
Highlights: IMTS and AMB

Gear technology, gear cutting tools, measuring technology, and automation systems
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LIEBHERR

Gear technology and automation systems



Highest quality – LGG 180/280 generating and profile grinding machine



The Liebherr LGG 180 / 280 stands out with its compact design, impressive accessibility and ease of setup. Different grinding heads can be used on the machine for every specific application. Also, an internal grinding arm can be adapted very quickly and easily – and even retrofitted. This means that both external and internal gears can be machined very economically and efficiently on this machine.

The powerful GH240CB grinding head can accommodate large grinding worms with a width of up to 200 mm, considerably increasing productivity and economic efficiency. In addition, large multiple-sector grinding worms can be used, which are ideal for generating grinding, finishing grinding and polishing grinding. Collision-critical gears can be ground with very small grinding worms, thanks to the extremely rigid spindle bearing and the counter bearing. The integrated centrifugal unit removes chips and coolant from the ground workpiece, eliminating any undesired oil loss in the machine.

Highlights

- Technological flexibility for internal and external gears
- Finishing grinding / polishing grinding
- Generating grinding with small grinding worms with long shift area
- Fast setup and short idle times
- Modern and user-friendly control panel LHStation & LHMobile
- Clean, drip-free workpieces; no oil loss
- Open connect (closed loop) solution between the WGT 280 gear inspection device and the LGG 280 generating grinding machine

Powerful, without compromise and flexible – LC 500 DC gear hobbing machine



Hobbing and simultaneous chamfering

At AMB 2022 in Stuttgart, Liebherr is presenting the LC 500 DC gear hobbing machine with the integrated ChamferCut unit. The chamfering parallel to machining has once again been improved in the new machine series for gear hobbing. A perfect chip removal, which means chip deposits are nearly eliminated, as well as unrestricted accessibility for the setup for both machining processes, are just two of the numerous developments.

The chamfering technology used can be either the familiar ChamferCut or the newly developed FlexChamfer process. A particularly notable feature is that workpieces with a diameter of up to 500 mm can now also be chamfered simultaneously – which is unique to this gear hobbing machine. The new operating concept LHStation & LHMobile, with the user-friendly LHGearTec user interface, provides maximum operating convenience.

Highlights

- New gear hobbing head for larger and longer tools for more productivity and flexibility
- Simultaneous chamfering of workpieces of up to 500 mm workpiece diameter and module 7 mm, with ChamferCut or the new FlexChamfer technology
- Maximum flexibility thanks to larger machining chamber
- Counter column with NC technology for maximum ease of setup
- Internal ringloader automation concept for workpieces up to 100 kg
- Operating concept with LHStation & LHMobile and LHGearTec
- Improved chip removal thanks to optimized and redesigned machine bed



Customized digitalization solutions for your requirements

With a combination of data profiles, protocols and the LHWeb-Platform, Liebherr provides an infrastructure for the acquisition, transmission, storage, processing, provision and display of machine, operating and production data. In the basic app LHMachInfo, users can see the live status of their machine tools at a glance and observe changes in real time. The LHSignalInfo app visualizes the recorded signals, taking into account all measuring points and their exact time stamp.

Liebherr has expanded the range of functions of LHWebPlatform to include a further tool: The LHReportInfo app visualizes and analyzes the performance of the machine and generates reports and evaluations from the machine data – a decisive step toward more productivity.



WGT 280 and WGT 400 gear inspection devices



Are you looking for a solution to ensure quality and increase productivity in gear manufacturing?

The four-axis measuring instruments of the WGT series have high-precision mechanics and electronics, which are controlled by smart and user-friendly software. They meet all accuracy requirements regarding gear measurement and comply with VDI guideline VDI/VDE 2613, group 1. In addition to the gear inspection machine options available as standard, customer-specific solutions are also available, such as adjusting the travel range on the Z-axis, longer tailstocks to accommodate long shafts, and rotary tables adapted to the payload. An automatic sensor changing system ensures uninterrupted measurement of the workpieces and also offers the highest levels of convenience for the user. The extensive software features make the machines suitable for measuring all types of gears, such as spur gears, bevel gears, worms, worm gears, shafts, gear cutting tools, and other rotationally symmetrical parts.

Highlights

- Highest precision provided by granite guides and air cushioning
- Low operating costs due to contactless guides and reliable probes as well as inexpensive spare parts
- Flexible for all types of gears
- User-friendly interface and ergonomic design
- Manufacturer-neutral GDE interface for data transmission to production machines

Training for gear hobbing and generating grinding: secure your place now!



Are you looking for high-quality, **individual training courses and workshops** on the topics of **gear hobbing** and **generating grinding**? Would you like to **specifically improve** or refresh your gearing knowledge in an effective way? Then you've come to the right place at the **Liebherr Academy!**

In our **new** and **modern** Machine Training Center (**MTC**), a **gear hobbing** and **generating gear grinding machine** is available to you for practice purposes.

We turn our participants into gear specialists!



