

Pandion Vista Crane House, Rheinauhafen, Cologne



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Design architects: *BRT Bothe Richter Teherani
Architekten BDA, Hamburg; Linster Architekten, Trier*
Client: *Pandion Vista GmbH & Co. KG, Cologne*
Curtain wall package: *Anders Metallbau GmbH, Fritzlar*

Mission

As the star architect Hadi Teherani sees it, towns and cities constantly need to transform. Prompted by an urban design ideas competition, he and his partners crafted a futuristic scheme for Cologne's former Rheinauhafen dockland area and managed to convince the local planning authority with his crane house ensemble.

■ Visionary urban development: crane houses on Rhine waterfront

When asked to express a preference between urban and rural living, the majority of people since the 1990s have come down in favour of the city. In Cologne, as elsewhere, this trend has not gone unnoticed among city planners. The Rheinauhafen, Cologne's historic dockland area, for instance, was already earmarked for redevelopment with office and residential buildings several decades ago. The extravagant site – on the left bank of the Rhine, near the city's cathedral, between the Severinsbrücke and Südbrücke bridges – offers an ideal setting for spectacular architecture. This considerably eased the hunt for a client willing to back an innovative project at this location. Reinhold Knodel, Director of Cologne-based Pandion AG, for instance, was excited by the development proposals of star architect Hadi Teherani and co-designer Alfons Linster. The avant-garde concept for a row of crane-shaped buildings jutting out from the urban fabric was inspired by the site's previous occupants:



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Unparalleled location: Pandion Vista sits on a peninsula in historic Rheinauhafen dockland

loading cranes with chunky jibs, still a familiar sight in ports all over the world.

■ Not only a favourite among architecture critics: Hadi Teherani

The architect Hadi Teherani as a virtuoso of architectural innovation has an internationally acclaimed reputation. Indeed, although all the architectural creations of Hamburg-based practice

BRT Architekten (Bothe, Richter, Teherani) speak a crisp, geometrical language, they are nothing if not spectacular. Pandion Vista, the northernmost of the three Rheinauhafen crane houses and a co-production of BRT Architekten and Linster Architekten, is a case in point. While the southern and middle crane houses are dedicated office facilities, Pandion Vista, with 133 apartments on 18 storeys covering a total area of 15,000 sqm, offers a unique luxury living experience, complete with breath taking views.

Futuristic form: Pandion Vista resembles a colossal, upside-down "L"



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■ Pandion Vista: the reinvented apartment building

"I don't know any apartment building offering comparable quality," is the opinion normally expressed by Hadi Teherani in his interviews. And this assessment is certainly hard to refuse given a few plain facts: Pandion Vista's location is commanding and unmatched. It boasts an absolutely pioneering architectural form, with an approx. 70 m long, horizontal linear block or "jib" sitting atop a cubic tower on the city side and carried, on the river side, by a slender lift tower. Even the living concept has been worked out to the last detail. The apartments between the 11th and 17th storeys are arranged around a spacious atrium, which is open at the top. All apartment entrances are on the inside, overlooking the atrium.

Building Design

By far the greater part of Pandion Vista's volume lies above the ninth floor – in the slender 70 m long "jib". For the structural engineers, in particular, finding a possible solution for this unusual geometry was a brain-racking experience.

■ Making the impossible possible: the BRT Architekten design

"Cloud iron" was the name given by the Russian architectural theoretician "El" Lissitzky to his proposal for a new high-rise typology. While American skyscrapers generally strain upwards along a vertical axis, Lissitzky in 1924 designed a high-rise that struck out in a horizontal direction. Although this antithesis to the skyscraper embodied much progressive thinking, like many other quirky structural concepts, it was widely regarded as impossible to realize.

architects and project engineers faced the thorny task of finding an appropriate structural solution – if possible, one suitable for all three crane houses, both the two commercial buildings and the residential northern block. Yet it soon became clear, during the initial design meetings that the different occupancies called for radically different structural concepts. Given that Pandion Vista, for instance, had lower storey heights than the office facilities, it was able to fit an extra three levels into the same envelope. The more stringent sound-control regulations



Atrium with expanded-metal screens



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Awesome threesome: the buildings hark back to the loading cranes that once served riverboats at Cologne's inner-city dock

This opinion prevailed for a long time – until the idea was reprised by BRT Architekten in 1992 in a design competition entry for the Rheinauhafen dockland area. It took a further seven years, during which the scheme was honed by several working groups, before the crane houses assumed their definitive form.

