

# Natural Smoke and Heat Exhaust Ventilation (NSHEV) systems



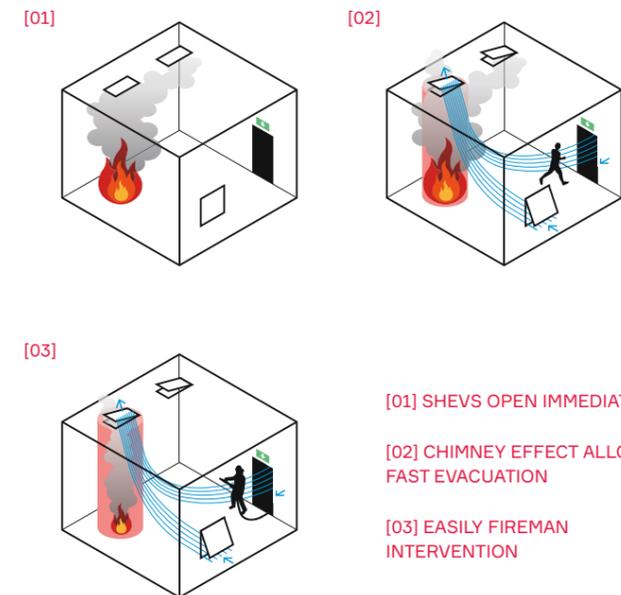
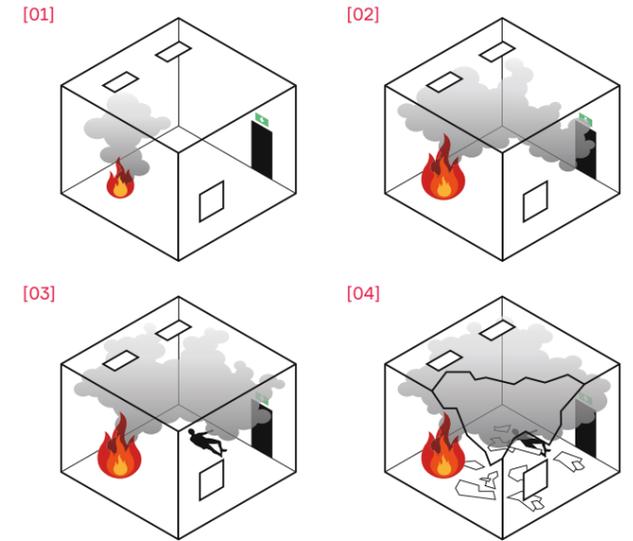
## WHAT IS NSHEV?

In the event of fire inside of a building, smoke and heat gases rise up in the building, creating a layer of dangerous gases under the ceiling, which fill up the room in a very short time.

The smoke precludes the visibility of the emergency exits and impedes the prompt intervention of the firemen.

Moreover, 90% of all fire victims die in consequence of smoke inhalation.

The second critical risk is the flashover generated by the very high temperature inside of the building that could generate explosion or big damages to the building structures, with the consequent collapse.



In order to avoid the above dangerous events, and keep escape routes clear for longer and also to ensure the fire service can quickly and safely locate and extinguish a fire, a Natural Smoke and Heat Exhaust systems must be integrated in fire protection concept.

The NSHEV consists in a system of automatic opening windows installed in the upper sections of the façade or in the roof in order to let the building free from smoke and heat. Ventilation openings in the lower area increase the thermal uplift, generating a “chimney effect”.

The NSHEV can be installed in parallel to sprinkler system increasing positive results and avoiding collateral damages like other fire protection system generate (water-based suppression system, foam-based suppression system, etc.).

**Summarizing, the following benefits can be achieved installing a NSHEV system:**

- › **People protection against smoke inhalation.**
- › **Granted visibility for escape routes and firemen intervention.**
- › **Preservation the building structures.**
- › **Minimum use of extinguishing agents.**

# FAÇADE AND ROOF EXHAUST SYSTEMS

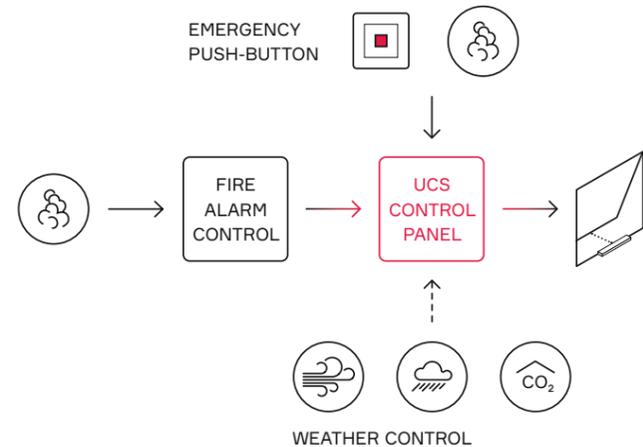
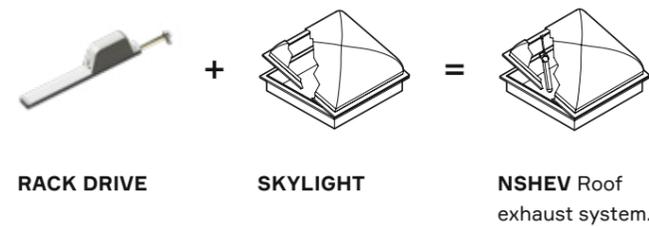
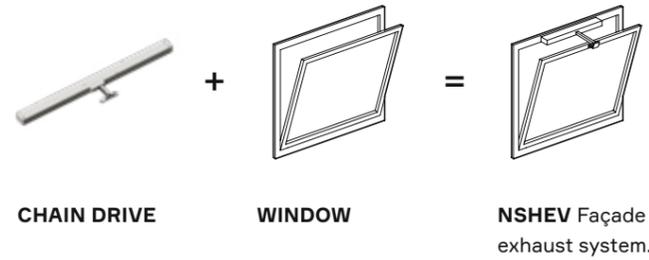
NSHEV systems can be divided in two main categories:

- › Façade exhaust system (Vertical façade).
- › Roof exhaust system.

The NSHEV consists in an electrical drive installed and operating on vertical or horizontal window design and developed to withstand very high heat (up to 300°C) and life-time (up to 10.000 cycles) tests.

The NSHEV in vertical façade is composed by electrical chain drive (or rack or spindle drive) installed on top hung, side hung or bottom hung window.

The NSHEV installed on the upper part of the building, directly on the roof or in the nearest area, is composed by electrical drive (rack or spindle drive) installed on a skylight.



## Smoke ventilation control panel

NSHEV systems need electrical power supply 24Vdc and shall be connected to an electric system for smoke and heat extraction which are composed by a control unit and related smoke and heat detector and/or emergency push buttons. The control unit shall be including power supply backup solution, in order to grant the 24Vdc even if the main power supply 230Vac is down due to the blackout caused by the fire.

In Europe, the smoke ventilation control panel must be certified according to the EN12101-10.

The same configuration might be used also for introducing natural ventilation to improve the quality of the air inside of the building. In such case sensors, like rain detector, wind detector and CO<sub>2</sub> sensors can be connected easily to the smoke ventilation control panel.

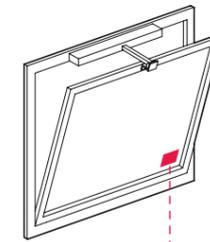
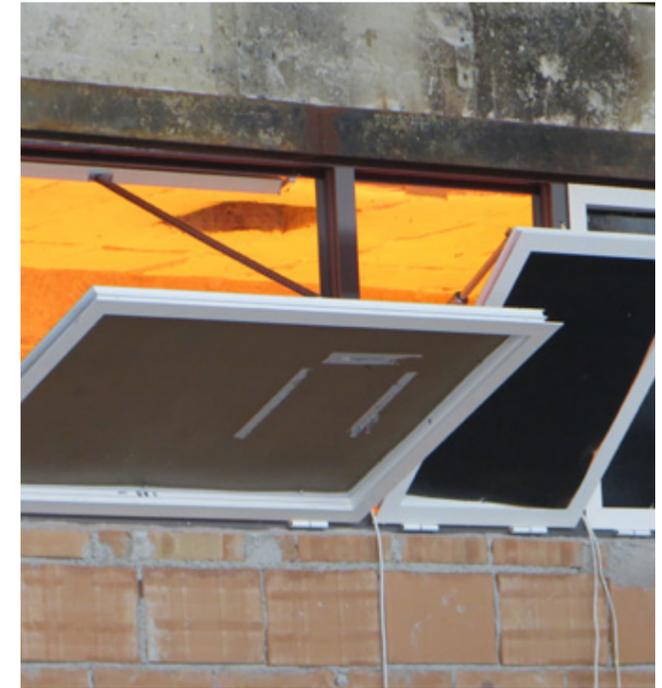
# EUROPEAN CERTIFICATION PROCESS FOR NSHEV

## Initial Type Test (according to EN12101-2)

UCS and notified body perform Initial Type Test according to the EN12101-2 on a single or full range of NSHEVs.

The following documents are the base for the right certification of the NSHEV:

- › **Initial Type Test report:** ITT reports performance and list of components of NSHEV.
- › **Technical catalogue:** including all the instructions related to the assembling procedure of the NSHEV.
- › **Cascading ITT:** regulating the relation between the parties and the NSHEV manufacturer and the FPC (Factory Production Control) process.



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AnyCoLtd., P.O. Box 21, B - 1050 02 123-CPD-001	
EN 12101-2:2003 Natural heat and exhaust ventilator any type	
A <sub>v</sub> = 3,10 m <sup>2</sup> WL 1500; SL 500; T(-0,5); RE 1000; B 300, A1 temperature of thermal initiation device (if fitted)	

## CE Mark and FPC (Factory Production Control)

According to the Construction Products Regulation (CPR), NSHEV must comply with System 1. Under the CPR 305/2011, manufacturers of System 1 Construction Products must have an FPC system performed and approved by a Notified Body and it must be re-assessed annually.

If the audit is passed positively, the manufacturer will be issued a CCP (Certificate of Constancy and Performance).

Then the manufacturer can produce NSHEV following the indication written in the Technical catalogue and using same components listed in the ITT Report.

Manufacturer must declare the performance of NSHEV basing on the test report and report them on the DOP (Declaration of Performance) written on the CE Mark label.