

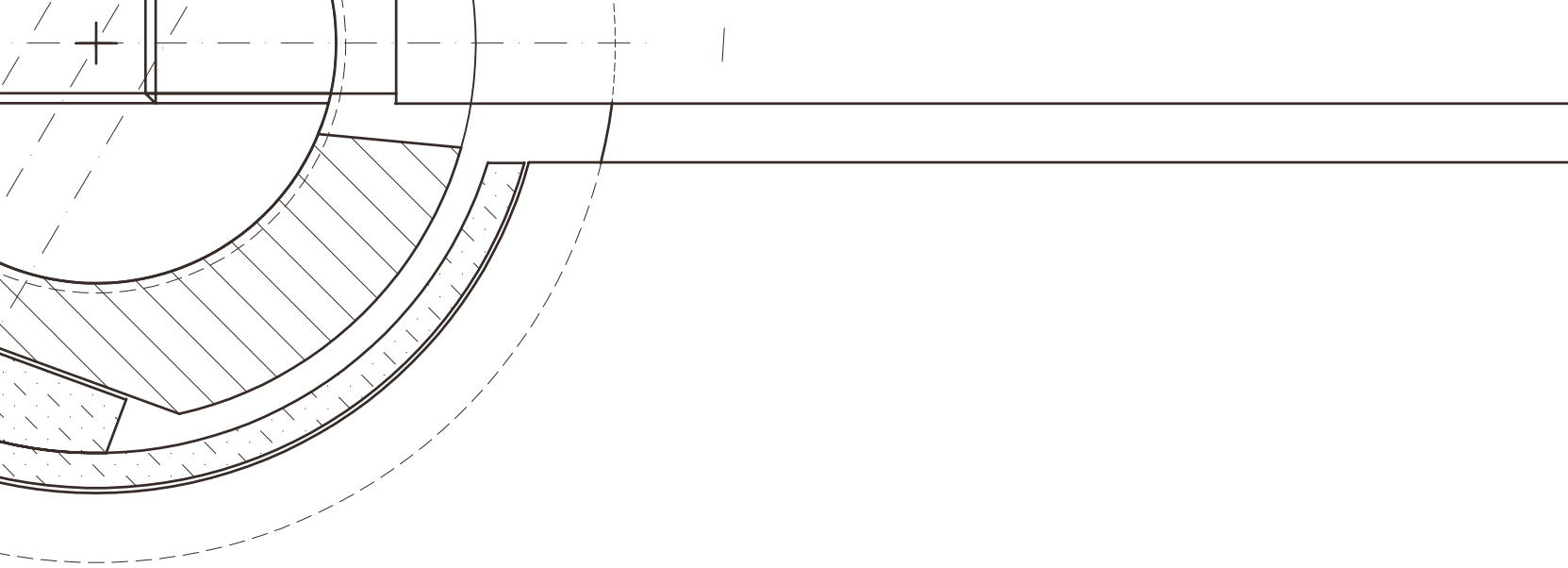


# The Stahlglas Stair System

The innovation in glass construction







## **Innovations break habits**

### **The world's first self-supporting stairs constructed with Stahlglas**

Wonderfully beautiful, fascinatingly elegant: the new, innovative stair system constructed with Stahlglas facilitates absolute transparency and ease with simultaneously high robustness. Even if all the single panes of a laminated glass panel were damaged, the load-bearing capacity would not be affected.

The groundbreaking idea is in the details: the glass panels of the Stahlglas structure assume a primary load-bearing function. Troublesome steel sections are avoided, the percentage of steel reduced to a minimum. The rule that glass can't have a load-bearing function is broken: The glass absorbs the compression load and the steel takes only the tensile load – which is completely unique in the world of glass construction.

# Innovative and economic

## The Stahlglas Stair System

The Stahlglas Stair System consists of many system elements, such as laminated glass and steel as well as the balanced tools for the planning and structural calculation that follow. Diverse staircases can be constructed through a combination of modules. In the process the difference between load-bearing components and detachable parts (accessories) such as hand rails is well-defined.

