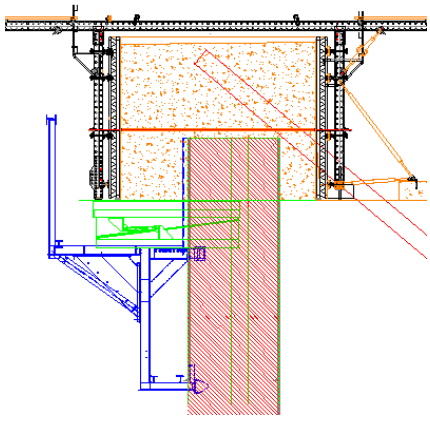
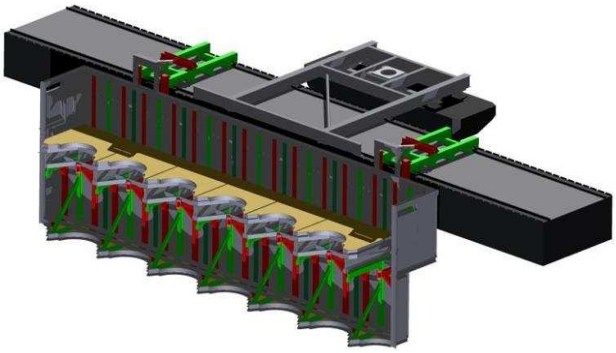
"AQUA-SHELL" the capping beam system

A PARTICULAR METHOD FOR THE CONSTRUCTION OF A CAPPING BEAM FOR WATERFRONT STRUCTURES

When building a quay wall in the water, the construction of a concrete capping beam is not easy. An unconventional formwork-technology is used in the construction of a quay wall in the port of Antwerp (Belgium) by Van Laere n.v.

A steel watertight caisson, shaped to fit the complex form of the combination-wall, is attached to this wall. Once positioned in place, the water-level is lowered inside this caisson. A large rubber joint is fixed to achieve a watertight connection. Subsequently, the capping beam is built inside the dry limpet. Moreover, this limpet is able to carry the full weight of the concrete beam and thus functions simultaneously as a bottom formwork.





Moving the limpet to its next position is done by using a purpose-built floating pontoon (catamaran). The pontoon is equipped with a sophisticated fork-lifting system, which carries the limpet, and moves it to the next position.

The limpet is a steel structure with a length of about 24,0m , a height of 6,00m and a maximum width of 5,20m . The upper part is wider and serves as a working space with sufficient room for the capping beam, the formwork and staff. Approximately at half height of the caisson, box profiles slide into U-shaped steel profiles that are welded to the tubular piles, thus creating a fixed connection.

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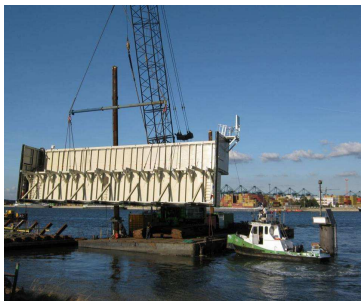
ASSEMBLY OF THE LIMPET AND LOWERING IN THE WATER :

POSITIONING OF LIMPET , FORMWORK AND POURING OF CONCRETE :


The benefits of this technology, called “AQUA-SHELL”, compared to traditional implementation methods are threefold: it saves time, there is minimal impact on the existing waterway, and the finished quality is much better when using monolithic implementation techniques for the concrete capping.

At the Belgian Building Awards 2010, Van Laere won the Innovation Award for this innovative construction technology, which was developed and manufactured in-house. The jury, which was made up of specialists from the WTCB and the Belgian Construction Confederation, acknowledged Van Laere more specifically for their speed, the quality of the implementation, their focus on their workers, and attention to safety.

Van Laere Construction Group is active in the construction of office buildings, hotels, utility buildings, civil- and hydraulic engineering and environmental projects of different kinds. The company is highly experienced in the construction and engineering of civil works, such as tunnels, quay walls, bridges and high speed train projects.

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