

Project: Museum Folkwang Essen – New Building
Client: NMFE GmbH
State: January 2010

Museum Folkwang Essen – New Building

The new building of the Museum Folkwang Essen, which will also house the German Poster Museum, is now completed after almost two years' construction time. David Chipperfield's design, which won an international competition in March 2007 was constructed on the site of the demolished north wing. Two large glass passages link the south wing, the so-called old building, which is listed, to the new one. Here the museum will soon present works of art on more than 7,000 m² of exhibition space. Apart from exhibition rooms, the new Museum Folkwang will also have a library with reading room, a multi-function hall, a restaurant, as well as the Museum administration, depots, workshops, restoration studios and an underground parking lot.

In the planning and construction, among other architectural and construction aspects, special importance was attached to the quality of natural light in the exhibition rooms. The building was designed so that changes in daylight are noticeable. The contours of light directing and light creating elements in the ceiling void over the daylight rooms are visible and visitors can appreciate where the light is coming from. The Museum's collection contains pieces that are less sensitive to light and those which are very sensitive. Permanent and special exhibitions will mainly be illuminated by daylight and exhibition rooms for the German Poster Museum, the Photographic Collection and the Graphic Arts Collection by artificial light.

For the building services equipment, an integrated, economic energy, ventilation and air conditioning concept was developed which had to meet requirements for indoor climate but also strict air treatment requirements for art. Of particular importance is a constant interior temperature/temperature profile and constant humidity along the entire wall surface. For an optimal design, dynamic building and air current simulations were carried out. Ventilation in and outflow openings have been integrated into the construction and are hardly visible for visitors.

Currently the new building is being occupied and the Museum Folkwang will open its doors for visitors on 30 January 2010.

1. Permanent Exhibition

Daylight enters via a system of ceiling clerestories in the ceiling voids and via the membrane ceiling in the exhibition rooms. Changes in daylight are compensated by opening and closing of sunshades directed towards the light. In the permanent exhibition rooms, works from the 20th and 21st century collection not sensitive to light are exhibited.

Facts and Figures

- Total dimensions of exhibition rooms L: 35 m, W: 43 m, H: 5,8 m
- 10 individual exhibition rooms, 9 illuminated indirectly via skylights, one using daylight (sidelight).
- Access via 3 passages with roller grilles to the corridors around the interior courtyards.
- Reinforced concrete roof construction with large openings for the skylights each covered by a clerestory roof with 4-sided surrounding glazing and sun protection
- Indirect daylight via clerestory roof with double layer, acoustically effective membrane construction (removable for maintenance or fresh air supply in case of fire)
- Artificial light from 2 different systems
- General lighting as indirect lighting system with clerestory strip linear lighting as clerestory strips installed above the luminous ceilings
- Illumination of exhibition pieces using bus-bar supplied spotlights, 90° swivelling, 360° rotating, installed in the luminous ceiling grid
- Heating and cooling of exhibition area via full floor heating with guarantee of cooling function.
- Air-conditioning plant with humidifying and de-humidifying functions for fresh air supply, air ingress via linear diffusers circumscribing the luminous ceiling soffit.
- Exhaust via perimetrical floor joints
- Floor covering of polished concrete

2. Special Exhibitions

The generous special exhibition area, without interior support, offers room for exhibitions with various requirements with its versatile equipment. Daylight is brought into the room through shed roof directed towards the north via the membrane roof. With the possibility of being entirely dimmed, various lighting strategies for objects sensitive or not to light, but also video and light installations are possible. The mobile dividing wall system attached to the ceiling grid permit alterations of space.

Facts and Figures

- Total Dimensions L: 43 m; W: 32 m; H: 5,80 m
- Self-supporting steel construction roof with 13 shed roof rows above to admit north facing windows, infinitely variable dimming
- Indirect daylight via clerestory roof with double layer, acoustically effective membrane construction (can be folded down for maintenance)
- Artificial light from 2 different systems
- General lighting through the luminous ceiling with linear lighting as clerestory strips installed in the ceiling void
- Illumination of exhibition pieces using hidden, in-built bus-bar supplied spotlights, which can be positioned flexibly.
- Ceiling grid 3.36 m x 1.68 m allowing flexible bearing of mobile dividing walls (load bearing both sides 125 kg/lfm) for various exhibition concepts and division of the space
- Opening via two doors of 5 m x 4.7 m, allowing the division of the room into 2 separate exhibitions
- Individual hanging of pieces from the ceiling grid possible
- Daylight (sidelight) via double façade on Goethestraße side
- Heating and cooling of exhibition area via full floor heating with guarantee of cooling function.
- Air-conditioning plant with humidifying and de-humidifying functions for fresh air supply, air ingress via linear diffusers circumscribing the luminous ceiling soffit.
- Exhaust via perimetrical floor joints
- Floor covering of polished concrete

