

Factsheet no. 4: RWTH seminar building, Aachen, Germany



Project summary and data

Client: Bau- und Liegenschaftsbetrieb NRW
Architect: IParch GmbH
Structural engineers: Führer - Kosch - Jürges Ingenieurgesellschaft
Total costs: ca. 8.7 Mio. €
Length: ca. 34 m
Width: ca. 11 m
Height: ca. 29 m
Usable floor space: 950 m²
Gross floor area: 2500 m²

Background

One of the most prominent places in the core area of the university has been waiting for renewal for a long time. The combined heat and power plant is located directly next to the main RWTH building. It had been expanded in various construction phases since the 1950s. After it was originally intended to supply the RWTH with heat, it was completely shut down shortly after completion of the flue gas filter system in the 1990s and replaced by a district heating pipeline from the Weisweiler power plant. Since the closure of the RWTH CHP plant in the 1990s, there has been a constant search for a new use for the centrally located technical building. Since a similarly large cubature at this location would probably not have been feasible with a new building, or would only have been feasible with major problems, a conversion became interesting for the university. The section, which was built in the 1990s, consisted of a tower facing Wüllnerstraße, the flue gas desulphurisation plant and the flue gas filter plant, which dominated the outer appearance of the ensemble. The filter system, which had now been converted to the auditorium building, was built on six columns which were built as bridges over the existing gas boiler house.



Design process



On behalf of the “Bau- und Liegenschaftsbetrieb NRW”, the architectural office “IP arch” prepared various conversion studies for the entire building complex and adapted them to the different usage requirements of the university. In the last revision in 2008, only the front part of the entire power plant was considered, since an institute of the RWTH was carrying out a long-term test in the boiler house behind it. In all the considerations of a reuse, the main focus was on the reuse of the existing steel structure.

Handling the stock

The existing load-bearing structure was designed for the heavy technical installations inside the coal filter system and was therefore sufficiently dimensioned to support the ceilings of a conversion with seminar use and its traffic loads. In previous studies, calculations have already been made by the office of “Führer - Kosch - Jürges” on the usability of the load-bearing structure. One of the biggest challenges in the planning phase was to realise the new use within the existing structure. The load-bearing structure was designed for large carbon filters, and not for regular storey heights and office space. Therefore, some parts of the steel construction had to be removed and partly supplemented with new girders. In order to keep



the effort as low as possible, it was important to define room heights and dimensions as well as stairwells in such a way that an optimal use of the existing load-bearing structure was possible. The existing structure was left visible throughout the building. In the interior, the rooms are shaped by the original supporting structure and give the building its industrial character. This impression was also enhanced by the choice of simple materials. The floor consists of sanded, anthracite coloured screed; large parts of the walls are made of exposed concrete.

Building envelope



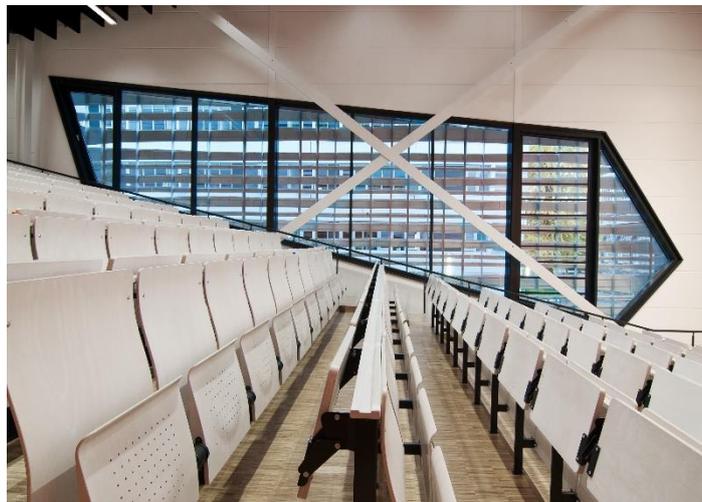
The architectural concept for the redesign of the building envelope was characterised by its former use. Horizontal aluminium sheets were used for the façade, which vary in height and have a distance of 3 cm between each other. The entire curtain wall façade has a distance of approx. 60 cm to the load-bearing outer skin of the building made of aerated concrete elements. The orange light behind the curtain wall is intended to symbolize the glow of the coal.

Usages

The use of the new building was ultimately determined by the high demand for additional lecture halls and seminar rooms due to the higher number of students at RWTH Aachen University. The building now comprises two lecture halls with 200 fixed seats each, two seminar rooms and a large multifunctional room for approx. 150 persons with flexible seating arrangements. On the different floors, there are four lavatory areas as well as corridors for the lecture halls and seminar rooms.

Operation method

In order to avoid errors in the implementation of the construction project, the entire project was planned three-dimensionally, including the existing structure. Furthermore, the 3D-model was used to check and adjust the colour concept and interior design.



Further information

The information in this case study and images were provided by Hendrik Daniel from IParch GmbH.