



Halcrow

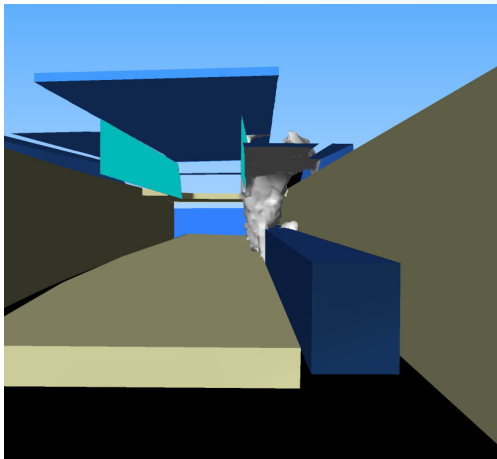
Capability in Computational Fluid Dynamics (CFD) for Fire and Smoke Control

1 Introduction

Computational Fluid Dynamics (CFD) is a powerful numerical modelling technique, which is increasingly used to simulate the conditions occurring in a fire within buildings and underground structures.

Typically, CFD is used in conjunction with other methods for the following tasks:

1. Verification of the performance of a proposed smoke control system.
2. Optimisation of a ventilation or smoke control system
3. Investigations following accidents
4. Development of understanding of particular flow processes which occur in fires within the built environment.



Smoke control via roof vents in the EARL station

2 Halcrow's capabilities

Halcrow has the experience and tools necessary to carry out detailed CFD simulations of fires and smoke control within the built environment. The principal CFD code used is the CFX general purpose code; this code has wide provenance for this type of problem. At Halcrow, CFX is often used in conjunction with one-dimensional codes or zone models to obtain a full description of the scenario. Halcrow's staff have extensive experience in CFD modelling of fires and smoke movement, and work closely with Fire Safety

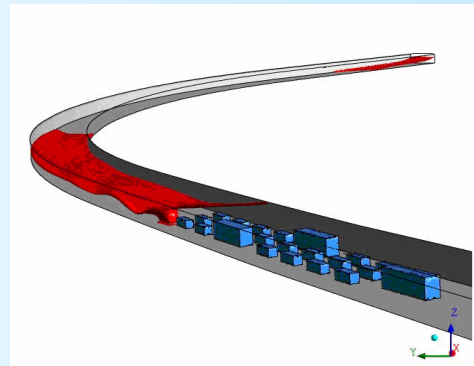
Engineers to provide practical solutions which fulfil the requirements of clients and the regulatory authorities.

3 Recent experience

Recent experience includes:

- Design of the mechanical and natural ventilation smoke control in the proposed new station at Edinburgh Airport (EARL)
- Design optimisation of the smoke control system for the new DLR station at Woolwich.
- Analysis of effectiveness of jet fans in smoke control for the new Palm Jumeirah Vehicle Tunnel (UAE)

Halcrow staff have also been extensively involved in investigations into the King's Cross Underground Station fire and the Mont Blanc Tunnel fire.



Smoke control in new vehicle tunnel

4 Contacts

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