

Site report

Two stationary booms for the bridge construction



The new ICE high-speed railway line between Frankfurt and Cologne requires the construction of numerous tunnels and bridges. The crossing of the River Lahn is one of the most spectacular bridge projects ever. Stationary Putzmeister placing booms are at the fore here for the work on the bridge superstructure – almost 50 m above the Lahn Valley.

The ICE new line construction does not just connect the economic centres of the Rhine/Main and Rhine/ Ruhr but also counts as an important section in the European high-speed network. The new line crosses the Lahn Valley at Limburg. The 438 m long bridge construction is one of the 18 large valley bridges over the course of the high-speed line.

The ICE Lahn Valley Bridge rests on six piers which required extensive foundation work. In the area of the river beds of the Lahn, the superstructure is supported on an arch. Whereas the superstructure was produced as a continuous support with an advance girder, the arch was erected guyed with 116 m support width from both springing stones.

Bridge superstructure concreted without having to change the standing position of the booms

The superstructure was erected at regular effective spans of 58 m and as a continuous bearer with unicellular hollow box (height 4.75 m). The company Philipp Holzmann AG used two stationary Putzmeister placing booms of type MXR 24 and MXR 32 for the concreting work on the superstructure. Whereas the 24 metre boom 'sat' on a 10 m high tub-



The two stationary booms MXR 32 (at the front) and MXR 24 concreting the bridge trough

ular column which was anchored on the side to the steel support structure of the formwork, the MXR 32 had been interlocked firmly with the tie rods in the concrete. With this method, the 58 m long and approximately 14 m wide superstructure was placed, reinforced and concreted

without any hindrances, and without the two concrete placing booms having to be moved to a different position. On completion of one section, the MXR 24 was pushed forward hydraulically along with the steel support structure of the formwork on the concreted bridge deck.

The trough and the bridge deck were respectively subdivided into eight concreting sections. For the individual concreting, the truck-mounted concrete pumps first conveyed with up to 52 m high placing booms concrete through their boom pipe line and then from the height of the steel support structure of the framework – via a firmly anchored concrete line into the vertical line of the stationary booms. With each advance, the stationary delivery line also moved into the steel support structure.

Approx. nine hours were estimated for the placing of the on average 400 m³ concrete into the trough. One required roughly eight hours to concrete the resp. 280 m³ concrete into the deck of the bridge. The concrete for the piers, arch and superstructure was a water-resistant B 45 WU with grain 0/16. The slump was 52 cm.

On schedule thanks to speed placing of the concrete

The operating plan of the Deutsche Bahn Railway is for five trains an hour in each direction once the new line has been completed. This will connect the Rhine/Main area to Cologne with a top speed of 300 km/h. The travelling time will be practically halved – from the 133 at present to 58 minutes. Both of the stationary Putzmeister concrete placing booms MXR 24 and MXR 32 have contributed to the completion on time of the Lahn Valley Bridge. Their unusual arrangement on the steel support structure of the formwork and deck have made speedy placing of the concrete possible.



Concreting the Lahn Valley Bridge with advance girders



Attaching the MXR 32 onto the already concreted deck section



Anchoring of the MXR 24 onto the steel support structure



The ICE new line Cologne-Frankfurt alternates between bridge and tunnel construction sites

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