The Stahlglas Stair System is offered in two different designs:

- **Point design**

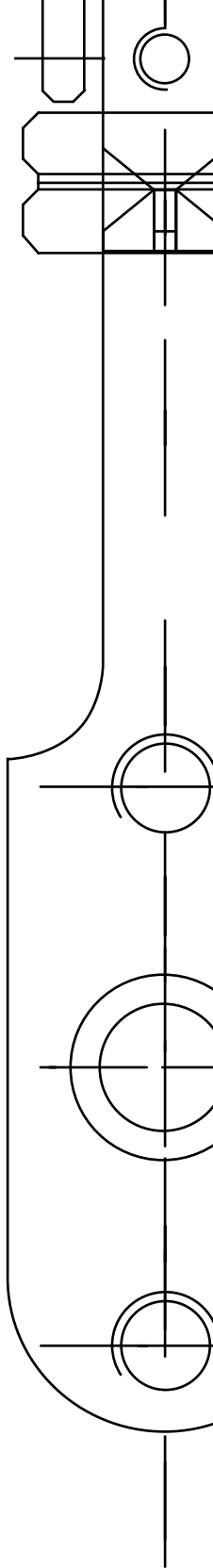
The connection parts between steel and glass are visible as dots. The steel bars are very subtle and blend into the background.

