



EUROPEAN CENTRAL BANK

EUROSYSTEM

Main Building

November 2020



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1 Overview

1.1 The project begins

1.1.1 A new home for the ECB

Upon a recommendation by the European Court of Auditors to all European institutions that it is much more economical in the long term to own premises rather than to rent office space, the ECB built its own premises on the site of the Grossmarkthalle (Frankfurt's former wholesale market hall). The premises were designed by Vienna-based architects **COOP HIMMELB(L)AU**.

Figure 1
185 m high office tower

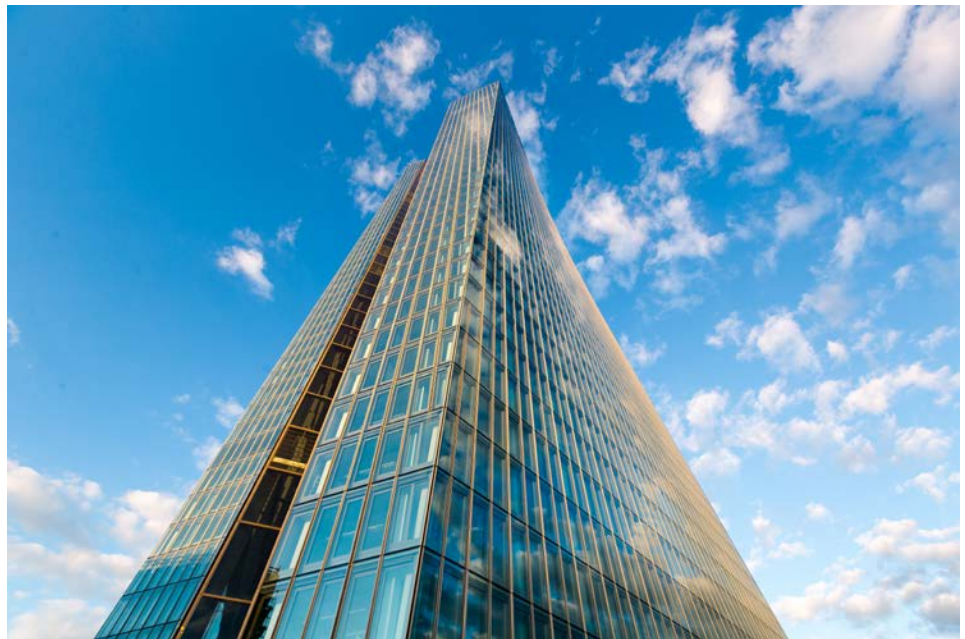


Figure 2
120,000 m² entire site area



Figure 3
250 m long Grossmarkthalle



1.1.2 Choosing the location

When the Maastricht Treaty was signed in 1992, it was decided that the ECB would be located in Frankfurt am Main. In 1998, when the ECB started operations in rented offices in the Eurotower, the search for a suitable site for its own premises in Frankfurt began. Having looked into 35 possible options across the city, the ECB finally decided

to use the site of the Grossmarkthalle and incorporate the existing building into the design for its new headquarters.

A feasibility study had shown that this site was economically the most viable, that it was well connected in terms of infrastructure, that the spatial requirements could be met and that it was the optimal site for implementing the security measures required by a central bank. Furthermore, it offered sufficient space for further construction and extension.

The majority of staff members dealing with monetary policy are now working together under one roof in Frankfurt's Ostend district. However, since the new premises were designed at a time when it was not foreseen that the ECB would assume responsibility for banking supervision in the euro area, the ECB decided in November 2013 to continue to rent the Eurotower to house its Banking Supervision staff. Staff providing shared services are located in both buildings.

Figure 4
73 km of restored joints



Figure 5
4,300 t steel

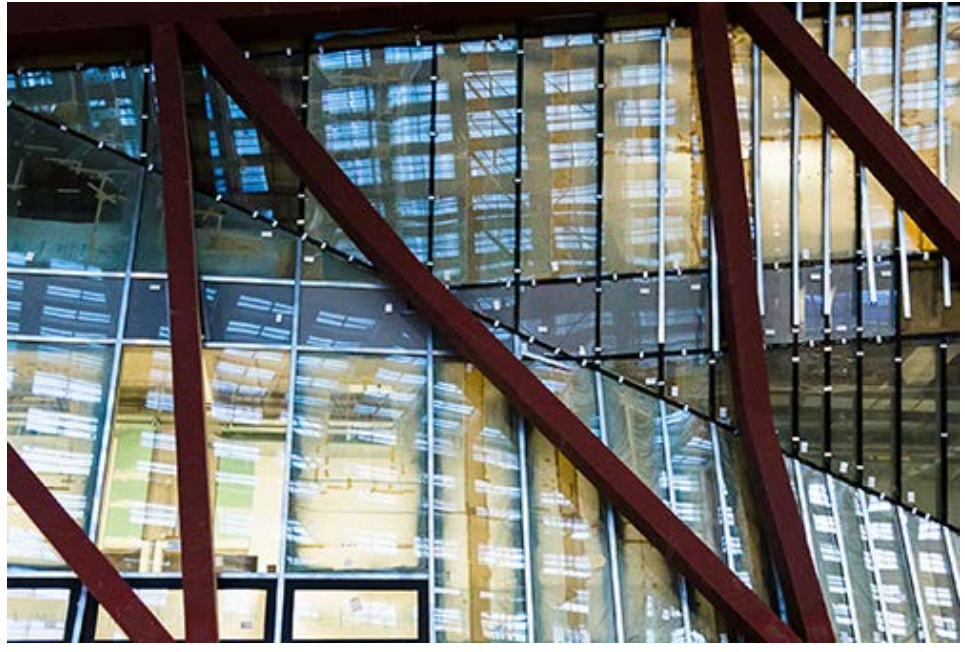


Figure 6
3,500 doors



1.1.3 Functional and flexible

The competition brief, final decision of the jury and subsequent planning phases focused on the functionality and sustainability of the new premises, and these key aspects continue to play an important role in the way they are used. The structural and spatial design of the new premises creates a working environment that meets various functional requirements and facilitates open communication, thus promoting teamwork and interaction at every level. At the same time, the degree of flexibility in the design means that changing requirements can be adapted to with little effort.

Figure 7
6,000 facade elements

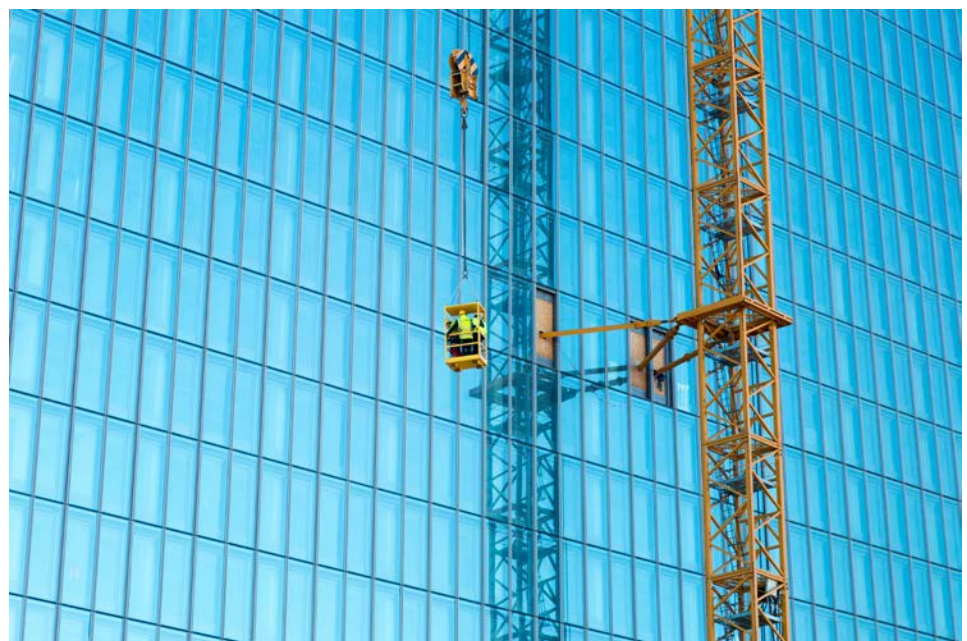
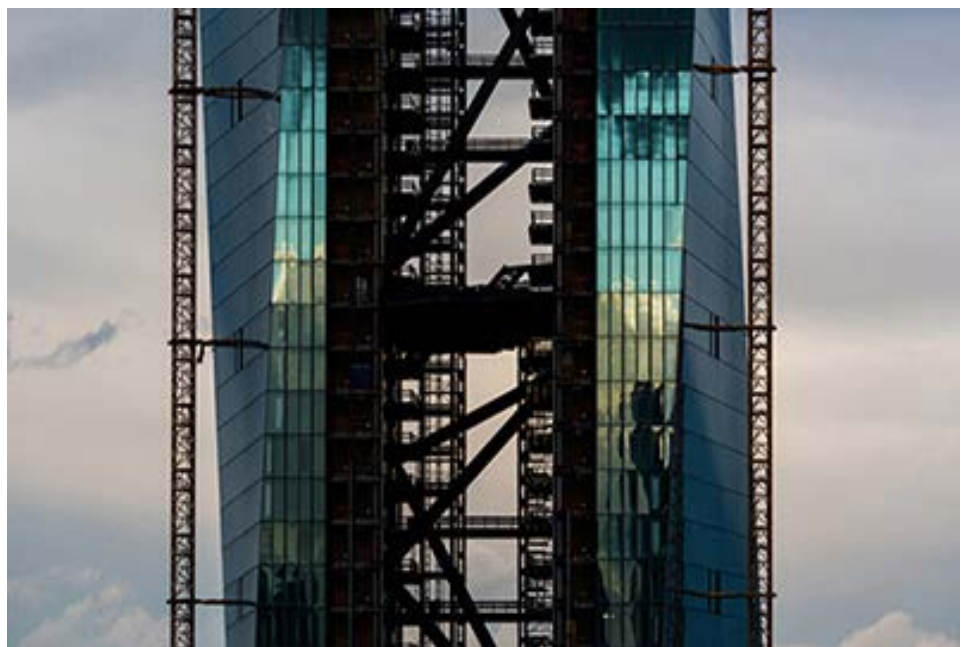


Figure 8
Over 700 trees



Figure 9
14 diagonal steel trusses



1.1.4 Urban landmark

The building ensemble was developed as part of an urban design process that took its alignment with Frankfurt's city centre as the starting point. The result is a clearly visible urban landmark on the site of the Grossmarkthalle, with the office tower extending Frankfurt's high-rise skyline to the east. Converting the city's former wholesale market hall and incorporating it into the design made history part of the ECB, adding to the uniqueness of this landmark in Frankfurt's Ostend.

1.2 Project Milestones

When the ECB was founded in 1998, it started to look for a suitable site where it could build its own premises in Frankfurt am Main. In total, 35 sites were investigated. A feasibility study – carried out jointly with Frankfurt-based architects Jourdan & Müller in 1999 – concluded that the site of the Grossmarkthalle (Frankfurt's former wholesale market hall) was eminently suitable for the construction of the ECB's new premises and that the old market hall itself could be incorporated into the design and put to good use. The ECB and the City of Frankfurt of Main signed the purchase agreement for that site in the spring of 2002. In the same year, the ECB launched an international urban planning and architectural competition for the design of its new headquarters. This competition consisted of several phases (see 2.1 Competition phases). During the revision phase, the three prize winners selected by the jury were given the opportunity to fine-tune their designs. In January 2005 the Governing Council of the ECB decided that COOP HIMMELB(L)AU's revised design best met the ECB's functional and technical requirements. This decision was followed by an optimisation phase and several planning phases (see 3.1 Different planning phases).

On 6 May 2008 the City of Frankfurt granted the ECB full building permission. The foundation stone was laid on 19 May 2010, marking the start of the main construction works. On 20 September 2012 a ceremony was held to celebrate the topping out of the high-rise and on 18 March 2015, after the relocation of staff in November 2014, the new premises were officially inaugurated.

[Image Gallery on Flickr: Inauguration of the European Central Bank's New Premises, 18 March 2015](#)

1.2.1 Topping out ceremony

On 20 September 2012 the ECB held a topping out ceremony to celebrate the completion of the main structural works for its new premises.

After a welcome address by former Member of the Executive Board of the ECB Jörg Asmussen, speeches were given by Peter Feldmann, Lord Mayor of the City of Frankfurt am Main, and Klaus Pöllath, Member of the Board of Directors of Ed. Züblin AG, the company responsible for the main structural works. Members of the Executive Board, the Governing Council and the General Council of the ECB, placed the flags of

the then 27 EU Member States and the flag of the European Union in the topping out wreath. The ceremony concluded with the raising of the topping out wreath and a traditional topping out toast by the construction foreman for the high-rise.

Figure 10

Topping out ceremony



Speeches

- Welcome address by Jörg Asmussen, Member of the Executive Board of the ECB ([English](#), [German](#))
- Speech by Peter Feldmann, Lord Mayor of the City of Frankfurt am Main ([English](#), [German](#))
- Speech by Klaus Pöllath, Member of the Board of Directors of Ed. Züblin AG ([English](#), [German](#))

1.2.2 Laying of the foundation stone

The laying of the foundation stone on 19 May 2010 marked the official start of the construction works for the ECB's new premises.

The welcome address by Jean-Claude Trichet, President of the ECB at the time, was followed by good wishes from Petra Roth, former Lord Mayor of the City of Frankfurt, and Wolf D. Prix, CEO of COOP HIMMELB(L)AU, the firm of architects whose design had won the international urban planning and architectural competition. Together with the President, members of the Executive Board, the Governing Council and the

General Council of the ECB, as well as the Lord Mayor and the architect, filled the foundation stone with a set of the building plans, newspapers from the then 27 EU Member States, sets of euro coins from the 16 countries of the euro area at the time, a set of euro banknotes and a coin from the City of Frankfurt. The foundation stone was then sealed and moved into the excavation pit where the office tower was to be built.

