

SMOKE SHAFT VENT - Frequently Asked Questions

What is it?

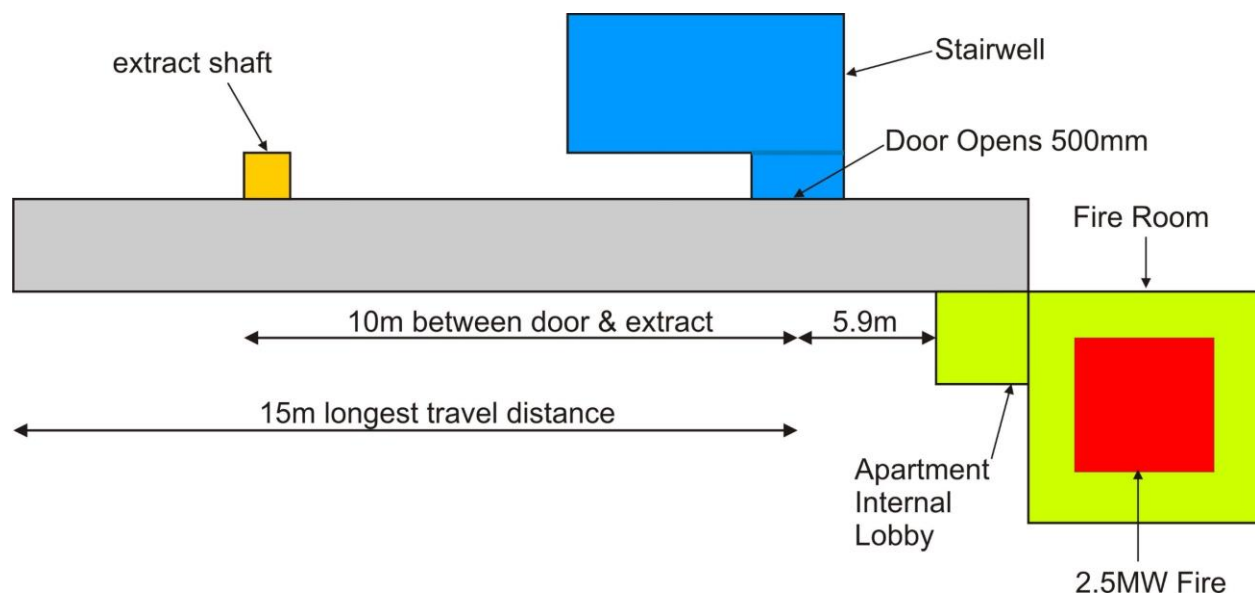
The Fläkt Woods Smoke Shaft Vent is a standardised modular mechanical smoke shaft system for protecting lobbies and corridors in tall buildings.

It is approved for use in England and Wales through the Local Authority Type Approval scheme.

What type of buildings is it suitable for?

The system is suitable for most tall buildings including residential, commercial, hotels and student accommodation within the following system parameters:

- Maximum of 20 storeys
- A single extract shaft of 0.6m² free area with inlet air from a stairwell
- Roof suitable for a skid-mounted fan arrangement
- A maximum escape travel distance from the accommodation of 15m
- Extract shaft to be located a minimum of two-thirds of the total travel distance away from the stair door (see illustration)



Can it be used for firefighting shafts?

Yes, the system is suitable for smoke control for both means of escape and firefighting conditions.

What power supplies do we need to the motor control centre?

The system will require both essential and non-essential 400V 3Ph&N supplies.

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The standard fan skid only accepts a single 400V 3Ph&N supply; so if both supplies are cabled to the fan skid a skid-mounted Automatic Transfer Switch can be provided to switch to the non-essential supply should the essential supply be lost.

What cabling do we need to install?

The cabling requirements would be:

- Interface panels – 3 core FP200 plus (230V supply) and 2 core FP200 plus (data)
- Cabling to the lobby vent and door openers – 3 core FP200 plus
- Cabling to the fireman's override switch – 3 core FP200 plus
- Cabling to the HMI – 3 core FP200 plus (230V supply) and 2 core FP200 plus (data)
- Cabling to the motor control panel/ATS should be in accordance with BS 8491:2008 and shall be at least Category 2 (minimum FP400) as described in BS 8519:2010

Are fireman's override switches needed to switch between modes?

