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architecture & design
تصميم و هندسة معمارية

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BIG - Bjarke Ingels Group

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Gnosis Architettura

PRAS and M.A.M. Rossi + AiKu

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[focus] تركيز

A Big(ness) Architecture



In passing over the Erasmus Bridge from Rotterdam city centre to the old harbour area, we arrive at the south banks of the Maas channel, dominated today by the vast De Rotterdam building, 150 m high with a total floor area of 160,000 m².

The De Rotterdam building is literally a vertical city, a "container" accommodating apartments, offices and leisure areas, conference facilities, a four star hotel and a large car park. Project development, under OMA architects, initiated in 1997 and construction was ultimately begun in 2009, at a location mid-way between Renzo Piano's KPN tower (1997-2000) and the older Rotterdam cruise-ship terminal.



DE Rotterdam

Project

Mixed-use vertical city

Client

De Rotterdam C.V., The Hague (a joint venture of MAB, The Hague and OVG, Rotterdam)

Location

Rotterdam, Netherlands

Project dates

Commissioned 1997; groundbreaking December 2009; completed November 2013

Architecture and Design

OMA

Rem Koolhaas, Reinier de Graaf, Ellen van Loon (Responsible partners)
Kees van Casteren (Responsible associate)

Project team (architectural and interior design, execution)

Team 1997–2001 (schematic design): Christina Beaumont, Stefan Bendiks, Frans Blok, Robert Cheoff, Bert Karel Deuten, Sharon Goren, Juan Guardetti, Jens Holm, Alex de Jong, Adam Kurdahl, Carolien Ligtenberg, Anna Little, Nuno Ro-sado, Saskia Simon, Johan de Wachter, Barbara Wolff

Team 2007–08 (schematic design to building permit): Chantal Aquilina, Eva Dietrich, Anita Ernödi, Markus Frank, Jonah Gam-blin, Clarisa Garcia-Fresco, Alex de Jong, Michel van de Kar, Christoph Michael, Elida Mosquera, Mauro Parravicini, Ippolito Pestellini Laparelli, Raphael Pulido, Louise Sullivan, Olaf Turck, Manuel Villanueva, with: Chun Chiu, Duncan Flemington, Evangelos Kotsioris, Sören Martinussen, Nobuki Ogasahara, Theo Petrides, Benoit Schelstraete, Ian Schopa, Kyo Stockhaus, Joao Viera Costa, Luca Vigliero, Jussi Vuori, Jean-Paul Willemse

Team 2009–13 (construction phase, interiors): Michel van de Kar (Associate), Marlies Boterman, Christoph Michael; with Katrien van Dijk, Nathalie Gozdziaik, Sai Shu, Saskia Simon, Tomas Dirrix, Erik de Haan, Jue Qiu, Pal Trodahl

Interiors hotel (2013): Saskia Simon, Marina Cogliani, Clive Hennessey, Yasuhito Hirose, Arminas Sadzevicius

Engineering

Structural engineer: Corsmit, Rotterdam

Structural advisor (schematic design): Arup, London

Service engineers: Techniplan, Rotterdam (offices, hotel); Valstar Simonis, Rijswijk (apartments, plinth)

Fire safety and building physics: DGMR, Arnhem

Lighting consultant, ground floor and atrium: Arup, Amsterdam

Building code consultant

ABT Bouwkunde, Velp / Delft

Size and total area

Total 162,000 m²: offices 72,000 m²; 240 apartments 34,500 m²; hotel (278 rooms), meeting centre and restaurant 19,000 m²; retail, food and beverage 1,000 m²; leisure 4,500 m²; parking (650 vehicles) 31,000 m²

Additional functions

Executive architect: B+M, The Hague

Façades: Permasteelisa; Middelburg for offices, hotel, plinth and TGM, Asten for apartments

Scenography/lighting consultants, hotel: Ducks Scéno, Paris and Les Eclaireurs, Lyon

Elevators, escalators, building maintenance units: Kone, The Hague

MEP: Roodenburg, Krimpen aan den IJssel

Contractor: Züblin, Stuttgart/Antwerp/Vlaardingen

Image credits

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Window structures

The design concept originates from the thinking of Rem Koolhaas, founder of OMA studio, and his interpretation of the contemporary city, particularly his concept of 'Bigness' as developed some years ago. As an outcome of both 'bigness' architecture and its role as a vertical city, De Rotterdam clearly emerges as a new icon of the Dutch urban landscape. It shows "its potential to reconstruct the Whole" in a single architectural gesture. This complex project was original and innovative in Europe, and certainly for Rotterdam, Netherlands' second largest city. Its realisation was achieved through identification of the common aim of a successfully-functioning vertical city, a goal shared by all those involved, from the master planners to those engaged in detailed execution. It hosts a great range of functions, which is a further characteristic of contemporary bigness. >



