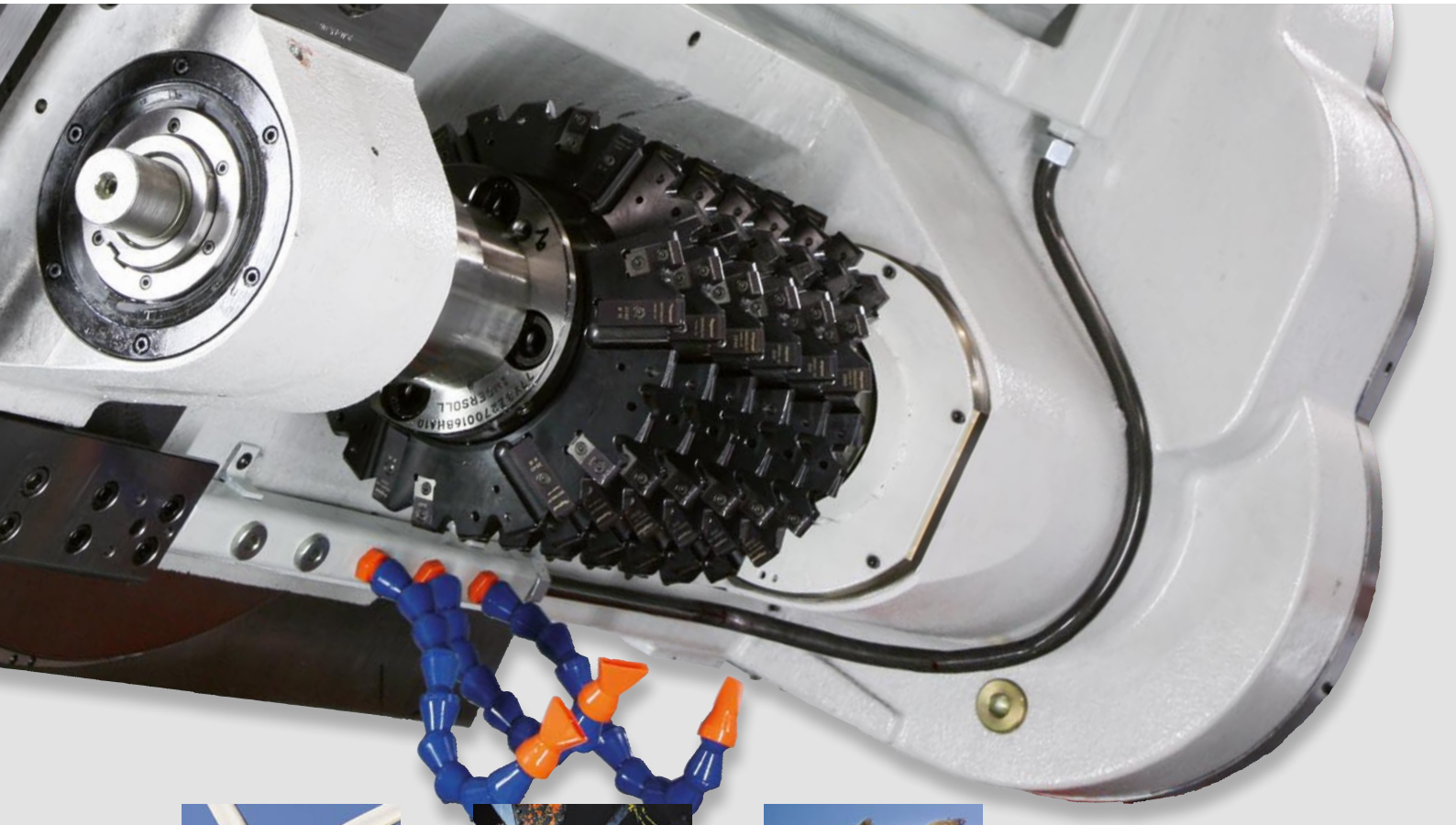
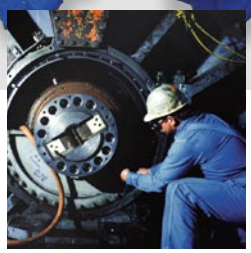
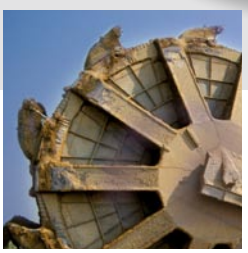
Powerhouses

