Flexible, textile smoke and fire protection systems

STÖBICH® FIRE PROTECTION

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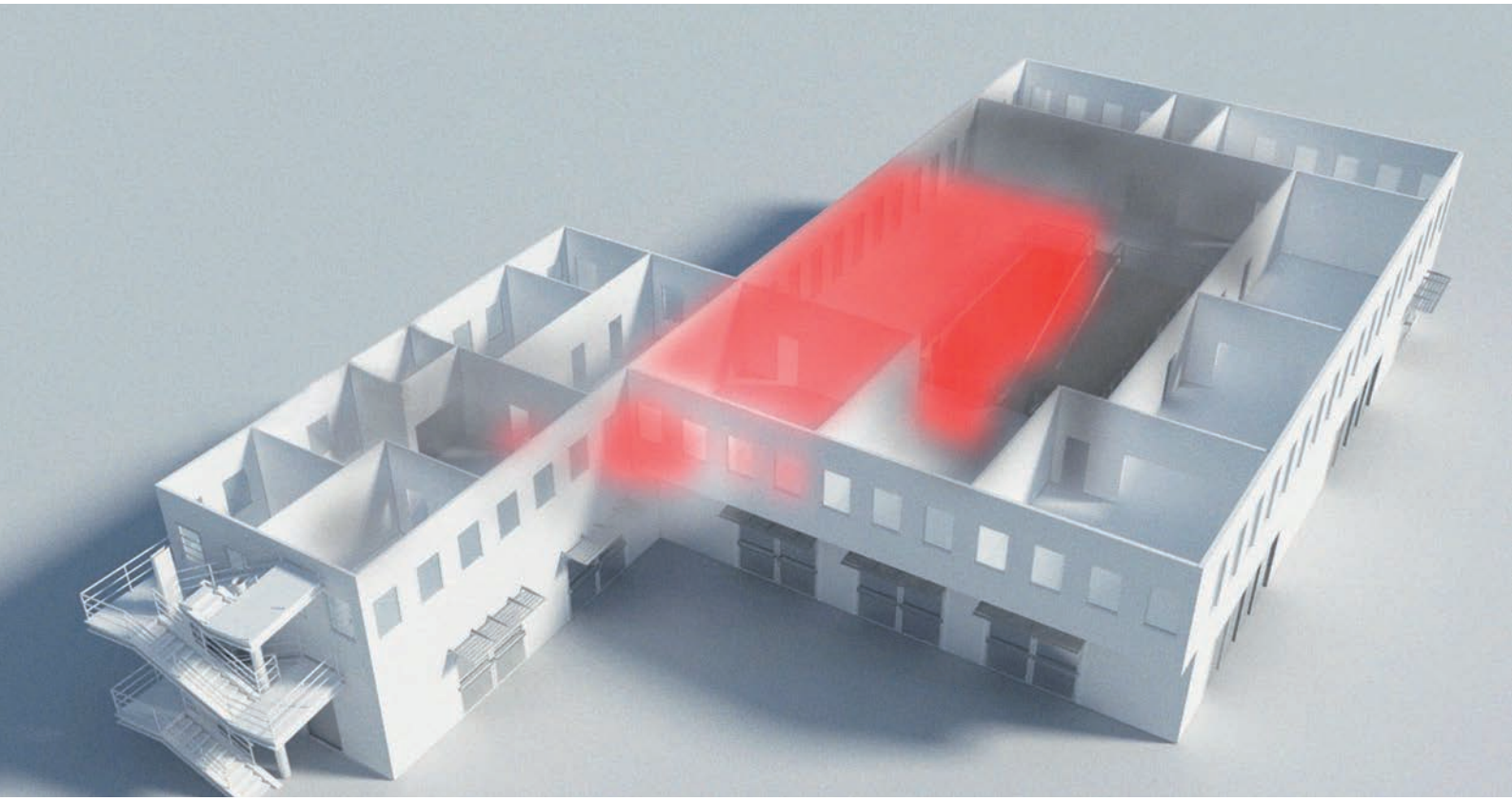
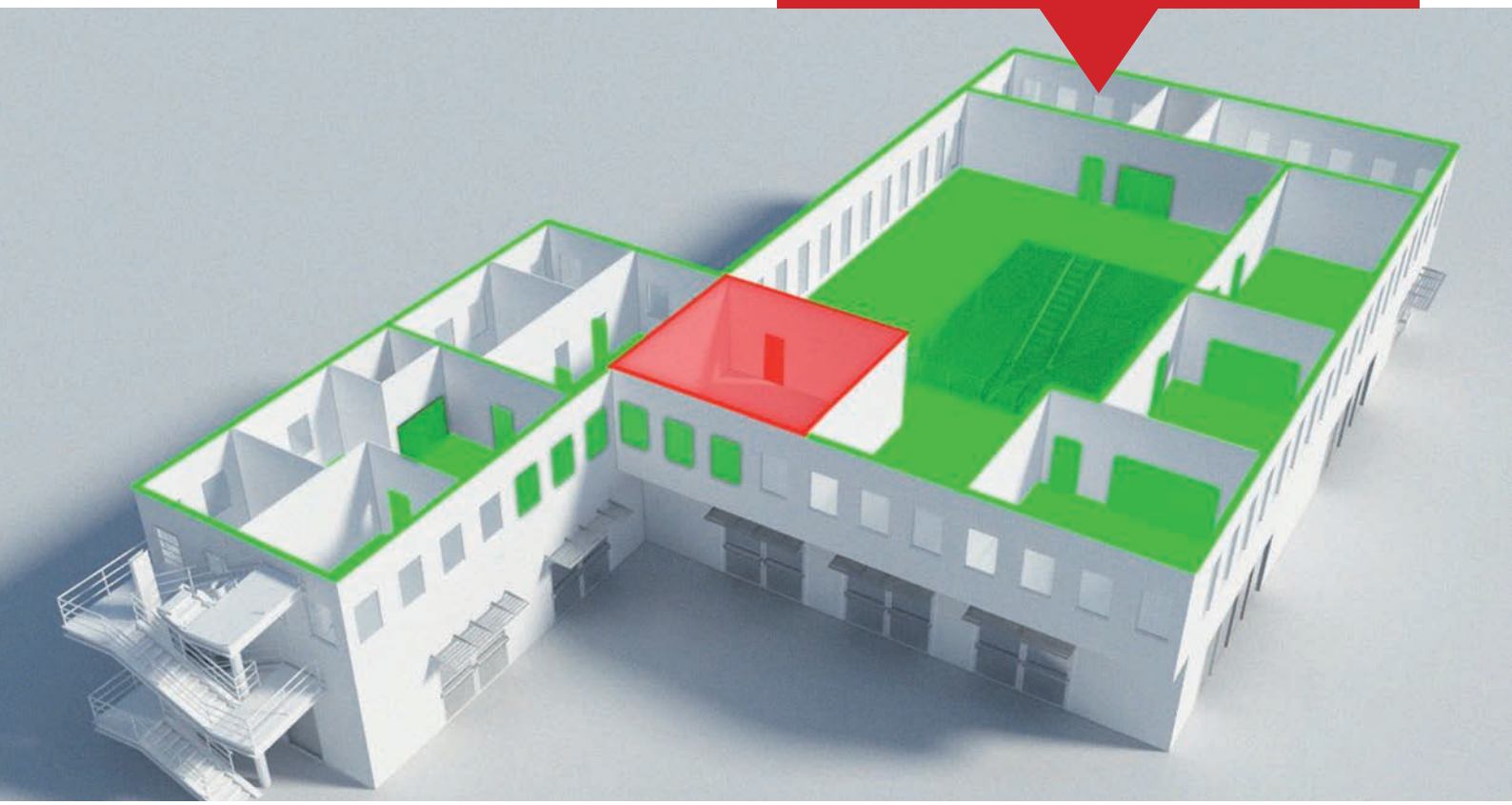


