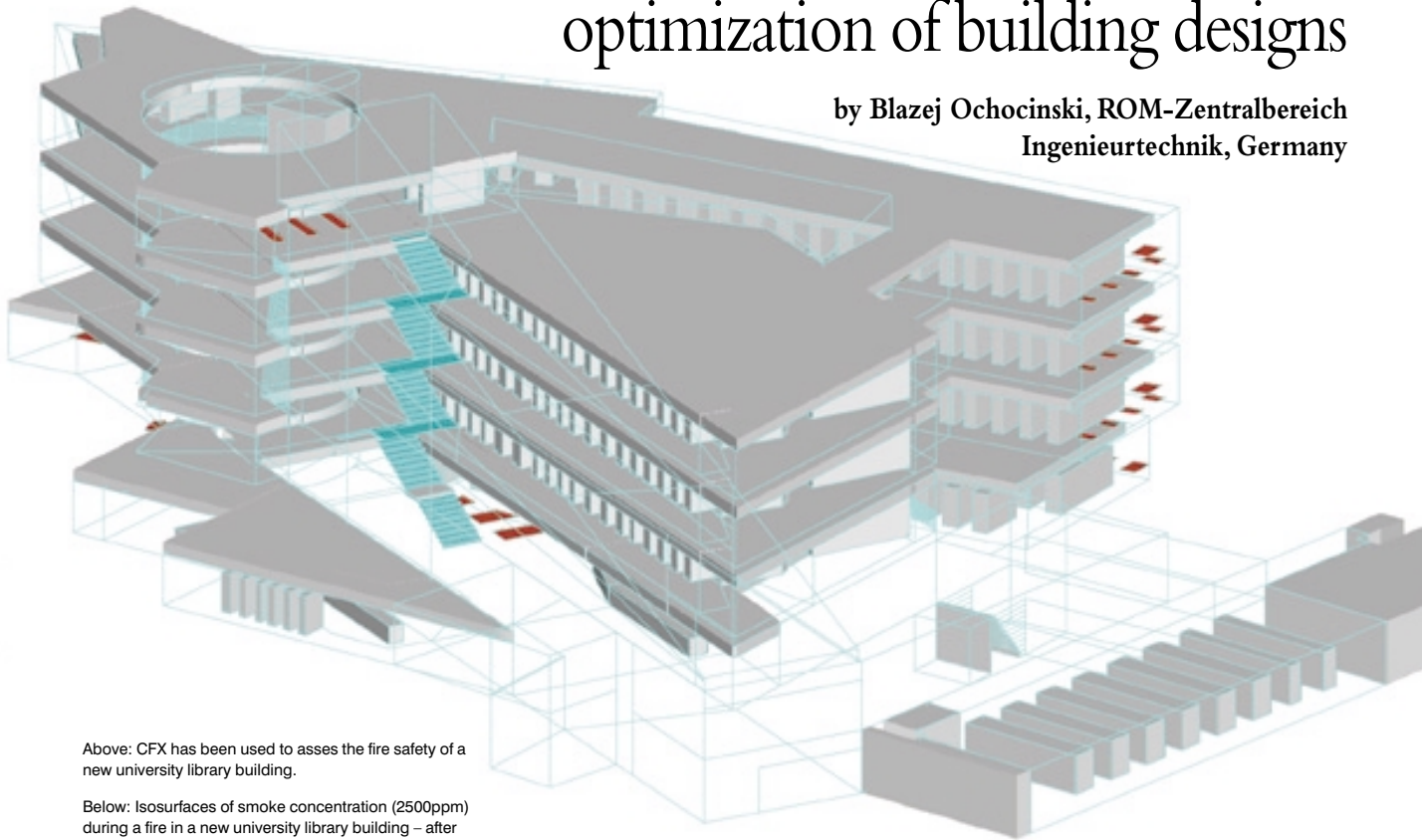


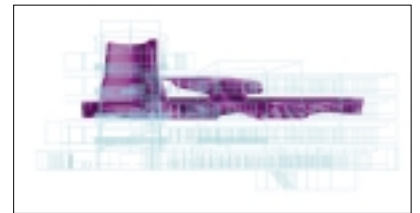
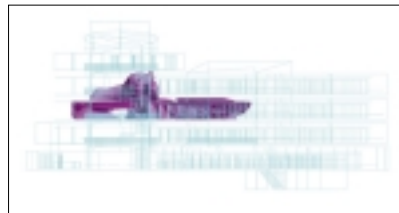
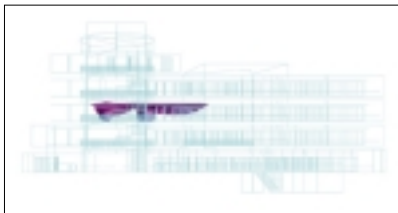
CFX - an essential tool in the optimization of building designs

by Blazej Ochocinski, ROM-Zentralbereich
Ingenieurtechnik, Germany



Above: CFX has been used to assess the fire safety of a new university library building.

Below: Isosurfaces of smoke concentration (2500ppm) during a fire in a new university library building – after 30, 60 and 120 seconds.



For the last ten years, ROM (Rud. Otto Meyer) has developed and applied software tools for the reliable assessment of building ventilation systems. From the very beginning, CFX has been an essential part of our integrated approach, and since ROM became a member of the IMTECH International (Internatio Müller Technologie) Group two years ago, our building-oriented CFX activities have spread throughout Western and Central Europe.

Our areas of expertise include global simulations of external flow around entire buildings including relevant parts of their surroundings, detailed assessment of airflows and comfort conditions in enclosures, pollutant transport processes in buildings and in their external environment, and smoke motion and removal in case of fire.

A recent study considered the airflow and transport of car exhaust fumes in the tunnel and underground parking and supply areas of the new German Bundestag in Berlin. The simulations have led to modifications to the tunnel's ventilation system that greatly reduce the exhaust-fume pollution risk in the adjoining governmental buildings.

Another case involved the investigation of smoke movement in the event of a fire in a new university library building. This required coupling of the internal and external airflows, as the smoke transport within the building was strongly affected by the conditions outside. CFX was used to study the behaviour of the smoke plumes for different critical outdoor and indoor airflow conditions, and helped to evaluate the building's evacuation schemes, the efficiency of the smoke removal by means of natural ventilation, and the effect of sprinklers.