Gear Hobbing Machines
HF 900 - 4000
HF 2400 l - 4000 l







HÖFLER

Dynamics in the most solid design: Gear hobbing machines made by HÖFLER

Southwest Germany, centre of the German vehicle and machine tool industry, is where HÖFLER has its base. Since it was established in 1958, HÖFLER has become a global supplier of high-precision gear hobbing machines, maintaining its position as a leader in technology through innovative research and development efforts.

Gear hobbing machines were added to our range of products in 2003. HÖFLER engineers aimed to completely rethink the principles and practical applications of this type of machine. Gear hobbing machines are »workhorses« and operate with extreme forces, so they must be solidly constructed. They must also meet the highest possible requirements for machining accuracy. HÖFLER has successfully met this challenge of combining drive, leading design competence, unique knowledge of torque motors and advanced software intelligence into one new machine. All the advantages that have made HÖFLER profile grinding machines successful the world over are included in the HF gear hobbing series. A HF from HÖFLER will make your production system a leader.

- FEM-optimized frame components
- Extreme stability
- Outstanding temperature resistance
- Excellent damping properties
- Unequalled hobbing and indexing accuracy
- Gear blanks up to 3.0 m diameter
- Torque motor

Drive with torque motor

Heavier in form: the idea

The stability, temperature resistance and versatility of gear hobbing machines determine the accuracy of your cutting data – a crucial factor for the quality of the final product. This is why the machine base and mechanical components of the HF series are made of high-quality materials.

Further developments: the drive

HÖFLER machine table drives with torque motors and direct measuring systems are world leaders. The typically high rigidity and the high torque of the contact-free torque motors enable many standard hobbing profiles to be machined in only one step, which greatly reduces the time required for machining. And it provides this with clamped gear blanks up to 3.0 m in diameter and weighing up to 25 tons. Additional advantages: torque motors operate wear-free with unfailingly constant accuracy – an excellent argument for investing in such a machine.

Designed for production: the controller

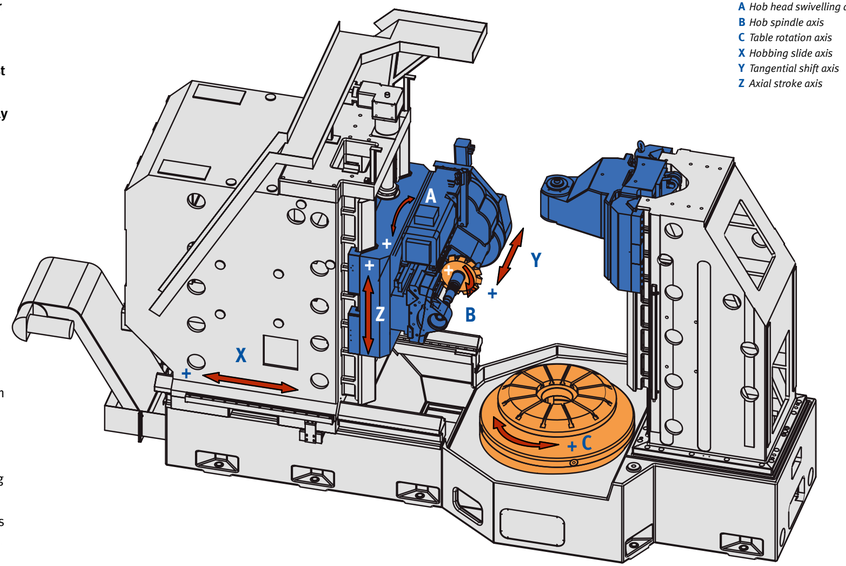
HÖFLER has been speeding up advances in gear machining with its significant investments in research and development. Our special in-house software helps maximize the output of our machines. Take the HF gear hobbing machines, for example: the table drive has automatic high-speed software adjustment for super-high precision adaptation to the weight and inertial mass of the workpiece – one of a number of unique features of HÖFLER gear hobbing machines. The advantages: minimum time required for configuration, faster time to better quality.