Figure 11
Laying of the foundation stone



Speeches

- Welcome address by Jean-Claude Trichet, President of the ECB ([English](#), [German](#))
- Speech by Petra Roth, Lord Mayor of the City of Frankfurt am Main ([German](#))
- Speech by Wolf D. Prix, CEO of COOP HIMMELB(L)AU ([English](#))

1.2.3 Inauguration

On 18 March 2015 the ECB held a ceremony for the inauguration of its new premises, alongside the regular meetings of the Governing Council and General Council.

“This building is a symbol of the best of what Europe can achieve together,” said ECB President Mario Draghi. “Many people have worked tirelessly to make this building a reality”. He also pointed out that “it is a landmark for the city of Frankfurt. And it provides the ECB with an impressive new home to pursue its mandate.”

After the welcome address by the President, speeches were given by Tarek Al-Wazir, Deputy Minister President of the State of Hesse, and Peter Feldmann, Lord Mayor of the City of Frankfurt am Main. Members of the Executive Board, the Governing Council and the General Council of the ECB, and of the Supervisory Board of the Single Supervisory Mechanism (SSM), as well as former ECB President Jean-Claude Trichet and former members of the Executive Board Jörg Asmussen, Lorenzo Bini Smaghi, Lucas Papademos and Gertrude Tumpel-Gugerell, looked on as Mr Draghi cut the ribbon in the Grossmarkthalle.

The ceremony was also attended by Wolf Prix, CEO of Vienna-based architects COOP HIMMELB(L)AU, Salomon Korn, Head of the Jewish Community Frankfurt, Konrad Elsaesser, representative of the Elsaesser family, Petra Roth, former Lord Mayor of the City of Frankfurt, Olaf Cunitz, Head of Urban Planning Department and Mayor of the City of Frankfurt, and Friedrich von Metzler, Honorary Citizen of the City of Frankfurt.

Figure 12
Mr Draghi cutting the ribbon



Speeches

- Speech by Mario Draghi, President of the ECB ([English](#), also available in 22 other languages)
- Speech by Tarek Al-Wazir, Deputy Minister President of the State of Hessen ([English](#))

- Speech by Peter Feldmann ([German](#))

1.2.4 Luminale

Luminale is an international festival of lighting that is held every two years in Frankfurt and the Rhine-Main region as part of the Light+Building trade fair.

Casa Magica

In 2008, when Luminale was held for the fourth time, the ECB also took part. From dusk until midnight, the lighting artists Casa Magica from Tübingen (Friedrich Förster and Sabine Weissinger) illuminated the southern facade of the Grossmarkthalle.

Figure 13

The illuminated Grossmarkthalle – 1

(© Robert Metsch)



Three motifs

Three motifs were beamed in rotation onto the building's signature concrete grid facade: the first motif of fruit and vegetables recalled its former function as a wholesale market hall; the second focused on the present, with diggers, cranes and concrete mixers alluding to its conversion into the ECB's future premises; and the third freely adapted the formal principles characterising banknotes, thus highlighting its future role as the ECB's headquarters.

Figure 14

The illuminated Grossmarkthalle – 2

(© Robert Metsch)



Figure 15

The illuminated Grossmarkthalle – 3

(© Robert Metsch)



Opening night

On the opening night, the ECB invited all interested parties to an information session in front of the hall on the Ruhrorter Werft, looking onto the illuminated Grossmarkthalle.

Figure 16

Luminale 2008



1.3 Building Description

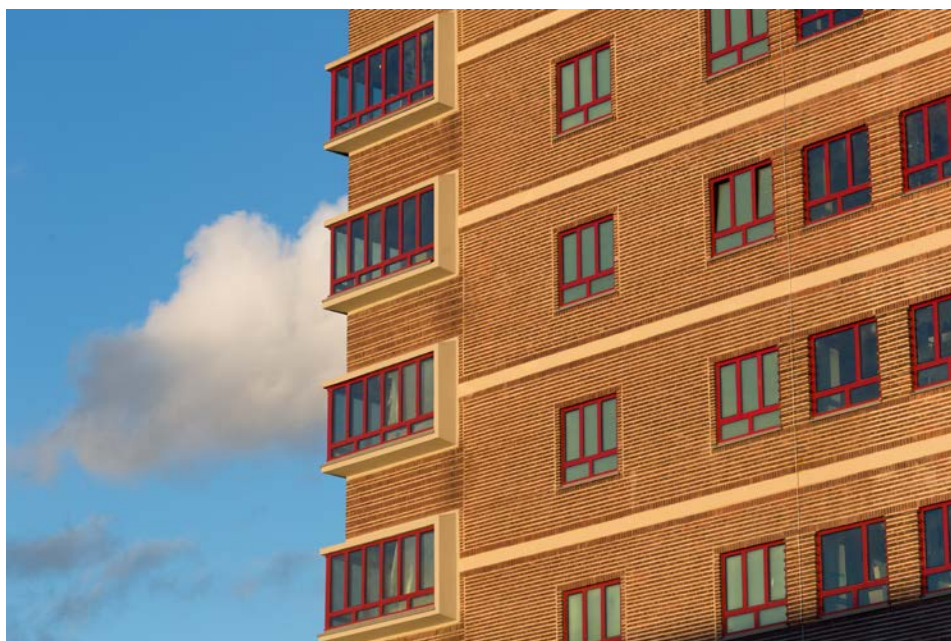
1.3.1 Three main elements

The building ensemble that is the ECB's new premises comprises three main elements: the Grossmarkthalle (Frankfurt's former wholesale market hall), complete with new internal structures; a high-rise consisting of two office towers joined by an atrium; and the entrance building, which creates a visual link between the Grossmarkthalle and the high-rise, and marks the main entrance to the ECB on Sonnemannstrasse.

1.3.2 Grossmarkthalle

The Grossmarkthalle, which has been completely renovated and restored, is an integral part of the ECB's new premises.

Figure 17
Grossmarkthalle



Relic of the 1920s

The Grossmarkthalle was built between 1926 and 1928 on the basis of the design of Martin Elsaesser, who was Director of Town Planning for the City of Frankfurt am Main at the time. It has been a listed building since 1972 and housed a wholesale fruit and vegetable market until 4 June 2004.

A new purpose

Having undergone extensive renovation and restoration work, which was completed in 2014, the Grossmarkthalle now houses the more public areas of the ECB, such as the lobby, exhibition areas and cafeteria, as well as a visitor centre, staff restaurant and conference area. The latter have been integrated into the hall as separate buildings on the basis of a “house-in-house” concept. The market hall is accessed via the main entrance underneath the entrance building.

Table 1

Data on the Grossmarkthalle

	Measurement
Gross floor area of the hall	approx. 12,500 m ²
Height of the hall	approx. 23 m
Length of the hall	220 m
Width of the hall	50 m
Height of the wing buildings	32.50 m
Floor area of the wing buildings	approx. 975 m ²

1.3.3 High-rise

Standing at a height of 185 m, the high-rise, with its distinctive silhouette extends Frankfurt's skyline to the east.

Figure 18

High-rise



The high-rise consists of two polygonal towers that are joined by an atrium. The north tower has 45 storeys and the south tower has 43.

Vertical city

The concept behind the glazed atrium between the two towers is one of a “vertical city”, with interchange platforms and bridges creating the impression of urban streets

and squares. The interchange platforms divide the atrium into three sections of varying heights (between 45 m and 60 m).

Flexibility

The high-rise houses the vast majority of the ECB's workplaces and internal meeting rooms. The large council meeting room and offices of members of the ECB's decision-making bodies are located on the upper floors. Each floor offers a high level of flexibility to allow for a variety of office configurations.

Table 2
Data on the high-rise

	Measurement
Gross floor area	approx. 110,000 m ²
Floor area (per storey per tower)	700 m ² to 1,200 m ²
Height of the north tower	185 m (45 storeys)
Height of the south tower	165 m (43 storeys)

1.3.4 Entrance building

The entrance building marks the main entrance to the ECB on Sonnemannstrasse.

Figure 19
Entrance building



Visual link

The entrance building creates a visual link between the high-rise and the Grossmarkthalle. With its asymmetrical design, inclined facades and generously proportioned windows, it forms the design lead-in to the high-rise behind it.

Press centre

The entrance building houses the press centre, from where the ECB's press conferences are broadcast. The press centre is accessible via a lobby, above which there are workstations that can be used by journalists during press conferences. There is also a second auditorium next to the large press conference room.

Table3

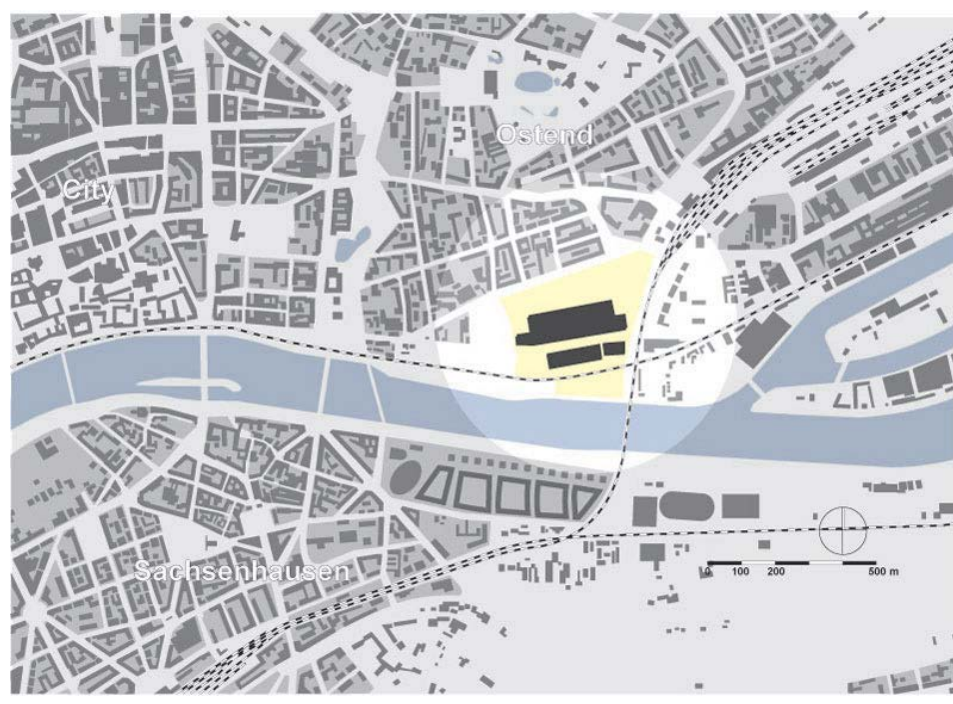
Measurement	
Gross floor area	approx. 3,000 m ²
Height	27.50 m

1.4 Site

1.4.1 Finding a suitable site

Figure 20

Site plan Grossmarkthalle



In 1998, the European Central Bank (ECB) began its search for a suitable site on which to build its new offices in Frankfurt. In total, 35 sites were investigated, one of which was the Grossmarkthalle (the city's former fruit and vegetable wholesale market hall) in the Ostend district.

1.4.1.1 Ostend district

Where city and river meet

The new premises of the European Central Bank (ECB) are constructed on the former site of the wholesale market hall, the Grossmarkthalle (§1.4.1.2 Historic Grossmarkthalle), in Frankfurt's Ostend district. The site's location marks the fusion between city and river. The highly diverse Ostend has been undergoing development since the 1990s, amid the reorganisation of the immediate vicinity with regard to the area's urban structure. On the far side of the railway tracks are the Osthafen docks, which still bear the industrial hallmarks that were also still evident until recently around

the Grossmarkthalle. Two heritage-listed sets of cranes on the wharf alongside the Grossmarkthalle serve as a reminder of this industrial past.

Figure 21

The Grossmarkthalle in Frankfurt's Ostend district, 2002

(© EZB/KingAir Luftfoto)



Structural change

The former industrial zone along the banks of the river Main to the west of the Grossmarkthalle site has gradually evolved into an attractive residential area with green spaces. This is where the changing face of the structures and buildings in Frankfurt's Ostend is at its most vivid.

The changing cityscape

The continuing structural change from manufacturing over to the services sector has transformed the urban face of Frankfurt's Ostend district in recent years. The area's central development corridor is the Hanauer Landstrasse, which generally acts like a magnet in attracting increasing numbers of service providers and cultural-related venues.

1.4.1.2 Historic Grossmarkthalle

Martin Elsaesser: the architect behind the Grossmarkthalle

The Grossmarkthalle was designed by Martin Elsaesser during his time as Stadtbaudirektor (Director of Town Planning) for the City of Frankfurt am Main. The Grossmarkthalle, built between 1926 and 1928, is probably the most important of his construction works. Not only was it one of the largest building complexes in the city, but also the world's largest free-spanning reinforced concrete structure at that time. During Ludwig Landmann's time as mayor, Frankfurt developed into a metropolis. In 1925, he appointed Elsaesser as Stadtbaudirektor for Frankfurt. Elsaesser was responsible for various public buildings, such as the Pestalozzi school in Seckbach, the Römerstadt elementary school, the psychiatric clinic in Niederrad and the indoor swimming pool in Fechenheim. However, no other building was more symbolic of Frankfurt's evolution than the Grossmarkthalle.

