

Press release

Liebherr assistance system for fast-erecting cranes makes semi-automated crane operation possible

- Positioning Pilot assistance system enables semi-automated, sway-free crane operation
- Stored positions can be accessed and routes travelled to and from, thanks to semi-automatic, simultaneous operation of all drives
- Economical operation through battery-powered inertial measurement unit (IMU) on the crane hook
- Nominated for the Innovation Award in the category “Mechanical Engineering”

The intelligent assistance system Positioning Pilot enables the crane operator to semi-automatically access several stored hook positions without sway and travel individually mapped routes. Safety on site is also increased through the semi-automatic driving of predefined distances. The crane operator is freed from repetitive, monotonous lifting tasks with help from this assistant. In addition, Liebherr's assistant system is currently one of few products still under consideration for the Innovation Award at bauma, the leading trade fair in the construction industry.

Biberach (Riß) (Germany), 18 February 2025 – Vehicles with intelligent assistance systems are becoming increasingly common in the construction machinery world. The Liebherr Group introduced intelligent operator assistants for its tower cranes at the end of 2024. These assistants help make construction sites safer for both people and materials, and also ensure more convenient and efficient crane operation. It only takes the push of a button to switch them on or off as required.

Positioning Pilot – navigating plotted routes and saved points

The Positioning Pilot assistance system makes it possible to precisely access up to three stored hook positions without sway, and travel two individually mapped routes. The routes can be travelled forwards and back again, and stopping in between is also an option. Travel speed is flexible and can be adapted to the particular conditions on site. This makes Positioning Pilot ideal for repetitive, monotonous lifting tasks like concreting work and truck unloading processes that require several lifts.

Positioning Pilot makes the crane operator's work significantly easier as it takes away the need for manual operation of the various travel drives and can move the load independently. All three drives of the crane (slewing gear, trolley and hoist winch) are controlled simultaneously so that stored points are

quickly reached. This not only improves work and operational convenience for the crane operator but also increases safety on site. The semi-automatic travelling of routes means that the crane hook's movement is preset and incidents with a negative impact on cost-effective construction operations can be avoided. A radio control is used to directly control the assistant.

Operator assistants based on new control and operating systems

The new assistance systems are based on Liebherr's Control 5 control system and Tower Crane Operating System 2. The control system's high processing power enables all assistance algorithms to be processed in real time.

An integral, underpinning element of the assistance system is load sway damping. A battery-powered IMU (Inertial Measurement Unit) sensor system measures hook inclination and angular velocity, while a sensor system on the tower detects the inclination of the tower. The sensors transmit data to the control system, which continuously processes this information together with crane structure measurement data to ensure precise and sway-free crane movements. A path following control system, including trajectory generation, allows the tower crane to follow almost any path independently. The control system is based on a detailed mathematical model of the crane, which has been developed in collaboration with the University of Stuttgart.

After nearly a decade of development, the intelligent Positioning Pilot assistance system was successfully launched for current K and L series fast-erecting cranes at the end of 2024.

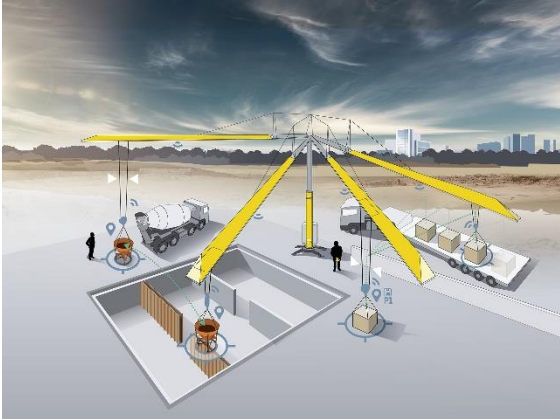
About the Liebherr Tower Cranes Division

More than seven decades of experience have made Liebherr a recognised specialist for lifting technology on all types of construction sites. The range of Liebherr Tower Cranes encompasses an extensive selection of high-quality tower cranes that are used worldwide. This includes fast-erecting, top-slewing, luffing jib and special-purpose cranes as well as mobile construction cranes. In addition to these products, Liebherr also offers a wide range of services that complete the company's portfolio: Tower Crane Solutions, the Tower Crane Center and Tower Crane Customer Service.

About the Liebherr Group – 75 years of moving forward

The Liebherr Group is a family-run technology company with a widely 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, 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 celebrated its 75th anniversary in 2024.

Images



liebherr-positioning-pilot-01.jpg

Positioning Pilot allows the crane to automatically navigate saved points and plotted routes. The assistant provides the crane operator with everyday support, particularly for repetitive, monotonous lifting tasks and unloading processes involving multiple lifts.



liebherr-positioning-pilot-02.jpg

The battery-operated IMU (Inertial Measurement Unit) sensor system measures hook inclination and angular velocity.

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