■ An engineering brain teaser: the structural design

While the crane houses dazzle by their unique and dramatic architecture, the

governing housing facilities also necessitated a much heavier construction for the partitions. Moreover, unlike the office buildings, whose "jibs" are divided off in the middle, Pandion Vista's horizontal block features a single, continuous atrium. It also houses additional plantrooms and storage spaces below this on the 11th floor. In this light, a complete rethink of the structural design of the residential facility was more than warranted. The key issue was Pandion Vista's dead weight: even though the live loads

were lower than those of the office buildings, the net additional loads imposed by the extra storeys and heavy, solid partitions still had to be offset. The solution entailed the use of hybrid concrete slabs (i.e. lightweight concrete combined with dense concrete "inlays" at point load positions) to reduce the self-weight of the structural floors. The fact that the loads acting on the transfer beams and foundations still exceeded those of the office buildings ultimately necessitated an increase in the pre-stress levels for the transfer beams.

Facade Construction

All components – whether curtain walls, windows, doors or balustrades – were custom-fabricated. As our clients fully appreciate, there are simply no standard solutions for sensational buildings like Pandion Vista.

■ New materials, new system components

For Anders Metallbau, the exploration of new construction materials – together with their implications for design, fabrication and installation – is part of an innovative project like Pandion Vista. One innovative feature of the residential crane house was the use of glassfibre-reinforced concrete cladding panels. This led us to conduct detailed investigations into the properties of glassfibre-reinforced concrete and the associated processing options as a prelude to developing a solution consistent with the client's stringent aesthetic requirements.

For the building's numerous balustrades, our engineers devised new assemblies to permit the incorporation of special glass balustrades. The use of this material fosters the illusion that the glazed panels, with their stainless-steel copings, almost "grow up" out of the floor.

The realization of this balustrade concept involved comprehensive tests to guarantee compliance with the stiff safety requirements.

■ Installation process: closely coordinated with the entire project team

While installing the curtain walling, window assemblies and special components, Anders Metallbau constantly liaised with both the site supervisor and all other trade contractors working on site. This was especially important as the entire building was enclosed by scaffolding, with installation works performed from the outside. (The upper sections were the first to be completed and the scaffolding was successively dismantled as the works progressed.)

The extreme spatial constraints on the site prompted us to develop and operate an elaborate logistics and installation concept. The need for high-precision workmanship to ensure a proper fit between components and materials was an added challenge during the installation phase.

Large-size windows in the form of tilt/slide units were incorporated in the penthouse apartments and on the recessed balconies. The window units were fitted with soundproof and solar-control glazing, with additional sunshading provided by aluminium venetian blinds. When fitting the sunshading

devices, our own installers were assisted by the suppliers specialist.

The 20 m tall atrium opening upwards from Pandion Vista's 11th floor features partially glazed corridors that provide access to the upper-level apartments. Our contract included installation of the glass balustrades on these walkways along with expanded-metal privacy screens. In collaboration with Schüco International, we developed a special assembly that we subsequently fabricated in-house. These glass balustrades were also fitted in the four penthouse apartments and on all balconies in the Pandion Vista building. Realization of the almost fully glazed lift tower, reminiscent in shape of a building column, was a complex task: To achieve the desired visual effect, all joints and gap widths had to be kept to an absolute minimum.

Our site manager and specialist installers continued to assist the client even after completion and acceptance in ensuring smooth handover of the exclusive private apartments to the new owners and tenants. The handover process was also supported by numerous expert consultants.

View through southern and middle crane houses towards Pandion Vista



Glass lift tower



Facade Construction

A progressive formal language coupled with idiosyncratic facade solutions typifies the designs of internationally distinguished architects such as Hadi Teherani. In our role as executive partner, we can rely on a near-eight-decades-long experience in creating technical horizons for exceptional architecture.

Anders Metallbau: specialists in unorthodox architecture

In November 2008, we were awarded a complex and demanding contract by Pandion Vista GmbH & Co. KG in Cologne. This included construction of the following elements and components:

- Aluminium doors and windows (balconies, penthouse, external windows)
- Aluminium-sheet cladding
- Steel/glass curtain walls
- Aluminium/glass curtain walls
- Glass balustrades
- Rainscreen aluminium panels
- Glassfibre-reinforced concrete panels
- Sunshading elements

Challenging design and planning requirements

Our specialist engineers were, from the beginning, fully aware of the rigorous demands placed by the design. Pandion Vista was the only crane house earmarked for residential use and the eventual owners were entitled to expect outstanding performance coupled with high visual appeal. To help generate an exquisite living environment, we set out to create window and facade assemblies fully consistent with the ultra-high-spec designs for the residential scheme. The various special constructions and system components were precisely tailored to Pandion Vista's architectural particularities.

