

## Porsche Pavilion, Autostadt, Wolfsburg



Autostadt is the Volkswagen Group's theme park, at its headquarters in Wolfsburg in northern Germany. This is where all the Group's brands are on display, in pavilions that provide appropriate architectural and artistic settings to turn the respective brand philosophies into experiences for visitors to enjoy. The Porsche Pavilion is the first new structure to be added to Autostadt's 28 ha of event and exhibition areas since it opened in the year 2000.

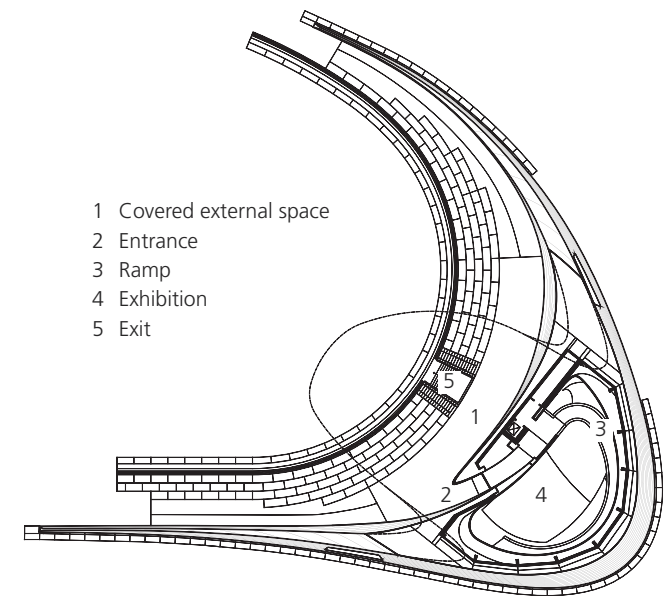
Located on the central axis of the park and lagoon landscape, the Porsche Pavilion, with its organic form, provides about 400 m<sup>2</sup> of space for exhibitions and presentations. Curving, dynamic lines turn the pavilion into a vibrant sculpture with characteristics derived from the Porsche brand image. Sheets of stainless steel with a matt finish clad this sweeping structure and allow the observer to experience a coherence that nevertheless

varies depending on the lighting and weather conditions.

On the entrance side, the asymmetric roof of the pavilion cantilevers 25 m out over the lagoon. Below this roof, there is a sheltered external area that is stepped to form rows of seating that blend into the surrounding landscape yet form a separate acoustic space. The walls rise gently out of this to the left and right of the water, guiding



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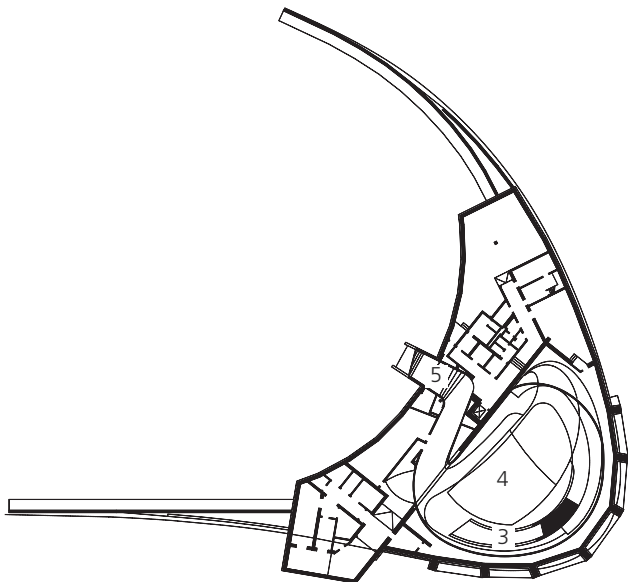
Entrance level, ground floor, scale 1:1000

the visitor to the entrance at the top of the steps. Inside the pavilion, a ramp curves down in a sweeping ellipse to the exhibition area at a lower level. Curves and the lack of distinct edges direct all attention to the exhibits: 25 silver-coloured replicas at a scale of 1:3 – from the Porsche 365 dating from 1948 to the current models. Together they portray the history and development of this sports car manufacturer.



