



OPTOPPEN RESIDENTIE LOUISE

Knokke

The renovation and expansion of Residence Louise



Status

2018 - 2022



Services:

Structural



Sectors:

Residential: Residential buildings



Client:

Hoprom



Architect:

Multiprofessionele
architectenvennootschap Koen
Willem



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General

The renovation and extension of Residentie Louise on the sea dike in Knokke-Heist – next to the well-known casino – turned out to be more complex than originally thought. With advanced BIM expertise and by applying new construction methods, we were able to help untangle the construction nodes and make the realization possible.

The association of co-owners, through the architect, engaged the Kortrijk-based project developer Hoprom to renovate the 7 existing floors with 26 apartments and to construct 4 new floors on the roof – each in duplex form. The outdated volume was completely stripped and renewed, and each apartment received a complete modern makeover.

3D makes stability challenges visible

Due to the complexity of the existing volume, 2D plans provided insufficient information about the structure. A clear picture was nevertheless crucial to be able to reinforce the stability in function of the new superstructure, and preferably in a stylish and barely visible manner. By converting the 2D plans to 3D, we created transparency and provided a workable model to build upon. By proactively detecting and eliminating the critical nodes, it became possible to seamlessly connect the new superstructure to the existing floors.

The foundation was reinforced via 28 columns running from the basement to the highest floors. Because the existing apartments obviously had to be preserved, those columns were placed out of sight where possible in the common areas, such as in shafts behind the elevator and integrated behind the new cladding of the facade.

Lightweight superstructure with creative solution for height restriction

The new superstructure posed a double challenge: keeping the weight as low as possible AND fitting within the prescribed building height, which was actually just too tight for four floors. For both challenges, completely new solutions were found.

The structure of the superstructure consists of metal trusswork that was also entirely designed in 3D to proactively untangle the construction nodes and enable smooth placement on site. To add as little weight as possible for the rest, robust Swiss Krono Magnumboard® OSB panels were used for the load-bearing walls, of which construction partner Wood & Build is the exclusive license holder for the Benelux. The floor construction of the top 2 floors of the new build was also executed in wood. For this – for the bottom two floors of the new superstructure – slim line floors from the Dutch company Slimline Buildings were used for the first time in Belgium, which were manufactured for us at Verhelst. These floors are precast slabs with embedded IPE beams, through which the services can run. This provides significant vertical space savings, making it possible to construct four floors within the permitted height.

Narrow window profiles for maximum sea view

To allow the owners and tenants of these apartments to enjoy the view of the sea and surroundings to the fullest, exceptionally fine and barely visible window profiles were also chosen. This is less straightforward than it seems, especially at this location where wind loads can be very high.

Construction partners:

- Hoprom (Kortrijk) – project developer - building owner
- Koen Willem (Oostkerke-Damme) – architect
- Van Huele (Ostend) – general contractor
- Wood & Build (Handzame) – timber construction contractor
- Verhelst (Oudenburg) – realization of slim line floors