Gear pre-machining by HÖFLER: Interaction for new qualities

Only a few years after their market launch, HÖFLER HF gear hobbing machines have become a benchmark for performance in pre-machining heavy gears. They combine solid cast mechanical parts with innovative measuring and drive electronics controlled by the best software currently available on the market. HÖFLER development engineers aimed to redefine the extremely complex interactions of machine bed, machine table and hob head: for maximum precision, even better processing performance and greater convenience in setting up and changing the machine along with chip flow and chip removal.

More stable design: the machine base
The HÖFLER HF has the heaviest, most stable and strongest machine bed in its class. The hobbing slides run in large dimensioned, hardened and precision-ground V-guides with pretensioned roller guides at the rear grip. A complex but perfect design: the machine bed can absorb the massive forces it is exposed to from all directions.

More intelligent design: the machine table
The machine table is above the V-guides of the hobbing slide and is therefore closer to the hobbing head. The advantages: lower, and thus more stable clamping; less vibration, resulting in higher quality products. An additional benefit: the hot chips do not form nests around the table. They are moved directly over the sloping surface in the machine base to a funnel below the milling head by flushing nozzles. They fall through the funnel directly onto a chip conveyor and are automatically removed from the machine.

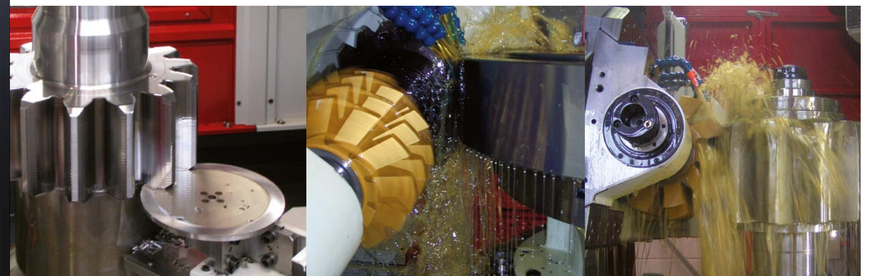


CNC axes
A *Hob head swivelling axis*
B *Hob spindle axis*
C *Table rotation axis*
X *Hobbing slide axis*
Y *Tangential shift axis*
Z *Axial stroke axis*

Deburring device
Height-adjustable, with a large deburring disc.

Hobbing head
Strong drive.

Module 33
One-step hobbing.



More flexible design: the hobbing head
Powerful driver performance, no play in the gearing, precision bearings – with this equipment an HF can hob gears in one step – and at hitherto unmatched quality. Additional machining is not required, what means longer tool life. The hobbing spindle has a large shaft range, which means that rolling and grinding hobbers can be placed on one mandrel, thus saving changeover time. The swivel range of the hobbing head can optionally be extended from -120° to a maximum of +45°. Result: more flexibility for hobbing. Even worm gears and pump pinions can be machined.

Better equipment: the deburring device
A height-adjustable, hydraulically actuated deburring device with a large deburring disk and manual radial positioning removes the coarse burrs and prevents injury when working with the finished workpiece.

Standard performance profiles
- Radial hobbing
- Skip feed and multiple toothing
- Radial and axial hobbing
- Centering software
- One-two-three-cuts cycle
- Production times (workpiece time, total time)
- Free choice of cutting direction between cuts
- In- and out-generating
- Various shift strategies, synchronous shifting
- Dimensional corrections, flank dimensions, ball dimensions
- Taper hobbing and crowned hobbing
- Single indexing
- Degressive feed and progressive feed

