

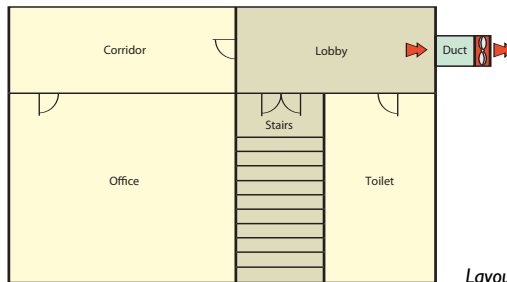


Colt Shaft

Full scale live smoke tests



Full Scale 'Live' Smoke Tests



Layout of test area

Fire fighting stair cores are required in certain tall multi-storey buildings in accordance with Approved Document B and BS 5588. These stair cores require ventilation. Where the fire fighting stairs and lobbies adjoin external walls this ventilation can be by simple openable windows. Where fire fighting lobbies are landlocked another solution is required.

Natural ventilation shafts have been the usual choice, especially since the introduction in 2002 of the BRE shaft, a 3m² shaft with a closed base, avoiding all the issues involved in providing an air inlet path at the base.

With increasing pressure to maximise saleable or lettable space, provision of a 3m² shaft to each fire fighting core is both difficult and expensive. A smaller shaft is required.

The solution is the Colt shaft, a design using mechanical ventilation to reduce the shaft size by 80%.

Colt have developed a standard solution, suitable for use in any fire fighting core and proven by both CFD analysis and full scale testing.

A CFD model was built for the BRE shaft and calibrated to give the same results as BRE's original modelling. A mechanical solution was then modelled and optimised to match or better the BRE shaft. Being a mechanical system it is less affected by wind and provides optimal performance at all times.

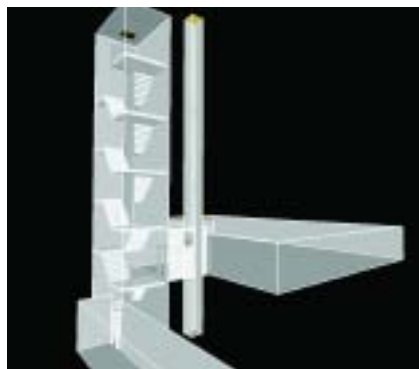
A full scale system was then installed at Colt's Hampshire offices to both confirm the validity of the CFD modelling results and to ensure that there were no practical

difficulties with the system. The installed system has provided successful practical demonstrations to both customers and enforcing authorities, which include District Surveyors, Building Control Officers and Fire Officers.

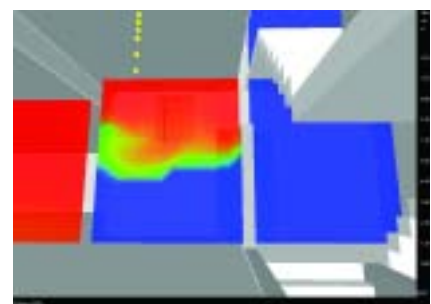
The modelling and testing showed that the stairs are kept smoke free and that, with the door to the accommodation closed, a typical 5m² lobby will clear totally of smoke within 15-20 seconds of opening the stair door.



The test lobby



The CFD model



Smoke flow as accommodation door is opened

The Colt shaft incorporates:

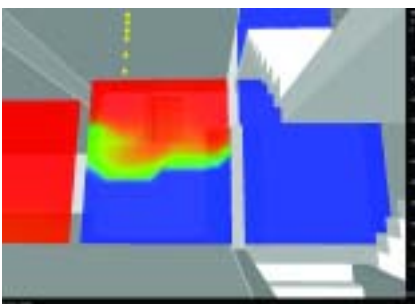
- A builder's work shaft adjacent to the lobbies (nominally 0.6m² but can be varied)
- Damper and grille or fire door with Colt Doorman to each lobby
- Variable speed fans (duty + standby)
- Ducting from shaft to external termination
- Pressure differential sensing to each lobby
- Seefire ventilator at head of stairs
- Central control panel.

It is offered as a complete system, designed, supplied, installed and commissioned by Colt, with only the builder's work and fire doors by others, to provide a complete, easy to specify, cost effective and space efficient solution for any building.

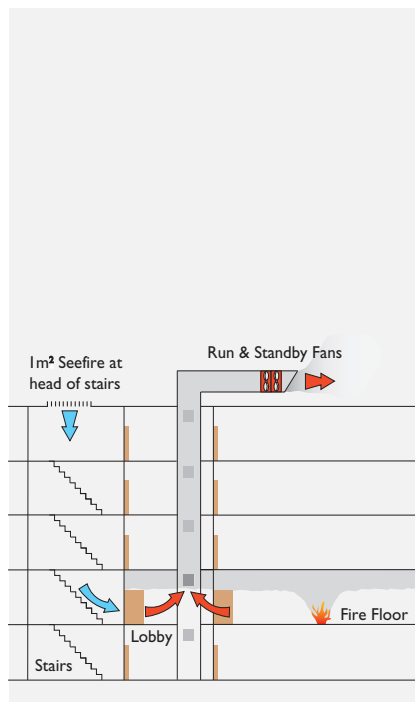
The Colt shaft has been accepted and approved on a number of projects around the UK and we would be pleased to provide more information on request.



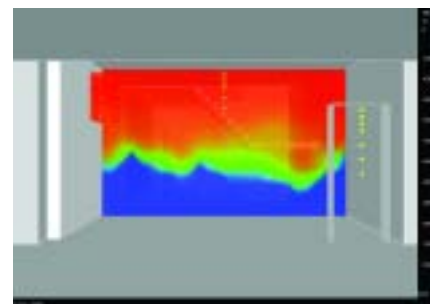
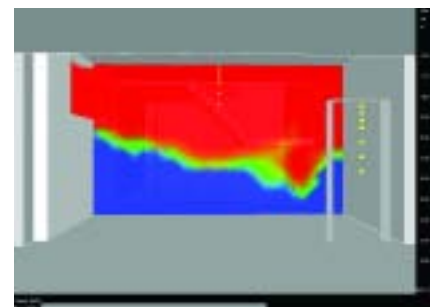
Exterior test equipment



Comparison of test and CFD conditions in lobby



Typical Colt shaft layout



Comparison of CFD results for BRE shaft (top) and Colt shaft

THE COLT PACKAGE

Colt can provide all manner of smoke control systems, whether they be fire dampers, ductwork, smoke or fire curtains, or powered or natural ventilators.

Colt offers a free technical design service on all projects undertaken. Please contact Colt for further information.

COLT SERVICE

Part of the Colt Group of companies, Colt Service offers a comprehensive range of maintenance packages incorporating the maintenance and repair of all building services equipment including non Colt products.

Colt Service provide a 24 hour, 365 day emergency cover as standard.

MAINTENANCE

Maintenance of a smoke control system is essential. Regular maintenance protects your investment and brings peace of mind that the system will operate effectively in an emergency.

The British Standard BS 5588-12 recommends that smoke control systems should be serviced at least once a year and tested weekly.



“People feel better in Colt conditions”



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