

Press release

## **An interaction that rules**

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- The symbiosis of Liebherr product areas drive technology and slewing bearings offer decisive advantages in application.
- Liebherr uses the shared technical understanding in application as a source for innovation.
- Liebherr stands out in terms of communication and coordination with shorter decision paths, as well as solutions from a single source.

**When the right parts work together, the result is success. What sounds like a familiar promise at first, however, applies perfectly to the Liebherr product division of drive technology and slewing bearings. The components of both product areas come directly from Liebherr site in Biberach (Germany). In customer applications, this interaction results in advantages that extend well beyond the respective individual product strengths.**

Nussbaumen (Switzerland), October 28, 2021 – Certain things should not be looked at separately from each other. Especially when they have to function together reliably. Drives with gear rims or slewing bearings, for instance, form such a unit. The two Liebherr product areas of drive technology and slewing bearings are located right next door to each other at the Biberach site. The coordination procedures are short, and people know each other. Over the years, the cooperation between these seemingly completely different disciplines has resulted in a knowledge resource that comes to light in direct, personal customer consulting. A perfect symbiosis of these two components in any application represents clear product advantages that cannot be exploited in this way, when viewed separately.

### **Tooth by tooth: a perfect harmony**

"We check the requirements for the drive and slewing bearing components right from the beginning. Hence, we deliver a pair of drive and rotary element that ideally complements each other in the customer's application," explains Stefan Harsch, team leader application engineering from the Liebherr Drive Technology department.

In detail, this means that Liebherr drives are manufactured with the necessary profile and flank line modifications on the pinion. If necessary, this can be based on calculation and simulation techniques, such as the finite element method (FEM). They provide important information on the load capacity and gearing reliability and allow Liebherr to optimise the design of its components. This gear fit accuracy means that slewing bearings and drive pinions are perfectly matched to the load spectrum of the respective application. This accuracy is reflected by efficient turning with little backlash, which significantly extends the service life of both components.

The same applies to the materials used. The drive pinions and the ring gear of the slewing bearing are given a material composition that is an ideal match. It is neither too hard nor too soft and prevents material cannibalism, in which the components do not wear each other out.

## **Runs like a charm**

Even the best tooth coordination needs good lubrication. It is not without reason that Liebherr is also regarded as a consulting expert, when it comes to the viscosities of greases and oils. Applying this knowledge, a technically well-matched product combination is created, that is simultaneously lubricated. In such a way failure due to tooth cracking with subsequent tooth breakage or minor metallic material chipping is reduced to a minimum. All factors together add up to a component pair that makes a clear contribution to significantly longer application availability.

## **Innovations from application experience**

At Liebherr, this shared technical understanding of the application also serves as a source for innovation. Not only does Liebherr's own applications benefit from it, but also external companies that use Liebherr components in their machines. One example of a product innovation is Liebherr's patented tooth root safety geometry (TSG). This is a built-in predetermined breaking point above the pinion in the drive. The origin of this design lies precisely in application experience, coupled with foresight: in the event of a sudden overload, the drive should break in a controlled manner at the specified point. This is an additional safety measure in case the overload protection integrated in the drive should no longer be effective. In this way, the significantly more expensive slewing bearing, which takes longer to procure, is protected against tooth breakage and can remain installed in the application. Longer downtimes are therefore being avoided.

## **Less effort, more convenience**

As always, time plays one of the most crucial roles in any project. As a business partner for component pairs, Liebherr stands out in terms of communication and coordination with shorter distances, as well as solutions from a single source. Manufacturing, assembly and modification of the component along with service offers at one location not only minimise effort, but also avoids possible design errors due to the simpler exchange of information and close cooperation.

With this cooperation and the resulting experience, Liebherr has already successfully implemented a variety projects.

## **About Liebherr-Components AG**

In this segment, the Liebherr Group specialises in the development, design, manufacturing of high-performance components in the field of mechanical, hydraulic and electric drive and control technology. Liebherr-Component Technologies AG, based in Bulle (Switzerland), coordinates all activities in the Components product segment.

The extensive product range includes diesel and gas engines, injection systems, engine control units, axial piston pumps and motors, hydraulic cylinders, slewing bearings, gearboxes and winches, switchgear, electronic and power electronics components, and software. The high-quality components are used in cranes and earthmoving machinery, in the mining industry, maritime applications, wind turbines, automotive engineering or in aviation and transport technology. Synergy effects in s other product segments of the Liebherr Group are used to drive continuous technological development.

## **About the Liebherr Group**

The Liebherr Group is a family-run technology company with a highly diversified product portfolio. The company is one of the largest construction equipment manufacturers in the world. It also provides high-quality and user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 140 companies across all continents. In 2020, it employed around 48,000 staff and achieved combined revenues of over 10.3 billion euros. Liebherr was founded in Kirchdorf an der Iller in

Southern Germany in 1949. Since then, the employees have been pursuing the goal of achieving continuous technological innovation, and bringing industry-leading solutions to its customers.

## **Image**



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Common understanding of application results in component solutions are incredibly powerful, when combined.

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