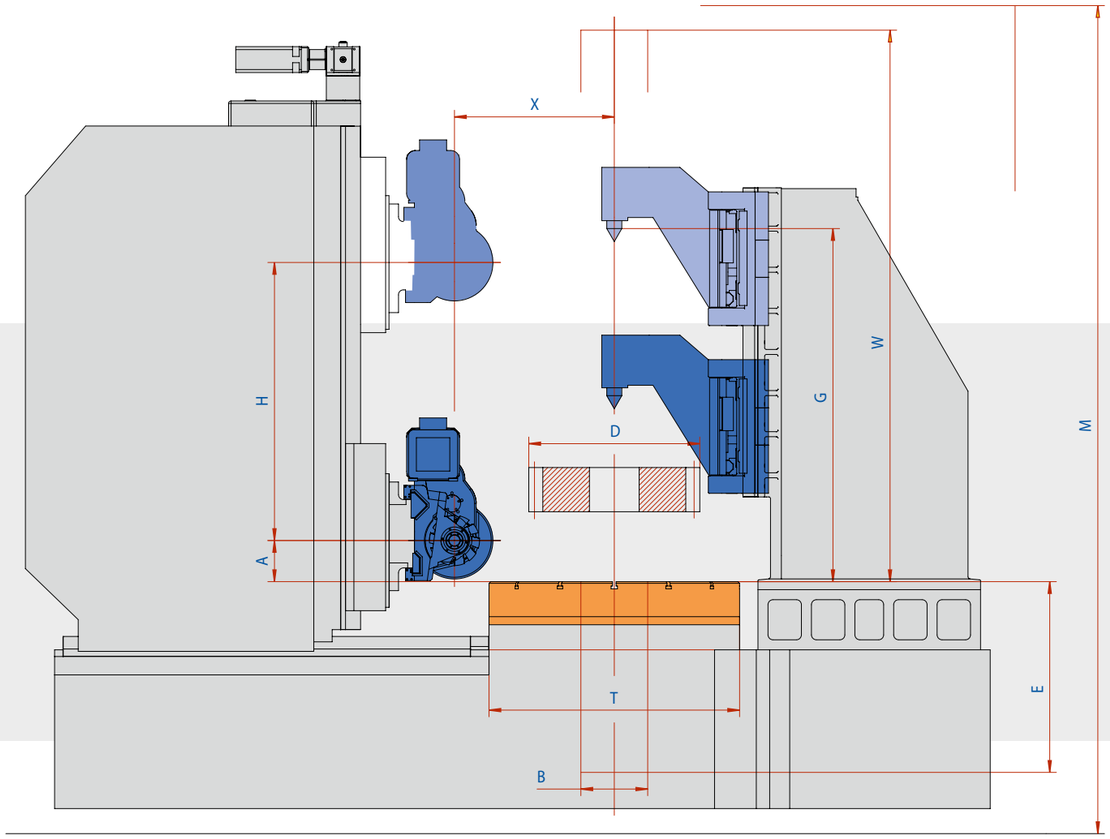
Optional performance profiles
- Diagonal hobbing
- Worm gear tangential hobbing
- Fly cutter hobbing of worm gears
- Hobbing double helical gears

Optional equipment
- Internal hobbing
- Internal inspection system

HÖFLER HF:
Precision in numbers

Greater accuracy, more efficient processes, fewer operators – these are typical advantages of HÖFLER grinding machines that are now optimizing gear wheel pre-machining as well. The HF series has been carefully designed to meet the requirements of gearing and end-product manufacturers in industrial gearing, construction machinery, mining and wind energy. HÖFLER gear hobbing machines cover their needs precisely – for workpieces of up to 3000 mm in diameter.

Hobbing Example *Hob with carbide indexable inserts*	
Hob diameter	220 mm
Hob length	200 mm
No. of carbide indexable inserts	96
Workpiece OD	820 mm
Cutting speed	120 m / min
Module	9 mm
No. of teeth	87
Face width	135 mm
Deep of teeth	20.5 mm
Setting Data / Cutting Data ***One cut with 20.5 mm radial infeed***	
Cutting speed	120 m / min
Hob speed	174 rpm
Axial infeed rate	2.8 mm / WU
Chip thickness	0.235 mm / Z
Total hobbing time per piece	35 min



