

# TATA STEEL



## Case study Antwerp Port House

**Client:** Port of Antwerp

**Architect:** Zaha Hadid Architects

**Main Contractor:** Interbuild

**Structural Engineer:** Studieburo Mouton

**Steel Contractor:** Victor Buyck Construction

**Tata Steel products:** ComFlor® 80 and ComFlor® 60 [supplied by Dutch Engineering r.i. B.V.]

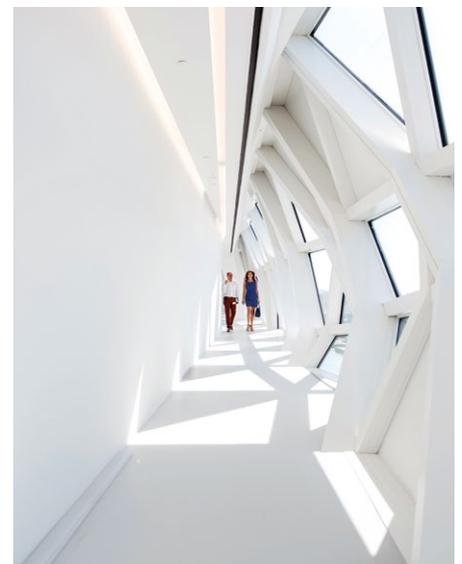
**Year:** 2015

The new Antwerp Port House comprises of a new highly architectural four-storey extension positioned above a restored former fire station built in 1911.

Providing 12,800m<sup>2</sup> of office space, the project has given the Port Authority a single headquarters building for the first time.

The strategy for the four-storey extension was to keep the existing building largely intact and treat the fire station as a plinth.

The new addition merges seamlessly with the old as the raised extension, shaped like the bow of a ship, sits asymmetrically above on concrete pillars.







Designed by renowned Zaha Hadid Architects, the prominent landmark building with its spaceship-like form that seems to float above the existing building, is intended to be a nod to ships that use the port.

The new building has a total of nine floors, four in the existing fire station, four in the new extension and one more level in a horizontal bracing structure, known as the Bridge, that is positioned between the two buildings.

#### The challenge

In order to find the best solution for the project's flooring design, a lot of complex design calculations were required between the structural engineer Studieburo Mouton and Dutch Engineering.

**"The structural choice of steelwork and light weight composite floor slabs was the logical conclusion, given the design of the building,"** explains Henk Prins of Dutch Engineering.

"The fact that a structural frame had to be placed over the existing Harbour House building was another complicating factor

#### Tata Steel products:

**ComFlor®** is the ultimate steel floor deck solution for multi-rise buildings, providing excellent acoustic performance, fire protection and contribution to thermal mass.

**ComFlor® 80** is a round shouldered 80mm deep trapezoidal profile to give long spans. The use of this profile allows

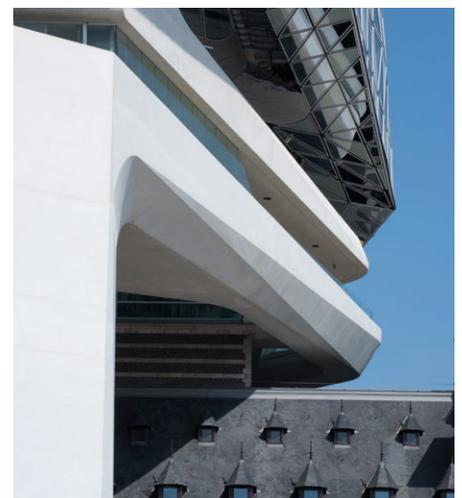
a designer to reduce still further the number of secondary beams in a building.

**ComFlor® 60** was the first of the new generation round shouldered trapezoidal combined 60mm profiles and is still the one to beat. This design is exceptionally resistant to compressive buckling resulting in superior span capability compared to traditional decks.

which again helped in making the decision to use Tata Steel's ComFlor® composite floor deck system throughout."

Speed and ease of construction were of the utmost importance to the project team and a flooring system that could easily be incorporated with the steel frame was vital to the design.

"A cost-effective flooring solution was required, one that would achieve long spans and the load requirement, with a low concrete volume, thereby removing the need for temporary propping," explains Mr Prins.





### The solution

Using ComFlor® helped ensure the best possible solution for the project. ComFlor® scored highly for all of the project's required needs and was the preferred flooring option out of five put forward, based on its light weight and cost.

**“The design team’s comprehensive evaluation required a flooring system that provided strength, achieved the load and span requirements and one that offered a fast build at great height,”**  
adds Mr Prins.

The flooring solution was completed using 5,000m<sup>2</sup> of ComFlor® 80 in 0.90mm gauge, as well as a quantity of ComFlor® 60 in a 1.20mm gauge for the sloped stairs, all supplied by Dutch Engineering.

David Dooms, Structural Engineer at Studieburo Mouton says: “We chose the ComFlor® 80 profile for a number reasons. It has a low floor self-weight, which was important in order to limit the weight of the new building ‘floating’ above the existing building.”

“By using ComFlor® we had the ability to work free of temporary propping. Again, this was

important because the new building is located above an existing building, supported on two giant concrete stilts.”

“And finally, we were able to use shear studs to get the composite action of the floor slabs with the cellular beams, as well the ability to achieve a 120 minute fire resistance.”

**To find out more about how Tata Steel products can help you maximise the structural performance as well as fire, acoustic and weather resistance of your projects, please contact a member of our design team on +44 (0) 1244 892199 or email [technical.theworks@tatasteel.com](mailto:technical.theworks@tatasteel.com)**

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