Figure 22
Martin Elsaesser

(© Martin-Elsaesser-Stiftung)



Table 1
Martin Elsaesser's Biography

Academic studies and early career	Martin Elsaesser was born in Tübingen in 1884. From 1901 to 1906 he studied architecture at the Technical University of Munich under Friedrich von Thiersch, and at the Technical University of Stuttgart under Theodor Fischer. In 1905 he won the competition for the design of one of the Lutheran churches in Baden-Baden and began his work as an architect. Between 1906 and 1908 he worked as assistant to Theodor Fischer in Munich, and from 1911 to 1913 as assistant to Professor Paul Bonatz at the Technical University of Stuttgart, where he also held a chair in building design, medieval architecture and building types from 1912 to 1920.
Career peak	Between 1920 and 1925 Elsaesser held the post of Principal Director of the School of Arts and Crafts in Cologne, later known as the Kölner Werkschulen (Cologne Crafts Schools). In 1925 he was appointed to the position of Stadtbaudirektor for Frankfurt am Main by Mayor Ludwig Landmann.
National Socialist Germany	He held this position until 1932, before moving to Munich, where he continued his work as an architect, and from 1937 to 1945 he lived in Berlin. In National Socialist Germany, he did not secure any planning commissions, but was able to undertake various projects in Turkey, including the construction of the Sümerbank headquarters in Ankara.
Post-war years	In 1945 he left Berlin and moved back to Stuttgart, in the hope of being commissioned for reconstruction works. However, although Elsaesser published a range of key texts on urban planning, he was still unable to secure any planning commissions. Therefore, in 1948 he took up the temporary cover position as Full Professor of Design at the Technical University of Munich, which he held until he retired in 1955. Martin Elsaesser died in Stuttgart in 1957.

The Grossmarkthalle was built between 1926 and 1928 according to the design of Martin Elsaesser, Director of Town Planning for the City of Frankfurt am Main from 1925 to 1932.

Dimensions

With a length of 220 m, a width of 50 m and a maximum height of 23.50 m, it housed the wholesale fruit and vegetable market, which served not only Frankfurt but also the entire Rhine-Main region.

Figure 23
View from the north-east

(© Robert Metsch)



Use

The Grossmarkthalle was used by Frankfurt's wholesalers from 1928 up to 2004, when they moved out to the Frischezentrum in the north-west of the city.

Figure 24

Train pulled up at the Grossmarkthalle (approx. 1930)

(© Institut für Stadtgeschichte)



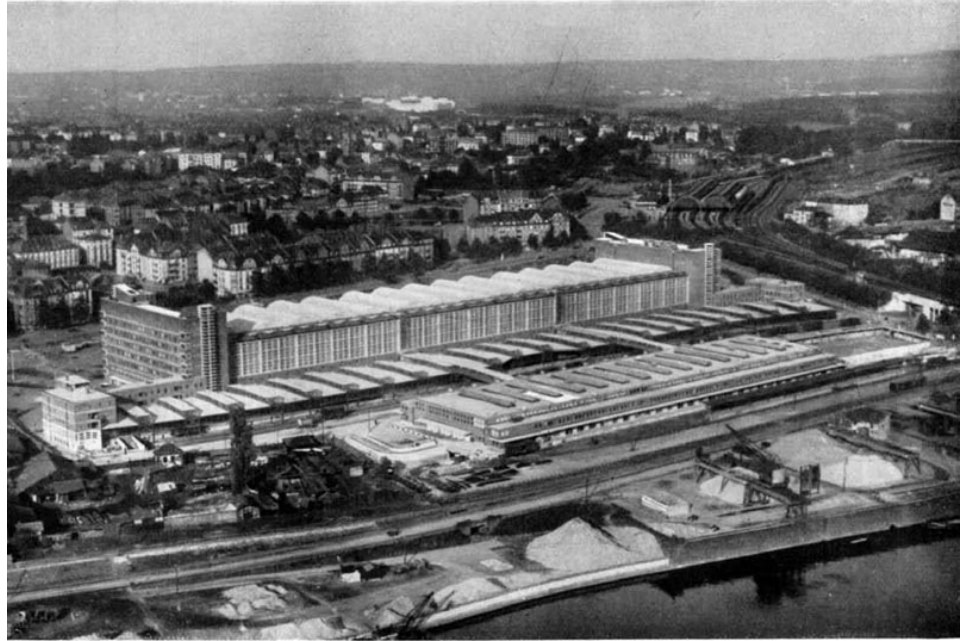
Cultural monument

The Grossmarkthalle, a state-of-the-art functional building from the classical modern era, has been a recognised cultural monument since 1972. It was built with a new type of structural framework that made it the largest free-spanning prestressed reinforced concrete hall in the world at that time.

Figure 25

View of the Grossmarkthalle from the south (approx. 1930)

(© Institut für Stadtgeschichte)



Three different elements

The entire Grossmarkthalle site originally comprised the following three elements:

- The Grossmarkthalle itself was a market hall with an eight-storey wing building at either end. The western wing building housed the wholesalers' offices and checkout area, while the eastern wing building contained additional stalls and cold storage rooms.
- The two wing buildings were linked to four-storey annexe buildings which were split into restaurants, flats and the customs area.
- On the south side of the hall, there were a number of railway tracks, as the bulk of goods, in particular tropical fruits, were delivered by train. It wasn't until a few decades ago that they started to be delivered by road.

Historic preservation

In line with the preservation order, the restoration work to be carried out on the Grossmarkthalle and the two wing buildings was not to affect the fundamental appearance of the buildings. They were to be carefully restored and remain distinctive components of the site's design. The restoration work also resurrected certain construction elements that have been concealed over time. Prior to the handover of

the site to the ECB, the Importhalle and other smaller buildings, which were in a poor state of repair, were pulled down.

Structural framework

At the time of its construction, the Grossmarkthalle was the largest columnless reinforced concrete hall in the world. The roof structure of the main hall consists of 15 concrete shells resting on reinforced concrete columns. The concrete shells, constructed according to the Zeiss-Dywidag method, are over 15 m wide and 43.50 m long. At their vertex, they are only 7.50 cm thick. The longitudinal facades of the hall consist mainly of glazed concrete grid structures; the facades at the ground floor level, as well as of the wing buildings, were built in contemporary brick.

1.4.2 The “vegetable church”

The Grossmarkthalle – or “Gemieskirch” (‘vegetable church’) as it is popularly known locally – was where fruit and vegetable merchants bought and sold their wares up until June 2004. Produce from the wholesale market was delivered to within a radius of 200 km around Frankfurt. Today, the wholesale market is located in the Frischezentrum, a new complex in Frankfurt’s district of Kalbach.

Figure 26
Grossmarkthalle, 2002

(© EZB/KingAir Luftfoto)



1.4.3 Post-industrial charm

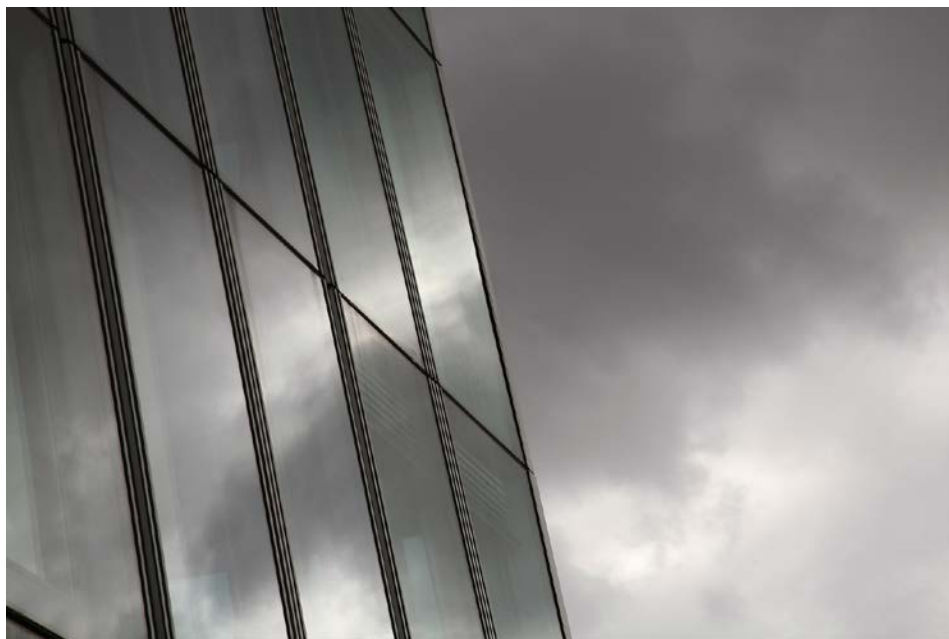
The Grossmarkthalle site between the Osthafen docks and the city centre already has sound infrastructure links, also a legacy of the functional requirements of the former wholesale market. Although the many related delivery depots and warehouses, wharfs and disused freight tracks have left their industrial mark on the location, the area has been in a state of transition from industry to services since the wholesale market's departure. Since the final decade of the last century, the same has also been true of the surrounding areas of the city. For instance, the street on the western side of the Grossmarkthalle (Oskar-von-Miller-Strasse) has been fully redeveloped with residential and office buildings. The ECB's move to the Grossmarkthalle site constitutes a key component in the urban development of the Ostend district.

1.5 Energy Design

From the outset of the design competition, it was the ECB's stated aim that its new premises should be 30% more energy efficient than stipulated by the Energieeinsparverordnung 2007 (German energy saving directive). To achieve this aim, all possibilities were explored and analysed, particularly with regard to the facades and technical systems. The resultant energy design has the following features.

Figure 27
Energy Design

(© Robert Metsch)



1.5.1 Rainwater harvesting

The Grossmarkthalle itself has a roof area of around 10,000 sqm. A system has been installed for collecting rainwater, so that it can then be used to both irrigate the gardens when there is not enough rain and flush toilets in the Grossmarkthalle.

Figure 28
Rainwater harvesting

(© Robert Metsch)



1.5.2 Recycled heat

The waste heat generated by the computer centre is fed back into a ceiling heating system in order to heat the offices. The new ECB premises is connected to the highly energy-efficient combined heat and power system of the City of Frankfurt am Main.

1.5.3 Efficient insulation

The Grossmarkthalle's surface areas, e.g. the roof and windows, are insulated in order to create a thermal envelope between the outside and inside areas, such as the staff restaurant and meeting rooms. These areas have their own microclimate, as they are integrated into the market hall as a separate house-in-house system.

1.5.4 Natural ventilation of office spaces

In addition to the central ventilation systems, motorised ventilation elements incorporated into the building facades allow for the direct natural ventilation of the offices. As a result, the fresh air requirements per person may be provided without the use of mechanical ventilation, if the user so chooses. People also have more of an idea of what is going on outside.

1.5.5 Efficient solar protection and low-energy lighting

In order to prevent the buildings from absorbing too much heat from the sun, highly efficient sun screens/glare shields are integrated into the facades.

Another way to save energy is to use natural daylight. The offices are fitted with daylight sensors, so that the lights switch off automatically when there is sufficient daylight. In terms of the artificial lighting for the offices, as well as for the atrium and the market hall, there has been much research into ensuring that they are lit sufficiently and efficiently at all times of the day.

1.5.6 Use of geothermal energy for heating and cooling

In order to further reduce the energy costs of the building, geothermal loops were incorporated into the pile foundations, which descend about 30 metres until they hit Frankfurt's bedrock. These loops can be connected to the water circuit and the heating pumps in the heating centre in order to extract heat from the ground in winter and coolness from the ground in summer.

To minimise the number of technical systems and the amount of energy required, certain areas, such as the atrium or the open areas within the market hall, are not air-conditioned. Instead, these areas function as a climate buffer and transition zone between the outside and the inside.

On 4 January 2003 Directive 2002/91/EC of the European Parliament and of the Council of 16 December 2002 on the energy performance of buildings entered into force. The German Government implemented the laws, regulations and administrative provisions necessary to comply with this Directive on 1 October 2007. The New ECB Premises project is the first major construction project in Germany to meet the required standards.

1.6 Sustainability

Sustainability in construction takes into account not only environmental issues, technical efficiency and functional requirements, but also urban regeneration and social aspects.

Figure 29
Sustainability in Construction

(© Robert Metsch)



1.6.1 Integrated design process

In 2002, within the framework of the international urban planning and architectural design competition for the new ECB premises, the ECB defined the functional and spatial programme, and set specific targets for energy consumption. It also explained the condition of the site and the surrounding area.

One of the key messages to architects participating in the design competition was the desire for an integrated design process. This means that the architect works together with a structural engineer and an energy and climate designer from the very beginning in order to optimise the energy efficiency and sustainability of a building. The concept for the new ECB premises therefore had to be based on the principles of sustainability and optimal efficiency in the building design, taking into account economic, ecological and social aspects that had to be weighed against future operating costs, maintenance costs and energy consumption. During the competition and at all stages of the evaluation procedure, the energy efficiency of the design and sustainability issues were important considerations.

1.6.2 Urban regeneration

One element of sustainability is urban regeneration. In this respect, the predominantly paved area around the Grossmarkthalle, where lorries used to park and unload, was converted into a large, landscaped, green area. Together with other parks in the

surrounding area – such as the GrünGürtel (Frankfurt’s green belt) and the Mainuferpark (an area of parkland along the banks of the river Main), as well as the nearby Hafenpark (a new park based on the theme of “sport and movement”) and Ostpark (the park in Frankfurt’s Ostend district) – it contributes to the creation of a “green lung” for the City of Frankfurt.

1.6.3 Recycling

In summer 2008 preliminary construction works were carried out on the site to prepare the ground for the main construction works. These works started with the removal of soil, which had to be analysed before being transported in order for it to be disposed of in the most environmentally friendly manner possible. The two annexe buildings of the Grossmarkthalle (two four-storey apartment blocks) were then dismantled brick by brick, so that each brick could be cleaned individually and stored for future use in repairing the damaged areas of the Grossmarkthalle’s facade.

The disused railway tracks on the Grossmarkthalle site were carefully removed. Most of them were then sent to the Härtsfeld-Museumsbahn (a railway society in Baden-Württemberg, Germany), which now uses the tracks to run steam train excursions during the summer months.

1.6.4 Sustainability and reuse

The reuse and conversion of the former Grossmarkthalle to form an integral part of the new ECB premises also contributes to the sustainability of the overall building design. Upon purchasing the site, the ECB agreed that the fundamental appearance of the Grossmarkthalle would be retained. In order to ensure that the Grossmarkthalle is renovated in an appropriate manner, the ECB worked in close cooperation with all local authorities, in particular the historic preservation authorities and energy conservation authorities of the City of Frankfurt am Main and the State of Hesse. Through this collaboration, it was possible, for example, to design replacement windows that are more energy efficient and have a similar profile to the original windows, in line with the requirements of the historic preservation authorities.

