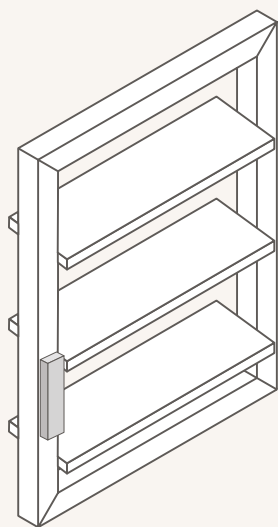


Automated Large Blade Louvre Certified Smoke Ventilation Solution

A complete, tested smoke ventilation solution for
façade integration



In this document we will
explore



- 1 In a building fire, smoke is the primary hazard
- 2 Smoke ventilation integrated into the façade
- 3 Where this solution is used
- 4 Relevant at every stage of the design and build process
- 5 Two configurations, both fully tested and CE marked
- 6 From first drawing to long-term maintenance
- 7 Get in touch



In a building fire, smoke is the primary hazard

Smoke spreads faster than fire. It reduces visibility, creates toxic conditions, and is the leading cause of death in building fires. Keeping escape routes clear of smoke gives occupants the time they need to evacuate safely and allows fire-fighting operations to continue. Natural Smoke and Heat Exhaust Ventilation systems (NSHEVs) are installed in buildings to do exactly this. When triggered by a fire alarm or smoke detector, the ventilator opens automatically, exhausting smoke and heat from the building.

Smoke ventilation is required across a wide range of building types – residential developments, commercial and office buildings, atriums, industrial facilities and public buildings. It is a standard requirement of building regulations and fire safety legislation across the UK and Europe.

A legal requirement

Under the Construction Products Regulation, smoke ventilation products must be CE marked before being placed on the market. This requires independent testing, a Declaration of Performance and ongoing third-party oversight of the manufacturing process.

Under the Regulatory Reform (Fire Safety) Order, building owners are legally responsible for maintaining smoke ventilation systems once the building is in use.

Smoke ventilation integrated into the façade

This solution brings together two specialists: FIEGER, a manufacturer of large blade louver façade systems, and WindowMaster, a specialist in actuation and smoke ventilation controls. The louver unit and actuator were tested together as a single system under EN 12101-2, so the performance classifications apply to the combination as installed.



Three things to know about this solution

1

One opening, two functions

The same louver unit serves both daily comfort ventilation and smoke extraction. A single opening in the façade handles both, rather than requiring separate provision for each.