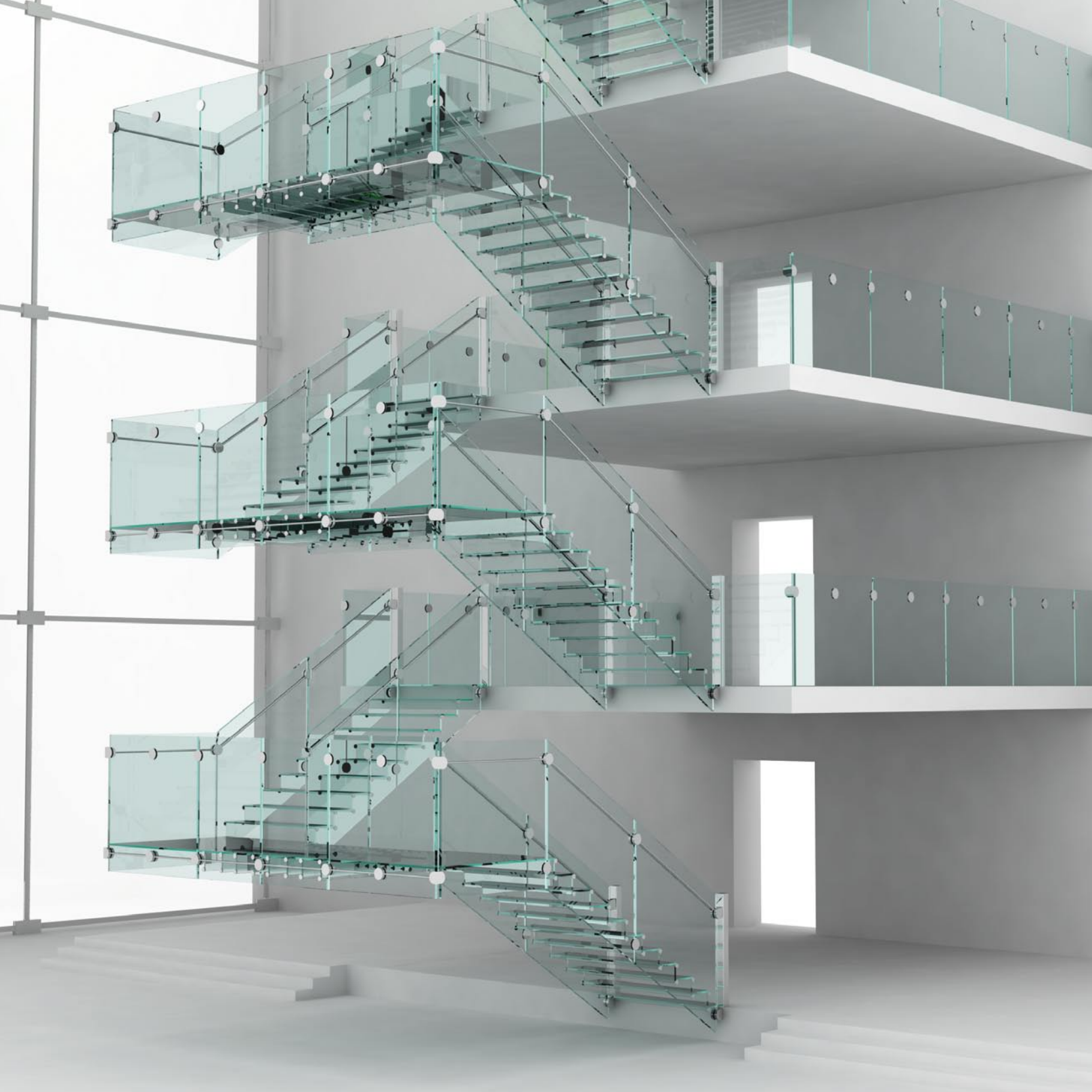
- **Line design**

The steel bars are more sturdily constructed and appear as a line, which defines borders the rail panels in the lower section.

The load-bearing system elements made of glass are the rail panels, steps, risers and floor panels. The system elements made of steel are the connection parts and the steel bars. With that, the measurements of the glass system elements and the length of the steel bars are adapted within a defined framework to the requirements of the particular object.

With the innovative Stahlglas Stair System many diverse staircases can be built. They will all be introduced over the next few pages, where you will find that the new system is also convincing in an economic respect: the development as a modular system makes the complexity of planning and construction calculable and also ensures cost effectiveness.







## **The flexible solution: Staircases made from system elements**

The system elements will be used solely as load-bearing structures of the staircases. Their flexibility and high load-bearing capacity facilitate the most diverse types of construction, so that differing wishes from clients and architects can be fulfilled.