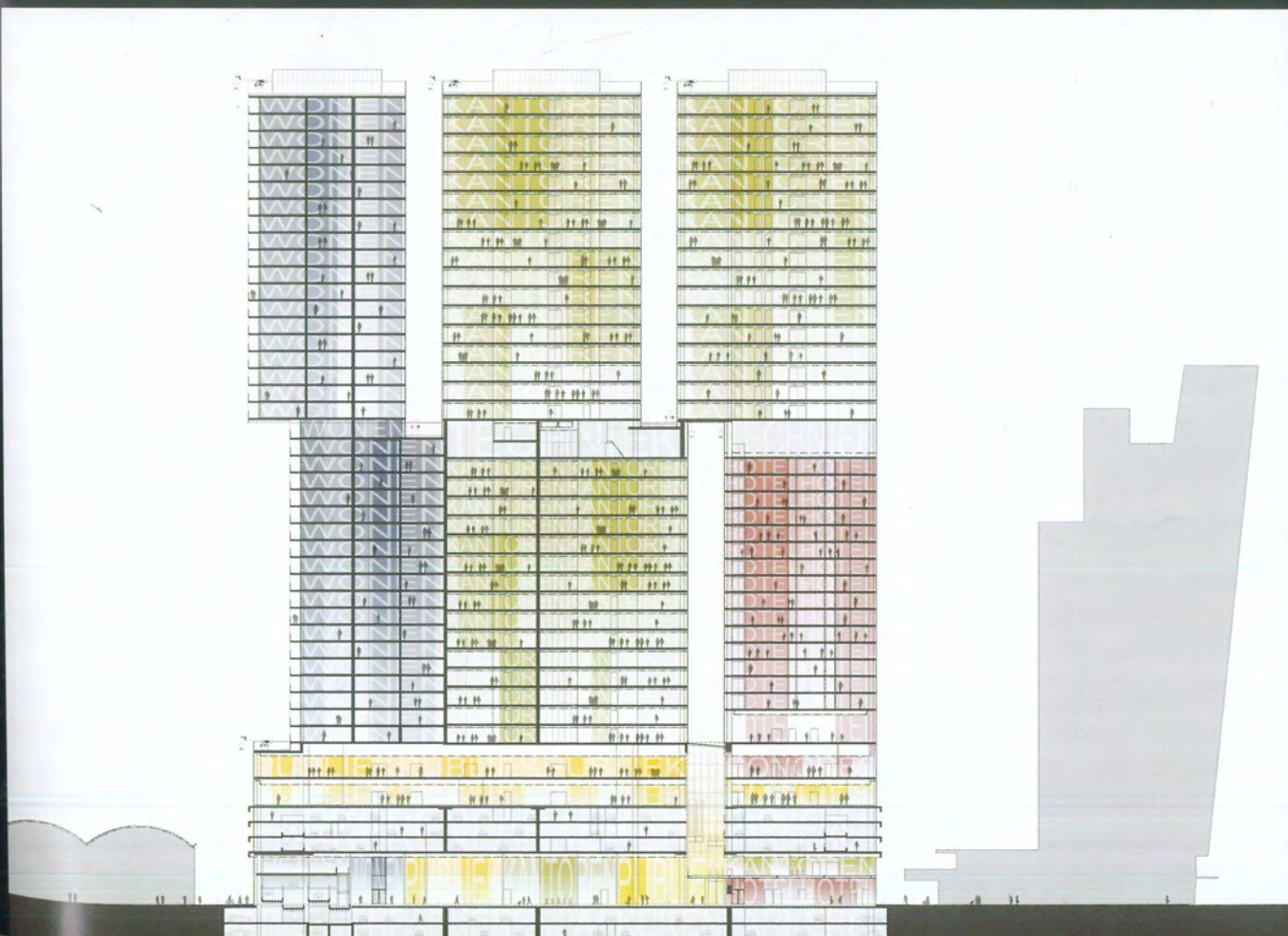
