

**Field of expertise:** Civil Engineering

**Client:** Strukton Immersion Projects

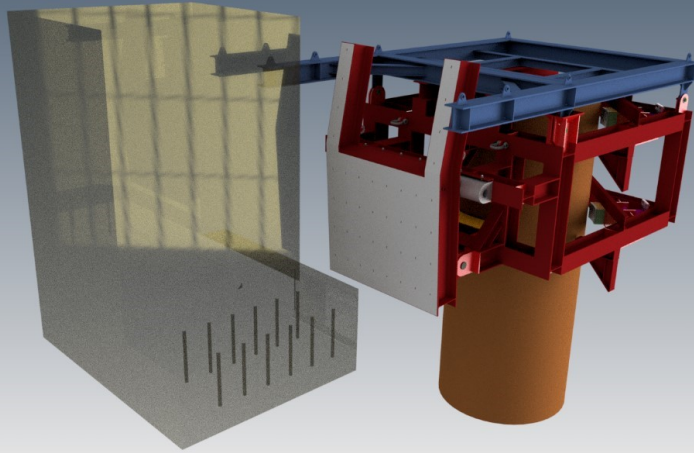


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## Immersion of Caissons as foundation for the Çanakkale 1915-bridge in Turkey

### Project description

The “Çanakkale 1915-bridge” will become a suspension bridge which connects Lapseki and Gallipoli in Turkey. The span between the pilons of 2.023 meters will make the “Çanakkale 1915-bridge” the bridge with the longest span in the world. The completion of the bridge is planned in 2023.

Two large caissons will be the foundation of the pillars of the bridge. The caissons are 20 meters high and have a surface of 74 by 83 meters and are located at a depth of 45 meters. They weight approximately 66,000 tons each. During a 72-hour operation, the caissons were placed on the seabed with an extreme precision of 10 mm by Strukton Immersion Projects.

### Project activities

- ◆ Strukton Immersion Projects (SIMP) searched, together with MH Poly, for a system to relocate the two caissons from the construction dock. Hereby, MH Poly made a model of the dynamic float off and the winch operation to determine the optimal winch positions and loads for the transport of the caissons out of the building dock.
- ◆ To immerse the caissons in a controlled matter, SIMP and MH Poly invented together a underwater positioning system for the caissons on the seabed. This system is required to control the placement of the caissons during the immersion into the strict placement tolerances required. Later on, MH Poly worked out, in good cooperation with SIMP, the drawings and the calculations of the design.
- ◆ Per caisson, the positioning system consists of 4 guiding frames placed over piles on the seabed and 4 hydraulic cylinders which are mounted on the toe of the caissons. The designs of the housings of the hydraulic cylinders were also part of the scope.
- ◆ The placement tolerances of the caissons were very tight. This meant the tolerances of the placement of the guiding frames were tight too. For this reason, special frames were designed to guide the guiding frames into the correct heading during placement. These heading frames were placed inside the piles. For the lifting operations, a special lifting frame was designed which was able to install the heading frames and guiding frames.