



## KEY FIGURES ELBPHILHARMONIE

| SUBJECT AREA  | KEY FIGURES                      |
|---|----------------------------------|
| AREA OF THE BUILDING  |                                  |
| GFA of whole building   | Approx. 125,512 sq. m            |
| - Of which GFA of warehouse                                       | Approx. 61,333 sq. m             |
| - Of which GFA of new structure                                   | Approx. 64,179 sq. m             |
| GFA of concert area   | 30,121 sq. m                     |
| GFA of plaza  | 5,745 sq. m                      |
| GFA of plaza, public area   | Approx. 3,100 sq. m              |
| GFA of hotel  | Approx. 27,000 sq. m             |
| Number of rooms   | 244                              |
| GFA of multistorey car park                                       | 22,736 sq. m                     |
| Number of parking spaces  | 520                              |
| GFA of residential units  | 12,801 sq. m                     |
| Number of apartments  | 45                               |
| GFA of eateries   | 1,332 sq. m (4% of the building) |
| GFA of eateries and conference facilities                         | 3,631 sq. m                      |
| GFA of general areas (staircases, thoroughfares, equipment rooms) | 16,387 sq. m                     |
| Total weight of the building:                                     | Approx. 200,000 t                |
| Height of former Kaispeicher A warehouse                          | 35 m                             |
| Height of plaza level   | 37.2 m                           |



| WAREHOUSE DIMENSIONS   |  |
|--|--|
| Length of northern side  | 108.6 m  |
| Length of eastern side   | 85.1 m   |
| Length of western side   | 21.6 m   |
| Length of southern side  | 125.9 m  |
| HEIGHT OF THE ELBPILHARMONIE   |  |
| Highest point, western side  | 110 m above sea level (Approx. 102 m above street level)                             |
| Lowest point on the roof   | 78 m   |
| ROOF   |  |
| Area   | 6,200 sq. m  |
| Number of roof sections  | 8  |
| Weight   | Approx. 700 t total  |
| Number of steel girders for the whole roof   | Approx. 1,000 girders  |
| Special features   | Each girder is unique and made from sheet steel, 3D design                           |
| Roof sequins <ul style="list-style-type: none"> <li>- Quantity</li> <li>- Diameter</li> <li>- Material area</li> <li>- Perforations</li> </ul> | Approx. 5,800<br>0.9–1.1 m<br>4,160–4,727 sq. m<br>11–15 mm                          |
| Special features and material used for the roof sequins  | Safe to walk on, aluminium panels, deep-drawn perforations, polyester powder coating |



| FOUNDATIONS  |  |
|--|--|
| Level of the ground floor raised by 3 m for the new Elbphilharmonie structure  | Ground floor 8.50 m above sea level<br>(HafenCity is at the standard flood protection height of 8 m above sea level) |
| Pile foundations:<br>Retrospective reinforced-concrete pile foundations (supplementing the 1,111 existing piles beneath Kaispeicher A) | 1,745<br>634   |
| Depth of the in situ concrete piles  | Approx. 15 m   |
| CONCERT AREA   |  |
| GRAND CONCERT HALL   |  |
| Number of seats  | Approx. 2,100<br>(Laeiszhalle grand hall (2,027 seats)<br>Berlin Philharmonie (2,440 seats))                         |
| Maximum distance from conductor  | 30 m   |
| Lowest circle seats (height)   | Approx. 51 m above sea level/12th floor  |
| Highest circle seats<br>Highest point of outer shell   | Approx. 68 m above sea level/17th floor<br>Approx. 88 m/23rd floor   |
| Diameter   | Approx. 30–50 m  |
| Height   | Approx. 25 m   |
| Number of entrances to the grand hall<br>- For performers/backstage<br><br>- For visitors  | 3 entrances on the 12th floor<br>(north, south, west)<br><br>12 entrances  |