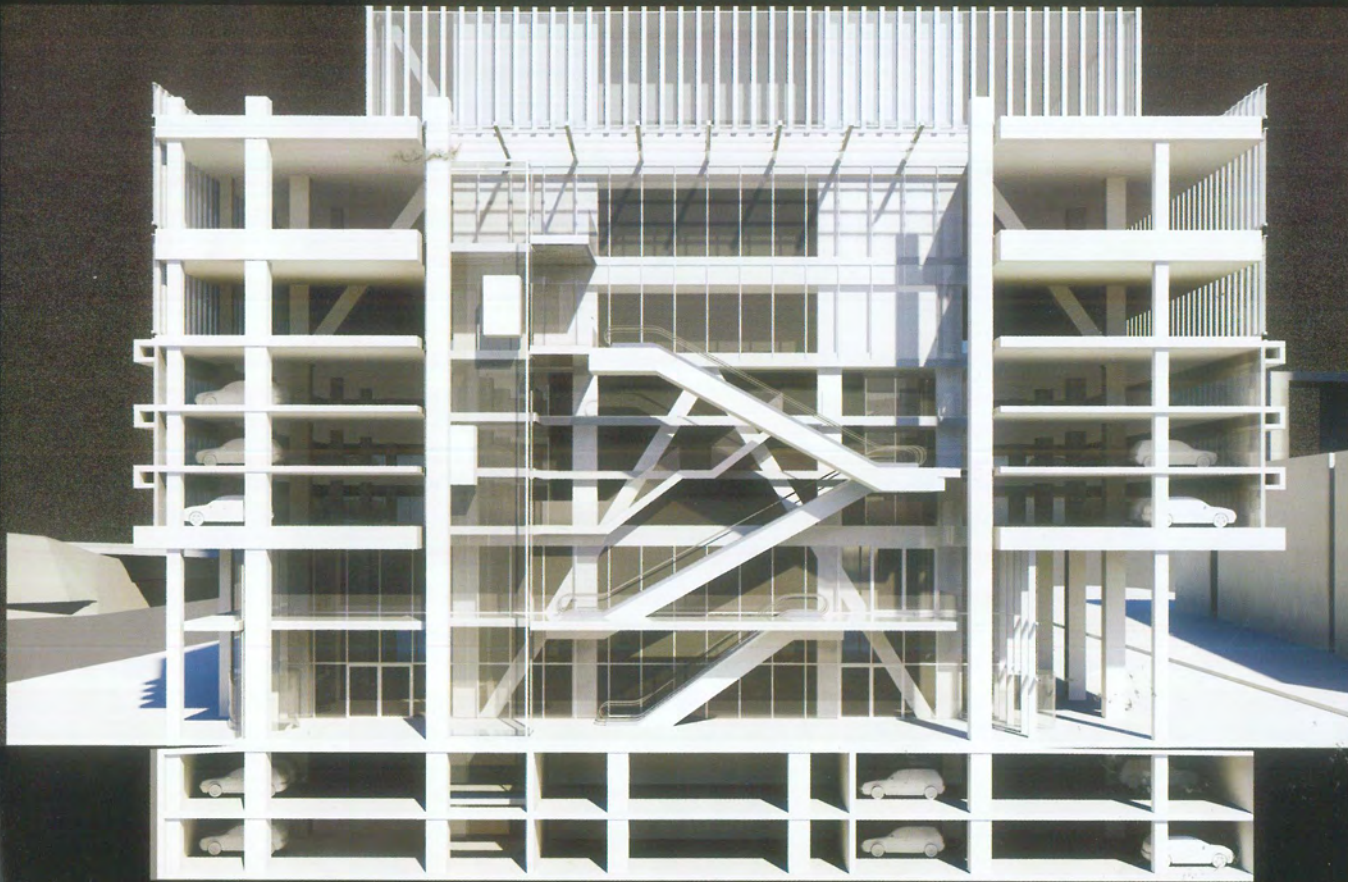