1.7 Memorial

The years from 1941 to 1945 constitute a very dark chapter in the history of the Grossmarkthalle, as the basement of its eastern wing building was used as an assembly point for the deportation of Jewish people. Here, more than 10,000 members of Frankfurt’s Jewish population boarded trains that transported them to concentration camps.

Figure20
Memorial



In 2001 the ECB and the Jewish Community Frankfurt had already decided to launch an international competition to design a memorial. The competition was then organised by the City of Frankfurt am Main between 2009 and 2011, in close cooperation with the Jewish Community Frankfurt and the ECB. The winning design, developed by architects KatzKaiser, successfully homes in on available fragments of history, creating a story that symbolises the complexity of the deportations without diverting attention from the actual site. This holds true both for the bureaucratic process behind the crime and the crime itself, i.e. the deportation.

A survivor tells her story

Edith Erbrich is a Holocaust survivor. In 1945, alongside others in her family, Edith was deported from the Grossmarkthalle to Theresienstadt – a Holocaust ghetto and concentration camp. She is one of only a few survivors who have returned to Frankfurt. She regularly visits the memorial today.

Watch on YouTube: [Here](#)

1.7.2 Pathway, signal box and railway tracks on public land

The part of the memorial accessible to the public lies in the strip of land to the east of the Grossmarkthalle, where a pathway for pedestrians and cyclists has been created between the Ostend district and the river Main. This new public pathway, together with the old railway tracks and a signal box that stands beside it, serves as a reminder of the deportation of Jewish women, men and children. A stepped footbridge has also been preserved. Here, people bade farewell to their loved ones or simply looked on with idle curiosity.

1.7.3 Ramp and basement rooms on the site of the ECB

A concrete ramp runs from the eastern border of the site down to the basement rooms in the Grossmarkthalle, demarcating the old basement entrance and forming a break in the landscape. The ramp is flanked by two concrete walls. A pane of glass at the site border enables people to look down to the basement entrance and peer into the “depths of history”. The basement room in which people were held before being deported has largely been left in its original condition to form an authentic part of the memorial. To give visitors and passers-by an insight into the deportations from a range of perspectives, the various components of the memorial are engraved with testimonies from victims and observers. The aim is that people chance upon this information on a walk through the green belt, without making a special trip to see the memorial.

1.8 Photo Gallery Timeline (2004-2015)

Date	File
11 September 2015	New ECB premises – Aerial images
18 March 2015	New ECB premises – Inauguration
18 December 2014	New ECB premises – Building complete
3 November 2014	New ECB premises – Ready to move in
2013 & 2014	New ECB premises construction phase – selected pictures 2013 & 2014
July 2013 – February 2014	New ECB premises construction works and technical infrastructure July 2013 – February 2014
31 October 2013	New ECB premises construction works: April-September 2013 New ECB premises – Site plans and section
23 May 2013	The facades of the new ECB premises
28 March 2013	Installation of the antenna
20 September 2012	Topping out ceremony
20 September 2012	Construction works 2008-2012
19 May 2010	Laying of the foundation stone
19 May 2010	New ECB Premises
17 December 2009	New ECB Premises
March 2009	New ECB Premises, various facade mock-ups
1 December 2008	Großmarkthalle and site, various phases
April 2008	Luminale
8 October 2007	Images and plans of the design of the Detailed Planning
1 October 2007	Image and short description of the mock-up building (English, German)
20 February 2007	Images and plans of the Preliminary Design
6 November 2006	Images and short description
18 January 2006	New Premises Model
16 December 2005	Optimisation Phase Model
9 June 2005	Signing ceremony
20 January 2005	Winner
13 January 2005	The three revised designs
3 March 2004	Models of the other 9 designs from the second phase of the competition
13 February 2004	Models of the three prize-winning designs from the architectural competition for the New ECB Premises Additional images.

2 Competition

In 2002 the European Central Bank (ECB) launched an international urban planning and architectural design competition for its new premises. The purpose of the competition was to identify the best design concepts for the ECB's future home and to select an architect to carry out the detailed planning work for the new premises and, if possible, to implement the project.

The new premises were to be built on the site of the Grossmarkthalle (Frankfurt's former wholesale market hall), an area of 120,000 m² next to the river in the eastern district of Frankfurt am Main. The ECB purchased the site from the City of Frankfurt in March 2002, with the intention of building premises that not only met its functional requirements, but also made innovative use of the old market hall, which was an integral part of site. Design concepts for the new premises were to be based on a usable area of approximately 100,000 m², accommodating 2,500 workplaces, special facilities, parking spaces and technical areas.

The competition consisted of several phases (§2.1 Competition phases). Initially, it attracted applications from more than 300 architects in 31 countries and four continents. After a preselection phase, 80 architects and planners were provided with the competition documents and guidelines (§2.2 Competition format), and asked to anonymously submit a design concept for the first phase of the competition. The designs submitted were evaluated by an international jury, which drew up a shortlist of 12 candidates for the second phase of the competition.

At its final meeting, the jury chose three winning designs:

Figure 31

1st prize: Coop Himmelb(l)au, Vienna, Austria.



Figure 32

2nd prize: ASP Schweger Assoziierte, Berlin, Germany.

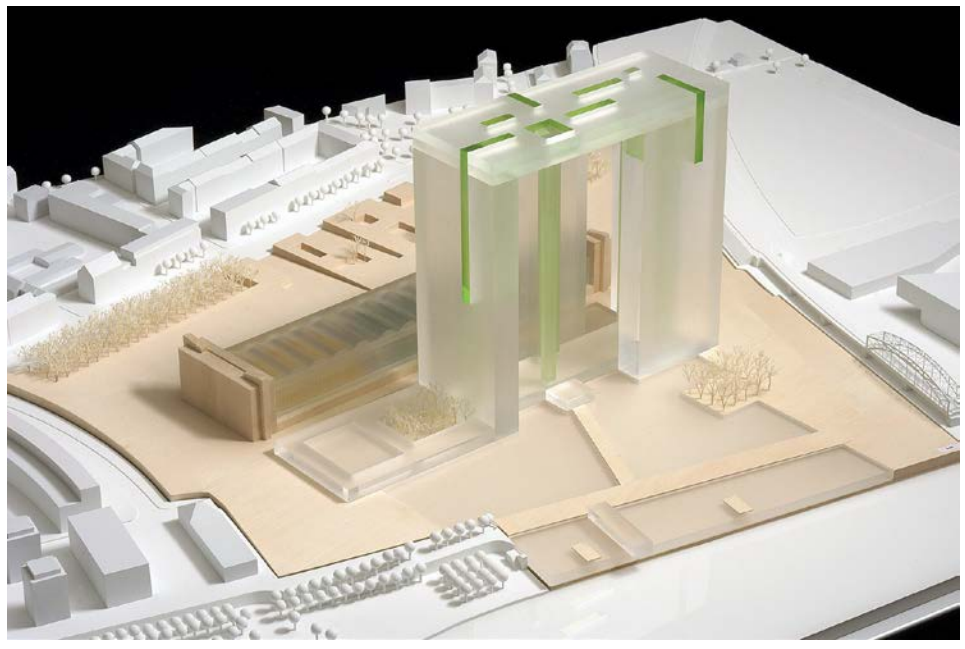
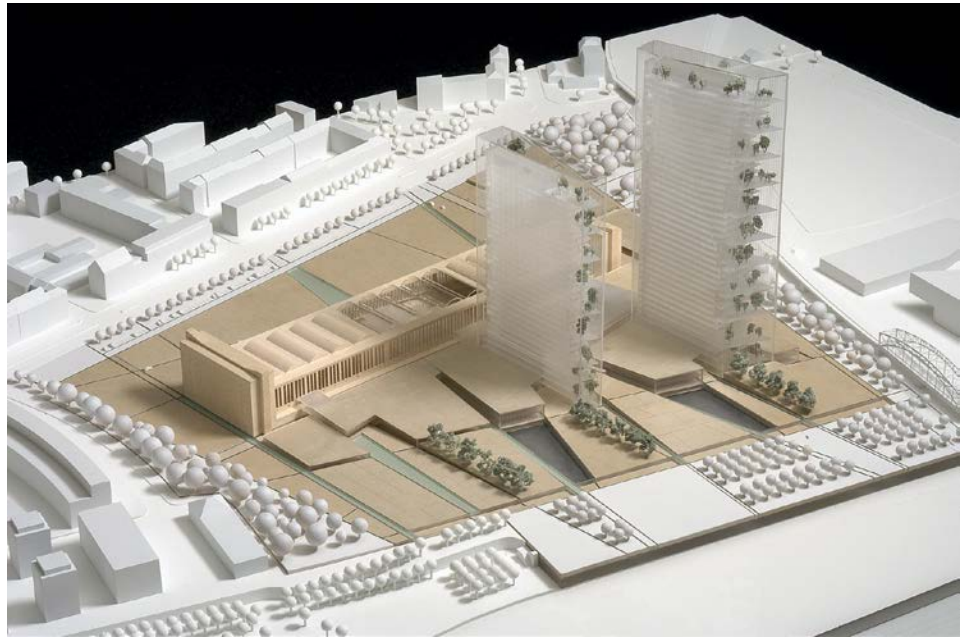


Figure 33

3rd prize: 54f architekten/T. R. Hamzah & Yeang, Darmstadt, Germany/Selangor, Malaysia.



All three prizewinners were invited by the Governing Council of the ECB to take part in a revision phase, in which they had the opportunity to fine-tune their designs. On 13 January 2005 the Governing Council concluded that the revised design concept of Coop Himmelb(l)au best met the ECB's functional and technical requirements, and had features that reflected the ECB's values and translated them into architectural language. At the same time, the Governing Council decided to launch an optimisation phase (§3.2 Optimisation phase) to review the functional, spatial and technical requirements, in order to minimise costs and ensure the optimal use of resources.

2.1 Competition phases

The international urban planning and architectural design competition for the new premises of the European Central Bank (ECB) comprised several phases. During a preselection phase, 80 participants were chosen to take part in the first phase. From the concepts submitted, a jury drew up a list of 12 participants, who were invited to further develop their designs in the second phase. The top three designs were then chosen from these 12 designs. After a revision phase, the Governing Council of the ECB confirmed its decision on the winning design.

2.1.1 Preselection phase

The [competition notice](#) invited architects from around the globe to apply to the competition by 20 January 2003. This resulted in the submission of some 300

applications, which were then evaluated by a preselection committee on the basis of the criteria laid down in the competition notice. The committee, which consisted of five ECB staff members supported by architects on the international jury, selected 80 architects (70 “established” and 10 “emerging young” architects) to take part in the first phase of the competition.

Related information and downloads

- European Central Bank launches international architectural competition [Press release](#)
- 80 architects selected for the first phase of the ECB’s architectural competition [Press release](#)
- [List of candidates who participated in the first phase of the architectural design competition](#)

2.1.2 First phase

The 80 architects shortlisted during the preselection phase were asked to anonymously submit a design concept for the first phase of the competition by 7 July 2003. The concepts were to include an initial architectural design for the ECB’s new premises and plans for the urban development of the site. A total of 71 design proposals were submitted, which were subsequently evaluated by an international jury.

Figure 34
Design concepts



Evaluation criteria

The evaluation of the proposals was based exclusively on the following criteria:

- overall town planning, architecture and landscape;
- compliance with the main features of the functional and spatial programme, including growth modules;
- feasible approach to an energy/environmental concept and compliance with the main features of the ECB’s technical requirements;

- compliance with the relevant rules, in particular in the field of building law and environmental law.

Downloads

- [Minutes of the jury meeting \(first phase\)](#)
- [Design proposals \(first phase\)](#)

2.1.3 Second phase

The evaluation of the proposals submitted during the first phase of the competition resulted in a shortlist of 12 candidates, who were requested to present more detailed architectural design concepts for the second phase.

Figure 35
Detailed design concepts



Evaluation criteria

The evaluation of the proposals was based exclusively on the following criteria:

1. **Overall town planning, architecture and landscape:**
 - architectural design and impact of spatial ensemble
 - integration into urban and landscape context
 - integration of protected monuments and buildings
 - function and quality of landscape design
 - originality, inspiration and innovation of the concept
2. **Compliance with the main features of the functional and spatial programme, including growth modules:**
 - fulfilment of spatial programme
 - functional organisation
 - spatial and design qualities
 - security zoning

- internal circulation
 - external access
3. **Feasible approach to an energy/environmental concept and compliance with the main features of the ECB's technical requirements:**
- life-cycle costs (investment costs and operating costs)
 - energy and technical concept
 - economic feasibility
4. **Compliance with the relevant rules, in particular in the field of building law and environmental law.**

Design proposals

- **101 Murphy/Jahn, Inc., Chicago, United States**

Helmut Jahn

The architectural concept consists of two 35-storey high curved towers that are connected to form a core to the south-east of the Grossmarkthalle. The towers create a vertical counterpoint to the horizontal plane of the Grossmarkthalle. The curved towers open out towards the entrance drive and the river, maximising the views both to and from the towers. The Grossmarkthalle is preserved and remains fully visible from Sonnemannstrasse. The design concept of the second phase differed significantly from the outline concept of the first phase, which consisted of two parallel slabs cantilevered above the Grossmarkthalle to unite the Grossmarkthalle and the river without destroying the autonomy of this historic building.

Figure 36
101 Murphy/Jahn, Inc.



- **107 tp bennett, London, United Kingdom**

Richard Beastall, Christopher Bennie, D. Granville Smith, William Soper

This concept draws on construction-related measures and innovative energy solutions to create an appropriate and comfortable working environment. The landscape is incorporated into the overall design concept: the low-rise buildings are modelled and sloped to create a variety of interesting spaces. The growth modules for possible future expansion are well integrated into this concept in the form of two additional towers of different heights in the south-west. The Grossmarkthalle is well preserved.

