



**Chioggia CBA02-Habitat** - Italy

## Project information

Client:	Clodia s.c.a.r.l.
Duration:	1 year
Date of completion:	November 2015
Contract value (EUR):	€ 0,5 million

## Description of the activities

Design, engineering and installation of an “underwater habitat at atmospheric pressure” (watertight space) for demolition / recovery works of a caisson roof of the Chioggia Flood Barrier.

## Details

Type:	Habitat
Habitat measurements:	25m x 12m x 6m / 3m (L x B x H external/internal)
Installation depth:	11 meters
Structural tolerances:	within +/-5mm
Specific requirement:	strict water tightness / multiple use



## Specific information

The Chioggia Flood Barrier is part of the MOSE-project, a system of movable barriers to protect Venice and its lagoon from flooding. The Chioggia inlet is one of the three inlets between the sea and the lagoon where barriers are installed. The barrier consists of concrete caissons immersed on the bottom of the inlet and steel mobile gates connected to the caissons with hinges.

In November 2015 one of the immersed caisson roofs was found to be damaged in two positions. The roof was 11 meters below the water line, where the possible damaged area per position was about 10 meters long and 8 meters wide.

In six months' time a steel habitat was designed and constructed to be able to execute the required dry inspection, demolition and repair works. Design, preparations and installation of the habitat were within the scope of work of Strukton, where construction of the habitat and demolition/repair of the caisson roof were in the scope of the client. The habitat consisted of three parts (one middle section and two side boxes) and two access shafts. All parts were connected with specialized rubber seals. The weight of the total structure was about 400 ton and it was produced in a steel fabrication plant in Italy. After transport over water on a barge, all the parts were lifted and accurately positioned piece by piece with two floating cranes under water with diving assistance of OTN.

The main challenges of the project were the strict water tightness of the drained habitat in order to assure high quality inspection, demolition and repair results. Another restriction was the weight of the habitat parts in relation to the lifting capacity of the floating cranes. By limiting the structural impact on the caisson and providing a large dry working space, the concrete repairs could start and finish on time and within the quality requirements.

After the first successful installation in June 2015, the habitat was retrieved, and reinstalled on the second location in August. In total the habitat was in function for 18 weeks before final removal in October 2015, meeting all requirements of the client during the entire time.