

## **Liebherr VarioBase® allows bridge to be constructed despite minimal space availability for mobile cranes**

- Liebherr LTM 1160-5.2 and LTM 1130-5.1 mobile cranes replace railway bridge over the River Aare over a period of eight nights
- Senn AG responsible for the production, transport and installation of the new trough bridge
- Jörg Senn: "The installation of the steel construction from the existing bridge was only made possible by VarioBase®"

**Ehingen / Donau (Germany) November 2015 – The first model of the new Liebherr LTM 1160-5.2 mobile crane was delivered to Swiss crane contractor Senn AG in the summer. Working with an LTM 1130-5.1 the new mobile crane completed a job during the last few weeks which other cranes would not have managed as a result of the restricted amount of space available. Over a period of eight nights, a 100-year old railway bridge was replaced in Aarwangen in the Canton of Bern. It was only possible to erect both cranes on a narrow, parallel road bridge using the VarioBase® variable supporting base developed by Liebherr.**

For the bridge builders it was actually a very comfortable job, dismantling the old structure and installing the new one from the neighbouring bridge. But there was only a road measuring seven metres wide available on which the two mobile cranes could be erected for the night-time tandem hoists. Both cranes featured the unique VarioBase® supporting system developed by Liebherr, however, which enabled them to be positioned on the side of the road and have supports variably extended on the side facing away from the load. On the side facing the bridge, this then left enough space to extend the outrigger beams to their maximum length. Load distributor plates specially built for this job ensured that the support pressure was perfectly distributed on the bridge's structure.

### **Greater safety and higher load capacity with VarioBase®**

The variable supporting base for mobile cranes, which was unveiled by Liebherr at the Bauma in 2013, enables each individual crane support to be extended to any length. The crane controller then calculates the maximum load capacity for the current boom

position of the mobile crane and makes sure that the crane is perfectly safe using its load moment limiter integrated in its LICCON controller. The crane controller continuously measures the support force in the support cylinder and ensures perfect safety whilst the crane is operating and during the set-up procedure.

### **Professional bridge building involving multiple tandem hoists at night**

The dismantling of the old truss construction installed in 1906 took four nights in Aarwangen. After the work to renovate the river pier and the abutment, the new 100-metre trough bridge with closed walls, was then installed over a period lasting a further four nights.

On each night, the river-crossing was closed to traffic from midnight. Each night one component of the new railway bridge was delivered from the production site of Senn AG in Oftringen by a low loader and positioned on the road bridge. Since neither time nor space was available to set up the cranes on the bridge, they were driven on to the bridge with the boom fully raised and ballasted.

The two 5-axle mobile cranes were positioned at either end of the 25 metre bridge sections. After attaching and lifting the load the support pressures on the crane supports were checked again before the section of around 50 tonnes of steel was swung over the river and lowered on to piers, auxiliary piers and abutments. The cranes were set up for this in such a way that the telescopic booms on both cranes were positioned precisely over the completely extended rear supports when the load was lowered so as to achieve maximum load capacities.

The crane drivers and structural steel erectors from Senn AG then only required around one hour to install a bridge segment precisely. The smooth, professional process was possible because everything was supplied from a single source, explained Managing Director Jörg Senn. "We completed both the production and the transport and installation work for the railway bridge ourselves in full."

## **The most modern crane in its class – Senn's LTM 1160-5.2**

The LTM 1160-5.2 has been added to the fleet at Senn AG since summer 2015 in the load capacity class between the existing Liebherr LTM 1130-5.1 and LTM 1200-5.1 mobile cranes. "We would like to continue our long-term relationship with Liebherr and the LTM 1160-5.2 is without doubt the most modern crane in its class on the market" was how Jörg Senn explains the decision to buy the Liebherr crane. "The main factors behind the decision included the new Tier 4 engine technology, the technical feature involving the VarioBase® support system and LICCON2, its modern control software. The adjustable ballast radius which allows the operator to vary between two positions is another fantastic feature", enthused the new owner of the LTM 1160-5.2. He also reported that the 160-tonne machine has a very compact design, is very powerful and, measuring just 2.75 metres in width, is a perfect addition to the fleet at Senn AG.

After opening in 1957 in Rothrist, a community between Basel and Lucerne, as a small metalworking business, Senn AG has developed over the decades into a renowned steel construction and crane and heavy haulage contractor. Today the company is based in nearby Oftringen. In its steel construction division, Senn AG currently has a workforce of 80 people whilst the crane and transport division has a further 50 employees. Of the total of 14 mobile cranes in the fleet with load capacities between 30 and 1,200 tonnes, 10 were supplied by Liebherr.

### **Caption**

liebherr-ltm-1160-5-2-ltm-1130-5-1-senn-bridge.jpg:

Tandem hoist at night: the Liebherr LTM 1160-5.2 mobile crane, shown on the left, installs one of four bridge segments for the new railway bridge in Aarwangen together with the LTM 1130-5.1.

liebherr-ltm-1160-5-2-ltm-1130-5-1-senn-detail.jpg:

Specially built: special load distributors for the crane supports had to be positioned with centimetre precision.

liebherr-ltm-1160-5-2-ltm-1130-5-1-senn-variobase.jpg:

VarioBase®: the LTM1160-5.2's sliding struts on the load side are fully extended, but only 19 percent extended on the opposite side.

liebherr-ltm-1160-5-2-ltm-1130-5-1-senn-cabin.jpg:

Complete concentration: Peter Christen at the controls whilst hoisting the new bridge over the River Aare, following the instructions of the installation crew.

liebherr-ltm-1160-5-2-ltm-1130-5-1-senn-disassembly.jpg:

Worn out: the old railway bridge over the Aare has clocked up almost 100 years of service. A segment of the old truss construction is being dismantled in this photograph.

liebherr-ltm-1160-5-2-senn-handover.jpg:

Handover: Marc Bollinger (Liebherr-Baumaschinen AG, left) hands over the new LTM 1160-5.2 to Jörg Senn (Senn AG, right).

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