Figure 37
107 tp bennett



- **120 Barkow Leibinger Architekten, Berlin, Germany**

Regine Leibinger, Frank Barkow

The concept of a 29-storey slab south of, and parallel to, the Grossmarkthalle with openings or “sky cuts” creates a strong image without overwhelming the Grossmarkthalle. The unique void spaces between the different components of the building allow the large volume to interact with the surrounding neighbourhood: these open areas are designed as gardens symbolising the EU Member States. The Grossmarkthalle is well preserved. Overall the concept seems to be promising in terms of design.

Figure 38
120 Barkow Leibinger Architekten



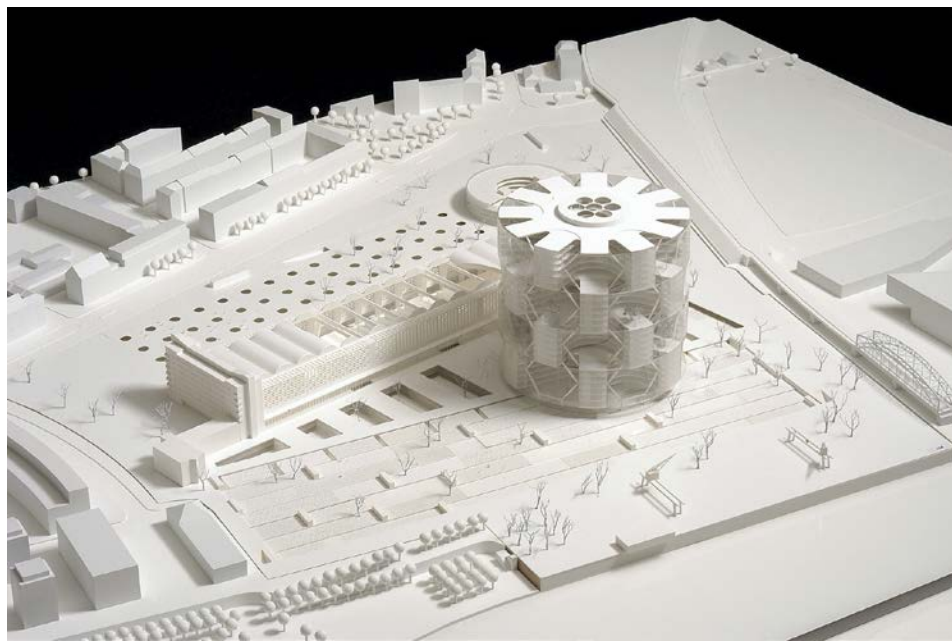
- **124 Schneider + Schumacher Architekturgesellschaft mbH, Frankfurt am Main, Germany**

Till Schneider, Michael Schumacher

The new building, a 25-storey cylindrical tower, forms a dialogue with the Grossmarkthalle, which should be preserved in its original state as far as possible. The growth modules for possible future expansion are created by adding new storeys above the initially constructed building. Within the tower itself, interesting garden spaces allow for both high-quality working spaces and social areas. Owing to the compactness of the cylinder, much of the site is not developed and a large area is allotted for green space.

Figure 39

124 Schneider + Schumacher Architekturgesellschaft mbH

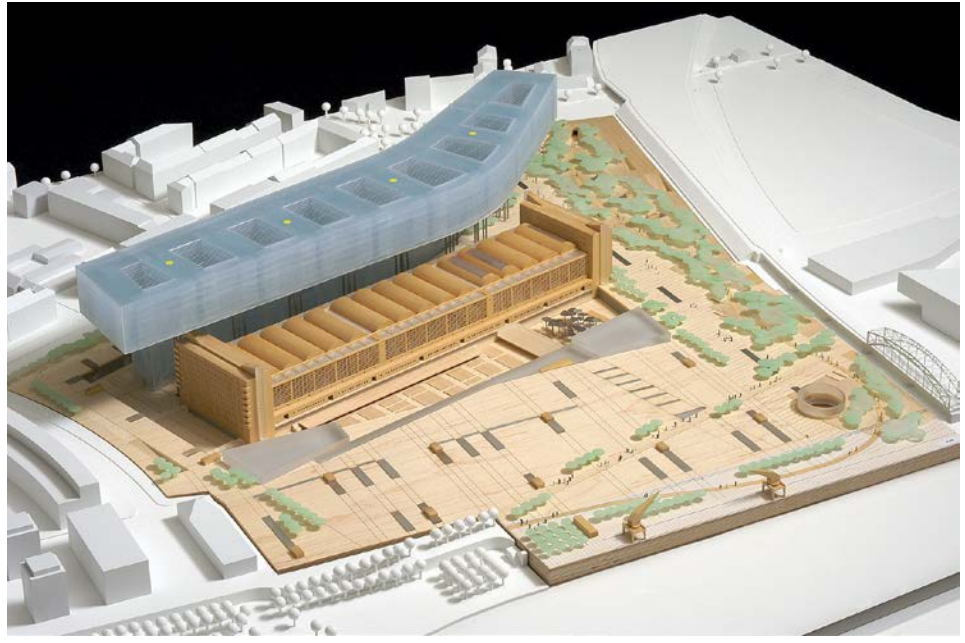


- **133 Estudio Lamela Arquitectos, Madrid, Spain**

Carlos Lamela de Vargas

The new building is located between the Grossmarkthalle and Sonnemannstrasse to link the immediate neighbourhood with the ECB's premises. Although the northern facade of the Grossmarkthalle is shielded from Sonnemannstrasse, the concept respects "history, existing culture and its collective memory".

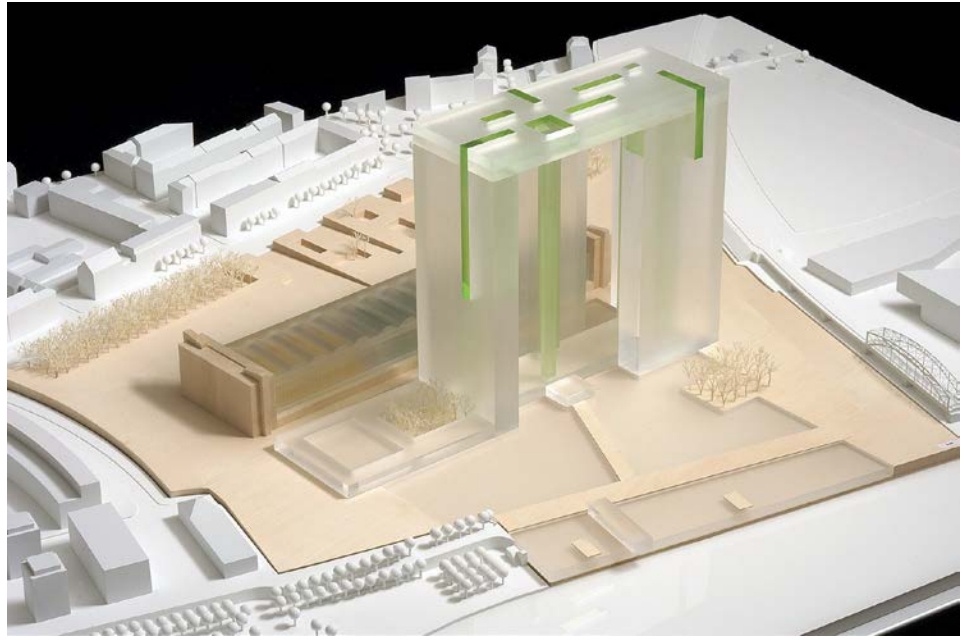
Figure 40
133 Estudio Lamela Arquitectos



- **140 ASP Schweger Assoziierte, Berlin, Germany**

The hovering “sky bridge” contrasts with the Grossmarkthalle without overwhelming this historic building. The Grossmarkthalle is well preserved, though its roof is replaced by a glass construction. This innovative concept creates an exhilarating effect, with the vertical buildings connected through an entrance plaza and the elevated plane. The growth module for possible future expansion is an additional tower.

Figure 41
140 ASP Schweger Assoziierte



- **145 Coop Himmelb(l)au, Vienna, Austria**
This concept has an intelligent combination of old and new in a sculptural form. The ensemble is formed from three basic elements: the Grossmarkthalle, a “groundscraper” and polygonal double office towers. In the outline concept of the first phase, the “groundscraper” cantilevered over the river walk and cut through the Grossmarkthalle. Now, in the second phase, it runs parallel to the Grossmarkthalle, leaving the historic building untouched. The Grossmarkthalle serves as the ECB’s main entrance and public area, and is linked to the two office towers by the conference centre in the “groundscraper”. The concept is concise and functional.

Figure 42
145 Coop Himmelb(l)au



- **152 Frank O. Gehry Associates, Los Angeles, United States**

Frank O. Gehry

The jury found that the original “village” concept for a small-scale cluster of buildings along the river Main was an original response to the given programme. A transparent roof covers a large part of the site to form a kind of “European umbrella”. Mid-rise buildings create an animated skyline above the roof. The “Grossmarkthalle represents the public facade of the ECB” and is treated as a “found object” framed by water basins and large transparent roofs sloping gently towards the historic building.

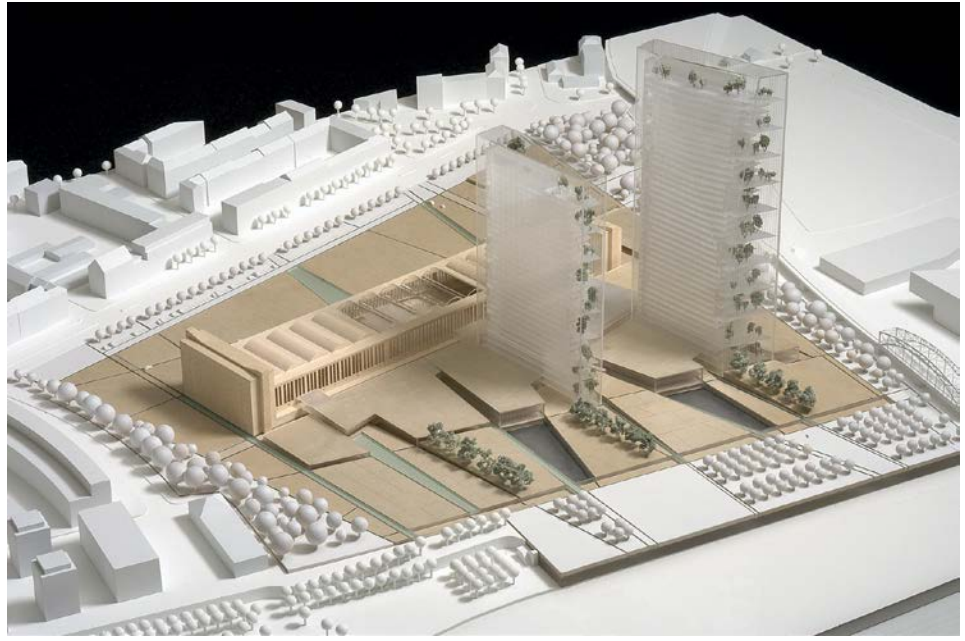
Figure 43
152 Frank O. Gehry Associates



- **157 54f architekten/T. R. Hamzah & Yeang, Darmstadt, Germany/Selangor, Malaysia**
The design concept extends the urban axes into the site, using them to create different landscapes and architectural elements. Two different high-rise slabs are placed to the south of the Grossmarkthalle to “enrich the existing shape of the city”. The open space concept is highly developed. High-quality workplaces take account of energy and environmental considerations. The design concept makes good use of the site and the proportions of the new buildings do not overwhelm the Grossmarkthalle. The concept integrates well with the neighbourhood, incorporating many requirements of the functional programme.

Figure 44

157 54f architekten/T. R. Hamzah & Yeang



- **159 Morphosis, Santa Monica, United States**

Thom Mayne

The vibrant connection between the towers and the Grossmarkthalle is a successful way of integrating the whole ensemble into the surroundings. The four sculpturally designed slabs of different heights are linked perpendicularly to the southern side of the Grossmarkthalle, based on a landscaped platform, to create a “campus of integrated pieces”. The plateau and water areas separate the site from the urban surroundings. This concept has an interesting design idea while incorporating many aspects of the functional programme.

Figure 45
159 Morphosis



- **163 Enric Miralles Benedetta Tagliabue, Barcelona, Spain**

Benedetta Tagliabue

The three v-shaped buildings with a single function, located to the south of the Grossmarkthalle, connect at the lower levels. The concept is “the bank as the market place”. The location and direction of the buildings follow the flow of the green belt on the site. The Grossmarkthalle is fully preserved in structure and appearance. The concept forms a comprehensive approach that successfully integrates the landscape, the Grossmarkthalle and the surrounding neighbourhood.