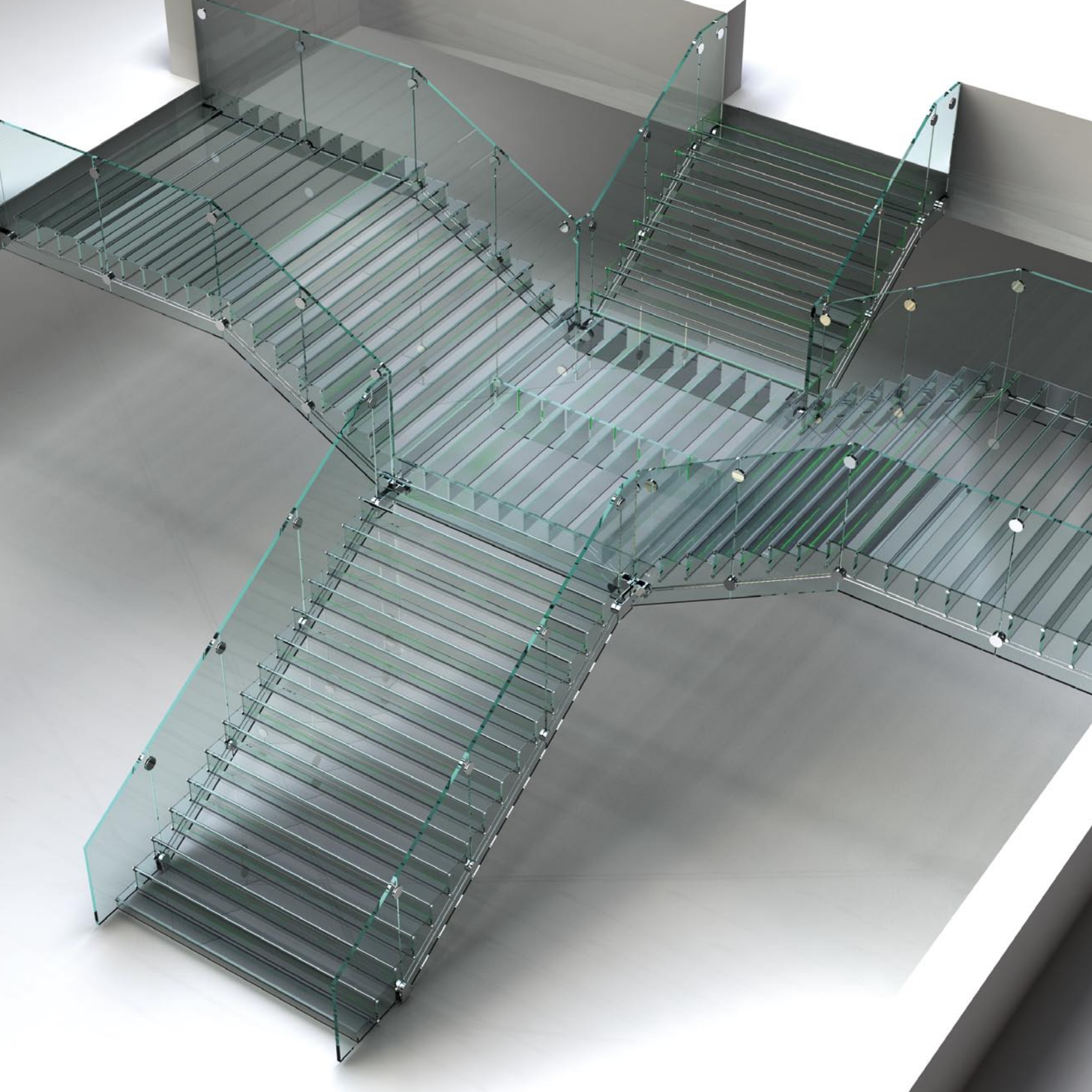


## **The individual solution:** Staircases with modified system elements

Through the limited modification of load-bearing system elements and the extension of conventional individual components, a wide adaptation of clients' and architects' wishes is possible. The boundaries of modification are thereby determined, so that no additional measures to ascertain the strength of the load-bearing elements of the system are necessary.









## **The creative solution: Free staircases**

With the free staircases of the Stahlglas Stair System, the boundaries of modification for the load-bearing elements of the system are overturned. Thus an individual, artistic free space is made possible, for the wishes of clients and architects.

The free staircases are also designed to the construction principles of the Stahlglas Stair System and adhere completely to these principles.

# The versatile solution: Outdoor staircases

The stress, particularly climatic, to which outdoor staircases are exposed, is borne through the selection of materials and precise calculation of the constructional measures taken. The overhanging stairs and bridges thus blend seamlessly into the Stahlglas Stair System.

