

EU Regulations and **automating windows for** **smoke control**

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Under the Construction Products Regulation, Natural Smoke and Heat Exhaust Ventilators (NSHEV) must be certified in accordance with BS EN 12101-2 or be individually authorised by means of approval. For complete products (ventilator with built-in actuator), the unit will have been tested and can be CE-marked by the manufacturer.

In the case of custom-designed facades and roof designs where an actuator is fitted to a window, such solutions shall have individual approval. This means that the combination of actuator and window has been tested in accordance with BSEN12101:2. It is also possible for a test to be applied to a family of products such that every possible size or orientation does not have to be tested so products within certain parameters are covered by a single test. Most manufacturers of actuators are constantly carrying out tests and most maintain a library of tested combinations of window profile and actuator that can be applied to appropriate situations. Using one of the tested solutions and installing to the manufacturer's instructions will produce a conforming solution. CE marking is possible even if the product is completed at site. Even more important if the product is CE-marked is the question if the CE-marked product is required for the use that it is intended. The standard says clearly that NSHEVs are required to ensure a smoke-free area. This scenario can only work in a single floor and not along multiple floors. At least this is the reason why the intended use of NSHEVs is not possible/necessary in stairwells or other building parts which go over more than one floor.

In other European countries you can find regulations for smaller compartments (up to 1,600m²) where geometric free areas of 1% of the ground floor area delivered by automatic opening vents (AOVs) are sufficient to exhaust this compartment in case of fire.

Automatic opening vents (AOVs) and opening vents (OVs)

Approved Document B of the Building Regulations specifies the requirements for controlling smoke in escape routes from flats. A vent of 1.0m² free area is required to outside at the top storey. For corridors, a vent is required in the corridor of blocks with a floor above 11m. This should be automatically activated by smoke detection in single stair buildings, and can be manually opened in multiple stair buildings where there are multiple escape directions (although opening it should also cause the stair vent to open so in practice it is normally electrically actuated). This vent should be 1.5m² free area. The vent may also discharge into a smoke shaft in which case it can be reduced to 1.0m² free area. Appendix C7 gives a method for calculating the free area of smoke ventilators.

Such ventilators, commonly known as AOVs (automatic opening ventilators) are not considered NSHEVs and there is no mandatory requirement for the product to be tested as a complete unit. British and European Standards are one way of complying with the Building Regulations requirements and BS9991 Fire safety in the design, management and use of residential buildings – Code of practice recommends that OVs opening to outside air should conform to BS EN 12101-2. It is advisable but not compulsory to adhere to the requirements of EN 12101:2 to comply with Building Regulations in such applications.