- **Reliable protection against flames and smoke.**
- **Successful since 1980.**
- **Safety through engineering.**
- **Global market leader ‚made in Germany‘.**



Global market leader for building-based fire protection

The company Stöbich Brandschutz GmbH develops, manufactures and installs individual and standard structural fire protection solutions across the world and is one of the most innovative global leaders in the industry. Since 1980 this Goslar-based family company has been making its marks in the field of fire and smoke shielding systems. The developments began more than 30 years ago with the invention of the first fire protection closures for non-separated continuous transport systems. In addition to the conveyor system closure division, Stöbich has also become a specialist and market leader in textile fire protection over the past 20 years. Using state-of-the-art high-performance fabrics at the production site in Lower Saxony, the company produces textile fire protection solutions for almost all application areas that are distinguished by their flexibility in terms of design and architecture.

• 90 % of all fire casualties are killed by smoke.

Smoke curtains DIN EN 12101-1

A smoke curtain is part of a smoke clearance system that also comprises other parts such as natural smoke and heat extraction units (EN 12101-2) and mechanical smoke and heat extraction units (EN 12101-3). Smoke curtains limit the movement of fire vapours within a building in the event of fire.
Smoke clearance primarily involves protecting persons by maintaining good visibility, whilst heat extraction primarily focuses on protecting the building and the safety of the fire service team when fighting fires. However, the benefits of smoke and heat extraction should always be seen in combination in the context of person protection and the protection of property. For instance, ensuring good visibility not only serves the rescue of persons, but also early and targeted extinguishing of the fire by the fire service, which ultimately helps to preserve the building.

Minimum building regulation requirement

CE symbol
In Part B of the List of Construction Rules in section 1.17.3, CE conformity with EN 12101-1 is specified as proof of usability.

According to test standard EN 12101-1, the following tests are required:
Fire test, endurance function test, fabric leak test and building materials class of the entire smoke curtain with respect to the fire behaviour.

EXCERPT OF SMOKE CURTAINS

The smoke extraction concept and the associated requirements for the smoke curtains can be defined based on: DIN 18232-2 und 5, Calculation method DIN 18232-2 and 5 model tests

Residual opening in the overlap area
We supply smoke curtains up to 50 metres in one piece, therefore 0 % leak rate in the overlap area. This prevents a possible residual opening.

Residual opening near the edge
Rod guide guarantees positive-locking fabric edge clamping across the entire height. Therefore leaks near the edge under compression load 0%. Residual openings under compression load near the edge are avoided.

Residual opening through deflection
The heavy weight of the closure strips of 4.6 to 13.5 kg/m means that they do not sway as much and prevents any leakage problems.

Space requirements
Our construction is designed for minimum space requirements across the entire width. For our systems with corresponding control system and higher drive output, regardless of the unrolling length and 30 m system width, one doe snot require a drive aggregate for every module.

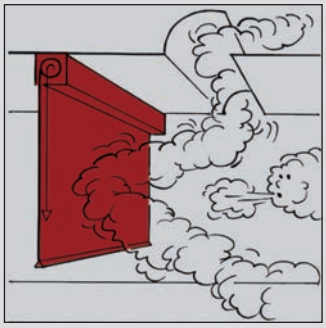
Ceiling closure and closing direction
Our system also offers a more attractive closure strip stopper to the ceiling mirror with a spring-bound closure strip or shadow groove joint. The systems can close in different directions and fits into your protection concept.

Reaction time and unwinding length
Unwinding speeds are achieved that reach an unwinding length of 8,500 mm to 20 m in 60 seconds.

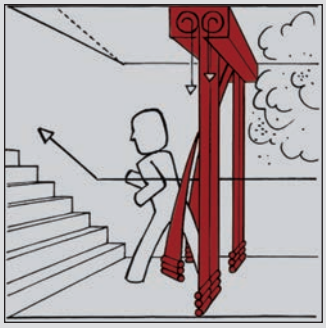
Temperature class
We satisfy higher safety concept standards and can supply our systems in various temperature and time classes.

Safe escape routes

Smoke removal systems optimised



Cross currents are influenced



Escape routes for Person flows

Protection objectives

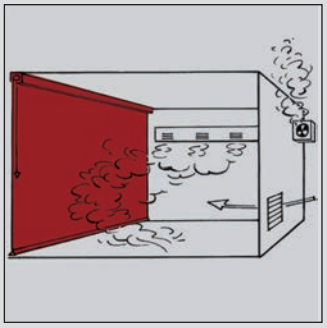
Our smoke curtains offer **safety for escape and emergency routes**. The systems are flexibly adapted to the local situation in order to meet the requirements of the smoke curtain classification in terms of leaks, temperature loads and time classes.

Smoke curtains optimise the efficiency of **smoke extraction systems**. The higher the smoke layer, the smaller the exhaust air opening surfaces and the 1.5 times larger supply air opening surfaces.

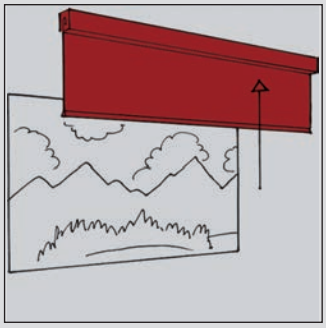
In the case of **cross-currents** that hinder the extraction of the smoke as a result of the weather - especially in high rooms - smoke curtains are used to ensure safe currents.

If in unfavourable situations in buildings the **escape routes** need to be combined with smoke curtains, the continuous and passable system Stripecoil is an alternative. Large flows of persons (depending on the width of the system, approx. 200 person/minute) can pass through the curtain with no significant restrictions. Handicapped persons with mobility equipment or children's prams can also escape without any additional effort through the separately designed fabric strips of the Stripecoil system.