| REFLECTOR  |  |
|--|--|
| Diameter (oval, bottom)  | 15 m   |
| Length   | 10 m   |
| Weight <ul style="list-style-type: none"> <li>- Steel structure only</li> <li>- Steel incl. payload, stage equipment and white-skin cladding</li> </ul>    | 24 t<br>Approx. 100 t  |
| Components   | Stage equipment (chain and cable hoists)<br>Stage lighting<br>Speakers<br>4 organ registers (remote console)<br>- LED lighting around the edge of the circle and lights within the structure; the lower part pointing towards the hall is covered with white skin and a thin membrane is stretched over the upper part of the reflector (indirect, dimmable lighting for the hall) |
| Area (hall floor and steps)  | 3,300 sq. m  |
| Hall floor area  | Approx. 2,590 sq. m  |
| Volume   | 23,000 cu. m   |
| Weight   | 12,500 t   |
| Stage area   | 270 sq. m  |
| Distance between the outer shells  | ~ 1.30 m (0.2–4 m)   |
| Number of springs<br>(steel springs affixed between the reinforced concrete ribs via brackets on the outer shell and a steel structure on the inner shell) | 362  |
| Steel used during construction (excl. steel roof structure)  | Approx. 1,100 t  |



|                                  |  |
|----------------------------------|--|
| INNER CLADDING, »WHITE SKIN«     |  |
| Area of the white skin           | 6,500 sq. m  |
| Material used for the white skin | 3D-milled gypsum fibre panels  |
| Number of gypsum fibre panels    | Approx. 10,000   |
| Size of each panel               | 0.5 sq. m  |
| Weight of each panel             | Approx. 30–125 kg  |
| Total weight                     | 400 t  |
| RECITAL HALL                     |  |
| Area                             | Approx. 440 sq. m  |
| Lowest point                     | Approx. 41.36 m/9th floor  |
| Highest point                    | Approx. 56.27 m/13th floor   |
| Accessed from                    | 10th floor   |
| Number of springs                | 56   |
| Number of seats                  | 550<br>(Laeiszhalle recital hall (594 seats)<br>Berlin Philharmonie (chamber music hall 1,180))  |
| Flooring                         | Parquet strip flooring, natural oak  |
| Wall                             | 3D-milled wooden panels (micro-shaped), oak  |
| Doors                            | 3D-milled wooden panels (micro-shaped), oak  |
| Ceiling                          | Ceiling in the hall made from reinforced concrete, coated black, with pendant luminaires<br><br>Ceiling underneath the catwalks (suspended ceiling): 3D-milled wooden panels |



| THIRD CONCERT HALL/KAISTUDIO 1   |  |
|--|--|
| Area   | 133 sq. m (3rd floor)<br>174 sq. m (2nd floor)                 |
| Height (lowest to highest point)   | 2nd floor to 3rd floor   |
| Number of seats  | 150<br>(Laeiszhalle Studio E (170 seats))                      |
| FOYER  |  |
| Foyer staircases in the concert area   | 2  |
| Walls  | Smooth, chalk-based mineral plaster                            |
| Length of the bar, 13th floor  | 21 m   |
| CURVED ESCALATOR (LARGE)   |  |
| Length <sup>[1]</sup> <sub>sep</sub><br>- Steel substructure per step<br>- Vertical lift | Approx. 80 m<br>Consisting of 14 paired elements<br>21.43 m    |
| Incline  | 11° to 23°   |
| Speed  | Normal speed 0.3 m/s – takes approx. 4.4 min. to reach the top |
| Number of sequins  | 8,000  |
| PLAZA ESCALATOR (SMALL)  |  |
| Length   | 20 m<br>From 6th floor to 8th floor                            |
| Incline  | 17.25°   |



| LIFTS   |   |
|---|---|
| From public area to plaza (ground floor to 8th floor, excl. apartments, hotel and eateries) | 4 banks of lifts/9 cabins   |
| Total in the plaza and Philharmonie   | 11  |
| Total in the private area   | 11  |
| Total goods lifts   | 3 (3.5 t/4 t load capacity)   |
| Firefighting lifts  | 4   |
| Total lift systems  | 29  |
| Staircases  | 11  |
| MATERIALS   |   |
| Steel used during construction of the Elbphilharmonie:                                      | 18,000 t<br>(14,000 t reinforcing steel, approx. 4,000 t structural steel)  |
| Concrete used   | 63,000 cu. m<br>(12,000 cu. m foundations,<br>51,000 cu. m shell,<br>2/3 exposed concrete)<br>(30 different types of concrete in total) |
| FACADE  |   |
| Glass elements<br>(each element consists of 2–3 panes)                                      | Approx. 1,100, each with 2–3 panes  |
| Panes of glass (total)  | Approx. 2,200   |
| - of which flat panes   | Approx. 1,605   |
| - of which spherical curved panes   | Approx. 595   |



|  |   |
|--|---|
| Balcony elements made from glass-reinforced plastic («tuning forks»)<br>- of which recessed balconies (concert area) | Approx. 103<br><br>6  |
| Total area of glass element facade   | Approx. 16,000 sq. m  |
| Pane thickness   | 48 mm   |
| <b>LIGHTING</b>  |   |
| Plaza  | 600 plastic and glass globe lights, half-mirrored<br>LED lights arranged in diamond shapes  |
| Grand hall   | 1,000 lights, LED globe lights, special hand-blown<br>luminaires made by Zumtobel, dimmable |