2

Tested as a complete system

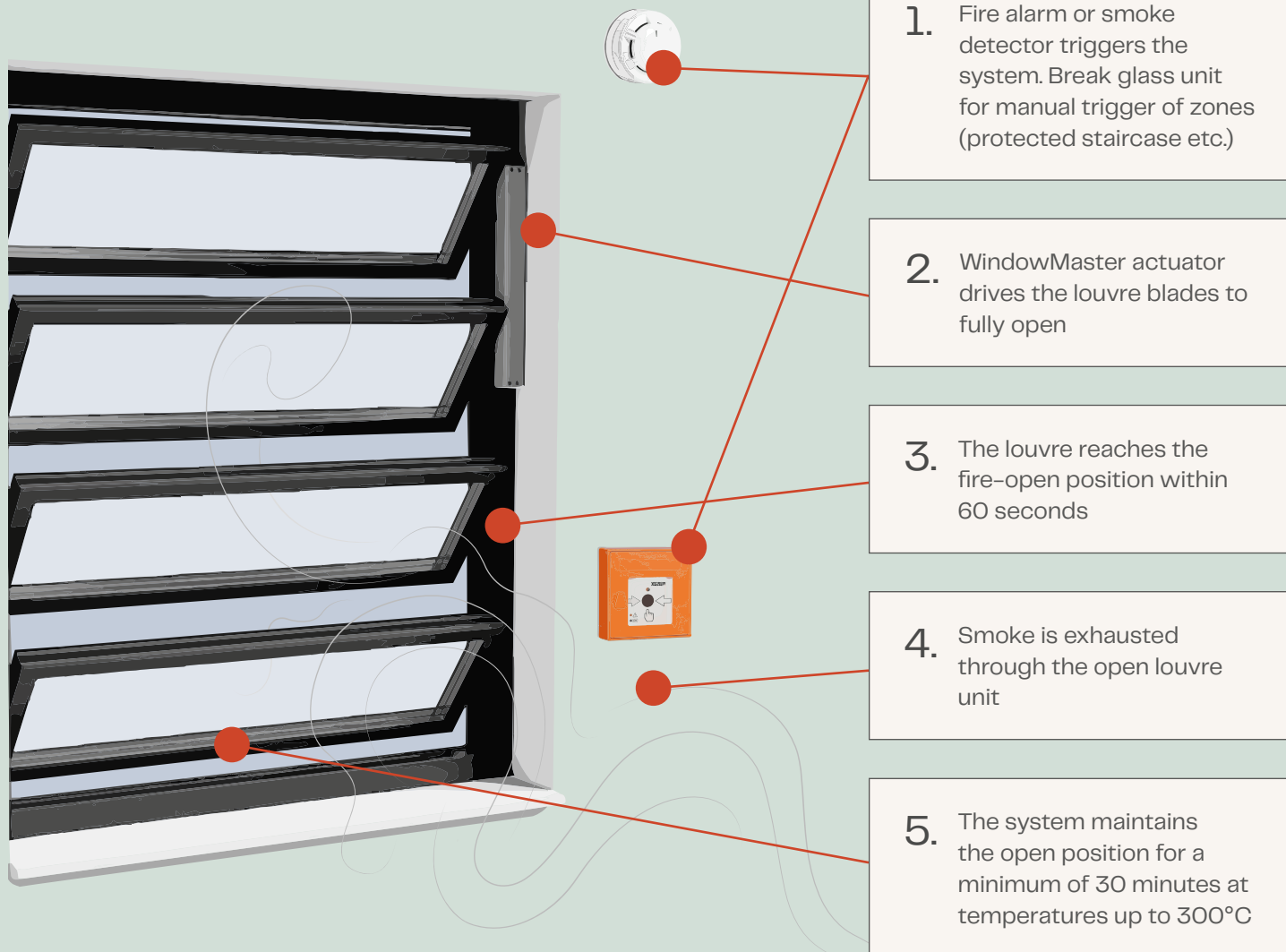
The louver unit and WindowMaster actuator were tested together under EN 12101-2. The performance classifications apply to the combination, not the components in isolation.

3

Designed for façade integration

Large blade louver units sit flush within the façade plane. Smoke ventilation becomes part of the architectural design.

How it works

**Technical reference****EN 12101-2 – the governing standard**

EN 12101-2 is the European standard covering Natural Smoke and Heat Exhaust Ventilators. It specifies the performance requirements and test methods that must be met before a ventilator can be CE marked and placed on the market.

The standard covers the complete ventilator: louvre unit and actuator tested together. Classifications are declared in a Declaration of Performance (DoP) issued by the ventilator manufacturer.

Control systems are assessed separately under EN 12101-10.

Where this solution is used

Automated large blade louver units are suited to a wide range of applications. They can be integrated into the façade as part of the architectural design, rather than added as a visible afterthought.

The smoke ventilation designer determines the required aerodynamic free area (Aa) for each application. WindowMaster can assist with free area calculations from the early design stage.

Applications

- Façade-integrated smoke ventilation
- Smoke shafts serving corridors and lobbies
- Lift shaft smoke ventilation
- Dual-purpose systems: daily ventilation and smoke control from the same unit



Building types

- Residential developments, including apartments and mixed-use schemes
- Commercial and office buildings
- Industrial and logistics facilities
- Atriums and complex mixed-use spaces
- Schools, leisure and healthcare facilities



UK regulatory framework:
ADB, BS 9991:2024 and BS 9999

The applicable design standards in the UK are Approved Document B (ADB), BS 9991:2024 for residential buildings and BS 9999 for commercial buildings.

Buildings up to 18 m: natural smoke ventilation acceptable; corridor AOVs direct to outside permitted

Buildings 18 m to 30 m: smoke shafts preferred over direct corridor AOVs; natural smoke shafts with a minimum 1.5 m² cross section free area are permitted, though BS 9991:2024 encourages

consideration of mechanical smoke extraction as height increases towards 30 m. Mechanical smoke shafts can be built to a minimum 850 mm depth dimension, significantly smaller than a natural smoke shaft.

Buildings above 30 m: mechanical smoke control is required; natural smoke ventilation is not sufficient

ADB specifies free area requirements in geometric terms: 1.0 m² for stairwells and 1.5 m² for lobbies.



