WINDOW MASTER®
Fresh Air. Fresh People.

Smoke ventilation – Safety for all building types

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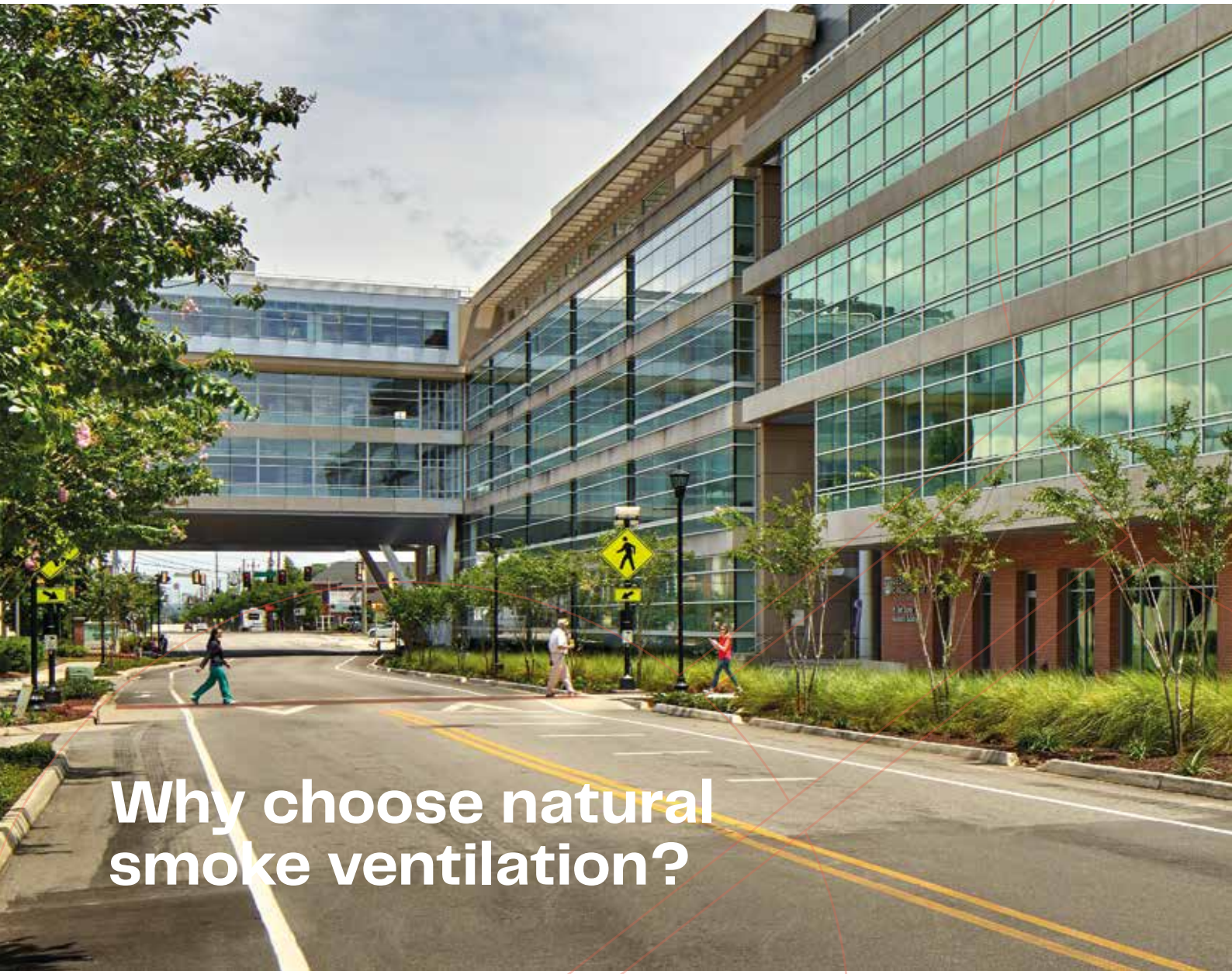


Why choose natural smoke ventilation?

Most people who die in fires do not lose their lives because of the fire itself but are suffocated by the smoke. It is vital that the smoke is removed from the building as quickly as possible to allow everyone to be able to see and breathe in order to escape, and the fire brigade to extinguish the fire.