Technical Data *Working Range / Gear Hobbing Machine*			*HF 900*	*HF 1250*	*HF 1600*	*HF 2000*	*HF 3000*	*HF 4000*
Workpiece diameter **D**	max.	mm	1000	1250	1600 [2000]*	2000	3000	4000
Radial distance between table and hob axes **X**	min.-max.	mm	40 - 700	50 - 800	50 - 1000 [125-1105]*	125 - 1105	250 - 1850	250 - 2350
Axial slide path above the table **H**	max.	mm	1000 [1700]*			1000 [1700]*	1500 [2000]*	1500 [2000]*
Lowest hobbing head above table **A**	min.	mm	350	150		150	350	350
Vertical travel of tailstock **G**	max.	mm	675 - 1675	800 - 1800		800 - 1800	600 - 2100	600 - 2100
Tangential hob shift	max.	mm	400				600	600
Swivel angle of hob head	min.-max.		+/- 45°					
Hob diameter	max.	mm	385				500	500
Hob length	max.	mm	450				600	600
Hob arbor cone			like HSK B 160					
Table diameter **T**		mm	800	980	1250	1500	2600	2600
Bore diameter **B**		mm	255 / 800	400			750	750
Bore depth **E**		mm	800		perdistent			
Hob spindle speed	min.-max.	rpm	240 [400]				200	200
Rpm of work table	max.	rpm	35					
Hob spindle power		kw	37 [52]				52	52
Torque hob spindle		Nm	6100 [8800]				11000	11000
Radial feed rate	max.	mm / min.	2000					
Vertical feed rate	max.	mm / min.	2000					
Tangential feed rate	max.	mm / min.	2000					
Connected power supply		KVA	150				200	200
Machine weight		kg	52000	55000	57000	62000	7000	70000
Space requirement, length x width		m	6.8 x 2.85	7.16 x 3.8		8 x 3.8	8 x 4.5	8 x 4.5
Height **M**		m	4.2	4.5		5.9	5.9	5.9
Table load [with tailstock pressure]		kg	10000 [6000]	14000 [10000]		18000 [14000]	50000 [44000]	50000 [44000]
Internal hobbing head [optional]			no	no	no	yes	yes	yes

** available at additional cost*

Subject to change

Standard Equipment

- Siemens 840 D control
- Portable hand panel for machine setup
- Torque motor table drive
- Various software options
- Hob arbor
- Chip removal flushing pistol

