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E-mail: erwann.maillot@terex.com**DEMAG® CC 3800-1 CRAWLER CRANE WORKS ON WATER FOR SARENS**
CHALLENGING TAIL BRIDGE LIFTS MADE FROM BARGES WITH EASE

ZWEIBRÜCKEN, Germany, October 20, 2016 – It was nearly a year ago when industrial contractor, Hollandia Infra, contacted its trusted heavy lifting and engineering transport specialist, The Sarens Group, to discuss an intricate project involving the Queen Maxima Bridge. Crossing the Old Rhine River at Alphen aan den Rijn, Netherlands, the planned new structure included a balanced tail bridge design, where the tails contain counterweights that ensure smooth opening and closing of bridge segments, allowing tall vessels to pass through.

The project called for lifting and positioning the two main balanced tail bridge segments weighing in excess of 280 tonnes (310 tons) from barges on the Old Rhine River. “We knew there would be much planning and we would need a high capacity crane to successfully complete this heavy lifting project,” says Robin van Oss, Project Engineer for Sarens.

Adding to the complexity, there was a narrow navigation channel through which barges carrying Sarens’ specialized lifting equipment had to pass. The required crane and supporting equipment would enter the river at Dordrecht, NL, and navigate nearly 50 km upstream to the bridge project site spanning the Old Rhine River. “The top challenge for working on water was the narrow, 11.4-m (37.4-ft) wide passage in some parts,” mentions van Oss.

Searching through Sarens’ vast lifting equipment fleet, one crane model stood out as the best choice for delivering success on the project. With its track length just narrowly fitting channel requirements for Sarens, the Demag CC 3800-1 lattice boom crawler crane offered the right combination of compact footprint and heavy lift capacity required for this job.

Meticulous planning

Sarens team members invested many months planning for the challenging lift. Because the hoists would take place from barges, the crane equipment needed to remain stationary on the floating bases, while tugboats and mooring lines did all the maneuvering. “The plan was to rig and position the CC 3800-1 crane in the correct set-up on the barges, and the crane would be used like a

sheerleg,” explains van Oss.

In addition to the Demag crane, Sarens’s plan called for a 100-tonne (110-ton) capacity mobile crane for lift support, a twin barge configuration and strand jacks. Sarens’ Sarspin device – with its four hydraulic leveling cylinders and up to 600-tonne (660-ton) capacity – would also be integral in helping the CC 3800-1 crane to position the pivoting bridge segments.

To handle the 230- and 280-tonne (253.5- and 310-ton) weight of the two bridge segments, the Sarens plan required the Demag 650-tonne (715-ton) crane to be configured with its Superlift structure to increase crane capacity. Accommodating the 11.4-m (37.4-ft) canal width in some areas and crane positioning on the floating base, “We had to install the crane on one barge and the Superlift tray with counterweight on the other,” explains van Oss and adds, “The crane’s tracks were to be positioned perpendicular to the length of the barge, so its 11.3-m (37.1-ft) track tip-to-tip length narrowly passed through the channel.”

The massive 30.7-m (100.7-ft) long bridge segments required LSL_2 configuration with 60 m (197 ft) of main boom for the CC 3800-1 crane and 36m Superlift mast. 165t counterweight on the crane’s superstructure , 50t central ballast and 325t on Superlift tray were necessary to give the crane a 347-tonne (382.5-ton) capacity when working at the predetermined fixed 24-m (78.7-ft) radius.

“We planned every lift detail and prepared for every possible contingency for about six months prior to the project start date,” mentions van Oss. In early July of 2016, Sarens’ crew members were able to put all of those preparations in action.

Smooth lift

The CC 3800-1 was shipped directly from the Zweibrücken (Germany) plant to the mobilization site in Dordrecht. Sarens’ van Oss offers, “The crane looked beautiful. This was the first project for it.”

Sarens’ 10-person crew had the crane rigged with main boom, Superlift mast and full counterweight within three days. The car body was maneuvered onto the first barge, while the Superlift tray and maximum counterweight was positioned on the second. Both barges navigated the narrow channel passageway independently of each other.

Once reaching the Queen Maxima Bridge destination, Sarens’ crew members connected the two barges together and the Superlift counterweight tray to the crane. While a tugboat positioned the two barges carrying the lifting equipment, a separate vessel positioned the enormous balance trap type tail bridge main segment, upended on its wings, next to the crane barge.

Crew members chose to position the west side bridge traffic lanes first. They used ballasting on the crane barge to slowly hoist the tail bridge segment and transfer weight from the transport barge.

“The bridge’s eccentric center of gravity challenged our work crew, but they used our Sarspin device to flip and rotate the bridge segment into its final position for connection to the rest of the bridge,” says van Oss. “When you work on water, you have a number of challenges to face – wind, weather, waves and weight transfer – and we faced it all on this job.”

It took just short of four hours to lift the west side bridge segment to height and another two hours for moving the crane barges and load into installation position. Within a final three hours, Sarens’ crew attached the pivoting segment of the bridge to complete the first lift. The entire process was completed in one long day.

The two crane equipment barges were then split apart and repositioned on the east side of the Queen Maxima Bridge. Attachment of the second moveable bridge segment went as smoothly as the first. Within two weeks, segment installation was complete and Sarens mobilized the barges with lifting equipment back to Dordrecht for derigging, leaving no sign that they were ever there.

Speaking about the project, van Oss concluded, “The long-term and intensive engineering phase, our talented and experienced work crew, and the use of trusted lift equipment like the Demag CC 3800-1 crane resulted in an excellent and quite short two-week execution phase. We quietly arrived, did our job and quietly departed.”

For more information on the Demag CC 3800-1 lattice boom crawler crane, please follow this link: [Demag CC 3800-1 crawler crane](#).

About The Sarens Group

The Sarens Group, with its Belgium-based head office (Wolvertem), has been providing heavy lift, engineered transport and specialized rigging services for more than 60 years. With state-of-the-art design tools and one of the world’s largest inventories of cranes, transporters and specialty rigging equipment, along with a team of highly skilled professionals, the Sarens Group is an international market leader in its field. Employing more than 4,200 dedicated employees who embody the spirit of the company’s motto, “Nothing too heavy, Nothing too high,” the Sarens Group is well prepared to support its customers’ heavy lift, engineered transport and specialized transport requirements around the globe and across every market sector.

For more information on The Sarens Group, visit <http://www.sarens.com>.

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