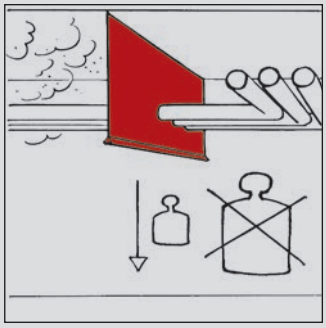
Better fire-fighting for the fire service



Room division for mechanical smoke extraction



Clearance of the field of vision



Very low weight

The formation of smoke sections prevents smoke spreading throughout the room. This makes it easier to identify the actual source of the fire, and the fire service can **fight the fire** more easily.

Smoke curtains serve to **divide rooms for mechanical smoke extraction**. This means much lower investment costs.

Hidden smoke curtains not only satisfy architectural standards in terms of function and protection, they also ensure that the **field of vision remains clear**.

Permanently installed smoke curtains made of textile structures have the advantage of being very lightweight, about 1 kg/m^2, and allowing continuous tubes, ventilation ducts or cable trays to be shielded easily.

SMOKE PROTECTION CURTAINS

- **70 % of all damage is caused by smoke.**

Smoke protection curtains

DIN EN 18095 acc. to approval Z-6.62-2264

When closed, smoke curtains (RSV) prevent smoke entering whilst a fire is developing so that the room behind the smoke curtain can be used to rescue humans and animals and there is enough time to save property without having to use respiratory equipment.

Small or large **openings in walls** can be sealed in a smoke-tight manner even if there is little space available and without compromising the architectural concept.

These automatic system are very small and therefore very easy to integrate. If there are additional fire-resistance requirements, fire protection fabrics are used to achieve the protection objectives up to E 120, EW 90 and up to EI 120 in connection with compensation measures.

In the case of **openings in fire compartment ceilings**, it is possible to close these in a smoke-tight manner in line with the protection objectives despite there being little space or architectural considerations. Thanks to its small size, little space is required to install these automatic system and they satisfy the wishes of design-conscious architects ideally (additionally tested based on DIN EN 1634-3 und DIN EN 1363-1).

Low entrance openings in underground garages can be shielded by subdividing large rooms or, in the case of entrances or exits, taking into the account the space available in the camber area and at the side of the opening.

Stöbich systems ensure that smoke cannot be transferred from one storey to the next or from one room to another via the **elevator shafts**.

Fire loads in escape routes according to MBO are not allowed. In the event of fire, our products guarantee safety, even if there are **drink or snack dispensing machines** in **niches** in corridors or screens installed in walls thereby creating a certain fire load.

Also, safe shielding is achieved in **nurses' rooms or receptions** without the need for the usual walls or glass panes which would disturb communication required for day-to-day operations.

The connection between **kitchens and canteens in hazardous areas** is shielded securely with out smoke curtains without any great restrictions.

Smoke tightness

This is the capability of a part to reduce or prevent the passage of smoke from one side of the door to the other side. The following performance levels are defined:

DIN EN 13501-2:

S_{200}: if the largest leak rate, measured both at the ambient temperature and also at 200°C and up to a pressure of 50 Pa is not exceeded for a single-leaf door system 20m³/h and for a two-leaf door system 30m³/h

Products: Fiberseal-RS-1, Fiberseal-H

S_a: if the maximum leak rate, measured at ambient temperature and up to a pressure of just 25 Pa does not exceed the value of 3m³/h per metre gap length between the fixed and mobile parts of the door unit (e.g. between the door leaf and door frame), except the leak at the sill.

Products: Fiberseal-RS-1, Fiberseal-H

DIN 18095-3:

RS: The leak rate of the door with respect to the normal state at a differential pressure during the test between 0 and 50 Pa may not be greater than 200°C both at room temperature (between 10°C and 40°C) and also at the test medium (air) temperature

- 20 m³/h for single-leaf smoke curtain doors
- 30 m³/h for two-leaf smoke curtain doors.
- 50 m³/h for single and two-leaf smoke curtain gates

Smoke curtains should be handled in the same way as single-leaf smoke protection doors.

Products: Fiberseal-RS-1, Fiberseal-H

Differences to textile closure systems and gates

Fire protection doors and gates are generally used for standard situations. However, the use of textile closure systems offers significant benefits over conventional solutions:

1. A **curtain needs little space**. The fabric is placed in small cases so that they can be fitted into and onto existing ceiling systems and hidden. There are no swivel areas that need to be kept free, and also no valuable space is required compared to a sliding gate.