Technical reference
Key performance classifications

Reliability:	Re 1000 – tested to open 1,000 times in smoke ventilation mode
Resistance to heat:	B300 – opens within 60 seconds, maintains position at 300°C for 30 minutes
Wind load:	WL 1500
Low temperature operation:	T(-5) – operates at a minimum ambient temperature of -5°C
Snow load:	SL 0
Barrier load:	tested to BS 6180:2011
Watertightness: (FLW 40)	Class 5A (FLW 32) / Class 8A
Aerodynamic free area (Aa):	expressed in m ² and declared in the Declaration of Performance for each unit
Aerodynamic performance: coefficient (Cv)	0.58 (FLW 32) / 0.59 (FLW 40) – measured at 85° blade opening

Full classifications are declared in the Declaration of Performance for each unit.

Fire safety regulations are complex and updated periodically. The information above references Approved Document B, BS 9991:2024 and BS 9999 as published at the date of this document. Always refer to the latest published versions of all referenced standards and consult a qualified fire engineer for the design and specification of smoke ventilation systems for specific building projects.

Relevant at every stage of the design and build process

Smoke ventilation requirements affect every discipline on a building project. Specifying this solution early, at design stage, helps avoid complications later.

Architects and designers

- Integrates into the façade design – two configurations available
- Dual-purpose operation – one unit for ventilation and smoke control
- Engage WindowMaster early for integration guidance
- Flexible sizing and placement options

Engineers and specifiers

- Tested to EN 12101-2 as a complete system
- All performance classifications declared in DoP
- Aerodynamic free area (Aa) available per configuration
- CE marked by FIEGER as ventilator manufacturer
- Control systems tested to EN 12101-10

Developers and building owners

- CE marked product compliant with Construction Products Regulation
- Declaration of Performance for every unit supplied
- The DoP is made available by FIEGER for each unit placed on the market and must remain accessible for ten years; we recommend retaining it in the building O&M documentation
- WindowMaster service agreements support ongoing maintenance obligations under the RRO



Technical reference

AVCP System 1: manufacturing certification

NSHEVs are life safety products and must be manufactured under AVCP System 1 – the most stringent level of assessment under the Construction Products Regulation.

This means: Initial Type Testing by a notified body; Factory Production Control inspected and

continuously surveilled by a notified body; a Certificate of Constancy of Performance (CCP) required before CE marking; and annual inspection by a notified body.

FIEGER holds the CCP for this solution and is subject to ongoing third-party oversight.



Two configurations, both fully tested and CE marked

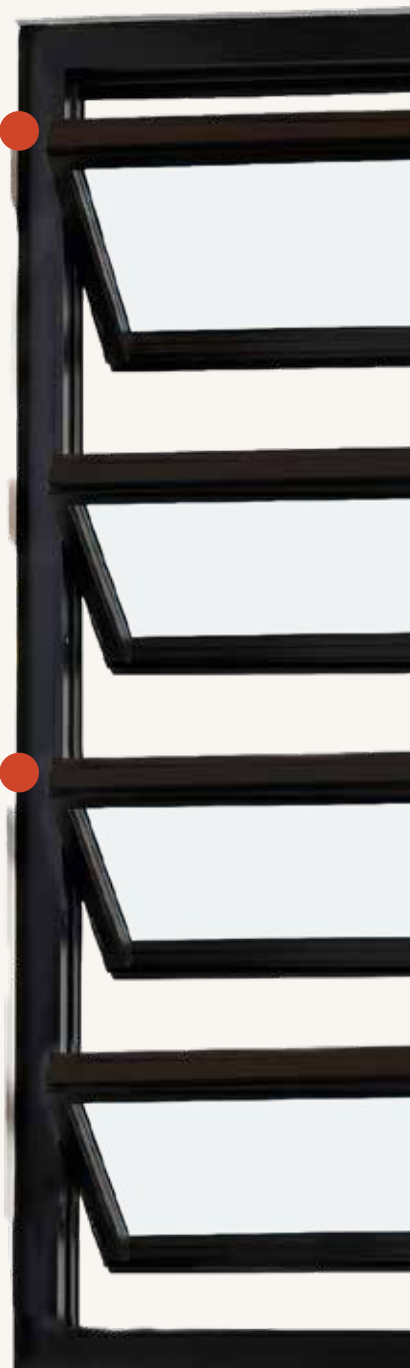
FIEGER manufactures two louvre unit configurations, both tested to EN 12101-2 with WindowMaster actuators. Select the configuration based on your project's glazing and performance requirements.