Contents of the training:

You can find all training contents in our **training catalog**.

<https://go.liebherr.com/ezev96>



Design-optimized gear skiving tools

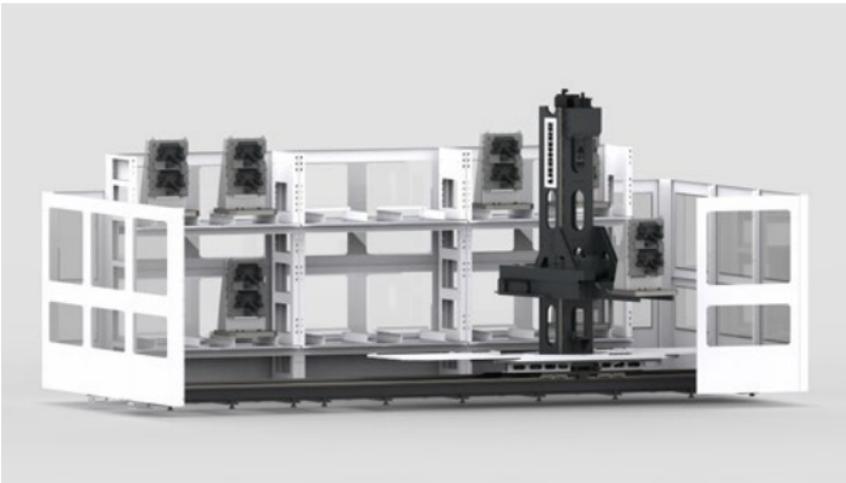
Due to its process-specific kinematics, gear skiving is a complex and demanding procedure with no margin for error. Even the slightest changes to the tool design parameters can have unwanted results. As a supplier of the complete package of technology, machinery and tools for gear skiving, and with more than 30 years of experience, Liebherr can use simulations to identify and exploit possible tolerances in the process kinematics in order to extend the tool life.

Small CBN grinding discs

25 millimeters – the size of a two-euro coin – is the diameter of the new CBN grinding discs developed by Liebherr-Verzahntechnik GmbH specifically for machining critical component geometries with low tool overrun. They can be coated with specifically selected grain for longer service life and faster grinding processes.

Highlights

- CBN (cubic crystalline boron nitride), one of the hardest grinding materials
- Suitable for the highest quality requirements
- Dressing-free, wear-resistant, heat-resistant



Pallet handling systems as a productivity booster

Liebherr pallet handling systems open the door to increased productivity, even for small batches.

Pallet handling systems handle workpieces on uniform transport pallets. This makes them the ideal automation system for one-off and small batch manufacturing, facilitating unmanned shifts through to “lights-out manufacturing” and enabling unit costs to be reduced by up to 40 percent and machine running times increased to up to 90 percent. The application and combination possibilities are diverse.

The rotary loading system provides compact automation for one or two machining centers. The modular PHS Allround can be expanded in one-meter increments and links up to four machines. This means that the front ends of the system can also be used, and attractive options such as front access for machine access without downtimes, or the double loader for even more productivity, are available. The PHS Pro has no upper limit and can automate any number of machines, also with integrated material management.

Highlights

- Three products, suitable for all requirements
- Standard automation with short delivery times as well as a flexible manufacturing system with any degree of automation
- Machine runtime up to 90%, manufacturing costs -40%



From the technology package to the turnkey robot cell

Liebherr supplies automation systems for automated raw parts input and finished parts removal in production facilities and possesses extensive system and software competence for position and object recognition with 2D and 3D camera systems.

With the LHRobotics.Vision technology package, Liebherr is making this industrial application expertise available to a broad range of users of robot integrations, to withdraw unsorted components from deep bins with process reliability. As a manufacturer of bin picking robot cells, Liebherr knows the challenges of the application and, with the aid of artificial intelligence has simplified the software so much that it can be intuitively used by anyone.

The technology packages consist of a 3D image recognition system and the LHRobotics.Vision software for object identification and selection, collision-free withdrawal of parts, and robot path planning up to the depositing point.

A special feature is the optional simulation tool LHRobotics.Vision Sim. This enables the user to test and optimize the processes in a completely virtual manner, without expensive hardware investment.

Highlights

- Scanning: Selection of suitable 3D image recognition systems from various manufacturers
- Picking: Calculation of the optimal picking position for collision-free withdrawal of parts
- Positioning: Robot path planning up to the stacking position
- Simulation: Realistic simulation of bin filling using a physics engine and virtual testing of the bin picking process

Liebherr Gear and
Automation Technology, Inc.
1465 Woodland Drive
Saline, MI 48176-1259, USA
Phone +1 734 429-7225
info.lgt@liebherr.com

Liebherr-Verzahntechnik GmbH
Verzahntechnik und Automationssysteme
Kaufbeurer Straße 141, D-87437 Kempten
Phone +49 (0)831 786-0
Fax +49 (0)831 786-1279
info.lvt@liebherr.com
www.liebherr.com