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*Both the stainless steel surface and the dynamic, elegant lines of the architecture are unmistakable reminders of the Porsche cars themselves.*



Exhibition level, basement, scale 1:1000

### Structure and envelope

Based on the principles of lightweight construction, the load-bearing structure of the Porsche Pavilion exploits monocoque (French: “single shell”) design principles. In this form of construction, used in the automotive and aircraft industries, the enclosing envelope is at the same time the load-bearing structure. The necessary stability is obtained by welding the upper and lower skins to the intervening longitudinal and transverse frames. In order for this seamless, monolithic structure to expand and

contract as the temperature fluctuates, it “floats” on its concrete substructure.

Stainless steel grade EN 1.4571 has been used for the roof shell. This titanium-stabilised austenitic chromium-nickel-molybdenum grade is easy to form and is characterised by excellent corrosion resistance and outstanding weldability. Depending on location and loads, the sheets of the covering and the frames vary in thickness from 10 to 30 mm.

### Prefabrication and erection

Once the 620 sheets had been cut to size and each one cold-formed to precise requirements, the individual parts were factory-welded into 50 accurate sections. In order for these subassemblies to fit together on site, the covering sheets and frames had to be measured in many places – at up to 50 points per section. As making good at a later date, e.g. with a filling compound, was impossible, the quality of the surface finish essentially depended on the quality of the prefabrication.

The subassemblies were welded together on-site in Wolfsburg to create a homogeneous roof – the largest monocoque to date. The smooth, matt yet lustrous metal surface was achieved by blasting the sheets with stainless steel granules.

*Factory-prefabrication of subassemblies*

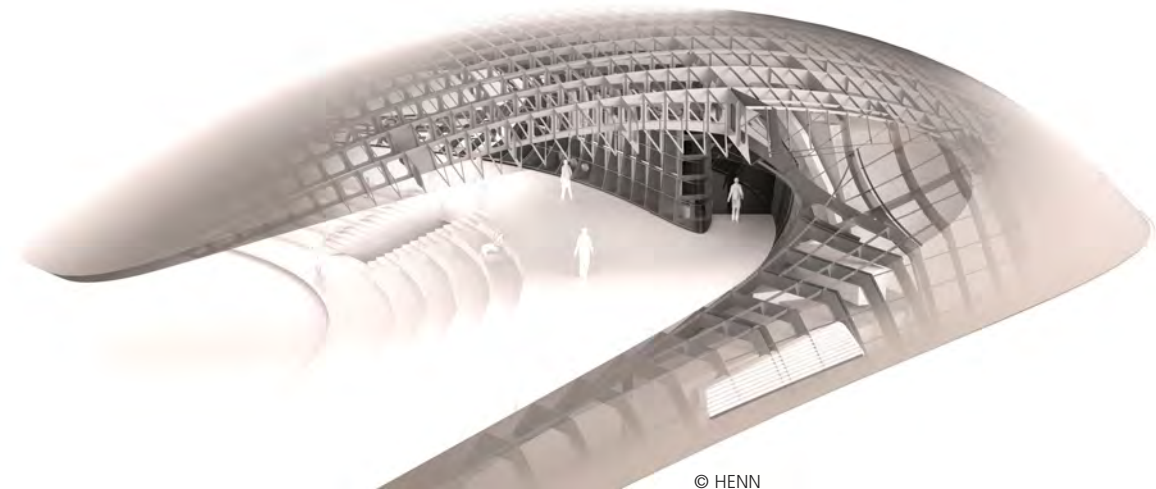


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*Erection on site*



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**Client:** Dr. Ing. h.c. F. Porsche AG/Autostadt GmbH

**Architects:** HENN Architekten, Munich

**Structural engineers:** Schlaich Bergermann und Partner, Berlin

**Monocoque fabrication:** Centraalstaal B.V., Groningen

**Construction period:** August 2011 to May 2012

**Surface area of monocoque:** 2550 m<sup>2</sup>

**Weight of monocoque:** 425 t

**Material of monocoque:** stainless steel grade EN 1.4571, sheet thickness 10–30 mm, shot-blasted surface finish

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