

### **Bauma China 2018: Liebherr presents components for tunnel boring machines**

- New modular LPS gearbox series for dynamic output torques up to 610,000 Nm with integrated water cooling
- New KFE series squirrel cage motors for a power range of 50 kW to 400 kW
- Extended slewing bearing portfolio with main bearing for cutter head mounting
- Hydraulic pumps for tunnel boring machines in pressure ranges over 400 bar

**Shanghai (China), 27 November 2018 - At this year's Bauma China, Liebherr showcases its portfolio of components for tunnel construction to trade visitors. In addition to the main bearings already successfully launched on the market, the new series of gearboxes and electric motors for tunnel boring machines are also in the spotlight of the show.**

At the international trade fair for construction machinery, building material machines, construction vehicles and construction equipment, Bauma China 2018, Liebherr is presenting itself as a components manufacturer for the tunnel construction segment. The focus thereby lies mainly on the new gearbox and electric motor series, which are presented to the trade public for the first time in Shanghai (China).

Components by Liebherr have been used in tunnelling projects around the world for several years now. Slewing bearings with a diameter of up to 9,000 mm have proven their value in tunnelling projects worldwide, for example in India, Africa, the UK and China. The portfolio includes main and erector bearings for tunnel boring machines. The main bearing can be designed as a triple-row cylindrical roller bearing as well as a double-row tapered roller bearing. The continuously rotating bearing moves the cutter head of tunnel boring machines, which are used for the expansion of subway networks, sewers or other tube systems. Erector bearings, on the other hand, are designed as single-row four-point or cross-roller bearings. Whereas, erectors are applied for the positioning of prefabricated tunnel sections.

Liebherr's portfolio of components for tunnel construction now also includes the newly developed LPS gearbox series. The gearboxes have a modular design and are suitable

for dynamic output torques of up to 610,000 Nm. They are equipped with a specially developed cooling system that keeps the temperatures of individual components low. This, in turn, increases the life expectancy of the components and considerably extends the time between oil changes and maintenance intervals. The modular design and maintenance openings on the gearbox housing facilitate repair and maintenance work. The modular, compact design of the gearbox also allows easy assembly and disassembly through the separately mounted output pinion.

Liebherr has also developed a sealing system with pressure-resistant seals as an option. This increases operational safety in harsh environmental and operating conditions. The interfaces are designed, so that any commercially-available electric motor can be installed almost effortlessly. The gearboxes can be equipped optionally with oil particle sensors, oil level sensors and temperature monitoring sensors to provide an ultra-rapid and safe overview of the operating conditions. A brake can also be integrated in the gearbox housing.

Liebherr will also be expanding the component portfolio for tunnel boring machines with high-performance and compact KFE series squirrel cage motors. The series has been developed according to a modular system and meets all customer requirements. Equipped with an optimised water cooling, the motors are highly efficient and feature a high performance, even in the smallest sizes. The power range of the machines is between 50 kW and 400 kW and is available in different voltage levels. Due to the experience in applications with high shock and vibration loads, Liebherr's electric machines are ideally prepared for use in tunnel boring applications.

"With application experience gained in recent years, we are selectively expanding our product portfolio with the new component series. In this way, we are able to provide our customers with complete drive trains, consisting of main bearing, gearbox and electric motor," says Oliver Wennheller, Head of Sales Drive Technology.

In addition to the components for the main drive, axial piston units have shown their value for tunnelling applications as well. Liebherr hydraulic pumps are used, for example, in medium-sized tunnel boring machines for hard and soft rock with a diameter of up to six meters. Liebherr's axial piston hydraulics is characterised by its particular robustness,

reliability, availability and long life expectancy. Liebherr's hydraulic pumps for tunnel boring machines are in the upper pressure level of over 400 bar.

All individual Liebherr components are perfectly matched to each other according to customer requirements and can therefore be used as an integrated drive system, for example for the cutter head in tunnel boring machines. With the exhibited system, Liebherr also demonstrates the possibilities for system solutions in this area.

### **Captions**

liebherr-components-tunneling-bauma-china-2018.jpg

Liebherr components for tunnel boring machines.

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