Making the most of a dockside ghost

Photo courtesy of Rob Hoekstra

By Margrit Colenbrander

The Kraanspoor (literally 'craneway') is a lightweight steel and glass office building consisting of three storeys built on top of an old concrete craneway situated in the dockyard area on the River IJ in Amsterdam, the Netherlands.

The project has rejuvenated a relic of the city's shipping industry, a concrete structure that was headed for demolition when the designer, **Trude Hooykaas** identified its redevelopment potential.

OTH designed the 12,500sqm transparent office building in such a way that it seems to float over the old concrete base. The old structure is 270 metres in length, 13.5 metres in height and 8.7 metres in width, making the first working floor of the new structure 15 metres above the ground.

The challenge for OTH was to create a maximum surface area without having to make radical adjustments to the existing concrete structure utilising its maximum allowable load-carrying capacity. A lightweight steel structure was chosen for the new development in combination with an Infra+ composite floor system to keep weight to a minimum without compromising strength.

The concrete structure acts as foundation for the new building and carries the maximum possible weight of a three storey building with an asymmetrical overhang of 3.25m on the waterside. This is due to the foundation's heavier load-carrying function for the former revolving cranes that cantilevered to this side.

The new offices have been supported on slender steel columns three metres above the craneway so that the new structure appears to float above the imposing concrete colossus.

The Infra+ floor system is supported by 625 tonnes of integrated steel beams spaced on centres of 7.67 metres with a span of eight metres. Services are tucked away in the hollow space between the concrete skin and the upper floor allowing for a maximum clear height.

A continuous floor was created using fishplates to support the floor beams on trusses to enhance stiffness. The stability of the steel structure is due to the steel K-bracing structures.

A remarkable feature of the newly built construction is the completely transparent double-skin climate façade of glass. The inner façade is of hinged timber windows stretching from floor to ceiling on each level. The outer layer of moveable motor-driven glass louvres lends a delicate detail to the look of the building and forms a lively and variable façade.

This façade allows natural ventilation and provides insulation. Openings in the floor and a low-energy mechanical extraction system complete the environmentally friendly ventilation cycle. Hydrothermal heating as well as cooling is provided to the building via river water which is circulated through pipes cast into the floors.

The four existing stairwells have been refurbished to include panoramic lifts providing easy access to the building. In the heart of the original concrete structure underneath the offices is extensive archive and storage space.

Construction on the Kraanspoor began in 2006 and was completed in November 2007. The project has received the Urban Land Institute Award for Excellence (Europe) 2008, the MIPIM Green Building Award 2008, the Glass Award 2008, the Staalprijs 2008 and the ULI Global Award for Excellence 2008 among other honours.

Project team

Client: ING Real Estate Development, Netherlands, Den Haag

Architecture: OTH, Amsterdam

Initiative and design: Trude Hooykaas

Project team: Trude Hooykaas, Julian Wolse, Steven Reisinger and Gerald Lindner

Project adviser: INBO Adviseurs Bouw, Woudenberg

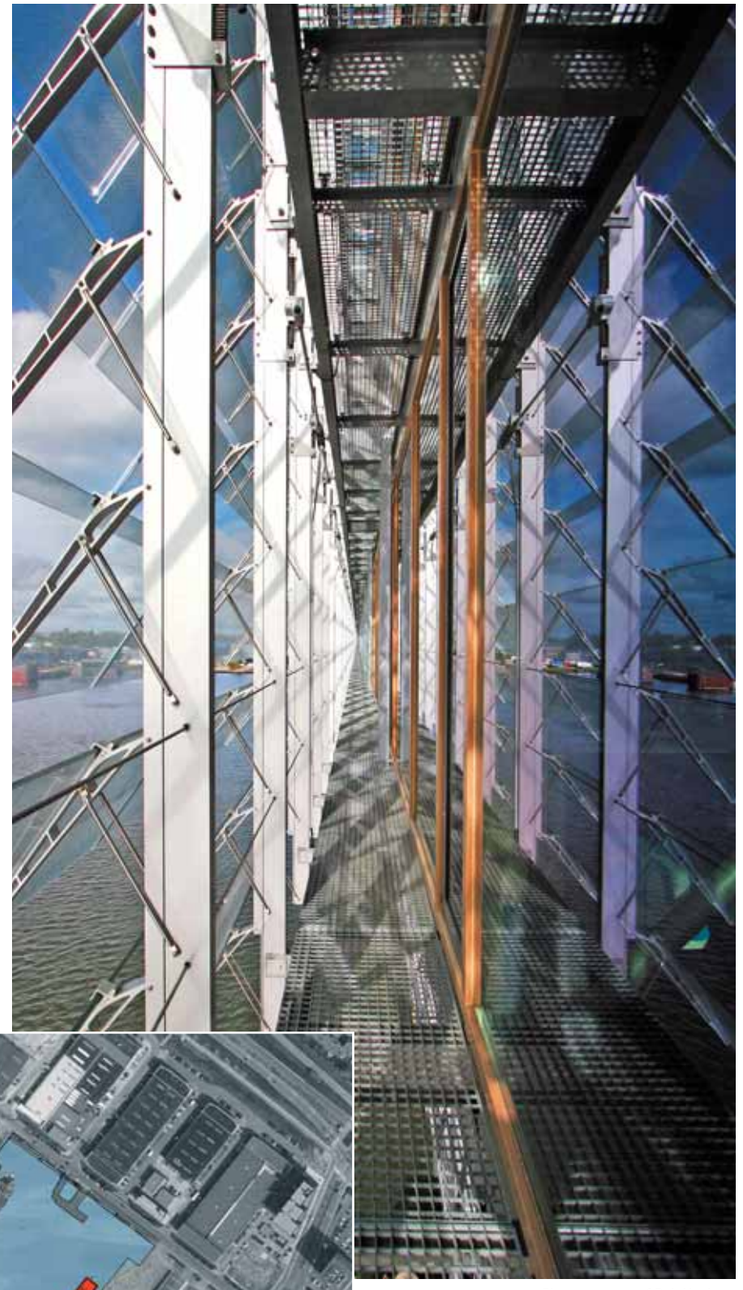
Structural Engineer: Aronsohn Consulting Engineers, Rotterdam

Contractors: M.J. de Nijs en Zn., Warmenhuizen/Bot Bouw, Amsterdam

Installations: Huygen Installatie Adviseurs, Rotterdam

Building physics: Lichtveld, Buis & Partners BV, Nieuwegein

Project management: Grontmij / Kats & Waalwijk, Gorinchem



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Site plan courtesy of OTH