Figure 46

163 Enric Miralles Benedetta Tagliabue

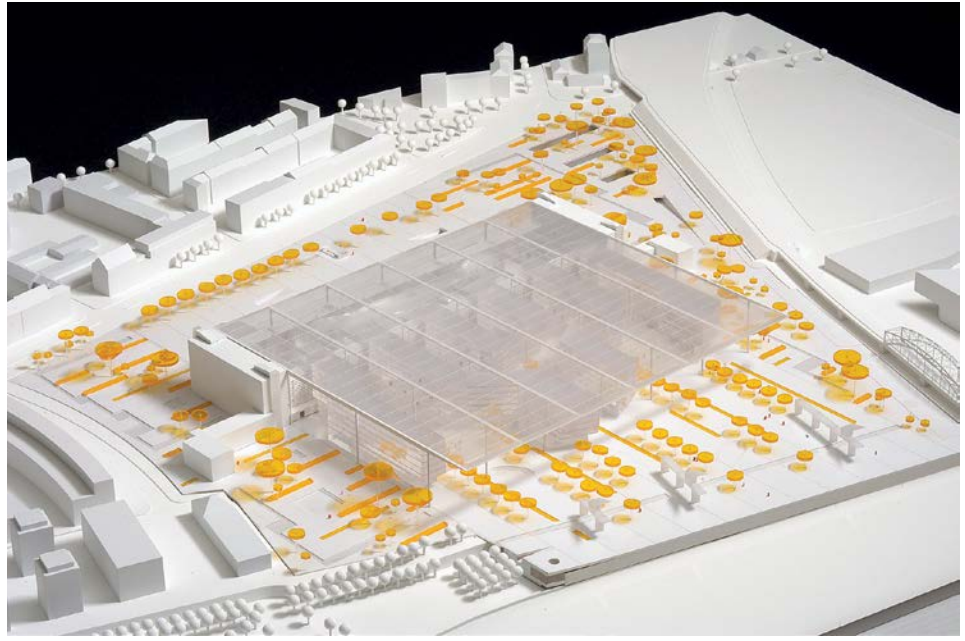


- **168 KHR arkteker AS Virum, Denmark**

Peter Leuchsenring

This flat-roofed form is considered to be modest and sophisticated and brings together the new premises and the Grossmarkthalle. The “European envelope” consists of a glass roof and facade that covers the Grossmarkthalle and low-rise office buildings; the new premises contrast with the skyscrapers of Frankfurt’s financial district. The landscape concept allows many connections between external and internal spaces, while opening up towards the river. The concept revolves around a transparency with “no barriers between the inside and outside”.

Figure 47
168 KHR arkteker AS Virum



Downloads

- [Minutes of the jury meeting \(second phase\)](#)
- [Design proposals \(second phase\)](#)

2.1.4 Prizewinners

In February 2004 an international jury chose three winning designs from the designs submitted during the second phase of the competition.

Figure 48
Three winning designs



The three winning designs

On 13 February 2004 an international jury, which was chaired by the ECB's Vice-President Lucas Papademos, chose the three winning designs in the international urban planning and architectural design competition for the new ECB

premises in Frankfurt am Main, Germany. This concluded the second and final phase of the design competition. The prizes were awarded as follows:

1. Coop Himmelb(l)au, Vienna, Austria
2. ASP Schweger Assoziierte, Berlin, Germany
3. 54f architekten/T. R. Hamzah & Yeang, Darmstadt, Germany/Selangor, Malaysia

Related information and downloads

- International jury chooses the three prizewinning designs in the architectural competition for the ECB's new premises [Press release](#)
- [Minutes of the jury meeting \(second phase\)](#)

2.1.5 Revision phase and final decision

On 18 March 2004 the Governing Council of the ECB decided to invite the three prize-winners of the competition to participate in a revision phase, which would give them the opportunity to review their design proposals and implement the recommendations and requirements of the jury, the ECB and the City of Frankfurt am Main. This phase was therefore conducted in close cooperation with the City of Frankfurt.

On 13 January 2005 the Governing Council reached a decision on the design for the ECB's new premises. After extensive discussions and a careful evaluation, based on the selection criteria, of the strengths and weaknesses of all three prize-winning designs, the Governing Council concluded that the revised design concept of COOP HIMMELB(L)AU best met the ECB's functional and technical requirements, and had features that reflected the ECB's values and translated them into architectural language. This decision confirmed the assessment of the international jury, who had awarded first prize to that design.

Figure 49
Final decision design



Related information

- ECB chooses participants for the revision phase of the “New ECB Premises” project [Press release](#)
- Governing Council decides on the design for the new ECB premises [Press release](#)

2.2 Competition format

2.2.1 Competition documents

In November 2002 the ECB announced the urban planning and architectural design competition for the new ECB premises in the Official Journal of the European Union. It was launched as a restricted project competition in two phases preceded by the pre-selection of 80 qualified applicants and possibly to be followed by an optional revision phase. The selected participants were supplied with the competition documents along with the competition rules and guidelines. The conditions of participation and competition rules were set out in the document entitled “Competition rules”. Details on the design requirements were provided in the “Competition brief”, which was published in sections.

Documents

- [Competition notice, November 2002](#)
- [Competition rules, November 2002](#)
- [Competition brief, November 2002](#)

2.2.2 Jury

The evaluation of the design concepts submitted during the first and second phases of the competition, as well as the selection of the prize-winners, was conducted by an international jury.

Members of the jury

The jury was composed of the persons listed below.

Please note that all titles and positions of the jury members are stated as they were at the time of the competition for the design of the new ECB premises. They may have changed in the meantime.

Table 2**The jury**

On behalf of the ECB and the national central banks	On behalf of the City of Frankfurt am Main	As external architects
Chair Lucas Papademos (Vice-President of the ECB)	Edwin Schwarz (City Councillor responsible for town planning)	Vice-Chair Françoise Hélène Jourda (France)
Liam Barron (Director General of the Central Bank of Ireland)		Oriol Bohigas (Spain)
Sirkka Härmäläinen (Member of the Executive Board of the ECB)		Kees Christiaanse (Netherlands)
Yves Mersch (Governor of the Banque centrale du Luxembourg)		Massimiliano Fuksas (Italy)
Hanspeter K. Scheller (Director General Administration of the ECB)		Michael Wilford (United Kingdom)
Ernst Welteke (President of the Deutsche Bundesbank)		

In addition to the jury members above, the following persons were appointed as deputies.

Deputies**Table 3****Deputies**

On behalf of the ECB and the national central banks	On behalf of the City of Frankfurt am Main	As external architects
Hans Georg Fabritius (Member of the Executive Board of the Deutsche Bundesbank)	Dirk Zimmermann (City of Frankfurt, Head of the Town Planning Department)	Craig Dykers (Norway)
Klaus Gressenbauer (Director Planning and Controlling at the ECB)		Martha Schwartz (United States)
Brian Halpin (Deputy Director General of the Central Bank of Ireland)		
Thomas Rinderspacher (Head of the Premises Division at the ECB)		
Fernand Yasse (Head of Organisation and Risk Management at the Banque centrale du Luxembourg)		

Documents

- [Minutes of the first jury meeting on 28-29 August 2003](#)
- [Minutes of the second jury meeting on 12-13 February 2004](#)

3 Planning Phase

3.1 Different planning phases

Following COOP HIMMELB(L)AU's optimisation (§3.2 Optimisation phase) of its winning design in 2005, on the basis of the reviewed functional, spatial and technical requirements, as well as the budget established, the project moved into the preliminary planning phase (§3.3 Preliminary planning phase, 2006) and from there into the detailed planning phase (§3.4 Detailed planning phase, 2007).

Figure 50

The entrance building creates a distinct entrance from the North

(© ISOCHROM.com)



The different stages

The preliminary as well as the detailed planning phase involved:

- Preparing and implementing the necessary tender procedures to award services contracts to planners, experts, architects, engineers and construction companies that would be involved in the planning and construction of the premises.
- Submitting the plans to the authorities of the City of Frankfurt in order to obtain the necessary building permits and reviewing all plans for compliance with the applicable building regulations, e.g. building code, fire protection and health and safety standards.

- Updating the cost plan in order to confirm the overall budget.
- Developing the design and the corresponding detailed drawings based on the reviewed building specifications and on continuous value engineering.

3.2 Optimisation phase

3.2.1 Preliminary decision

When it selected COOP HIMMELB(L)AU to design the ECB's new premises on 13 January 2005, the Governing Council also decided to conduct an optimisation phase. In cooperation with the ECB, the architects reviewed their design, taking into account the revised functional and spatial requirements, in order to ensure an optimal use of resources and to reduce costs. In parallel, the ECB worked closely with the Frankfurt authorities to integrate the Grossmarkthalle site into the city's infrastructure.

Figure 51

Design prior to the optimisation phase

(© Frank Hellwig)



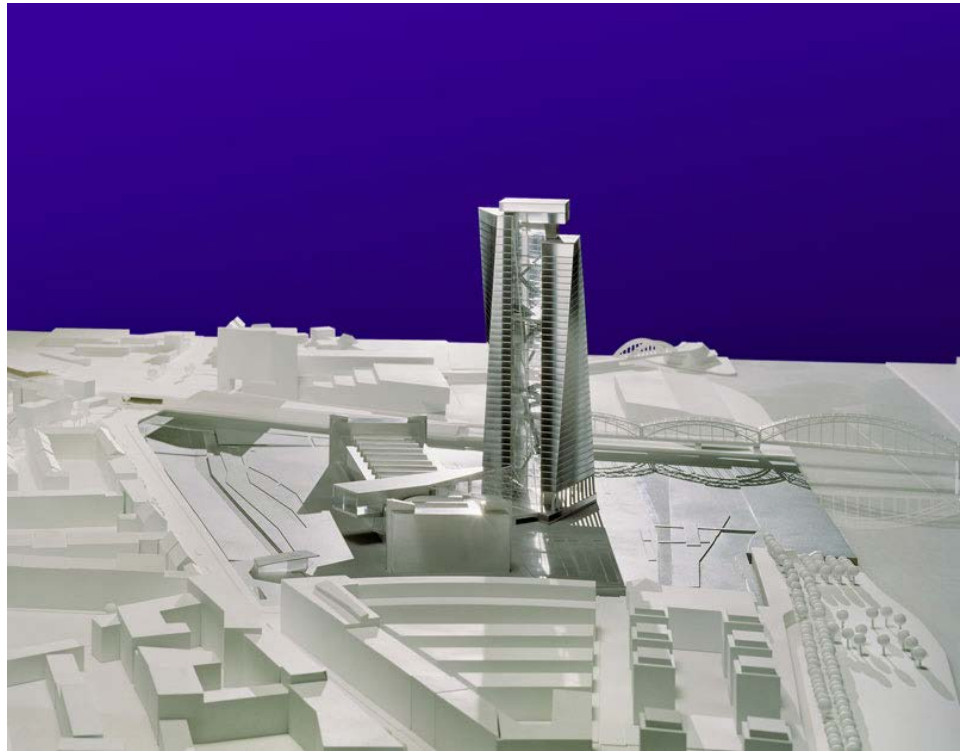
Approval

On 15 December 2005 the Governing Council approved COOP HIMMELB(L)AU's optimised design concept for the ECB's new premises. The new concept fully met the requirements of the ECB.

Figure 52

Design at the end of the optimisation phase

(© Robert Metsch)



Changes

The optimisation phase led to several changes in the design proposal:

- First, a new building element was introduced, which intersects the Grossmarkthalle, connecting the hall to the office towers and providing a distinctive entrance to the new ECB premises from the north.
- Second, the use of the Grossmarkthalle was intensified, while the view of the Grossmarkthalle from the south was improved.
- The revised requirements resulted in a reduction in the number of workplaces from 2,500 to 2,300. These are occupied by between 1,500 and 1,800 ECB staff members, as well as by experts of the National Central Banks, external consultants, trainees and temporary staff.

3.3 Preliminary planning phase

3.3.1 Detailing

On 20 February 2007, the European Central Bank (ECB) presented the outcome of the preliminary planning phase, in which the architects consolidated and modified the design proposal for the new premises on the basis of the results of the optimisation phase. The preliminary planning phase paved the way for the detailed planning phase.

Figure 53

Model, View from the North

(© Markus Pillhofer)



3.3.2 Improvements

The high-rise and entrance building, which links the Grossmarkthalle to the high-rise, were moved slightly to the west, over the part of the building that was rebuilt after the Second World War. In line with the requirements of the historic preservation authorities, the signature concrete grid facade was to remain intact. The envisaged functions of the Grossmarkthalle were reorganised on the basis of historic preservation and space requirements. The facade of the high-rise was rendered more energy-efficient by increasing the level of solar protection. The landscape design of the site was redefined and redeveloped with regard to the integration of the ECB's security requirements into the landscape.

Figure 54
Model, View from Northeast

(© Markus Pillhofer)



3.4 Detailed planning phase

3.4.1 Request for a building permit

On 8 October 2007, the European Central Bank (ECB) presented the outcome of the detailed planning phase for its new premises. The design was submitted to the relevant authorities of the City of Frankfurt for planning permission. On 22 October of the same year, the City of Frankfurt gave the go-ahead to start the preliminary construction work in the first quarter of 2008.

Figure 55
Model

(© COOP HIMMELB(L)AU, Markus Pillhofer)



3.4.2 Building permission

On 6 May 2008, Petra Roth, Lord Mayor of the City of Frankfurt am Main, handed over the building permit for the entire new premises project to Jean-Claude Trichet, the then President of the European Central Bank.

Figure 56

Colour trials at one of the columns inside the Grossmarkthalle

(© Robert Metsch)



3.4.3 Preliminary construction works

Among other things, the preliminary construction work included the demolition of the two annexe buildings to the east and west of the Grossmarkthalle and the construction of the pile foundations

3.4.4 Renovation

Analyses on original building elements and materials of the Grossmarkthalle were also carried out in order to develop suitable restoration methods. The overall concept for the interior, including the materials and surfaces, was defined, and various installations were built in order to test both the functionality and quality of the materials chosen.

3.5 Execution planning phase

3.5.1 Detailed plans

The execution planning phase involved fine-tuning the plans developed during the detailed planning phase, with a view to facilitating the construction of the new

premises of the European Central Bank (ECB). From January 2009, architects and planners worked on the detailed plans for the new premises.

Figure 57

View towards the high-rise from the West

(© COOP HIMMELB(L)AU)



3.5.2 Tendering the construction works

The execution planning phase commenced in parallel to the second tendering procedure for the construction works, which was launched at the beginning of 2009 after the first tendering procedure for a general contractor was closed on 25 June 2008 because it did not produce a satisfactory economic result.

3.5.3 Re-tendering of the construction works

For the second tendering procedure, the construction works were divided into packages and lots in the hope that medium-sized companies would also submit competitive tenders and that specialised companies would be found for each trade.

4 Construction Phase

In the autumn of 2007 the design plans were submitted to the relevant authorities of the City of Frankfurt am Main, which then granted partial building permission on 22 October of that year. This meant that the preliminary construction works could be started in the first quarter of 2008. On 6 May 2008 Petra Roth, Lord Mayor of the City of Frankfurt am Main at the time, granted full building permission to Jean-Claude Trichet, the then President of the ECB.

