



Solutions for the planning and design of natural smoke ventilation devices

Planning of buildings on the basis of technical approval for a particular case

Individual smoke ventilation systems in buildings and technical approval for particular cases

ZVEI:

Specialist group for electrically driven smoke ventilation and natural ventilation



Preface



Dipl.-Ing. Bernhard Müller

Behörde für Stadtentwicklung und Umwelt
Amt für Bauordnung und Hochbau
(Development and Environment Department of the Planning and Building Control Authority)

Prüfstelle für Gebäudetechnik
Hamburg
(Testing Center for Building Installations, Hamburg)

Natural smoke and heat ventilation units require general technical approval from the building control authorities to verify that they are suitable for use in accordance with Building Rules List B Part 1.

In Germany the requirements and testing procedures first specified in EN 12101-2:2003-06 was adopted in DIN EN 12101-2:2003-09 “Smoke and heat control systems, Part 2, Specifications for natural smoke and heat ventilation devices“.

Building Rules List B, Part 1, lists only those building products which are covered by harmonized European standards and for which the building control authorities consider it necessary for further information about the required characteristics of the product to be provided in relation to certain uses in the interests of maintaining national safety standards for building construction.

For every type of test set out in DIN EN 12101-2 (wear, temperature, etc.), several different classes are available for selection. Only products which bear the manufacturer’s “CE“ declaration of conformity are permitted to be traded.

The term natural smoke and heat exhaust ventilator is deliberately chosen because the ventilator and control mechanism are tested together. In certain cases this can lead to problems where units are to be installed in a building project which do not comply with the standard because it is intended that the ventilator be used with an alternative control mechanism or fail to comply with the standard for some other reason and are therefore not permitted to bear the CE mark of conformity. Frequent use is made these days of completely glazed curtain walls involving different types of window structure. It is also often the case that structural details are only decided upon at short notice while the building is already under construction. “Technical approval for particular cases” therefore provides the verification in such instances that the ventilators to be used meet all building regulations requirements and are suitable for use in the specific building concerned. Applications for “technical approval for a particular case” have to be submitted to the supreme building authority in the federal states.

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Introduction

Natural smoke ventilation systems are now a firmly established component of fire protection systems. The building regulations of the federal states, the building guidelines covering industrial buildings, multistorey buildings and places of assembly and a whole host of other regulations all contain statutory requirements covering smoke ventilation systems.

The introduction of DIN EN 12101-2 has led to certain changes concerning natural smoke and heat ventilation devices. This publication describes the effects of those changes for architects, specialist planners, building owners, approval authorities, expert consultants and installation companies. The intention is to provide guidelines to help with the actual task of obtaining technical approval for natural smoke ventilation systems. It therefore includes checklists, data sheets, application forms and contact addresses.

Natural smoke ventilation systems with electrically actuated drives - a concept of the future

By combining modern electronics with high-performance drive units and alarm technology, electrically driven smoke and heat ventilation systems are capable of responding and actuating quickly and reliably. The aim of saving lives and protecting property is fulfilled by quick-response tripping via automatic smoke detectors. All safety-related functions are automatically monitored. Short response times and quick actuation of smoke and heat ventilation openings are essential for saving lives in the event of fire. These systems also offer the additional benefit of providing a daily ventilation facility. By combining with other building management control systems, electric motor driven smoke ventilation systems can provide both safety and comfort ventilation.

The right solution, with approval, for every building

The natural smoke ventilation of buildings through facades and roof openings using electric motor driven smoke ventilators has been common practice for many years and is a method used in most types of buildings. Including sports centers, airports, shopping centers, atriums, railway stations and exhibition centers.





Legal consequences

When a building with a smoke and ventilation system is being planned it has to comply with the requirements of building regulations legislation concerning the position, size, number and arrangement of the natural smoke and heat ventilation devices in the roof or facade, at least in respect of ensuring that the escape routes for escape and evacuation are kept free of smoke, in order to avoid the possibility of liability at a later date in the event of a fire. In addition, compliance is also required with all other building-specific aspects arising in the course of the planning work, in order to ensure that all users of the building can leave the building unaided and without injury in the event of fire. For such smoke and heat ventilation systems it is only permitted to use natural smoke and heat ventilation devices which have been given formal certification of suitability for use. This means that the ventilators to be used must either have a CE mark of conformity in the case of standard units or “technical approval for a particular project“ in the case of individually designed facades and roof structures. When submitting the application for building regulations approval, the planner of the building must be certain that the proposed smoke and heat ventilation system will receive verification of suitability for use by the time it is commissioned at the latest, if it does not have such verification already.