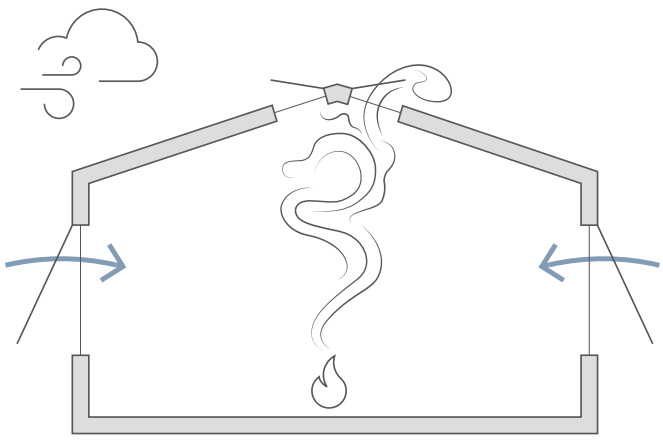
Exhausting the smoke ensures that the building does not overheat and that explosions of smoke gases, which can result in the entire building collapsing, do not occur.

With a passive smoke ventilation solution, the highly placed smoke vents (skylights or windows) will open automatically in conjunction with the lower placed air openings. This system, when designed and controlled correctly, will ensure that the smoke is exhausted rapidly, enabling the occupants to escape and therefore reducing the risk of fatalities.

Smoke ventilation based on natural forces does not only create safety and security for the users of the building. The openings in the facade and roof can also be used every day to provide a pleasant indoor climate using comfort ventilation.

Comfort ventilation is intelligent management of the indoor climate using natural ventilation, which is both energy-saving and environmentally friendly. The system measures temperature and air quality in each room and, depending on the weather conditions, opens windows as required to allow precisely the right amount of air into the building.

This means that the safety solution is not just an investment in protection in the event of a fire or smoke incident, but it also becomes an active part of providing users with a balanced day-to-day indoor climate that is environmentally friendly.



Find the right smoke control panel for your building type

Photo: Jörg Schwarze

Flexibility in your smoke panel connectivity

The configuration of the final solution depends on the size of the building, the number of smoke vents, the window actuator amperage requirements and the number of smoke zones / rooms.

The choice of the right smoke control panel depends on the specific requirements of your building. For example, if you require several smoke ventilation zones, you could choose FlexiSmoke™, which is a modular panel.

We supply two series of smoke control panels

1

CompactSmoke™
Compact smoke control panels for smaller areas. Available in 4–20A and covering up to 10 smoke ventilation zones.

2

FlexiSmoke™
Flexible, modular smoke control panels for larger areas. Available in 20–60A and covering up to 39 smoke ventilation zones.

CompactSmoke™

For small and medium-sized areas

WSC 104

Panel for one smoke zone

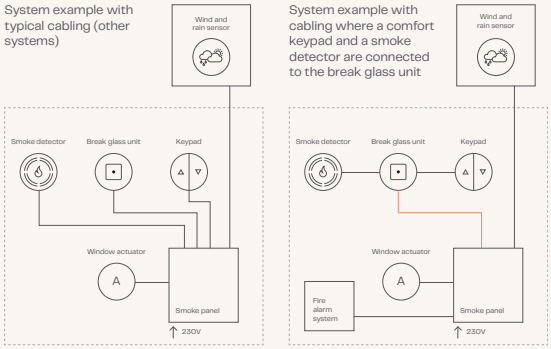
Smoke control panel for control of ±24V DC actuators or actuators with MotorLink® for smoke extraction and comfort ventilation. The smoke control panel is especially suitable for use in smaller areas, e.g., staircases, smaller sports centers, and restaurants.

- Supplied with 4A
- 1 smoke zone / comfort ventilation group
- For smaller areas
- Control of ±24V DC actuators or actuators with MotorLink®
- Comes with two back-up batteries
- CE marked according to EN 12101-10
- Complies with ISO 21927-9
- Configuration via 8 DIP switches

It is possible to connect common wind and rain sensors and with the use of additional modules, the panel can also be used for comfort ventilation.

Example of application with ease of cabling

The smoke panel can be connected to several components so that the controls can be adapted to the specific project. Either a fire alarm system or smoke detectors can be connected at a time. Connecting smoke detectors and comfort keypads to the break glass units and using bus technology significantly reduces cabling.