After the successful conclusion of a tendering procedure, in which the construction works had been divided into packages and lots, the main construction works were launched in spring 2010. The foundation stone for the high-rise was laid on 19 May 2010. Alongside the works on the high-rise, work began on the extensive restoration of the Grossmarkthalle and the construction of its new internal buildings. Just over two years later, on 20 September 2012, a topping out ceremony was held to mark the completion of the main structural works. Work then continued on mounting the facade panels on the high-rise and fitting out the interior of all the building elements, including the installation of the technical infrastructure.

The overall design concept for the ECB's new premises included the landscaping of the industrial site surrounding the Grossmarkthalle. The idea was to create a diverse parkland area for which the river Main was a major inspiration.

The new ECB premises were completed and operations commenced in 2014.

Time-Lapse video of the construction: [Here](#)

4.1 Preliminary works

4.1.1 Preliminary site work

Before it could hand over the site to the ECB, the City of Frankfurt am Main was responsible for clearing the site and preparing it for the handover. These works were carried out between the spring and autumn of 2004 and involved the demolition of buildings that were not worth preserving: to the south of the Grossmarkthalle these were the "blaue Halle", the "Importhalle", which served primarily as a depot for incoming tropical fruits, and the "Ami-Halle" (hall used by US-Americans); to the north of the Grossmarkthalle, between the market hall and the Sonnemannstrasse, the smaller "Hallenhütten" were also torn down.

Figure 58
Desiccation of the bricks

(© Robert Metsch)



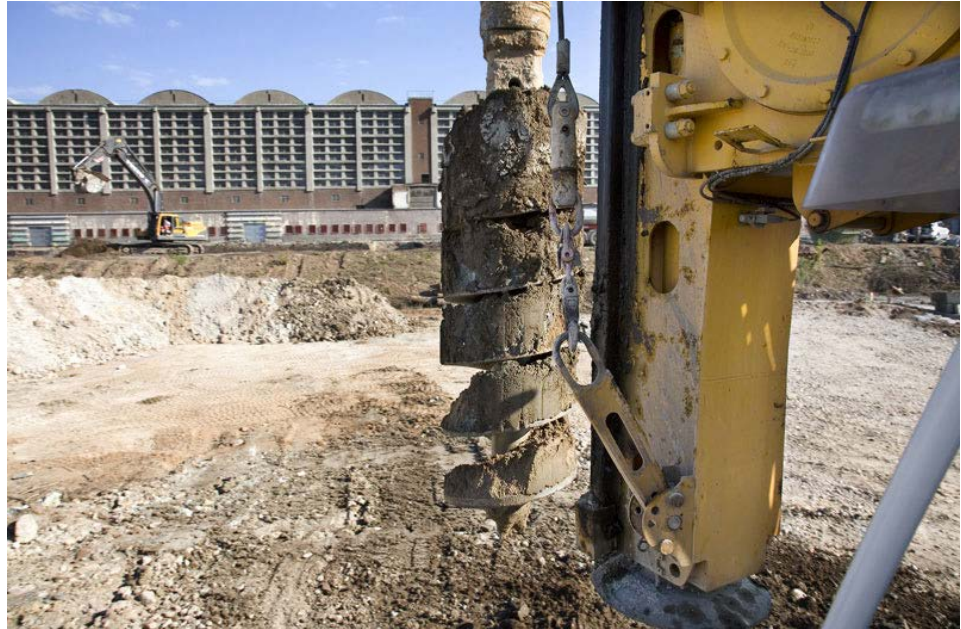
4.1.2 Removal and excavation works

Between the spring and autumn of 2008, preliminary construction work was carried out on the site of the former Grossmarkthalle and the new premises of the European Central Bank (ECB) to prepare the ground for the main construction works. This included excavation and foundation work for the high-rise and underground staff car park, as well as demolition work on the Grossmarkthalle.

Figure 59

Excavation of the pit (secant bored pile wall)

(© Robert Metsch)



4.1.3 Demolition/removal works

Dismantling – brick by brick

The disused railway platform and the two four-storey annexe buildings were demolished. Parts of the annexe buildings were carefully pulled down by hand so that the bricks could be used to renovate the facade of the former Grossmarkthalle. The reason for this is that the colour of new bricks would not match that of the old ones owing to different manufacturing techniques and materials.

Figure 60
Demolition of the western annexe building

(© Robert Metsch)



Figure 61
Hand removal of the brickwork and demolition of the western annexe building

(© Robert Metsch)



4.1.4 Recycling

The rubble resulting from these demolition works, for example wood, bricks, glass and roofing materials, was carefully sorted, preserved and then either recycled or disposed of.

4.1.5 Restoration trials

Analyses and trials

The Grossmarkthalle needed to be restored and renovated to ensure that the building is structurally sound for the next few decades. With a view to drawing up a renovation concept, building restorers and structural engineers carried out thorough analyses and restoration trials on the Grossmarkthalle during the period 2005–07. Engineers assessed the structural soundness of the building and thus its suitability for further use, while building restorers searched for original surfaces and evaluated their condition. This produced a number of damage patterns that needed to be treated using a range of different measures.

Figure 62

Trial restoration of the concrete grid facade with sample windows

(© Robert Metsch)



Original materials

Inside the wing buildings, only a few surfaces have been preserved in their original state. For example, parts of the staircases and the checkout area are still in their original state; in the foyer of the western wing building the original decorative brick pattern still exists under the plaster. These surfaces were uncovered and restored. In the event that they needed to be added to, this was done using neutral, subtle materials that were in keeping with the original materials.

Figure 63

Trial restoration of the concrete grid facade with sample windows

(© Robert Metsch)



4.1.6 Pile foundations

Excavation of the pit

In the summer of 2008, preliminary work was carried out on the construction site to the south of the Grossmarkthalle in preparation for the construction of the high-rise. This involved the excavation of the pit (secant bored pile wall) and construction of the pile foundations.

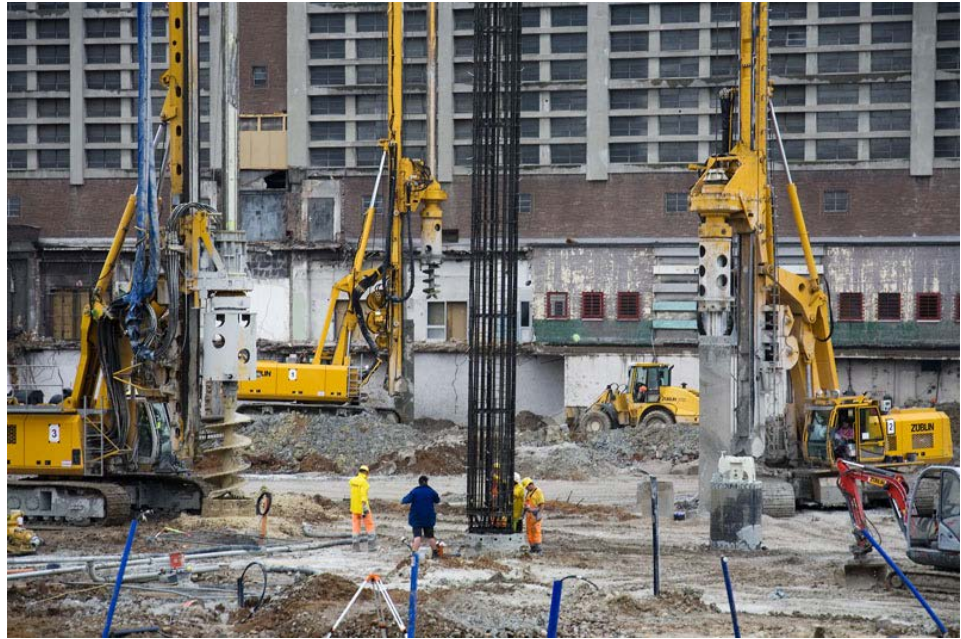
97 foundation piles and geothermic devices were inserted into the ground to a maximum depth of 37 m during this phase of the construction works, which was completed in October 2008.

Pipes forming part of the water circuit are attached to the pile cage and can be connected to the heating pumps in the heating centre. The use of geothermal energy can reduce the energy costs of the new premises.

Figure 64

Excavation of the pit (secant bored pile wall)

(© Robert Metsch)

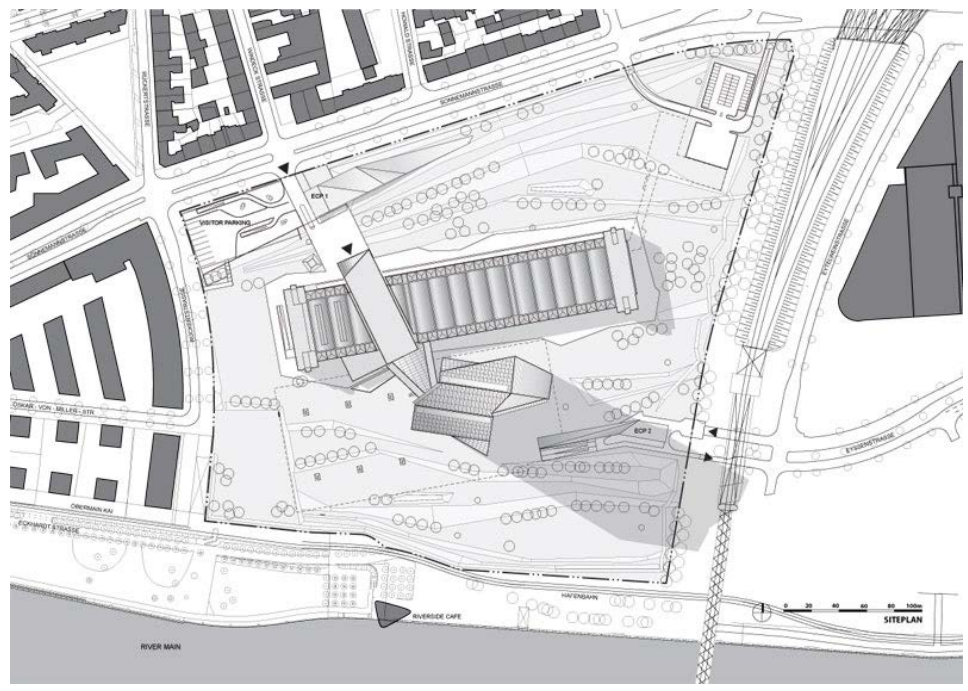


4.2 Structural work

4.2.1 Start of the construction works

The construction works for the ECB's new premises started in spring 2010, with the laying of the foundation stone on 19 May. First to be carried out were the structural works for all the building elements, the requisite steelwork and the restoration of the Grossmarkthalle.

Figure 65
Site plan



4.2.2 Building of the new premises

The two office towers are reinforced concrete skeleton frame structures. The north tower has 45 floors and the south tower 43. Steel trusses and interchange platforms in the atrium join the two towers together to create a single static structure.

Restoration of the Grossmarkthalle

A large part of the construction works focused on the restoration of the Grossmarkthalle, which was built on the basis of the design of Martin Elsaesser during the period 1926-28. The fundamental appearance of the Grossmarkthalle has been retained, with its facades and surfaces having been restored in line with the building preservation order. In 2010 approximately 7,000 m of horizontal joints and 32,500 transversal joints in the wing buildings were removed and reinstalled. In addition, approximately 14,000 defects in the concrete were repaired.

Figure 66
Restoration



The ECB's functional facilities, such as the visitor centre, staff restaurant and conference area, are separate steel frame structures that were integrated into the market hall on the basis of a "house-in-house" concept.

Floor of the Grossmarkthalle

The Grossmarkthalle houses a visitors' centre, a staff restaurant, a cafeteria and conference rooms. These areas were integrated into the hall as a separate house-in-house system. The original 1920s hall floor and its sub-structure were not strong enough to support these new building elements, thus necessitating a new structural framework. There is also a new, waterproof basement that houses the archives and technical rooms.

In the summer of 2010 diggers took down the reinforced concrete ceiling and reinforced mushroom columns. These works had no impact on the structure of the Grossmarkthalle, as the diagonal columns that support the roof shells rest on separate footings that extend down to the basement.

The installation of the foundation piles for the new building elements and the construction of approximately 3,500 drilled metres of concrete underpinning for the existing column footings were completed in 2010.

Figure 67
Grossmarkthalle



Removal works for the entrance building

The purpose of the entrance building is to create a functional and visual link between the Grossmarkthalle and the double office tower. It intersects with the Grossmarkthalle to form a clearly identifiable entrance from the north side of the site on Sonnemannstrasse. It also houses the press conference area.

In order to enable the construction of the entrance building, three segments of roof were pulled down in August 2010, upon agreement with the historic preservation authorities. The three concrete shells that were removed were those that were damaged during the Second World War air raids and subsequently reconstructed in the 1950s.

They were removed by diggers according to a carefully devised plan: first, the facade was taken down, leaving the structural framework of the roof shells. Then the shells themselves were removed, and finally, the structural framework, which consisted of reinforced concrete supports, was also pulled down. The diggers followed this plan meticulously, so as not to damage original parts of the building.

Figure 68
Removal works Entrance



Foundation work for the entrance building

The concrete core of the entrance building showed the location of the entrance building and its alignment towards Sonnemannstrasse.

Figure 69
Foundation work for the Entrance building



Structural framework for the “house in house” building elements

With the new basement and ground floor, as well as the first few floors of the “house-in-house” building elements, in place, the wide set of stairs leading up to the conference area already gave a first impression of the dimensions and proportions of the new internal buildings in relation to the hall.

Figure 70

Structural framework for the “house in house” building elements



Restoration of the roof shells

The roof shells were constructed using the Torkret process, which was state-of-the-art at the time and one of the reasons why the Grossmarkthalle became a listed building in 1972. The shells were restored, and, contrary to initial fears, their quality turned out to be amazingly good. The outer surface of bituminous roofing felt and styrofoam film was removed so that a new layer of insulation could be applied, while the inner layer of concrete was restored.