EN DIN 12101 Part -2 - Compatibility with architectural freedom?

The system providers and manufacturers of natural smoke and heat ventilation devices provide the market with a variety of tested “standard“ system solutions. The rules for testing these standard smoke and heat ventilation devices are set out in EN 12101 Part 2. Specially manufactured smoke and heat ventilation units, largely made for facades of a high architectural quality or individual design, require “technical approval for a particular case“ as specified in the building regulations of the federal states.

Technical approval for particular cases

Verification of suitability for use of building products in particular cases can be obtained by seeking approval from the relevant supreme building control authority (ministry or senate department)

- for building products which are permitted to be traded exclusively on the basis of the Building Products Act (Bauproduktengesetz [BauPG]) or any other regulations implementing the directives of the European Community, but do not meet their requirements in full
- for non-regulated building products.

(Deutsches Institut für Bautechnik; DIBt dictionary)

This instrument therefore provides legal certainty for the planning, implementation and acceptance of individual, architect/designer planned buildings as well.



Procedures

When the application for building regulations approval is made, the application for technical approval should be submitted to the supreme control authority of the relevant federal state; authority in North Rhine Westphalia is delegated to and coordinated centrally by the chief official in Dusseldorf. Technical approvals for particular cases are granted on a building-specific basis. A list of the addresses of the supreme building control authorities in Germany to which applications for technical approval have to be submitted is included in this publication.

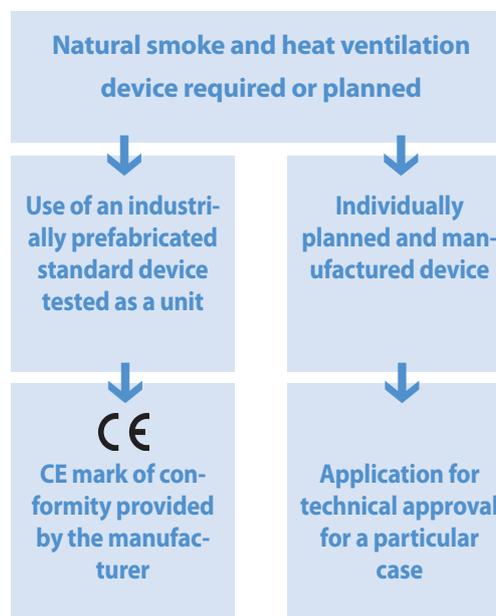
There are only minor differences between the individual regulations of the 16 federal states. Some of the supreme building control authorities provide guidelines to help with the submission of applications and these guidelines and information on procedures are available on the internet. Likewise, there are also regulations covering who is actually permitted to submit the application. Applications for “technical approval for a particular case” are also subject to processing fees. The following diagram showing the decision-making process indicates what has to be done before the application is submitted.

The members of the “Electric motor driven smoke ventilation systems” specialist group in the ZVEI are capable of providing assistance with every phase by advising, providing documentation, test reports for tests carried out elsewhere, etc., but are not themselves permitted to submit the application for technical approval for a particular case. Experience has shown that it is an advantage if planners and manufacturers/installers work together at an early stage. Once all the details have been established, careful preparation of the project can ensure that technical approval for a particular case can be obtained quickly and at no great expense. The application for the granting of technical approval should be submitted as early as possible within the planning process for the building in order to avoid extensive modifications at a later stage, especially amendments to the planning consent/building regulations approval which may be required if the supreme building control authority decides to refuse the application or stipulates special requirements in respect of the properties of the materials involved or any other features of the natural smoke and heat ventilation system.

Which components are covered by the technical approval for particular cases?

The subject matter covered by the technical approval for a particular case, just as in the case of a CE mark of conformity, is never a multiple component smoke and heat ventilation system as a complete unit; instead it is each individual “smoke ventilation device”, i.e. a single vent flap/window with associated opening mechanism.