All areas of the structure are accessible from a large, 8.5 metre-high atrium that spans the entire width of the complex (roughly 100 m). This space is characterised by natural stone flooring and wall surfaces, with travertine and brass elements. The atrium plaza is contained within a six-storey base on which three transparent towers are placed. The towers, each with 44 floors, are made of massive overlapping offset blocks, which present an ever-changing dynamic to the building's viewers, seen as "different from every part of the city".

Each tower and block is designed for different and specific functions, and the structural features show the independence of these parts. All functions are interconnected by the base, where employees, residents and hotel guests meet in the services area. The curtain-wall systems allow delineation of different spaces and lighten the overall architecture. The entire wall system consists of 50,000 m² of glass, produced by Italy's Permasteelisa under its Dutch subsidiary, Scheldebouw.

The curtain wall module measurements are slightly different for the hotel and offices, and the hotel facade has a spandrel at the floor edge. The middle and east towers are designed with custom made profiles, while a standard system profile is used in the apartment tower. In both cases the surface treatment is "natural anodised". >

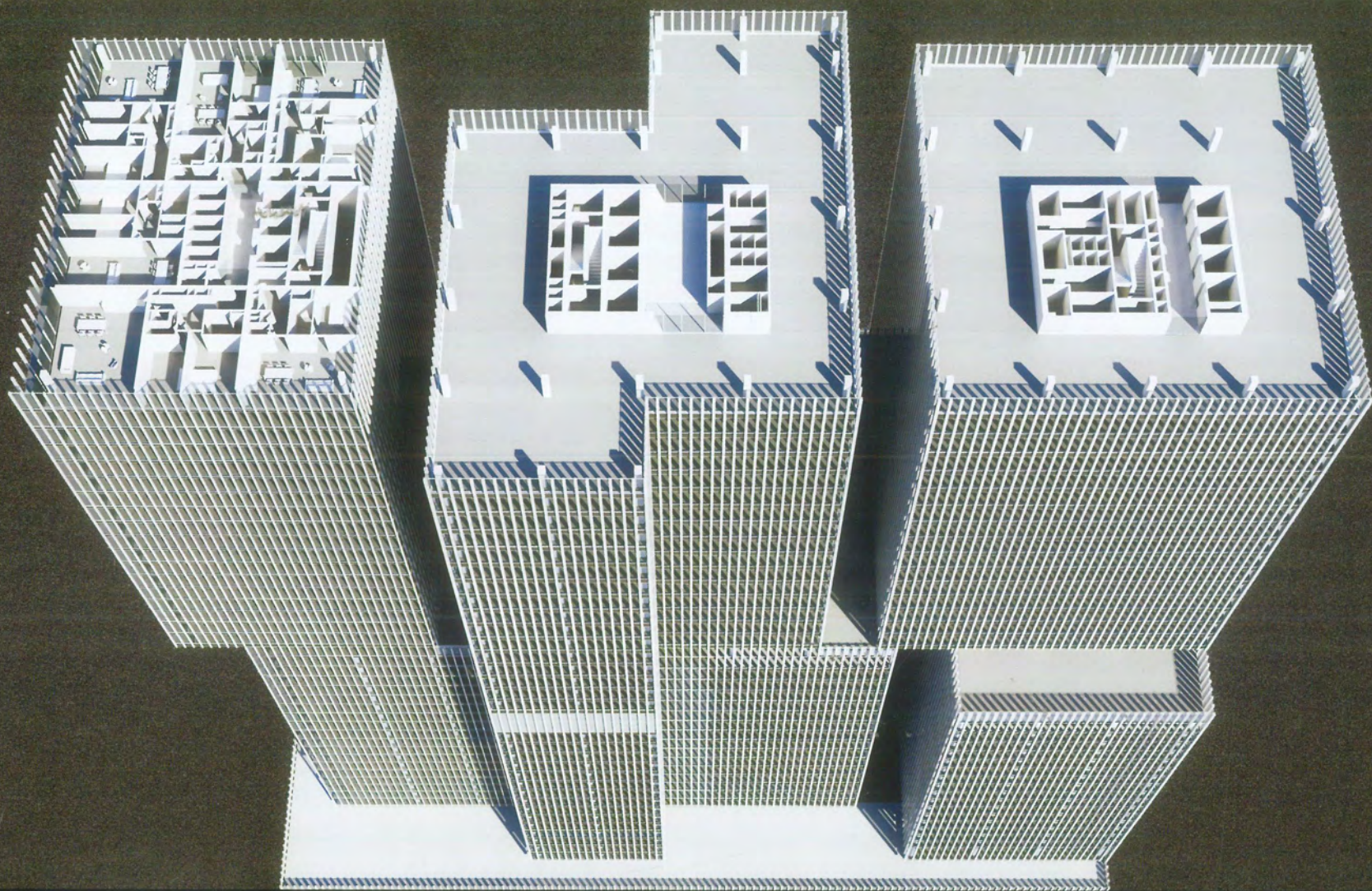


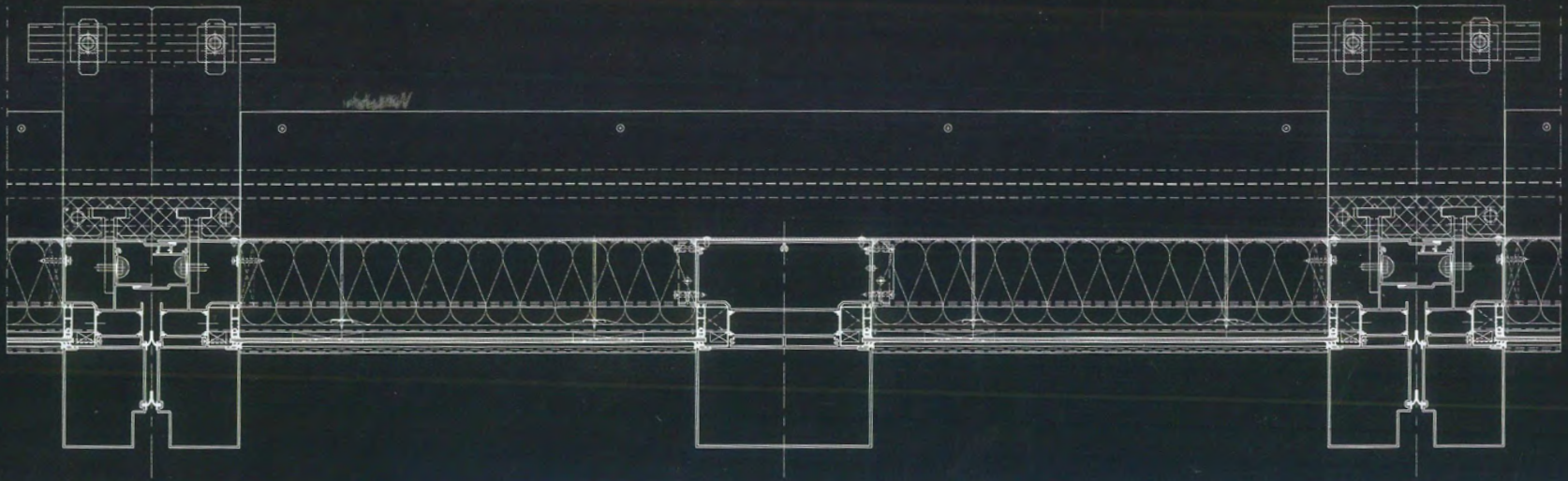


The project director for the De Rotterdam was Reinier de Graaf, who became an OMA partner in 1996. He led several projects in the Middle East and is now Director of AMO, a research studio counterpart to OMA, operating in areas beyond the boundaries of traditional architecture, including sociology and renewable energy.

