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Stacker crane for handling precast concrete elements Low-wear solution from Brunnhuber Krane and STAHL CraneSystems

The Bavarian company Lindermayr has been working with a customised 12.5 t stacker crane from Brunnhuber for the semi-automatic production of precast concrete elements since the beginning of this year. This crane, equipped with a lifting mast from the Landshut systems builder Sommer, lifts concrete elements up to 5.7 m in weight from the production line and stacks them onto carts which transport them to the loading bay on the outside of the building. The system was designed by the Augsburg crane building specialist Brunnhuber, STAHL CraneSystems from Künzelsau supplied the matching crane technology.

In the run-up to the company's 50th anniversary, Lindermayr decided in 2012 to upgrade the production line for precast ceilings and double walls, commissioned in 1991, with the aim of increasing its output and the quality of in-house transport. Previously the sections were handled by a number of bridge and portal cranes, including an old 6.3 t bridge crane with a 4 t scissor beam. Essential features of the upgrade included replacing this crane while increasing capacity by at least 1.5 t, and improving operator convenience, in part by fitting a radio remote control.

Customised crane more cost-efficient than standard solution

The heart of the new stacker crane is a customised crab with electric wire rope hoist and lifting mast mounted on the crab. "During the quotation stage for this order, we looked at comparable systems supplied by competitors and we were told about major problems with excessive rope wear," explains Reiner Frick, who planned the crane for Brunnhuber Krane. He said to himself: "We have to improve on that – no-one can be satisfied with a crane that regularly shuts down production for unnecessary repair work!" However he now had to persuade the customer to order the more complex and expensive customised solution.

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Finally Lindenmayr was convinced and placed the order for the crane in October 2012, and Brunnhuber was able to start planning.

As another single girder crane with 5 t S.W.L. runs on the existing crane runway, saving weight was top priority for Brunnhuber when they were designing the new crane. In this case too the optimum solution is to be found in the details: the design engineers were able to reduce the maximum wheel loads occurring by limiting the crab's travel. This change had no adverse effect on production due to the large dimensions of the precast concrete elements. In addition, Brunnhuber reinforced the crane runway in the field of the lifting mast crane.

Individualised hoisting technology

"The lifting mast looks larger from outside than it is, the flange plates and reinforcements on the inside take up a lot of room," says Reiner Frick, who had to house the bottom hook block and the whole rope drive inside the telescope. A sophisticated design demanding close coordination between Brunnhuber's and STAHL CraneSystems' project engineers was necessary for the low-wear rope drive. STAHL CraneSystems manufactured an individualised double-groove rope drum without lateral hook displacement for the hoist – a SH 60 wire rope hoist. The crab frame is based on wheel blocks from STAHL CraneSystems – here too, saving weight and absolutely symmetrical load distribution played a central role. Brunnhuber mounted the lifting mast on the crab with a flange plate: this permits the lifting mast to be dismantled if the crane is to be used for other tasks.

Increased output

The system was commissioned in February 2013 after just under six months and has been in continuous operation ever since. The demand for pre-fabricated concrete sections is high and Lindermayr's production is running at full speed. The system at present achieves 200 tonnes and 210 lifting cycles per day – 24 hours a day, six days a week. Lindermayr was able to increase the production of pre-fabricated sections by up to 20 % thanks to the upgrading. Brunnhuber's increased planning outlay has paid off: "The rope still looks like new after nine months in spite of the incessant three-shift operation," says Reiner Frick with a certain pride. Lindermayr will profit from his solution in the future too: "The low rope wear means that Lindermayr has no expensive downtimes for unnecessary repair work – that's sometimes a cause for complaint with equivalent standard solutions."

Stacking for higher output

Stacker cranes with telescopic lifting masts offer numerous advantages when transporting concrete elements: the rigid guide permits the heavy loads to be lifted quickly and safely without swinging, if required they can be rotated and stacked accurately on top of one another. Brunnhuber's engineers verified that the crane bridge and the existing crane runway could sustain the higher loads caused by this system by checking the building's statics beforehand.

Up-to-date radio remote control

The stacker crane has a convenient radio control. The multi-receiver concept from HBC radiomatic in Crailsheim is used: crane and beam controls have separate radio receivers so that no main and control cables had to be routed to the beam. Only the beam's main power supply is provided by a spiral cable.

STAHL CraneSystems supports crane builders in their demanding projects with the aid of its wide range of products and individually produced engineering solutions. Particularly qualified crane builders such as Brunnhuber Krane GmbH receive intensive support as certified crane building partners. The modular design of STAHL CraneSystems' hoists and crane components and the high level of vertical integration in its Künzelsau plant permits crane systems with components from STAHL CraneSystems to be adapted to the respective requirements in detail. Thus even sophisticated customised solutions such as this stacker crane are always based on high-quality mature crane technology from series production, accounting for the high reliability and long service life of the systems.

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Customised stacker crane from Brunnhuber with components from STAHL CraneSystems: concrete elements weighing up to 5.7 t are lifted from the production line onto transport carts.



Reinforcements and intelligently limiting the crab's travel made it possible to use the existing crane runway.



A low-wear solution for the rope drive was designed in close collaboration between Brunnhuber and STAHL CraneSystems. The basis of the customised solution is the field-proven SH 60 wire rope hoist which was manufactured with a double-groove rope drum for this crane.

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At present, the system lifts up to 210 of these elements per day. Thanks to the upgrade, Lindermayr was able to increase its production of pre-cast elements by up to 20 %.