Luxury building with large glazing areas: Pandion Vista commands breathtaking views over River Rhine and Cologne's historic core



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Striking out above ninth floor: the 70 m long "crane jib"

Experience, foresight and sensitivity were just as important for the logistics planning: the site was subject to severe spatial constraints and only limited scope was available for the movement of components within the building shell. We completed our design work within the shortest possible period, in permanent consultation with the relevant specialist engineers and site supervisor, so as to ensure prompt fabrication of the individual components.

Fabrication tailored to site demands

Fabrication and installation of the window and facade assemblies was governed by a number of factors: on the one hand, we had to observe the on-site logistics procedures. On the other hand, our works could only commence after completion of the building shell. Crucial to the efficiency of our operations was the unambiguous marking of each individual component.

Indeed, maximum precision had priority throughout the production process. With practically every dwelling unit having its own geometry, the individual units varied accordingly in size and function. For the fabrication process, this, in turn, required the observance of minute tolerances in order to meet qualitative requirements. Furthermore, all components needed adequate protection so as to prevent any damage to the high-grade finishes.

To ensure the exact fit of each component during on-site installation, the many and widely differing components and assemblies had to be fabricated with the utmost precision.



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Interiors

The eye-catching qualities of the crane-shaped Pandion Vista apartment building are not limited to its external form. The equally flamboyant interior reveals in flowing spatial sequences, panorama glazing and sumptuous materials. All in all, the crane hosts a decidedly noble lifestyle.

■ Luxury concept: Pandion Vista has all the comfort of a five-star hotel

Pandion Vista has written its own success story: having won planning permission in 2006, Pandion AG had already sold most of the apartments by mid-2008, far ahead of completion. This "run" on the 60 m residential tower is doubtless due to a variety of factors. Pandion Vista stands directly by the Rhine, within minutes of Cologne's historic centre. The views – or rather "vistas" – across city and river enjoyed by the large apartment balconies and penthouse terraces are truly stunning. Yet, a commanding location is still not enough to sell residential properties.

Yet Pandion Vista also scores in other respects – with the concierge service, for instance, or the spatial concept. Architect Hadi Teherani and interior designer Silke Pabelick also supplied inspirational ideas for the interior furnishings through their "Vista Box". This 125 sqm mock-up apartment was installed next to the building on top of a 23 m tall steel frame. The design concept celebrates fluid spatial arrangements and counterpoints. The lavish material palette includes Canadian rough oak and fully vitrified grey stoneware for the floor coverings. The building basement is no less remarkable, housing Europe's longest underground car park, from which Pandion Vista residents have direct access to their apartments.



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Facts and figures: the essentials in brief

Employer/architect/project team:

Client:	Pandion Vista GmbH & Co. KG, Cologne
Design architects:	BRT Bothe Richter Teherani Architekten BDA, Hamburg; Linster Architekten, Trier
Executive architect/ site co-ordination:	Höhler + Partner Architekten und Ingenieure, Aachen

Curtain wall package: Anders Metallbau GmbH, Fritzlar

Facade component suppliers:

Sections and hardware:	Schüco International KG, Bielefeld
Glazing:	Glas Trösch GmbH, Nördlingen
Sunshading systems:	Warema Renkhoff SE, Lahnu-Dorlar
Glassfibre-reinforced- concrete panels:	Rieder Faserbeton-Elemente GmbH, Kolbermoor
Curtain wall structural engineering:	Vogel Ingenieure im Bauwesen, GmbH Hanover

Project data:

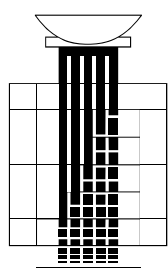
Facade area:	Approx. 20,000 sqm
Usable area:	Approx. 15,800 sqm
Storeys:	18
Construction period:	20 months
Completion:	Spring 2011

Completed works:

Aluminium windows/doorsets: (recessed balcony, penthouse, external windows)	Approx. 8,000 sqm
Aluminium-sheet cladding:	Approx. 2,500 sqm
Steel/glass curtain walls:	Approx. 2,300 sqm
Aluminium/glass curtain walls:	Approx. 520 sqm
Glass balustrades:	Approx. 1,500 m
Rainscreen aluminium panels:	Approx. 3,500 sqm
Glassfibre-reinforced-concrete panels:	Approx. 1,600 sqm
Sunshading devices:	Approx. 2,300 sqm
Expanded-metal cladding:	Approx. 1,300 sqm

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