• Bachbrücke

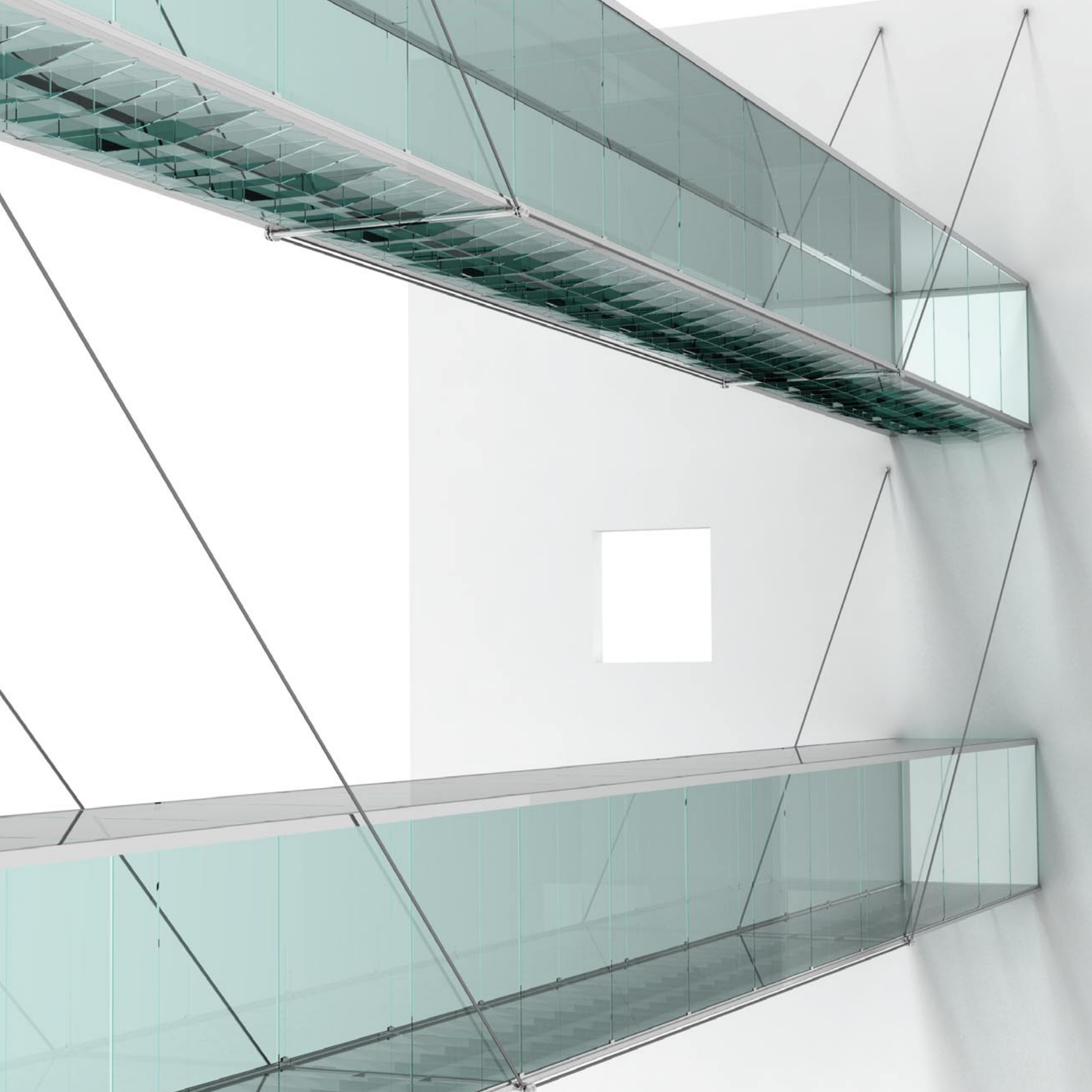


• Fleetbrücke



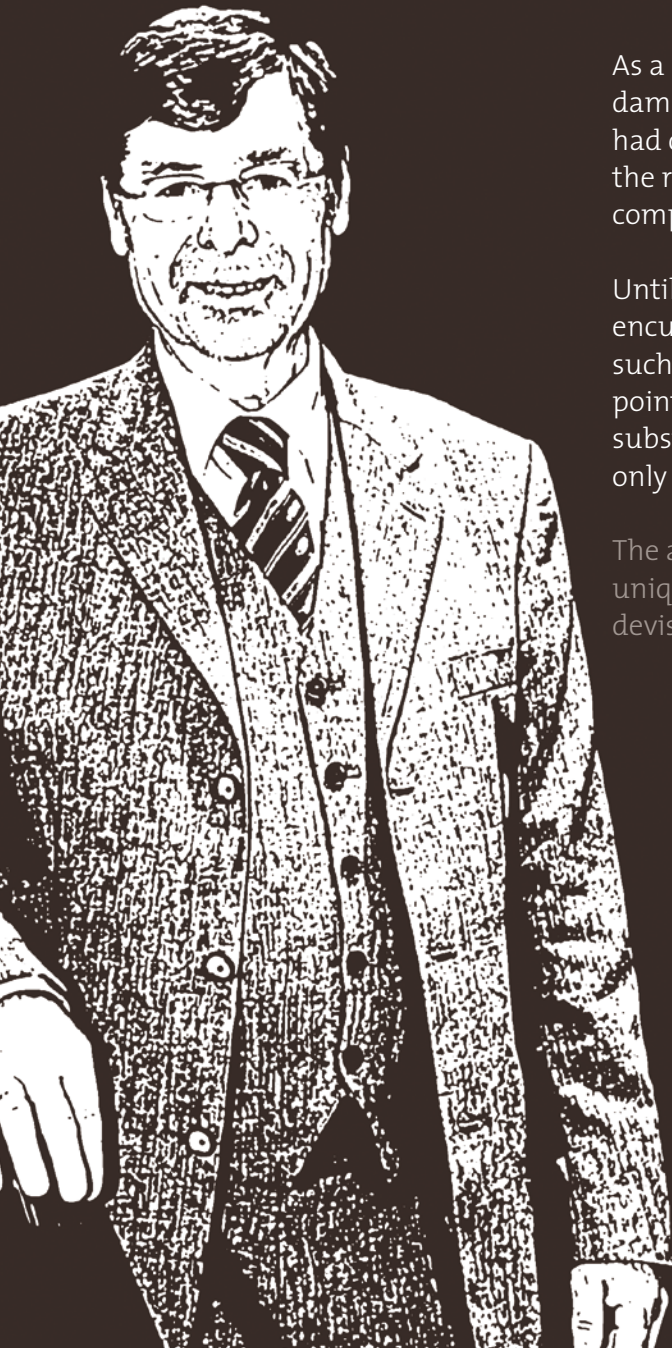
• Straßenüberquerung





# Innovations arise from inquisitive minds

## How it all began



As a specialist, Prof. Dr.-Ing. Wolfgang Maier was called to a scene of damage on the 12th of August 1997. The glass railings of a steel staircase had cracked for an apparently inexplicable reason. Within a short time the reason was clear: contact between glass and metal. Unforeseeable compression forces had been induced in the glass panels.

Until then the rule was thought to be true, that panels could only be encumbered by their own weight and by forces that have a direct impact such as wind and snow. Prof. Maier asked himself „why, when the loading points are proportionately designed, could the panels not bear the substantial forces and therefore unburden the steel structure; the steel only apportions the tensile load?“

The answer to this question created a trend-setting and until now unique construction method – the Stahlglass construction method was devised.

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Prof. Dr.-Ing.  
Wolfgang Maier

# The first prototype

## A vision takes shape

Over the following years the question was discussed and examined with a former colleague, Petra Weiler. Hence a comprehensive field of research for the general use of Stahlglas design in construction engineering was developed – the fields of application being including roofs, gazebos, bridges and towers, amongst others. Construction, calculation and safety were henceforth crystallised as key aspects.

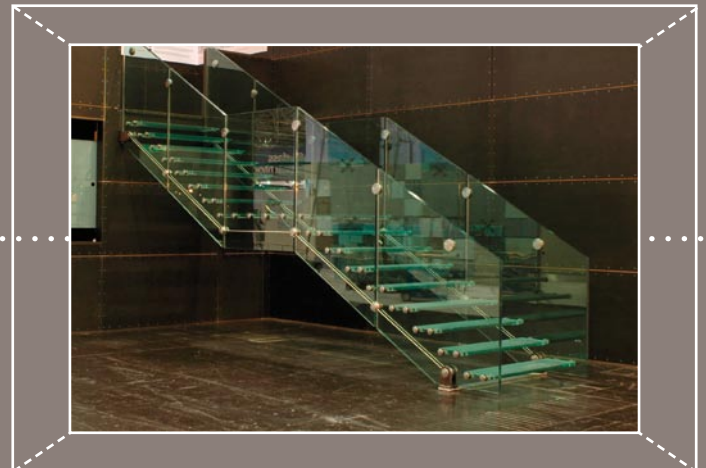