3. Photography, Graphic Arts and Deutsches Plakat Museum Exhibition Rooms

The exhibition area oriented towards Bismarkstraße, as an artificial light area, is equipped with a linear florescent lamp system for basic lighting and a bus-bar system for special effect lighting. The exhibitions here contain light sensitive objects from the Deutsche Plakat Museum, the Fotografische Sammlung and the Grafische Sammlung.

Facts and Figures

- Total Dimensions L: 41 m, W: 24 m, H: 4.70 m divided into three individual areas
- Deutsche Plakat Museum L: 16 m, W: 24 m
- Fotografische Sammlung L: 17, W: 22 m
- Grafische Sammlung L: 6.50 m, W: 24 m

- Open room order with flowing utilization
- Access through 2 room-high doors which are flush to the wall when opened.
- Suspended ceiling with sound control plaster system
- General lighting and exhibition piece lighting via variably fitted ceiling tracks for dimmable linear lights and bus-bar supplied spotlights, 180° swivelling, 360° rotating
- Daylight through double façade on Bismarkstraße side and towards the old building, ceiling high wall plates present daylight falling in sensitive areas

- Air-conditioning plant as complete temperature control system
- (Heating, cooling, humidifying, de-humidifying and heat recovery)
- to protect the exhibition the plant is run with positive pressure
- Air ingress via linear diffusers in double walls

- Exhaust via perimetrical floor joints
- Floor covering of polished concrete

Facts and Figures on the New Building

Gross Volume

GV (a)	126,000 m ³
GV (b)	1,700 m ³
GV	127,700 m ³

Gross Surface Area

GSA (a)	25,200 m ²
GSA (b)	300 m ²
BGF (c)	1,200 m ²
GSA Total	26,700 m ²

Net Surface Area

NSAGF	23,000 m ²
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Floor Space

FS	16,000 m ²
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Floor Space New Building

Special Exhibitions	1,400 m ²
Permanent Exhibitions	1,400 m ²
Fotografische Sammlung	400 m ²
Deutsches Plakatmuseum	350 m ²
Grafische Sammlung	160 m ²
Foyer	500 m ²
Access	50 m ²
Artist Project Room	50 m ²
Multi-Function Room	220 m ²
Restoration	650 m ²
Workshops	770 m ²
Depots	2.800 m ²
Restaurant (Dining Room)	230 m ²
Bookstore	110 m ²
Underground Parking Garage 132 Parking Places	3.700 m ²

Courtyard Area New Building

Courtyard 1	710 m ²
Courtyard 2	260 m ²
Courtyard 3	660 m ²
Courtyard 4	200 m ²

Materials / Volumes New Building

Concrete	16,000 m ³
Concrete Ashlar Base	1,100 m ²
Glass Ceramics	5,200 m ²
Double Facade	1,500 m ²
Steel-Glass Facade	2,100 m ²
Skylights	1,700 m ²
Sun Protection	2,700 m ²
Polished Concrete	4,800 m ²
Exhaust Joints in Concrete	900 lfm
Parquet	800 m ²
Linoleum	650 m ²