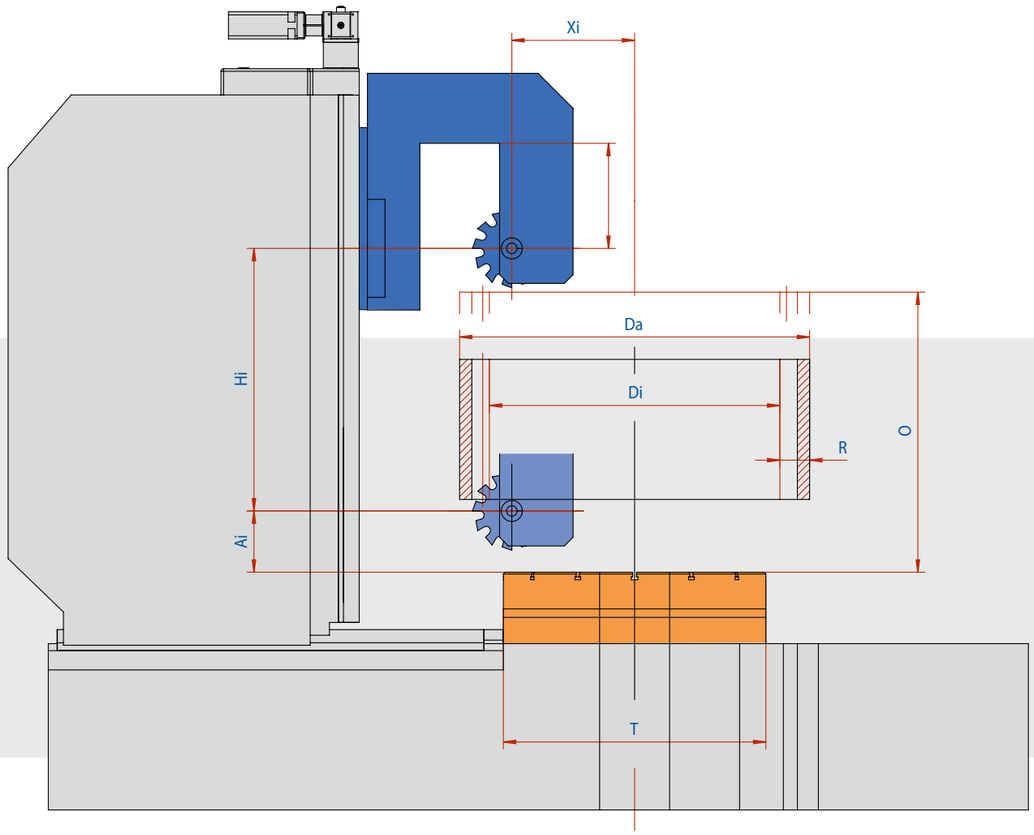
Standard Software Equipment

- Radial-, radial-axial-, radial-tangential hobbing
- Crowning and conical hobbing
- Skipped indexing
- Single indexing
- Degressive and progressive feed rates
- Various shifting strategies, e. g. synchronous shifting
- One-two-three-cuts cycle
- In- and out-generating

Technical Data *Working Range / HÖFLER HF Internal Hobbing*		*HF 2400 I*	*HF 3000 I*	*HF 4000 I*
Outside diameter of gear ring **Da**	mm	2400	3000	4000
Maximum internal root diameter at ß=0 degree	mm	2200	2800	3800
Maximum internal root diameter at ß=0 degree **Di**	mm	800	800	800
Axial slide path above the table **Hi**	mm	1500	1500	1500
Penetration depth in ring gear at ß=0 degree **I**	mm	600	700	700
Working Range above the table **O**	mm	350 - 1600	350 - 1600 (2100)	350 - 1600 (2100)
Wall thickness of ring gear **R**	mm	250	250	250
Cutter diameter	mm	470	470	470
Cutter thickness	mm	124	124	124
Cutter rpm	rpm	250	250	250
Swivel angle	degree	+/- 28	+/- 28	+/- 28
Cutter spindle motor power	kW/hp	52/70	52/70	52/70
Torque on the cutter spindle	Nm	8800	8800	8800

** available at additional cost*

Subject to change



Service from HÖFLER: Experts on demand

HÖFLER employees have been with the company for 16 years on average, an unusual degree of loyalty even in machine tool manufacturing. The reason: HÖFLER considers in-house training and continuing education to be essential to their competitive edge and invests accordingly to ensure that HÖFLER technicians and engineers remain the best in the industry. Only those with the appropriate qualifications and extensive experience come into contact with customers – as consultants, trainers or as assembly and commissioning technicians. On the other hand, customers will hardly ever see an emergency team from HÖFLER – because HÖFLER machines are optimally designed, solidly built and will operate perfectly for many years.

Quicker fixes: remote maintenance

Good to know: If serious problems do ever occur, professional help is just a mouseclick away. Our eight-member, globally operating service team will analyze and correct your problem by remote diagnosis and remote control. They operate in virtually all time zones and speak German and English. Experience shows that 95% of all problems can be analyzed and usually corrected this way. HÖFLER technicians, who can generally be on site very quickly after notification of a fault, can take care of the remaining problems – regardless of where in the world the machine is installed.