Number of opening speeds of the connected actuators

1 — ±24V DC standard actuator with one speed (H&S)

2 — MotorLink® actuator with two speeds (H&S / comfort ventilation)

WSC 310 / 320 Plus

Panel for several smoke zones

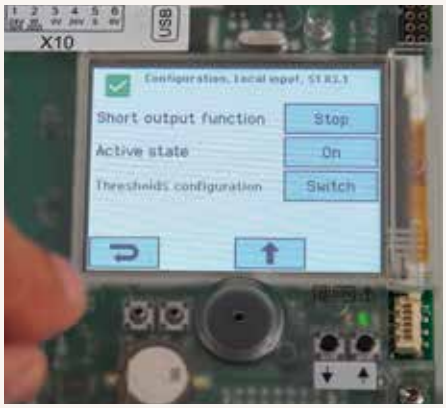
Smoke control panel for the control of ±24V DC actuators and actuators with MotorLink® for smoke ventilation and comfort ventilation. The panel can be used in small to medium sized buildings as well as in building sections e.g. staircases and atriums.

- Supplied with 10A or 20A
- Up to 10 smoke zones / 10 ventilation groups
- Break glass units and keypads can be connected to each smoke zone. A maximum of 2nr WSK 501 break glass units can be connected to the panel. WSK 503 break glass units would make up the other 8nr.
- Up to 12 inputs for keypads (can also be configured for other input functions)
- Comes with two back-up batteries
- Easy and simple configuration via the touch screen to implement the specific requirements of the building
- In connection with comfort ventilation, bus communication via KNX, BACnet IP, BACnet MS/TP, Modbus TCP, or Modbus RTU is possible. The field bus card is to be ordered separately
- CE marked according to EN 12101-10
- Complies with ISO 21927-9

The panel can also be combined with the NV Embedded® and NV Advance® systems. By connecting PLUS panels together, they can also be used in larger single zone scenarios. The number of zones / inputs depends on the type of smoke panel.

Easy commissioning

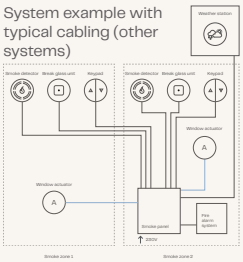
The panel includes an easy-to-use 2.5" LCD touch screen, which makes the panel easy to configure, commission and maintain – also without the need of a PC. System errors are described on screen to facilitate troubleshooting.



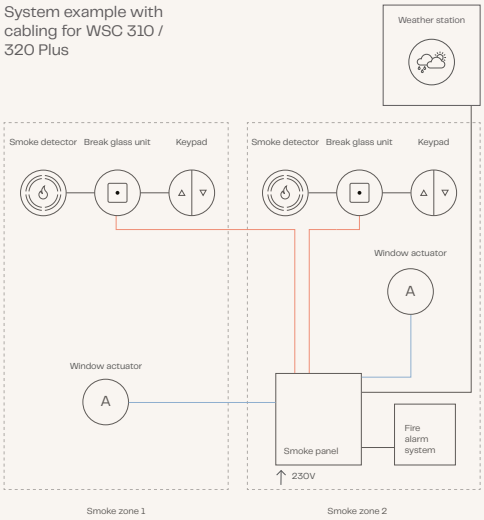
Examples of applications with ease of cabling

Connecting smoke detectors and comfort keypads to the break glass units and using bus technology significantly reduces cabling.

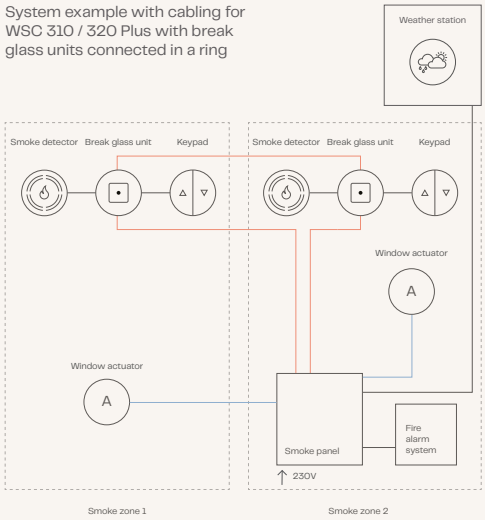
System example with typical cabling (other systems)



System example with cabling for WSC 310 / 320 Plus



System example with cabling for WSC 310 / 320 Plus with break glass units connected in a ring



Number of opening speeds of the connected actuators*

1 — ±24V DC standard actuator with one speed (H&S)

3 — MotorLink® actuator with three speeds (H&S / comfort ventilation / automatic operation)

*Depending on the type of actuator

FlexiSmoke™

For large and medium–sized areas

WSC 520 / 540 / 560
Flexible system structure

Modular smoke ventilation panels for the control of ±24V DC actuators and actuators with MotorLink® for smoke ventilation and comfort ventilation. The modular panel can be used in larger and medium sized buildings e.g. shopping centers, schools or sport/ leisure facilities.