## PROJECT HISTORY

### **The project Elbphilharmonie Hamburg**

The initial idea for rejuvenating Kaispeicher A was of the construction of the MediaCityPort – an office building for the media industry, which was to tower up to a height of 90 metres on top of the Kaispeicher A, with a gross surface area of 50,000 square metres. However, the end of the dotcom boom meant it was never actually built. Originally commissioned by the project developer Alexander Gérard, the star Swiss Architects Herzog & de Meuron came up with a project sketch – the groundbreaking idea of a »Hamburg Philharmonie« – the construction of a concert hall on the historical warehouse, surrounded by commercial facilities and a publicly accessible Plaza. The spectacular design elated the Senate, the city government and the public. In May 2004 the ReGe Hamburg, a project development company owned by the city, was installed as the developer of the Elbphilharmonie Hamburg. The feasibility of the project was assessed and an utilisation concept was prepared, and then the private partners for the construction, the financing and 20 years of operation of the object were determined by means of a European tendering procedure. The contracts were assigned to Commerz Real AG and Hochtief Solutions AG within the property company Adamanta GmbH & Co. The approx. 45 freehold apartments entailed by the project lie in the responsibility of Hochtief as the property developer, who in this specific field cooperates with Quantum AG in a company named Skyliving GmbH.

### **Construction progress**

Following the unanimous approval of the city government, construction work began on 2 April 2007 with the laying of the foundation stone. The Kaispeicher A was first completely gutted, with just the brick facades remaining intact. Then a further 634 reinforced concrete piles, in addition to the existing 1,111, were rammed 15 metres deep into the mud of the River Elbe, so that the building could support the 200,000 tonnes of the Elbphilharmonie Hamburg. On completion of the 26th storey, the last one in the bare brickwork, the topping-out ceremony took place in May 2010. The roof of the hall has been paved in November 2011. The shell construction was completed in November 2013. The installation of the »white skin« in the Grand Hall was commenced in December 2013. The facade was completed in January 2014; the roof was sealed in August 2014. After installation of the »white skin« was completed in February 2016, the concert area was able to be finished on schedule by 30 June. On 31 October 2016, in accordance with agreed deadlines, the Elbphilharmonie was handed over to the city of Hamburg. The Plaza has been publicly accessible since 5 November 2016, and the opening ceremonies for the concert area will be held on 11 and 12 January 2017.

### **Problems during construction**

The building of the Elbphilharmonie Hamburg was accompanied by disputes between the municipal Elbphilharmonie Bau KG and the property development company Adamanta until summer 2013. Supplementary negotiations ended in November 2008 with a settlement (Amendment 4). At this time the costs of the project increased from 272 million Euro that had been forecasted in 2007 to 495 million Euro for the city. 30 November 2011 was agreed upon as the new completion date.



In 2010 the Hamburg state parliament launched a parliamentary committee of inquiry in order to determine the causes of the increase in costs. After more disputes and a temporary construction stop, the project partners signed an agreement for restructuring of the project in April 2013. The restructuring agreement stipulated among other points:

- Additional responsibilities assigned to Hochtief (assumption of any risks related to planning and construction, participation in a newly founded consortium with the architects, guaranteed meeting of quality requirements from the architects and the acoustician Yasuhisa Toyota, contractually warranted intermediate deadlines, as well as a binding date of completion)
- A new construction schedule (handover of the concert venue areas of the Elbphilharmonie by 30 June 2016; final inspection and acceptance of the Elbphilharmonie by 31 October 2016)
- Additional costs for the City of Hamburg (256.65 million Euro for the additional services executed by Hochtief and the architects). Thereby the overall costs for the city result in 789 million Euro. The construction continued smoothly after the restructuring agreement.

Following the reorganisation agreement, construction progressed without issue.

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