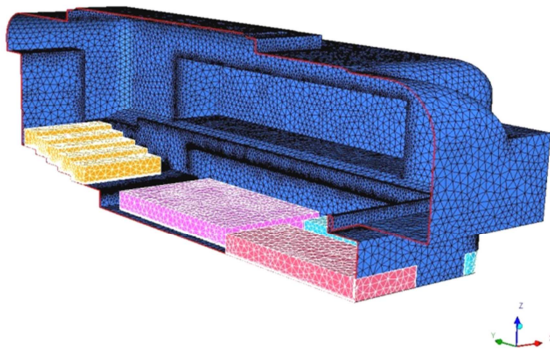
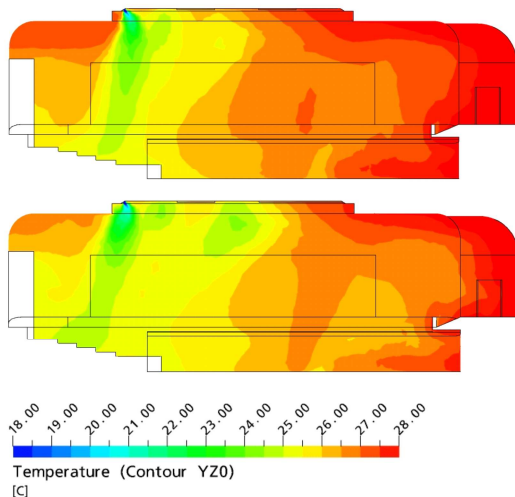




Zürich Tonhalle: View towards the stage



CFD-Model of Zurich Tonhalle (symmetry model)



Temperature distribution: longitudinal section before (above) and after (below) the retrofit of the ventilation

Description

The main auditorium of the Zurich Tonhalle forms part of the Congress Centre in Zurich. It is esteemed to be one of the best concert halls in the world. As the floor had to be reconstructed, the ventilation system for the auditorium was to be improved.

As the main auditorium of the Zurich Tonhalle is under protection as a historical building, the ventilation concept was selected to be an improvement of the existing system. The ventilation concept is based on fresh air duct and supply openings in the ceiling of the auditorium. The air flow capacity and the position of the supply openings were optimised on the basis of 3D CFD simulations. The CFD simulation was within the scope of HBI Haerter Consulting Engineers.

Services

HBI Haerter Consulting Engineers was responsible for the following scope:

- Site measurements of the existing openings for air intake and discharge
- Data collection of the current operation modes of the ventilation system
- Definition of the 3D model of the Zurich Tonhalle in CAD
- Grid generation with a non-structured grid generator
- Definition and model of visitors, musicians and concert light as heat sources and air flow resistance
- Simulation of the state before the refurbishment of the ventilation system
- Simulation of the state after the refurbishment of the ventilation system
- Optimisation of air flow quantity and air intake geometry for the new ventilation system under special consideration of noise development
- Post-processing and documentation of simulations and findings
- Summary and recommendations for further optimisation