Process control

On-site service

On-site customer advice

HÖFLER GearPro Software:
From virtual to actual perfection

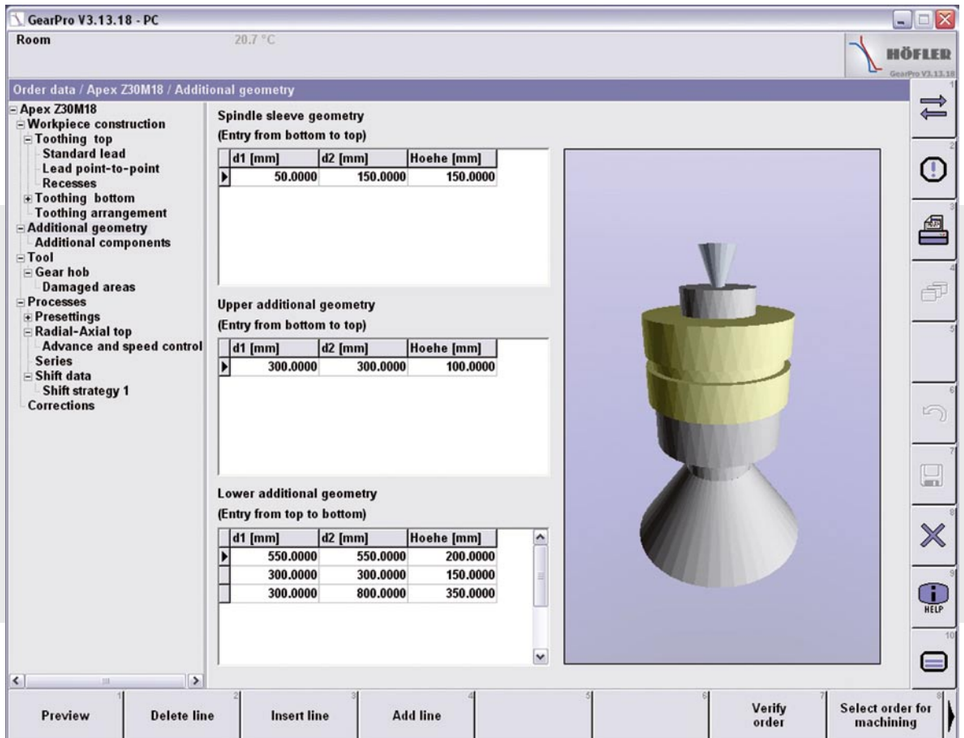
HÖFLER is driving progress in gear machining with substantial investments in research and development. The same modules that have made GearPro the leading control software for profile grinding machines are now available for gear hobbing and can be implemented immediately by trained users. All new users have the same surprising experience with GearPro: never before has a gear hobbing machine been so efficient and easy to operate!

Programmed for the future: the system
One software for complete hobbing pre-machining from a single supplier: GearPro allows hobbing of all state-of-the-art profiles – precisely, efficiently and quickly. In addition to this basic program, GearPro offers a wide range of options. Thus the HF also becomes an allrounder for future requirements with refined special features – exciting options and significant added value for your investment.

More value than ever: the data basis
GearPro includes a special feature for the user: access to the concentrated knowledge on material and processing characteristics from intensive research and development. Knowledge that cannot be gained only empirically or by experiment. Thus users have a wide range of experience at their disposal: an invaluable advantage in their daily work. For example, GearPro automatically considers the moment of inertia of a clamped workpiece, a exceptional feature unique to HÖFLER. It makes the hobbing process more precise and faster – a small but significant benefit that produces significant savings over the long life of the machine.

Safer operation: the user guidance
Set up jobs, change workpieces, configure the machine, monitor processes – GearPro can do this in just a few steps. A menu guides the operators step by step through dialogues to the start of the process. No parameters are forgotten, operating errors are prevented as early as possible. Another advantage: GearPro displays machine status and processes graphically, which makes machine control more intuitive, easier and therefore more efficient.

Easier setup: the 3D function
Set up a machine at the computer away from the noise of the machine hall? Set up the configuration virtually, display problems and even potential collisions during workpiece clamping – before the problem actually [and expensively] occurs at the machine? This is not fiction but an actual function offered by GearPro. The workpiece is displayed as a 3D simulation. If clamping pots and clamping arbors are considered, the complete hobbing process can be simulated in 3D on the computer. The data are not uploaded over the network to the machine until the entire process operates without problems. No other manufacturer's software offers so much transparency and ease of use when planning and organizing processes.



HÖFLER is a member of AGMA and FVA and is DIN EN ISO 9001/2000 certified.

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