FLW 32 – louvre window

- EN 12101-2 classified louvre ventilator
- Watertightness: Class 5A
- Glazing: double or triple (28–32 mm)
- Barrier load: tested to BS 6180:2011
- Approved with WindowMaster WML 860 and WML 870
- Aerodynamic free area (Aa): see Declaration of Performance
- Aerodynamic performance coefficient (Cv): 0.58 (at 85° blade opening)

FLW 40 – louvre window

- EN 12101-2 classified louvre ventilator
- Watertightness: up to Class 8A
- Glazing: triple (36–40 mm)
- Enhanced thermal and acoustic performance
- Barrier load: tested to BS 6180:2011
- Approved with WindowMaster WML 860 and WML 870
- Aerodynamic free area (Aa): see Declaration of Performance
- Aerodynamic performance coefficient (Cv): 0.59 (at 85° blade opening)





WindowMaster actuation and controls

The following WindowMaster actuators were included in the EN 12101-2 type testing. Only these types may be used in the CE marked ventilator.

WML 870 – louvre actuator

- Push/pull force: 800 N · Holding force: 2000 N
- TrueSpeed™ controlled movement
- MotorLink® communication
- Compatible with WindowMaster control systems

WML 860 – louvre actuator

- Push/pull force: 600 N · Holding force: 2000 N
- MotorLink® communication
- Compatible with WindowMaster control systems

Technical reference

Tested configuration: important note for contractors

The finished ventilator placed on the market must be identical to the unit produced during the Initial Type Test. Only the WindowMaster WML 860 and WML 870 actuators may be used in the CE marked ventilator. The Declaration of Performance for each unit confirms the specific configuration, dimensions and actuator combination. Contact WindowMaster or FIEGER for the current DoP and field of application documentation.

Control systems: EN 12101-10

Smoke control panels are assessed under EN 12101-10, separately from the ventilator.

WindowMaster supplies:

- CompactSmoke™ – compact panels tested to EN 12101-10; 4–20A supply; up to 10 smoke zones; suitable for small and medium buildings
- FlexiSmoke™ – modular panels tested to EN 12101-10; 20A, 40A or 60A supply; KNX and BACnet IP communication; suitable for larger buildings
- Integration with BMS via BACnet, KNX and Modbus

From first drawing to long-term maintenance

WindowMaster supports your project at every stage. We recommend engaging early, from the design phase, so smoke ventilation is integrated into the building rather than addressed at the end.



Design & Specification

- Free area calculations
- System selection and specification support
- Application and integration guidance for architects
- CFD and indoor climate analysis
- Early engagement from design stage



Installation

- On-site commissioning support
- Handover documentation and training
- Electrical documentation and system CE marking (DoP for complete installation)
 - contact WindowMaster to discuss





Service & Maintenance

- Planned maintenance and service agreements
- Fault diagnostics and remote support
- Third-party approval support – contact WindowMaster to discuss availability in your market
- Hotline support



Ongoing maintenance is a legal obligation

Under the Regulatory Reform (Fire Safety) Order, building owners must maintain smoke ventilation systems in accordance with the manufacturer's recommendations.

WindowMaster service agreements support building owners in meeting this requirement.



WindowMaster can support you early with concept dialogue, application fit and coordination of the solution

Get in touch

We are happy to discuss your project, whether you are at an early design stage or ready to specify.

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Fire safety regulations are complex and are updated periodically. The information in this document references standards and regulatory guidance as published at the date of issue. Always refer to the latest published versions of all referenced standards and consult a qualified fire engineer for the design and specification of smoke ventilation systems for specific building projects. This document does not constitute engineering advice.

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WindowMaster develops, manufactures, and distributes facade automation for natural ventilation, hybrid ventilation and smoke ventilation systems. Since 1990, our intelligent indoor climate solutions have improved indoor air quality and reduced energy consumption, ensuring healthy, high-performing buildings that support occupant wellbeing and safety. WindowMaster actuators and control systems enable seamless, programmable window automation, delivered through smart sensor technology, for accurate and efficient actuation in both new-built and retrofits. Additionally, WindowMaster provides project design assistance, installation, commissioning, integration opportunities along with and training of our intelligent systems.

WindowMaster's headquarters are in Denmark, and we operate globally with sales offices in Germany, the USA, the UK, Ireland, Switzerland, and Norway. For projects located outside of our main markets, WindowMaster cooperates with a vast network of certified distribution and integration partners worldwide.

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