- Supplied with 20A, 40A or 60A
- Easy cabling using single bus technology
- Wind direction dependent smoke ventilation
- Flexible system structure
- Simple system adaptation in the event of renovation
- Configuration and troubleshooting with the integrated touch screen without the need of a PC. A PC can be connected without additional modules
- CE marked according to EN 12101-10
- Complies with ISO 21927-9

With the combination of several panels, FlexiSmoke™ can be used in very large buildings or areas.

Up to 39 smoke zones and comfort groups can be implemented, depending on panel variant type.

The panel is also available with a field bus card, so that controlling comfort ventilation is possible via bus communication KNX or BACnet IP. FlexiSmoke™ can also be controlled by the NV Advance® system.

Easy commissioning

Easy-to-use 3.5" LCD touch screen makes the panel easy to configure, commission and maintain – also without the need of a PC.
System errors are described on screen to facilitate troubleshooting.

Number of opening speeds of the connected actuators*

1 ±24V DC standard actuator with one speed (H&S)

3 MotorLink® actuator with three speeds (H&S / Manual control / automatic operation)

*Depending on the type of actuator

Wind direction dependent smoke ventilation

The smoke control panel can be set so that opening and closing of smoke ventilation units is determined by wind direction and speed. This means that the roof and facades can be utilised even more efficiently as part of the smoke ventilation strategy.

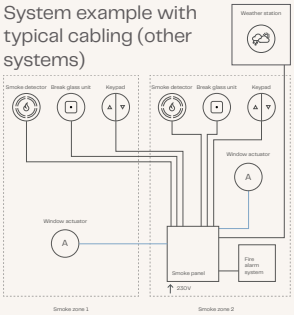
Examples of applications with ease of cabling

FlexiSmoke™ can be connected to several components so that the controls can be adapted to the specific project. An example is shown here with two zones and component connections where the blue lines are motor cables, while the red lines show the unique bus-communication between the break glass units.

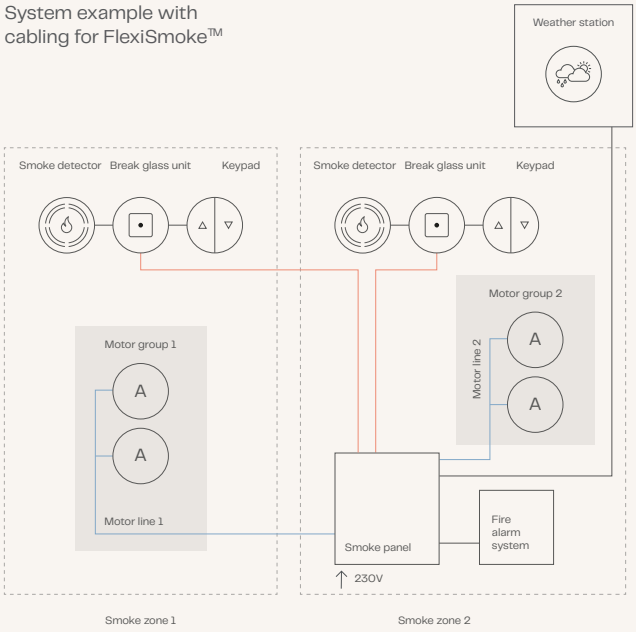
FlexiSmoke™ uses bus technology and the overall cabling for break glass units, smoke detectors and keypads is significantly reduced compared to other types of smoke panels:

- The break glass units are connected in series, therefore it is not necessary to cable from each break glass to the smoke ventilation panel
- Keypads for comfort ventilation and smoke detectors are connected directly to the break glass units in the smoke areas