Chronology on the Building of the Museum Folkwang's New Building

January –May 2006	<p>Feasibility study on the conversion of the new building section (section B) for the Museum Folkwang after the departure of the Ruhrlandmuseum with the participation of three architectural firms to examine different variations:</p> <p>Renovation of the section B surface used by the Museum Folkwang Complete renovation and partial reconstruction of the entire section B Complete demolition and reconstruction of section B on the basis of the Museum Folkwang's requirements</p>										
August 2006	<p>Announcement by the Alfried Krupp von Bohlen und Halbach-Stiftung that they would finance a new museum building for 55€</p>										
Sept. – Nov. 2006	<p>Preparation of architectural competition for the Museum Folkwang's new building Revision of museum's requirements Creation of framework program, functions scheme, floor plan & materials catalogue, Integration of requirements Creation of a cost estimate on the basis of the floor plan & materials catalogue</p>										
Nov. 2006 – March 2007	<p>Architectural Competition Organization of the international competition by the City of Essen Selection of 12 architectural firms as participants December 2006: Participant meeting with presentation of first studies (selection of an initial study to prepare cost estimates of the competition results) February 2007: Examination of competition results (Volume Examination, Cost Estimation, Plausibility Study, Evaluation of complexity, construction times, functionality)</p>										
February 2007	<p>First jury meeting with the decision to request the first two placed to rework their designs to reduce costs</p> <table> <tr> <td>1st prize</td> <td>David Chipperfield Architects</td> </tr> <tr> <td>2nd prize</td> <td>Adjaye/ Associates, London</td> </tr> <tr> <td>3rd prize</td> <td>Gigon Guyer Architekten, Zurich</td> </tr> <tr> <td>Acknowledgement</td> <td>Zaha Hadid Architects, London</td> </tr> <tr> <td>Acknowledgement</td> <td>Staab Architekten, Berlin</td> </tr> </table>	1st prize	David Chipperfield Architects	2nd prize	Adjaye/ Associates, London	3rd prize	Gigon Guyer Architekten, Zurich	Acknowledgement	Zaha Hadid Architects, London	Acknowledgement	Staab Architekten, Berlin
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March 2007	<p>Second jury meeting with the decision to accept the design by David Chipperfield Architects and request a further revision to meet the budget</p>										

April 2007	Optimisation of the winning design Reducing of building volumes by ca 5,000 m ³ Examination and revision of the functionally interrelated areas in dialogue with the user. Incorporation of results in the plans as a basis for cost estimation
May 2007	Presentation by the council for approval by the City of Essen
May to October 2007	Design and Approval Planning
From September 2007	Construction planning
August to October 2007	Demolition of Section B, building site installation
November 2007	Beginning of construction
December 2007	Beginning of concrete work of new building floor slab
September 2008	Topping-out ceremony
October 2009	Completion of construction
From November 2009	Occupation and furnishing of the new museum
28 January 2010	Inauguration of the Museum Folkwang new building
30 January 2010	Open to the public for the first time

The role of the NMFE in the construction of the Museum Folkwang new building

In view of the short time of only 30 months, from the beginning the most important task was to accelerate the planning and construction of the ambitious museum building. The Neubau Museum Folkwang Essen GmbH took on the role of client including the related risks of investment costs and punctual completion.

Services of the NFME GmbH

- Development of the construction models in agreement with the Stiftung and the City of Essen
- Establishment of service description and calculation of total costs
- Accompanying the international architectural competition
- Selection of financial institutions and agreement on terms for bridging finance
- Examination of submitted designs including evaluation relative to construction within budget limits
- Selection of suitable project managers, architects, specialist planners and site managers
- Selection of executing companies in consideration of their capabilities, flexibility, years of experience and commitment to complete the project in the given time
- Drafting of contracts with the planning and executing companies
- Drafting and signing of contracts for maintenance of structural facilities and technical systems
- Drafting and signing of lease contracts for the museum bookstore, restaurant, bistro and underground parking garage
- Cost controlling and documentation of all relevant project costs
- Certification of construction work
- Optimisation of running costs for the City of Essen in the start-up phase of the museum
- Organisation and implementation of services for facility management
- Transfer of the building to the City of Essen

Within the tasks of the client for such a project, of particular importance is trusted communication between donor, the city and its administration, the museum administration, residents and the public. It demands dexterity, tact and time.

