Press Release

Georg Schlegel GmbH & Co. KG

Managing complexity

How Liebherr is simplifying the control architecture of its MK cranes with the Schlegel control panel

Inner-city construction sites are often cramped, dynamic and difficult to manage. Materials are moved constantly, processes are interlinked and time slots are tight. In this environment, mobile construction cranes must operate precisely, reliably and, above all, intuitively. Liebherr therefore relies on a control panel specially developed by Schlegel for its mobile construction cranes, which consolidates numerous cab functions within a confined space. The aim was to combine ergonomics, system integration and future-proofing.

Mobility meets precision

With around 1,500 employees, Liebherr-Werk Biberach GmbH is one of the world's leading manufacturers of tower cranes. The MK mobile construction cranes, manufactured at the Biberach site, combine the advantages of a classic tower crane with the mobility of a truck-mounted crane – a decisive factor in urban environments.

The MK series covers a wide range of applications, from the compact Liebherr MK 73-3.1E, which can be set up in around ten minutes, to the manoeuvrable Liebherr MK 88-4.1E and the powerful five-axle models. The MK 120-5.1E and MK 140-5.1E lead their class in both, the reach and the hook height. All of these cranes have fully electric drives, ensuring emission-free operation on the construction site – no exhaust gases and no combustion noise, regardless of the energy source used to power the electric system.

The challenge: making complexity manageable

As performance increases, so does the complexity of operation. On an inner-city construction site, for example, the crane operator must be able to quickly identify functions and operate them safely – even under time pressure. The steplessly height-adjustable operator's cab ensures optimum visibility.

Equally crucial, however, is the design of the control system. The more clearly the controls are laid out, the lower the risk of errors, particularly during long shifts. At the same time, demands on technical integration are increasing. Modern machines incorporate more and more functions. However, every additional function also increases complexity.

Initial project requirements

At the start of the project with Schlegel, the focus was on integrating classic cab functions. These included cab lighting and generator control via the battery. As development progressed, further requirements were added. For example, the three windscreen wipers and the windscreen washer function were also to be controlled via the control panel. Furthermore, the intermittent wiper control and rain sensor integration were developed in close consultation with the customer and incorporated into the control panel. The system was supplemented by an

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integrated 20-watt audio amplifier unit to handle communication between the cab microphone and the external loudspeaker.

Another design challenge was that the control unit had to be integrated into the crane cab in the immediate vicinity of the armrest, i.e. in a confined space. A compact yet functionally comprehensive solution was therefore crucial.

Consolidated functions on a central circuit board

Schlegel developed a control panel tailored specifically to the spatial conditions. This reduces the amount of wiring required and keeps the system architecture clear and straightforward. Connection is done via a multi-pin connector, which simplifies installation and servicing. "A reliable, collaborative relationship and direct on-site support enabled us to find fast, practical solutions," says the Liebherr development team. Schlegel's involvement from the prototype phase was a decisive factor. This allowed structural, electronic and practical requirements to be coordinated in parallel.

Designed for everyday use on construction sites

In addition to the system architecture, the focus was on practical suitability. Construction sites are characterised by vibration, temperature fluctuations and constant mechanical stress. The control unit is therefore robustly constructed and designed for high operational reliability. "Robustness, reliability and quality are our top priorities. The Schlegel control panel meets these requirements," concludes the team in Biberach.

Partnership as a development approach

For over 80 years, Schlegel has been developing and manufacturing control elements and system solutions for industrial applications at its Dürmentingen site, ranging from classic pushbuttons to complex bus systems. However, in the project with Liebherr, the focus was on system integration rather than the individual product. The result is a scalable platform for future requirements, combining an ergonomic operating concept with reduced hardware complexity and bus-compatible architecture.

Conclusion

With the Schlegel control panel, Liebherr is focusing consistently on integrated system architecture in the MK series. The result is not only a well-structured user interface, but also an expandable, maintenance-friendly solution that meets the growing demands of modern mobile construction cranes. This is particularly important in inner-city environments, where precision, clarity and efficiency are paramount.

Photos

Caption: The MK 88-4.1 in action at Herrenchiemsee Palace. Photo: Liebherr

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Caption: The MK 140-5.1 E assisting with lifting operations in Cottbus. Photo: Liebherr

Caption: Liebherr's mobile construction cranes impress with their exceptional reach and hook height. Photo: Liebherr

Caption: The Schlegel control unit brings together numerous cab functions of the Liebherr mobile crane in a compact space. Photo: Schlegel

Caption: To reduce the amount of wiring required and maintain a clear and well-organised system architecture, the Schlegel solution brings together various functions on a single central circuit board. Photo: Schlegel

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Contact details:
Georg Schlegel GmbH & Co. KG
Wolfgang Zoll
Kapellenweg 4
88525 Duermentingen
Phone +49 (7371) 502-0
Fax +49 (7371) 502 49
www.schlegel.biz
vertrieb@schlegel.biz

Media contact:
Georg Schlegel GmbH & Co. KG
Bruno Jungwirth
Kapellenweg 4
88525 Duermentingen
Phone +49 (7371) 502-0
Fax +49 (7371) 502 49
www.schlegel.biz
bruno.jungwirth@schlegel.biz

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About Georg Schlegel GmbH & Co. KG

Schlegel stands for innovation, quality and design. Founded in 1945, Schlegel is today a globally operating company with headquarters in Germany, sales offices in Austria, China, USA and Singapore, and exports to more than 80 countries on all five continents. The core competences: Development and production of control units, pilot lights and terminal blocks. The product portfolio further includes bus systems, enclosures, control panels and functional components. When developing new products, Schlegel sets high standards as to the design. More than 100 national and international design awards confirm the company's high level of design expertise, among these prizes are the iF Design Award, the Red Dot Award, the Good Design Award and the German Design Award.