No, research shows that firefighters are reluctant to use manual controls on active firefighting systems due to lack of familiarity with the intricacies of systems in individual buildings.

“Over-complicated smoke control is the last thing firefighters want when dealing with a challenging, dynamic live fire situation. I'm a big fan of the Fläkt Woods Smoke Vent Shaft system because it's simple and effective; it removes the frequently complex override controls that firefighters simply don't have the time to deal with. An automated, standard system protecting building occupants from fires has to be a good thing.”

Gary Johnson, Head of Business Fire Safety, South Wales Fire and Rescue Service

Who is responsible for system design?

The installing contractor is ultimately responsible for system design as for any other building engineering system. The design is pre-configured as part of the system concept and a generic design document forms part of the output from the product selector, together with drawings, BIM models, technical submittals and installation and operation instructions.

Do you produce a CFD to prove performance?

Reference CFD models have been produced for systems at the extremes of the system parameters and these were vetted and approved by the LABC Type Approval process, so providing the building is within the scope of the system then an individual model is not needed.

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Where does air inlet for the system come from?

Replacement air for the extract system is drawn from the staircase by the controlled partial opening of the lobby/stair door.

How do you prevent negative pressure or excessive depressurisation of the lobby?

The partial opening of the stair door relieves overpressure in the lobby and ensures efficient operation of the system.

Do you provide a supply and install service?

Yes, although the system is designed for self-installation by competent mechanical and electrical contractors, there is a network of Fläkt Woods-approved installers who can offer a full installation and commissioning service.

How is the system commissioned?

The system is configured via a menu-driven touch screen and requires no specialist programming skill and full instructions are provided.
To comply with the LABC scheme, the system must be certified by a Fläkt Woods-approved inspector.

Can the system be used to prevent corridor overheating?

Yes, the system software includes a daily ventilation mode using the existing extract plant to mitigate heat build-up in corridors.

Does the system comply with relevant British and European Standards?

Yes, it complies fully with all relevant standards including:

- BS 9991:2011 - Fire safety in the design, management and use of residential buildings
- BS 9999:2008 - Code of practice for fire safety in the design, management and use of buildings
- Smoke Control Association – Guidance on Smoke Control to Common Escape Routes in Apartment Buildings (Flats and Maisonettes) Revision 2: October 2015
- BS 8519:2010 - Selection and installation of fire-resistant power and control cable systems for life safety and firefighting applications

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- BS EN 12101-2:2003 - Specification for natural smoke and heat exhaust ventilators
- BS EN 12101-3:2015 - Specification for powered smoke and heat control ventilators (Fans)
- BS EN 12101-8:2011 - Smoke and heat control systems Smoke control dampers
- BS ISO 21927-9:2012 - Smoke and heat control systems Specification for control equipment
- BS EN 12101-10:2005 - Smoke and heat control systems Power supplies
- BS 5839-1:2013 - Fire detection and fire alarm systems for buildings
- BS 7346-4:2003 - Functional recommendations and calculation methods for smoke and heat exhaust ventilation systems
- BS 7346-8:2013 - Components for smoke control systems Code of practice for planning, design, installation, commissioning and maintenance

Does the system use inverters to control the fans in emergency use?

No, in emergency mode the inverters are bypassed to comply fully with the requirements of EN12101 Part 3:2015, which precludes the use of inverters in emergency mode unless they have been fire tested with the fans or are equipped with additional filters and the fan motors derated by 20%.

This standard makes the use of compliant modulating fan systems uneconomical.

What are the maintenance requirements?

The maintenance requirements are the same as for any other smoke control system and as detailed in the Regulatory Reform Order. It is recommended that the system is tested monthly and inspected/serviced twice per year by a competent person. The Smoke Shaft Vent system has the capability for remote monitoring (additional cost item).

Does the control system interface with other building systems?

Yes, the system can communicate directly with BMS and fire alarm systems via a Modbus interface.