Figure 71

Restoration of the roof shells



Restoration of the facade of the eastern wing building

The repair of the brick facade of the eastern wing building began in the spring of 2010. This involved removing the mortar from all the joints and replacing it. The joint profile of the brick facade constitutes one of the Grossmarkthalle's special features: according to the design of Martin Elsaesser, who was Director of Town Planning for the City of Frankfurt am Main at the time, the width of the transversal joints was to be considerably wider than that of the vertical settlement joints, i.e. two and a half centimetres compared with only one centimetre. The idea was to accentuate the horizontality of the brick courses. This artistic accentuation of the horizontality was further underlined through the colouring of the joints, with the horizontal joints being filled with a pale mortar and the vertical settlement joints with a dark mortar. The aim of the careful restoration of the joints was to replicate this original feature of the facade.

Figure 72

Restoration of the facade of the eastern wing building



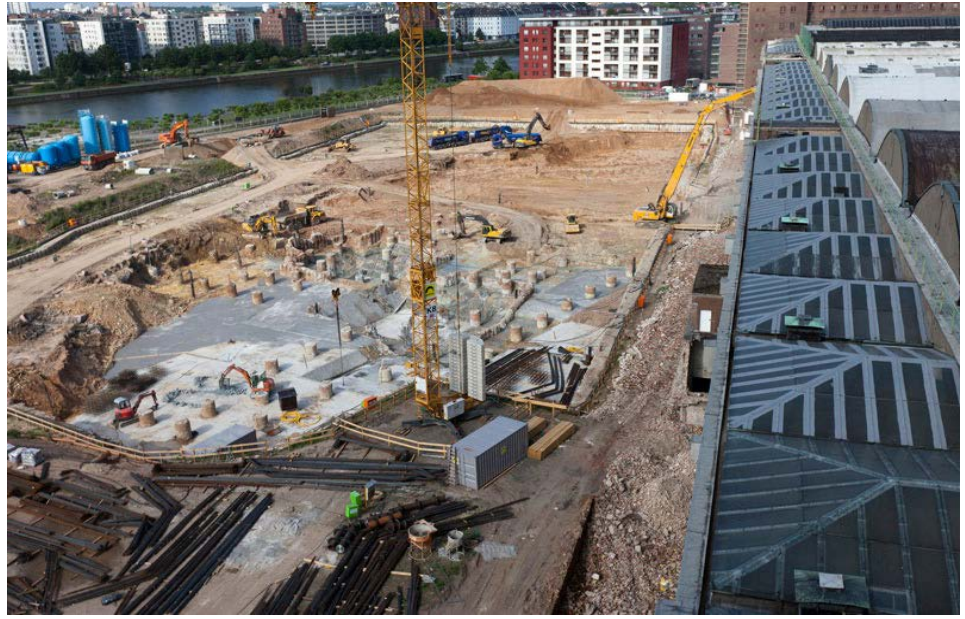
High rise: Laying of the foundation plate for the double office tower

In the course of 2010 removal works were carried out on the floor of the Grossmarkthalle and the foundation plate for the double office tower was laid. Adjoining the west of the high-rise is the underground staff car park.

The foundation plate of the double office tower is approximately three metres thick. For the reinforcement of the concrete (i.e. the incorporation of steel rods), approximately 4,200 tonnes of steel were required. The casting of the foundation plate needed to be carried out in segments. For each segment, the concrete had to be poured continuously.

Figure 73

High rise: Laying of the foundation plate for the double office tower



High rise: Construction of the basement levels

The winter of 2010/2011 saw the construction of the two basement levels of the double office tower and the self-contained underground staff car park, which is to the west of the double office tower and provides approximately 600 spaces over two levels.

Figure 74

High rise: Construction of the basement levels



High rise: Floor construction continues

From July 2011 onwards the structural framework of the high-rise towered over the Grossmarkthalle. The two office towers grew at the same rate of one storey a week, but in terms of their height, one tower is taller than the other. The top of the structural framework was surrounded by a yellow framework, a shield which allowed the formwork and concreting works to continue in bad weather and strong winds, without putting the safety of the workers at risk – even at great heights. The concrete cores of the towers, along with the technical installations and lift shafts, were erected by means of a mast climbing work platform, while the floors were constructed using formwork tables.

Figure 75

High rise: Floor construction continues



High rise: Installation of the first interchange platform

In November 2011 the first of a total of 14 trusses was mounted in the atrium between the two office towers. These steel trusses, together with the interchange platforms, served to brace the two office towers. They were anchored to large node points; the first joint plate was installed in July 2011. The steel trusses were delivered to the construction site in segments and set down in the atrium area. The segments were then welded together so that each truss consisted of two halves.

Figure 76

High rise: Installation of the first interchange platform



4.2.3 Timeline

The laying of the foundation stone on 19 May 2010 marked the official start of the construction works for the ECB's new premises. See §1.2.3 Laying of the foundation stone.

The topping out ceremony on 20 September 2012 marked the completion of the main structural works. See §1.2.2 Topping out ceremony.

4.3 Façade

The facades of the new premises of the European Central Bank (ECB) consist of glass, clinker bricks, concrete and metal. The Grossmarkthalle (Frankfurt's former wholesale market hall) is characterised by concrete grid and clinker facades, while, with their glass and metal facades, both the double office tower and the entrance building are clearly identifiable as new.

4.3.1 Facades of the Grossmarkthalle: old building restored to its former splendour

The characteristic brickwork and concrete grid facade of the Grossmarkthalle have been restored in close cooperation with the historic preservation authorities.

Eastern and western wing buildings

Extensive repair work was carried out on the brick facades of both wing buildings. Any bricks that were damaged have been replaced with those collected during the removal of the annex buildings. All the joints of the brickwork were raked out and, in keeping with architect Martin Elsaesser's original design, filled with two different colours of mortar – a pale mortar for the horizontal joints and a dark mortar for the vertical joints – in order to accentuate the horizontality of the brick courses.

The eastern wing building used to house the market's cold storage rooms and so its facade had virtually no windows. In agreement with the historic preservation authorities, space was therefore created in its brickwork for rows of windows, so that its facade is now similar to that of the western wing building. As for the windows in the staircases of the two wing buildings, the old steel frames were fitted with new glass panes.

Concrete grid facades

The concrete grid facades on the northern and southern sides of the Grossmarkthalle were carefully repaired and cleaned, and all the windows, with a few exceptions, were replaced. The steel frames of the new windows were constructed in such a way that they are as narrow as the old ones, but strong enough to support double glazing. Additionally, the new windows are much more energy-efficient than the old ones.

The brick facades of the ground and first floors of the market hall were removed and replaced with rows of windows, in order to let in more natural light. The windows on the northern side were fitted with thermal insulation glass, while those on the southern side were fitted with glass that provides both sun protection and thermal insulation.

Front extension on the northern side

The brickwork of the outermost wall of the front extension on the northern side of the Grossmarkthalle was fully restored. Three of the original windows were restored and fitted with new glazing, while the others were replaced with new ones consisting of narrow steel sections and a single pane of glass, resembling the original ones. The original steel bars were also restored and mounted in front of the three original windows.

"House-in-house" concept

In line with the "house-in-house" concept designed by the architecture office COOP HIMMELB(L)AU, the conference area and staff restaurant were integrated into the Grossmarkthalle as separate building elements. These have a structural framework of steel posts and beams, and individual facades consisting of thermal insulation glass. While the new building elements are enclosed units with their own temperature

regulation system, the open areas of the Grossmarkthalle surrounding them are affected by the seasonal air temperatures outside.

4.3.2 Facade of the double office tower: complex geometry

The two office towers and the transparent atrium that joins them together are conceived as a monolithic glass structure.

Office facades

A combination of different geometries makes the double office tower look like a large crystal, with oblique surfaces on the western and eastern facades and hyperbolic paraboloid surfaces on the northern and southern facades. A hyperbolic paraboloid surface is essentially a concave curved surface that is produced by moving an open-down parabola along a fixed open-up parabola. What is important, however, is that the hyperbolic paraboloid surface can be produced through two sets of straight lines, so that the hyperbolic paraboloid can be constructed from rectilinear elements.

It is this principle that formed the basis of the facade design for the high-rise. The towers have been fitted with flat glass panels, 90% of which are identical to each other. Each panel runs the entire height of a single storey, so that only the vertical fixings are visible. The result is a homogeneous curved glass surface made up of straight panels.

This surface consists of a state-of-the-art "shield hybrid facade", which comprises three layers and is a refined synthesis of classic facade constructions, combining the functions of box windows, double-glazed windows and double facades. In order to meet various requirements relating to fire prevention, the reduction of radar reflection, the cleaning of the facades and sun protection, a special type of glazing was chosen, consisting of sun protection glass on the outside and thermal insulation glass on the inside. Aluminium blinds are also fitted between the two panes of glass to enhance the level of sun protection.

The offices are air-conditioned, but there is also the possibility of natural ventilation through the use of a new opening mechanism, whereby the panes move out horizontally from their frames. This mechanism is "hidden" behind the outer facade and supplies the offices with outside air through the ventilation slots that it creates. If the individually adjustable ventilation slots are open, the air conditioning system in the respective office automatically shuts off in order to conserve energy. The opening panels can be fixed in any position by means of motor-driven hinges.

Atrium facade

The panes of glass for the facade of the atrium – which connects the two polygonal towers – are mounted on a customised steel grid. It is strong enough to bear the weight of the glass panels along the full height of the atrium and is therefore clearly visible through them. In line with the design concept, the glazing of the atrium is

neutral in colour and transparent. This enables people to see straight through the atrium and view the high-rise as two separate towers. This impression of a transparent atrium is enhanced by its roof, which is also made of glass. The glass is coated in such a way that it absorbs less than 10% of the energy from the sun, though the sky can still be seen through it.

4.3.3 Facade of the entrance building: a clearly defined approach

The distinctive entrance building, in the foreground of the double office tower and the long horizontal expanse of the Grossmarkthalle, rounds off the building ensemble and defines the look of the ECB.

The entrance building projects out of the Grossmarkthalle by about 20 m in the direction of Sonnemannstrasse. Its northern facade, behind which the press centre is located, is particularly striking: in contrast to that of the double office tower, it is a three-dimensionally curved surface consisting of hyperbolic glass panels.

The walls of the entrance building, as well as its underside, are covered with aluminium sheets, while panels of glass break up the concrete grid facade of the Grossmarkthalle, clearly marking the main entrance to the ECB.

4.4 Landscape architecture

By reinterpreting the traditional landscaping theory of the “English garden”, the Swiss company Vogt Landscape Architects developed a sophisticated design for the area around the new ECB premises. The river Main was a major inspiration for the design of a parkland area, which is planted with more than 700 trees of 25 different types.

Creating an English garden for the ECB

The defining principle of the “English garden” was that it should be in harmony with the surrounding landscape and present an idealised view of nature, loosely modelled on the typical English countryside. Many of London’s parks or the estates of English stately homes, or even the Englischer Garten in Munich, follow this principle. What is typical about this style is how landscape architects incorporated the movement of people and their constantly shifting viewpoints into their designs. It was this concept that Vogt Landscape Architects had in mind when creating the landscape design for the ECB’s new premises.

To start with, landscape architects analysed the site in great detail to gain a comprehensive understanding of its attributes. For them, the most obvious was its proximity to the Osthafen, directly on the banks of the river Main. They therefore chose to make water a central, distinguishing element of the landscape design.

River serves as major inspiration for the park

With regard to the softscape, the basic idea was that of abstracting the typical terrain of natural flood plains: the particular topography of a river landscape with its clefts and plateaus, backwaters, undercuts and slopes is abstracted to geometric forms. The result is a parkland area consisting of a stylised river landscape that follows the contours of the river Main and incorporates the market hall, high-rise and other essential facilities, while retaining all the qualities of a park. The vegetation both enhances and questions the idea of a river landscape with a combination of typical river plant life and exotic plants that appear strange in such a habitat. Most of the trees are deciduous, enabling people to experience the different seasons. Meadows with widely spaced trees are interspersed with dense woods, natural hedges, typical riverbank formations and rows of trees that reiterate the form of the river valleys.

Turning to the hardscape, certain areas are paved with cobblestones, which gradually fade into the asphalt or grass areas instead of forming sharp edges. Some of the stones date back to when the Grossmarkthalle still housed Frankfurt's wholesale market. In addition, some of the contoured river valleys are filled with the kinds of stones typically found in such areas.

“Green lung” for the city of Frankfurt

In November 2012 the first of the Ginkgo trees were planted, marking the start of the implementation of the landscape design. The landscape architects have created a park that appears to have grown naturally, although everything of course was carefully planned and thought through. This also applies for the necessary security features, which are incorporated into the landscape as walls and fences, marking the border of the site. They are embedded in layers in the park so that, insofar as is possible, the green space is perceived neither from the outside nor from the inside as an enclosed site. The external wall is made out of materials that reflect the consistency of earth so that it looks like a continuation of the park. The fence, which partly follows the undulation of the landscape, is a palisade-like metal structure, with the gaps between the individual vertical elements varying between a predefined minimum and maximum width.

Together with other parks in the surrounding area – such as the GrünGürtel (Frankfurt's green belt), the Mainuferpark (an area of parkland along the banks of the river Main), the nearby Hafenpark (a new park based on the theme of “sport and movement”) and the Ostpark (the park in Frankfurt's Ostend district) – the landscape around the new ECB premises contributes to the creation of a “green lung” for the city of Frankfurt.

5 Appendix

Table 4
Additional Material

Additional Material
BROCHURE- INFORMATION ON THE NEW PREMISES OF THE EUROPEAN CENTRAL BANK IN FRANKFURT (English , German)
FACT SHEET (English , German)
NEWSLETTER-March 2015 (English , German)

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For specific terminology please refer to the [ECB glossary](#) (available in English only).