Project Participants for the Museum Folkwang's New Building

Client	Neubau Museum Folkwang Essen GmbH, 45128 Essen
Design / Architecture LP 1 – 4	David Chipperfield Architects, 10119 Berlin
Architecture LP 5	Plan Forward GmbH, 70192 Stuttgart
Artistic Consulting, Museography	Lorenzo Piqueras, Architekt, Paris
Project Management	W+P Gesellschaft für Projektentwicklung mbH, 45128 Essen
Awards / Site Management	W+P Gesellschaft für Projektentwicklung mbH, 45128 Essen
Heating, Air-Conditioning and Sanitary Engineering	Giesen-Gillhoff-Loomans GbR, 47799 Krefeld
Electrical Engineering	bbt Ingenieure GmbH, 40474 Düsseldorf
Fire Protection	Ingenieurgesellschaft für Brandschutz Dr. Hagen GmbH, 45128 Essen Dipl.-Ing. Bernhard Spitthöver GmbH, 45133 Essen
Statics	Pühl und Becker, 45128 Essen
Statutory Statics Analysis	Warns – Löschmann + Partner, 45481 Mülheim an der Ruhr
Acoustics and Building Physics / Bauphysik	ISRW Dr.-Ing. Klapdor GmbH, 40468 Düsseldorf
Facade Planning	Pazdera AG, 96450 Coburg
Landscaping	Dipl.-Ing. Meinolf Hasse, 45472 Mülheim/ Ruhr
Surveying	Vermessungsbüro Köhncke, 45127 Essen
Kitchen Planning	FLÜGEL Grossküchentechnik, 45128 Essen
Light Planning	Arup GmbH, 10623 Berlin
Building Simulation	ifas Institut für angewandte Energiesimulation und FM, 50226 Frechen
Safety Conception	ifas Institut für angewandte Sicherheitstechnik, 45472 Mülheim/ Ruhr

Executing Firms on the Museum Folkwang's New Building

Field	Firm
Shell	Zechbau GmbH, Ndl. Essen, 45133 Essen
High and Low Voltage Installations	Elektro Decker GmbH, 45141 Essen
Safety Technology	AFD Allg. Fernsprech- und Datenanlagen Deutschland GmbH, 22547 Hamburg
Elevators	Thyssen Krupp Aufzüge West GmbH, Ndl. Essen, 45141 Essen
Facades	Pazdera AG, 96450 Coburg
Heating, Sanitation	Alfred Lange GmbH & Co. KG, 40472 Düsseldorf
Ventilation, Air-Conditioning, MSR	GYRO Bautechnik GmbH, 45356 Essen
Luminous Ceilings / Partitions	Schmid GmbH, 88171 Simmerberg / Allgäu
Roof Waterproofing	Poburski Futura GmbH, 21035 Hamburg REFA GmbH, 01728 Bannewitz
Drinking Water / Gas, Mains Connection	Stadtwerke Essen AG, 45128 Essen
Cavity Floor	Lindner AG, Ndl. Düsseldorf, 40885 Ratingen
Metalwork / Post Lighting	Metallbau Nowicki GmbH, 45699 Herten
Dry Walls	Jaeger Ausbau GmbH & Co. KG, 44379 Dortmund
Parquet, Linoleum	Parkett Strehl GmbH, 45276 Essen
Doors - Wood	K. Westermann GmbH & Co. KG, 73770 Denkendorf
Doors Steel	Hodapp GmbH & Co. KG, 77855 Achem-Großweier
Painting	Bernhard Goldkuhle GmbH & Co. KG, 45145 Essen
Concrete Floors	Otto Aman GmbH & Co. KG, 48361 Beelen
Interior Decoration	Späh Innenausbau GmbH, 45279 Essen
Interior Plastering	Hoffmeister GmbH, 47495 Rheinberg Heinz Vorwerk GmbH, 48231 Warendorf
Sealing	Fugentechnik A. Skopp, 45309 Essen

Tiling	Arnd Köster Mosaiklegermeister GmbH, 45239 Essen
Landscaping	Knappmann GmbH & Co. Garten- und Landschaftsbau, 45356 Essen
Kitchen Installation	FLÜGEL Grossküchentechnik, 45128 Essen
Furnishing	Walter Knoll AG & Co. KG, 71083 Herrenberg
Core Boring	A. Kirchheim Bohrtechnik, 45359 Essen
Loading Ramps	Crawford hafa GmbH, 45327 Essen
Post Lifts	Matthiessen Fördertechnik GmbH, 33106 Paderborn
Master Key	System Aug. Winkhaus GmbH & Co. KG, 48147 Münster
Traffic Security	B.A.S. Verkehrstechnik AG, 45134 Essen
Site Fencing	Schwarzfeller Draht + Zaun GmbH, 40764 Langenfeld
Demolition Work	Heinrich Becker GmbH, 46238 Bottrop
Container Services	EBE Entsorgungsbetriebe Essen GmbH, 45010 Essen
Site Security	S.E.C. Security, Event and Consulting GmbH & Co. KG, 50996 Köln
Copy Services	Lichtpaus- & Reprotechnik Kunz GmbH, 45127 Essen