

Press release

Liebherr supplies slewing bearing for Europe's largest lifting swing bridge

- A slewing bearing with an outer diameter of five metres is installed in the bridge Friesenbrücke, which is erected for Deutsche Bahn, a federally owned mobility and transportation group with railway as its core business
- This large slewing bearing will enable the rotation of the central bridge section, which is approximately 145 metres long
- Designed to last 100 years, the bearing is also equipped with an integrated wear measurement technology

Liebherr's components product segment supplies the heart of the rotating pillar for the bridge Friesenbrücke, which is being erected for Deutsche Bahn in Weener. It comprises a 5 metre, 12.5 tonne combined roller and ball bearing along with eight matching pinions. This rotating pillar and the associated mechanical systems by Hermann GmbH Maschinenbautechnologie support the 145 metre long, 1,800 tonne central section of Europe's largest lifting swing bridge to date.

Baden (Switzerland), 27 November 2024 – The Friesenbrücke is the key part of the 173-kilometre-long rail route between Groningen and Bremen. "With its total length of 335 metres, it is the largest lifting swing bridge in Europe, carrying not only rail traffic, but also footpaths and cycle lanes," says Alexander Volgmann from Deutsche Bahn. "The bridge spans the river Ems and opens the way for ships by rotating up to 90 degrees. This is where Liebherr's slewing bearing and pinions come into play."

The combined roller and ball bearing along with eight matching pinions ensure that the bridge can rotate on its central pillar. "The technology used here is a lift-and-rotate mechanism. First, the rotating section of the bridge is unlocked. The central section is then lifted by the rotating pillar, releasing it. Finally, the hydraulic drive and the slewing bearing swivel the bridge," explains Karl Völkl from Hermann GmbH Maschinenbautechnologie, the supplier of the rotating pillar for the Friesenbrücke.

The bridge section will be rotated around 1,850 times a year. To support optimum operating times, Liebherr has designed the slewing bearing for a service life of 100 years and verified it by a finite element (FE) analysis. Moreover, the bearing has been coated with a C5 anti-corrosion layer, specifically designed for use in or near water. "Additionally, our intelligent bearing clearance monitoring system measures wear on the axial raceway, allowing efficient monitoring and maintenance of the bearing," explains Michael Sander, technical sales engineer for slewing bearings at Liebherr-Components in Biberach (Germany). This solution integrates sensors directly into the bearing, with the measurement results fed directly into the customer's system. "The seamless integration into the customer's control

system is a key innovation. We provide a specially developed and protected code, allowing the customer to integrate the data into their own system, using their own logics and interface," adds Sander. No additional gateway is required, reducing system complexity thanks to the software-integrated bearing clearance monitoring system.

About Liebherr-Components AG

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

The extensive product range includes combustion 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 with other product segments of the Liebherr Group are used to drive continuous technological development.

About the Liebherr Group – 75 years of moving forward

The Liebherr Group is a family-run technology company with a highly diversified product programme. The company is one of the largest construction equipment manufacturers in the world. It also provides high-quality, user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 150 companies across all continents. In 2023, it employed more than 50,000 staff and achieved combined revenues of over 14 billion euros. Liebherr was founded by Hans Liebherr in 1949 in the southern German town of Kirchdorf an der Iller. Since then, the employees have been pursuing the goal of achieving continuous technological innovation and bringing industry-leading solutions to its customers. Under the slogan '75 years of moving forward', the Group celebrates its 75th anniversary in 2024.

About Deutsche Bahn (DB)

The DB Group is the leading integrated provider of public mobility in Germany and of logistics solutions and combined transport throughout Europe. At its core, DB consists of the Systemverbund Bahn. The Systemverbund Bahn comprises the public-interest railway infrastructure company DB InfraGO for the operation of around 33,000 kilometres of track network and 5,400 stations, the traction current supplier DB Energie, the long-distance and regional transport services operated by DB in Germany, the Europe-wide rail freight transport activities and the operational service units for ticket sales, IT, facility management, security and technical services for rail transport companies. Headquartered in Berlin, the DB Group employs around 226,000 people in Germany alone.

About DB InfraGO AG

DB InfraGO AG is shaping the future of German railway infrastructure. Since 1 January 2024, we have been combining the strengths of DB Netz AG and DB Station&Service AG in an infrastructure company geared towards the common good. With over 63,800 employees, we are creating the basis for the mobility of today and tomorrow. Our mission is to create an efficient rail network and attractive railway stations that inspire across the board. In doing so, we are consistently focussing on achieving our political goals. We want to double the transport performance in passenger rail transport and increase the market share in rail freight transport from 19% to 25%. In addition, we are creating new management instruments for an infrastructure that is orientated towards the common good. A central component is the federal government's multi-year Infraplan, which defines and annually updates key figures and measures for the rail network and railway stations. Our approximately 56,000 employees in the Track division ensure the smooth operation and further development of Europe's largest rail network. In the Passenger Stations division, around 8,000 employees are involved in the design and operation of around 5,400 railway stations throughout Germany.

Images



liebherr-acceptance-individual-rings-combined-roller-ball-bearing.jpg

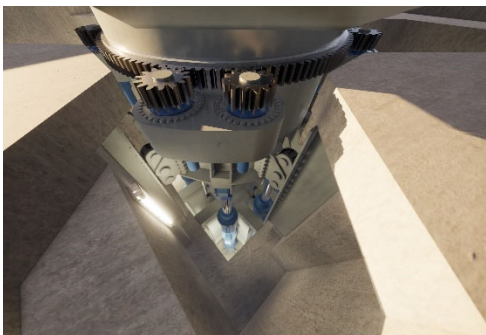
The inspection and approval of the individual rings of the combined roller and ball slewing bearing: (from left) Michael Sander (Liebherr-Components Biberach GmbH), Alexander Volgmann (DB InfraGo AG), Tobias Killmann (DR. SCHIPPKE + PARTNER mbB), Alexander Krölls (Adam Hörnig Baugesellschaft mbH & Co. KG, Matthias Längle (mlng GmbH), Andreas Menzel (MCE GmbH), Ralf Hanke (Liebherr-Components GmbH).



DB-visualisation-Friesenbrücke-copyright-eberhardt-die-ingenieure-GmbH.jpg

This is what the Friesenbrücke will look like once completed.

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This is what the slewing bearing and pinions will look like once installed.

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