Complex bearing replacement at the port of Hamburg

Special launching track for the old and new bearings of the Köhlbrand bridge.

Hamburg. **Changing the bearings on the important Köhlbrand bridge at the port of Hamburg is a major challenge. Through a combination of massive scaffolds, special launching tracks and electric winches inside the bridge deck, MAURER is demonstrating what engineers and installers are capable of.**

The Köhlbrand bridge sits at the heart of the port of Hamburg. Opened in 1974, the asymmetric cable-stayed bridge crosses the Köhlbrand, which is part of the Süderelbe. It connects the western areas of the port with the island of Wilhelmsburg in the river. It also links the port to the motorways heading towards Flensburg, Kiel, Hanover and Bremen. The bridge carries large volumes of heavy goods traffic, particularly on weekdays, while its clearance of 53 m allows container ships to pass underneath. It was this height that posed a challenge when it came to replacing the bridge bearings.

Launching track and scaffold tower

"The problem when changing the bearings here isn't the bearings themselves, but rather the installation and removal", explains Michael Trzeciok, Project Manager at MAURER. Each of the three piers forms its own project phase. After intensive preliminary work, replacing the two bearings on each pier requires the bridge to be closed from Friday evening to Monday morning every time. This is because the bridge deck can only be raised when there is no traffic.

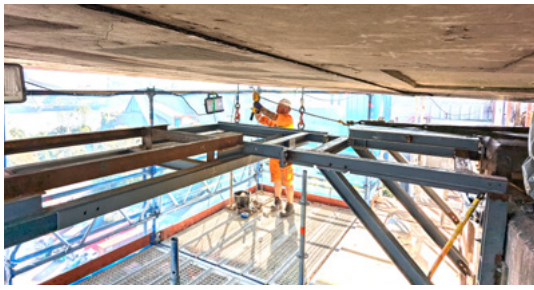
The first two bearings were replaced in October 2023. Pier 101 stands on the island. A scaffold measuring around 40 m in height was built here to reach the bridge bearings.

A special launching track with table was designed, in order to remove an old bearing from the pier and replace it with a new one.

The old bearing was taken away on the table via the launching track and put down, before the table returned with the new bearing (photo).

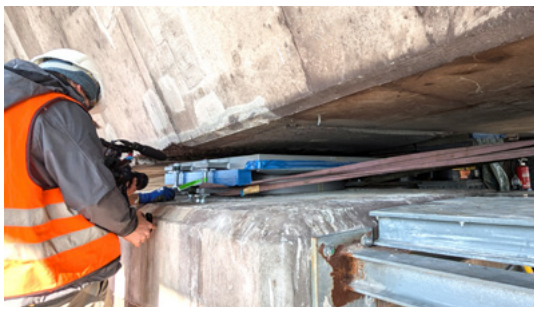
The Köhlbrand bridge in Hamburg.

Photo: MAURER



Launching track..

Photo: MAURER



New inserted bearing.

Photo: MAURER

Press Contact

MAURER SE
Judith Klein
Head of Marketing & Communication
Frankfurter Ring 193, 80807 Munich
Telephone +49.89.323 94-159
Fax +49.89.323 94-306
j.klein@maurer.eu, www.maurer.eu

This required electric winches, which were installed inside the bridge's box girder. The image shows the cables passing down through the box girder on the left and right.

Replacement over water

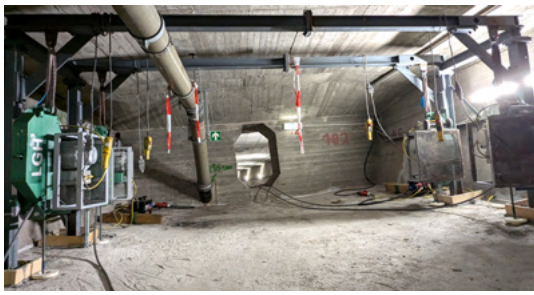
The second phase in September was even more challenging, as pier 102 is located in the water of the Köhlbrand itself.

To replace the bearing here, a temporary bridge was constructed from pieces of scaffold in order to access the pier from the water.

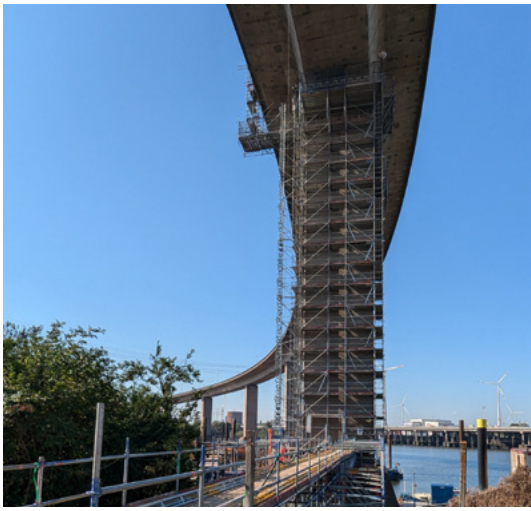
A total of six pot bearings are being replaced in three phases until 2025.

The bearings each measure 1.5 x 1.5 m, with a weight of 2 t and a load-bearing capacity of up to 30,400 kN.

Text: 2,434 characters



Electric winches in the bridge's box girder.
Photo: MAURER



Temporary bridge.
Photo: MAURER

New bearing.
Photo: MAURER

Press Contact

MAURER SE
Judith Klein
Head of Marketing & Communication
Frankfurter Ring 193, 80807 Munich
Telephone +49.89.323 94-159
Fax +49.89.323 94-306
j.klein@maurer.eu, www.maurer.eu

Quick facts about MAURER SE

MAURER SE is a leading specialist in mechanical engineering and steel construction, with over 1,500 employees worldwide. The company is the market leader in structural protection systems (bridge bearings, expansion joints, seismic protection devices, tuned mass dampers and monitoring systems). It also develops and produces vibration isolation solutions for structures and machines, rollercoasters and Ferris wheels, as well as special structures in steel construction.

MAURER has been involved in many spectacular large-scale projects. These include the world's largest bridge bearings in Wazirabad, Pakistan, earthquake-resistant expansion joints for the world's longest suspension bridge, the 1915 Çanakkale in Turkey, tuned mass dampers in the Baku and Socar Towers in Azerbaijan, and the unique guided cross-ties with derailing protection on the Champlain railway bridge in Montreal. Complete structural isolation projects range from the Acropolis Museum in Athens to the new airport in Mexico. MAURER has also worked on spectacular amusement rides, such as the Umadum Ferris wheel in Munich, BOLT™ – the first rollercoaster on a cruise ship, and the world's first duelling rollercoaster at the Mirabilandia Park in Ravenna, Italy.

Press Contact

MAURER SE
Judith Klein
Head of Marketing & Communication
Frankfurter Ring 193, 80807 Munich
Telephone +49.89.323 94-159
Fax +49.89.323 94-306
j.klein@maurer.eu, www.maurer.eu