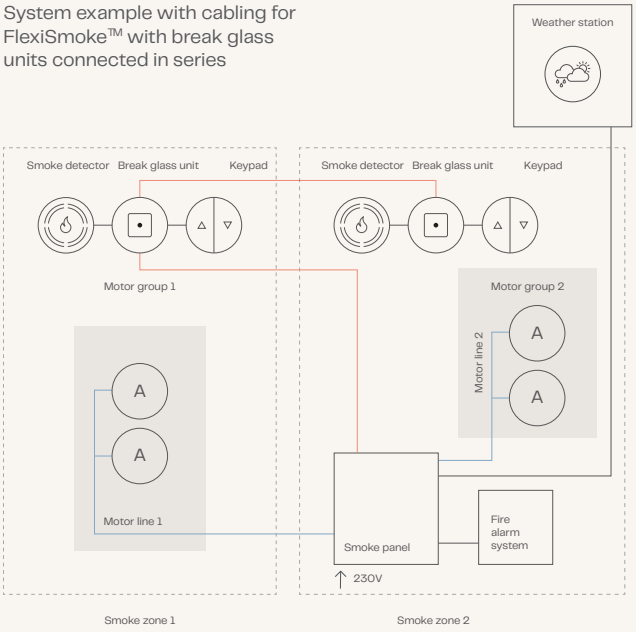
System example with typical cabling (other systems)



System example with cabling for FlexiSmoke™



System example with cabling for FlexiSmoke™ with break glass units connected in series



Structure

Sections
The FlexiSmoke™ smoke ventilation panel is available in three different sizes 20A, 40A and 60A. The smoke ventilation panel consists of 20A-sections, thus WSC 520 contains one section, WSC 540 two sections and WSC 560 three sections.

Modules
Each section contains the power supply module, the overall control module and 3 slots for expansion modules. The overall control module is available with or without field bus interface for KNX and BACnet IP.

The 3 slots allow an input / output module and the new generation universal motor module. All newly supplied FlexiSmoke® panels are backwards compatible to allow the use of older MotorLink® motor modules & Standard motor modules (module firmware dependent). The type and number of the modules are selected specifically to suit the smoke panel required functions.

Power supply module
WSA 5PS

Control module – without field bus
WSA 5MC

Control module – KNX or BACnet
WSA 5MC

Input / output module
WSA 5IO

Universal motor module
WSA 5UM


Main Entrance

How to compose a solution for smoke ventilation

An example with a stairwell with smoke and comfort ventilation

The stairwell comprises a basement and four floors. The ground floor has an opening to take in replacement air, and the roof has a smoke ventilation unit that can be used to exhaust smoke from the stairwell.

At the very top there is a smoke detector, a keypad, and a break glass unit. A break glass unit has also been

Natural smoke ventilation can be installed in the majority of buildings

installed in the rest of the floors. A wind and rain sensor has been mounted on the roof.

All products are controlled from a smoke control panel located in the basement.

The following components have been used:

1 x CompactSmoke™ smoke panel – WSC 310

1 x smoke detector – WSA 311

1 x break glass unit – WSK 501

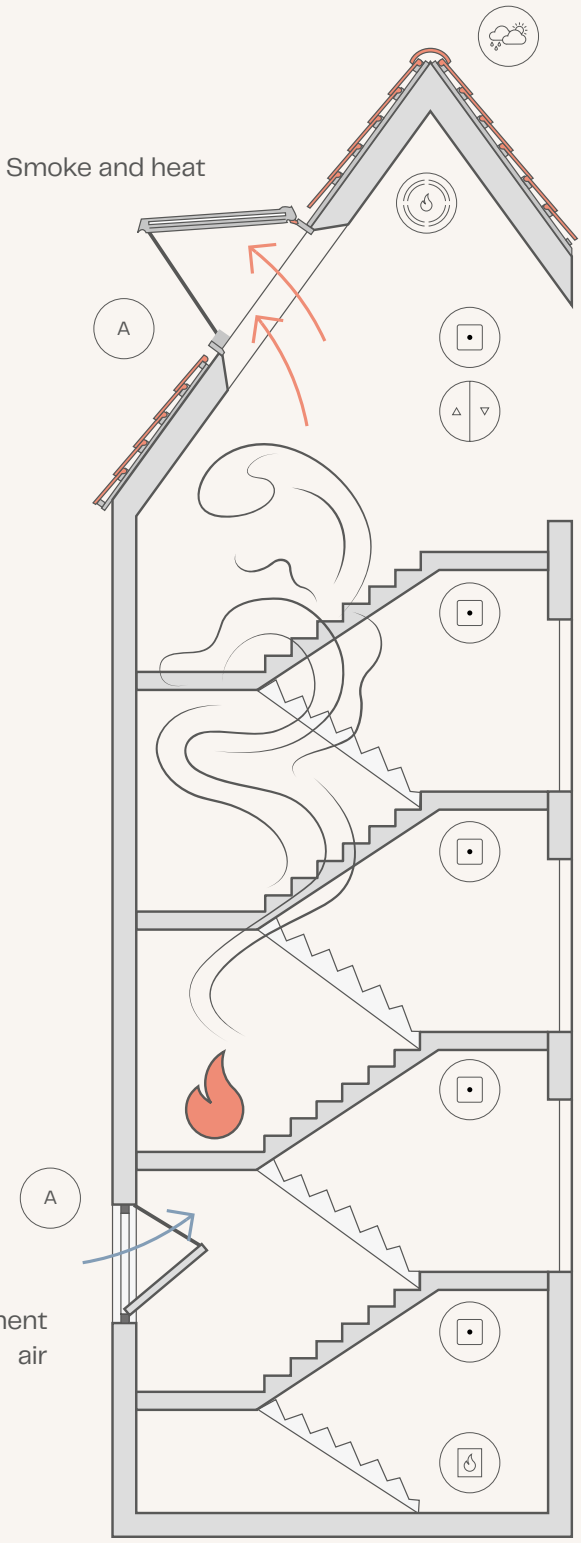
4 x break glass unit – WSK 503

1 x actuator – WMU 885
in a CE marked EN 12101-2 roof ventilator

1 x actuator – WMU 836
in a CE marked EN 12101-2 facade ventilator

1 x wind and rain sensor – WLA 330

1 x keypad – WSK 100



Symboles:

Keypad

Smoke control panel

Smoke detector

Break glass unit

Actuator

Wind and rainsensor

WINDOW Master®
Fresh Air. Fresh People.

Don’t forget service and maintenance

Regular inspection of smoke ventilation systems is a legal requirement. You must also have the system inspected and tested at fixed intervals.

WindowMaster offers maintenance agreements for our smoke ventilation systems. We inspect the complete system in accordance with the applicable legislation. Maintenance of the smoke ventilation system includes checking windows, window actuators and emergency power and checking that triggering and control functions are fully functional.

Please contact us for further information about how we can tailor a service agreement to suit your requirements.

Legislation
It is important to note that different counties and governing authorities have differing requirements for smoke ventilation in various building types. These requirements depend on whether the building is a new-build or renovation and apply to product choice, installation and subsequent inspection and testing.

WindowMaster has comprehensive experience in providing expert advice in the installation and servicing of smoke ventilation solutions. We have worked with a wide range of window and facade manufacturers to develop, test and CE mark solutions that meet the European standard EN 12101-2.

Get inspired by our reference projects

New Street Square

New Street Square is one of the City of London's largest office redevelopment projects. It is a 730,000 sq ft mixed-use scheme to replace a cluster of post-war offices with four contemporary designed buildings, which open up to a landscaped central square lined by shops and cafes.

Safe solution for redevelopment
WindowMaster, Europe's largest provider of natural ventilation solutions, is developing and installing smoke ventilation control systems to operate over 2,000 windows at London's New Street Square redevelopment.

To meet Document B of building regulations on fire safety, smoke ventilation units were specified so that they could be opened to clear smoke from the office floor plates quickly and safely in the event of a fire.

Solution
Smoke Ventilation

Location
London, Great Britain

Sector
Commercial Buildings

Controls & Technology
FlexiSmoke™

Year
2008

Tollcross Housing Association

At the beginning of 2018, Tollcross Housing Association moved into this new state-of-the art 4 storey office building after years of operating out of two separate offices. WindowMaster delivered natural ventilation and smoke ventilation to this prestigious project.

The office building was designed for natural ventilation through automatically controlled windows via the façade and roof vents. There are 17 ventilation zones in total, including the office spaces, waiting area, committee break-out space, and meeting rooms.

Natural ventilation and SHEV in one solution
In 5 of the 17 zones, both natural ventilation and smoke ventilation are in operation together with the addition of a WindowMaster smoke control panel, FlexiSmoke™. In case of fire, signals are sent directly to the smoke panel which then communicates to the actuators to open quickly to vent the smoke from the building.

Solution
Natural ventilation, Smoke Ventilation

Location
Glasgow, Scotland

Sector
Commercial Buildings

Controls & Technology
NV Advance®, FlexiSmoke™

Year
2018