Press release

SkiveFinishing®: Innovative and precise

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**Hard-fine machining II – quality and efficiency for internal gears**

**SkiveFinishing** **® is a new method for efficiently hard machining high quality internal gears. It combines the flexibility of gear skiving with the surface quality of CBN grinding technology. An innovative CBN tool by Liebherr-Verzahntechnik GmbH ensures a long tool life and even enables profile modification.**

Up to now, two methods have been used in hard-fine machining internal gears. Firstly, Hard skiving with a geometrically defined cutting edge, which -- while economical -- comes up against its limits when maximum quality is required. Secondly, profile grinding with a geometrically undefined cutting edge, which offers maximum precision, but is time and cost intensive and therefore only suitable for series production under certain limited conditions, for example in e-mobility or commercial vehicles. SkiveFinishing® fills this gap: It uses the kinematics of gear skiving in combination with a non-dressable electro-plated skiving tool. This achieves higher quality than in hard skiving, but is also faster and more efficient than profile grinding.

**Innovative tool, tested technology**

The CBN tool used offers a crowned geometry and multiple usable shift positions. It machines with an axial feed along the contact line. If a position is worn, the tool shifts to the next position. The tool design and the extremely tough CBN coating (the second hardest cutting material after diamond) combine to ensure a long tool life and high process stability. “SkiveFinishing® combines the flexibility of skiving with the advantages of CBN grinding,” explains Haider Arroum, Division and Site Manager, Tools. “This means optimal roughness values and efficient processes can be implemented by specific selection of CBN grain sizes.”

**Component modifications possible**

SkiveFinishing® increases the tooth flank load capacity thanks to the higher residual compressive stresses. Modifications like tip reliefs, profile crowning or tooth trace modifications can also be made directly to the component - even on challenging geometries like internal gears. Previously this was only possible using the costly profile grinding process or a special dressing kinematic process.

If the tool is completely worn, it will be treated at the Ettlingen site. Liebherr’s CBN expertise goes back more than 30 years and so guarantees consistently high quality. “This opens up new options for users to optimally adapt manufacturing process to components and economic efficiency,” adds Haider Arroum.

**High quality in cost-effective machining**

SkiveFinishing® is aimed at applications which have to combine very high quality requirements with economically efficient processes. In aerospace, where cost pressures are constantly rising, precision and load capacity matter. In e-mobility, new gearbox designs require lower noise levels and longer service life. SkiveFinishing® provides a greater power density for planetary gears in trucks and tractors: Reducing the amount of heat treat distortion means smaller and lighter and yet more powerful gearboxes can be designed. The method and tool will be introduced to the global public for the first time at the EMO in September 2025.

Photos

Ein Bild, das Metallwaren, Zahnrad, Metall, Autoteile enthält.

KI-generierte Inhalte können fehlerhaft sein.

LK 280 FN 5810 SkiveFinishing\_06

Ein Bild, das Haushaltsgerät, Küchengerät, Im Haus, Wand enthält.

KI-generierte Inhalte können fehlerhaft sein.

LK 280 FN 5810 SkiveFinishing\_09

SkiveFinishing® is based on the same kinematics as gear skiving.

Ein Bild, das Metallwaren, Metall, Zahnrad enthält.

KI-generierte Inhalte können fehlerhaft sein.

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Non-dressable, electro-plated skiving tool with multiple shift positions  
  
  
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