The sustainability criteria applied to the project inspired fundamental design choices, such as high building density (the floor space index is 32, well above Dutch minimum standards), a dynamic mix of features aimed at greater social cohesion, maximum use of natural light, energy-saving lighting controls, energy production from elevators (with feedback to the grid), reduced-consumption water systems, and finally use of river water from the Maas for cooling systems, with on-site production of "green" electricity through a combined cooling, heating and power plant. >







With these criteria, De Rotterdam achieves the highest level of sustainability recognised in Holland: GreenCalc "A". Greencalc criteria demand energy efficiency, financial economy in use, maximum benefit from daylight, optimal climate controls, flexible and unrestrained layout, and intelligent, innovative design applications. The technical solutions and systems achieve optimal energy performance in all types of functional spaces. Generation and conservation systems ensure an energy performance co-efficient (EPC) well within building code requirements: apartments are at 0.55 EPC, middle-tower offices at 0.82 EPC, and east tower offices at 0.77 EPC (a remarkable 31%, 18% and 23% under the respective code ceilings).

OMA had the difficult task of achieving both social and economic growth and sustainable development in creating the largest-ever Dutch building. As Rem Koolhaas said at the inauguration, "the fact that De Rotterdam stands today represents a small triumph of persistence for the city, the developer, the contractor and the architects".

Paola Ascione