Parallel to the research Prof. Maier began the development of a Stahlglas staircase in 2002. Initially the basic capability of the design had to be tested and demonstrated. From the collaboration with architects from HfbK Hamburg and with economic support a staircase was eventually developed, which drew much attention when it was proposed at the „Glasstec“ trade fair in November 2004.

Trade fair 2004  
Düsseldorf



### The developer

From left to right: P. Siemer,  
M. Voßbeck, J. Baumjohann,  
P. Weiler, M. Rücker, W. Maier



# The first commercial Stahlglas staircase

## Step by step to market maturity

Two years later at the „Glasstec“ trade fair in 2006, another staircase with an alternative method of construction was successfully shown at the „Glaserinnung Deutschland“.

Both this as well as the staircase developed in 2004 were thoroughly utilised by the public, where they were on view, not only at the final installation site, but also at the trade fair – as an integral part of the trade fair stand. For the safety of the public, extensive experimental and theoretic research of the staircase was necessary. For this reason it was possible to establish a structural calculation and successfully apply for a permit through the chief planning commission.

Since the end of 2006, based on the preceding research and development of the construction method, a tangible stair system has been drafted and developed by Prof. Maier and his team.



Setting-up  
the staircase

Trade fair 2006  
Düsseldorf







# Imprint

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**Innovations are in alliance with the future**  
Stahlglas – the revolutionary material  
for glass construction

**We are happy to discuss the manifold possibilities of the Stahlglas Staircase and its construction with you.**

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