Diagram of the decision-making process





Specimen submission details for an application for technical approval for a particular case

We recommend, in the first instance, following the guidelines on procedures and application submission issued by the supreme building control authority. Unless stipulated otherwise by the authority or where any specific state should not have any such guidelines, we recommend that two copies of the application and associated enclosures be submitted.

To

the Oberste Bauaufsichtsbehörde des Landes ...

Applicant

- Owner/developer or (on behalf of the owner/developer)
- Architect or
- Specialist planner/designer or
- In exceptional cases only, other people involved with the building

Information about the proposed building

- Description, address
- Subject of the application (building product, building technique)
- Owner/developer
- Responsible supreme building control authority
- Person responsible for drawing up the plans; including reference number of the application for planning consent/building regulations approval if applicable

The following enclosures should be included with the application, if available

- Requirement for technical approval for a particular case
- Designation and description of the building product (natural smoke and heat ventilation device)
- Details about the manufacturer or installation company (if known at this stage)
- Description of the installation situation
- Quantity and dimensions of the building products/building techniques to be used
- Description of deviations from the applicable hEN 12101-2 standard or from existing approvals and appraisal certificates
- Proposals for the declaration of compliance for the proposed building products or building techniques
- Appraisal certificates and consultant's reports possessed by the applicant
- Other verification documents relating to the building product or building technique
- Description of the fire protection strategy for the building, especially for special types of buildings and buildings with special uses; in particular a description of requirements in respect of the operation of the natural smoke and heat ventilation device for keeping the building free of smoke and in relation to evacuation purposes within the framework of the individual fire protection strategy.
- If applicable, details of any technical approvals for particular cases which have already been obtained for the same subject of the current application, including the file reference.
- Statements from expert consultants





Supreme building control authorities (Oberste Bauaufsichtsbehörden)

Baden-Württemberg

Wirtschaftsministerium Baden-Württemberg
Theodor-Heuss-Str. 4
70174 Stuttgart
Tel. (0711) 12 30 Fax (0711) 12 32 126
poststelle@wm.bwl.de
www.wm.baden-wuerttemberg.de

Bayern

Oberste Baubehörde im Bayerischen Staatsministerium des Innern des Freistaates Bayern
Franz-Josef-Strauß-Ring 4
80539 München
Tel. (089) 21 92 02 Fax: (089) 21 92 13 281
www.bayerisches-innenministerium.de/bauen

Berlin

Senatsverwaltung für Stadtentwicklung Berlin
Referat IV D - Oberste Bauaufsicht
Württembergische Str. 6
10702 Berlin
Tel. (030) 90 12 57 05 Fax (030) 90 28 32 44
www.stadtentwicklung.berlin.de/bauen

Brandenburg

Ministerium für Infrastruktur und Raumordnung (MIR) des Landes Brandenburg
Oberste Bauaufsicht (Referat 24)
Henning-von-Tresckow-Str. 2-8
14467 Potsdam
Tel. (0331) 8 66 83 30 Fax (0331) 8 66 83 68
www.mir.brandenburg.de

Bremen

Der Senator für Umwelt, Bau, Verkehr und Europa der Freien Hansestadt Bremen
FB-01-Bautechnik
Ansgaritorstraße 2
Tel. (0421) 3 61 24 07 Fax (0241) 3 61 20 50
www.baumwelt.bremen.de

Hamburg

Behörde für Stadtentwicklung und Umwelt der Freien und Hansestadt Hamburg
Stadthausbrücke 8
20355 Hamburg
Postfach 30 05 80
20302 Hamburg
Tel. (040) 42 84 00 Fax (040) 42 84 03 196
fhh.hamburg.de/stadt/Aktuell/behoerden/
stadtentwicklung-umwelt

Hessen

Hessisches Ministerium für Wirtschaft, Verkehr und Landesentwicklung
Referat VI 2
Kaiser-Friedrich-Ring 75
65185 Wiesbaden
Postfach 3129
65021 Wiesbaden
Tel. (0611) 81 50 Fax (0611) 81 52 225
www.wirtschaft.hessen.de

Mecklenburg-Vorpommern

Ministerium für Verkehr, Bau und Landesentwicklung des Landes Mecklenburg-Vorpommern
Abteilung 2
Schloßstr. 6-8
19053 Schwerin
Tel. (0385) 58 80 Fax (0385) 58 88 099
www.mv-regierung.de/vm

Niedersachsen

Ministerium für Soziales, Frauen, Familie und Gesundheit
Referat 505
Heinrich-Wilhelm-Kopf-Platz 2
30159 Hannover
Tel. (0511) 12 00 Fax (0511) 12 04 298
www.ms.niedersachsen.de

Nordrhein-Westfalen

Ministerium für Bauen und Verkehr des Landes Nordrhein-Westfalen
Gruppe VI A
Jürgensplatz 1
40219 Düsseldorf
Tel. (0211) 3 84 30 Fax (0211) 3 84 36 01
www.mbv.nrw.de

Rheinland-Pfalz

Ministerium der Finanzen Rheinland-Pfalz
Referatsgruppe Baurecht und Bautechnik
Kaiser-Friedrich-Straße 5
55116 Mainz
Tel. (06131) 16 0 Fax: (06131) 16 43 31
www.fm.rlp.de

Saarland

Ministerium für Umwelt des Saarlandes
C/Sb Bauaufsicht
66117 Saarbrücken
Tel. (0681) 501 00 Fax (0681) 501 45 21
www.umwelt.saarland.de

Sachsen

Sächsisches Staatsministerium des Innern
Referat 53
Wilhelm-Buck-Str. 2
01097 Dresden
Tel. (0351) 56 40 Fax (0351) 56 43 199
www.sachsen.de/de/bf/staatsregierung/ministerien/index_innern

Sachsen-Anhalt

Ministerium Landesentwicklung und Verkehr des Landes Sachsen-Anhalt
Turmschanzenstr. 30
39114 Magdeburg
Tel. (0391) 5 67 01 Fax (0391) 5 67 75 10
www.mbv.sachsen-anhalt.de

Schleswig-Holstein

Innenministerium Schleswig-Holstein
Düsternbrooker Weg 92
24105 Kiel
Tel. (0431) 98 80 Fax (0431) 28 33
www.schleswig-holstein.de
unter „Landesregierung und ihre Ministerien“

Thüringen

Thüringer Ministerium für Bau und Verkehr
Werner-Seelenbinder-Str. 8
99096 Erfurt
Tel. (0361) 3 79 12 20
www.thueringen.de/de/tmbv

Summary

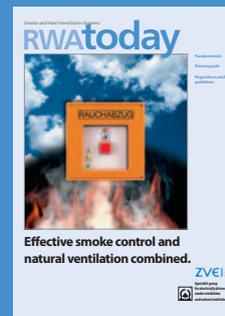
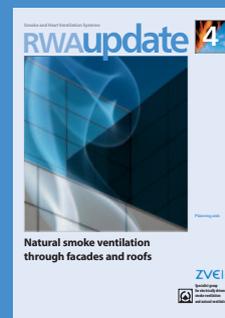
The member firms of the “Specialist group for smoke and heat ventilation systems” offer individual design solutions for natural smoke and heat ventilation systems, embracing both the supply of standard devices with certification as complete units as well as assistance in obtaining technical approval for particular cases. This ensures that a wide diversity of building openings can be used for required smoke ventilation. For architects and planners the member firms of the ZVEI are competent partners for the implementation of solutions for development projects, helping to achieve the optimum combination of intelligent technology and architectural requirements. We look forward to assisting you with the realization of your development project. You will find your specialist ZVEI firm at:

www.ZVEI.org/sicherheitssysteme or www.ZVEI-errichter.de



Individual smoke
ventilation systems
in buildings

More publications are available from your specialist ZVEI firm or direct from the ZVEI.



All publications are also available in German.

ZVEI:



Specialist group
for electrically driven
smoke ventilation
and natural ventilation

ZVEI

Fachverband Sicherheit

Lyoner Str. 9

D 60528 Frankfurt am Main

Phone: +49 - 69 63 02-250

Fax: +49 - 69 63 02-288

E-Mail: info@RWA-heute.de

www.RWA-heute.de

Presented by ZVEI member:

**Building Automation
for smoke and heat exhaust
and for ventilation**



HAUTAU GmbH
Wilhelm-Hautau-Str. 2
D 31691 Helpsen

Phone +49-5724 / 393-0
Fax +49-5724 / 393-124
Info@HAUTAU.de
www.HAUTAU.de

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