2. A further advantage of the fabric technology is that it can **close very large openings.** Stöbich Brandschutz has a general building authority approval for up to 7 x 4.5 m.

3. A smoke curtain has a very **low weight**. Just a few dozen kilograms per running metre need to be taken into account in the plans. Our systems can also be installed on lightweight wall systems.

4. There are significant **costs savings** to be made if textile systems are used to close large openings.

5. Functional reliability is high because no rubbing sealing system can impact on the closing process and the sealing function.

FIRE PROTECTION CURTAINS

• Fire protection that is concealed.

Fire protection curtains

Fire protection curtains serve to close wall of ceiling openings in the event of a fire. Their constructional design (unrolling and folding equipment) and the use of various fabrics opens up a wide application spectrum and different protection objectives or classifications and time classes. Cases and guide rails of the flexible systems are combined almost invisibly into the building structure and offer lots of design freedom for complex open room concepts.

Large openings in walls and ceilings that create fire compartments can be closed in line with protection objectives even though there is little space available or architectural requirements need to be considered. These automatic system are very small and therefore very easy to integrate into the architecture.
The demands on fire protection curtains are high especially in buildings with representative architectural concepts. Usually they need to be installed invisibly and seal off the room. Also, in some cases **room-creating** curtains needs to go around corners so that several walls or glass panels are not needed. This can be achieved without restriction by using lateral guide rails or columns. The fire protection curtain Fibershield-S creates a polygon-like room without the need for annoying guide rails that are needed to achieve the required level of tightness.

The flat case design (12 cm in standard model) allows easy integration into the ceiling.

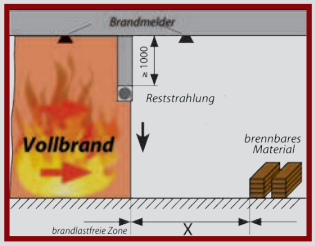
If a **building or building parts meet across corners or facade openings with small building clearances** and are separated by a fire wall, there may be no openings within a distance of 5 m from the fire wall. This does not apply if the buildings or building parts come together at an angle of more than 120°over the corner.

This requirement can be achieved by using Fibershield-P and Fibershield-F systems: designed for inside and outside buildings and proven thousands of times over. In these tight and self-closing shielding systems, standard windows (VSG) without fire protection panes are used. The user profits from the unrestricted use of the windows and room comfort.

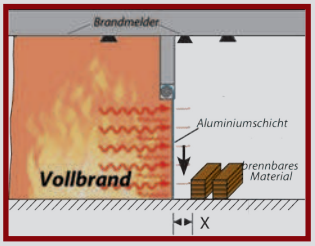
Roofs of attached parts, which are connected to **wall with openings** or to walls that are not at least fire-retardant, need to be as fire resistant as the ceilining of the connected building within a distance of 5 m from these walls.

Textile fire protection closures are installed in the building to prevent the **transfer of fire from one storey to another** and are controlled by fire alarm systems automatically, for instance by means of thermal triggers in the event of a fire.

Fire risks for machines and systems that are at special risk are limited by the **creation of sections** within fire compartments. The walls and ceiling necessary for this can be created with the Fibershield closures. Also, the rooms created in this way are flooded with high-pressure mist extinguishing systems or gas extinguishing systems to put out the fire. The Fibershield closure systems are designed depending on the allowed leaks. Due to the strict tightness requirements for gas extinguishing systems, systems with guide rails are used.

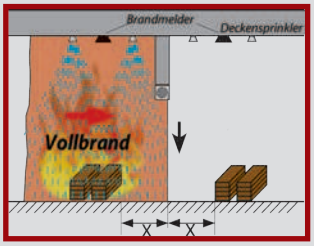


Brick partition (E)
is the capability to withstand the fire so that the penetration of flames or hot vapours can be prevented.
E 90, E 120, E 240



Brick partition with Limitation of the radiation penetration (EW)

Radiation limitation is the ability to reduce fire transfer to neighbouring materials by means of radiated heat.
EW 30, EW 60, EW 90, EW120

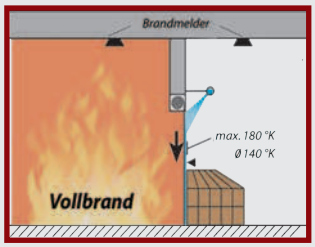


Heat insulation in case of exposure to fire with dense sprinkler protection (E + Sprinkler)

Heat insulation is the ability to prevent fire transfer by means of heat. The transfer must be limited so that neither the surfaces facing away from the fire nor materials close to these surfaces ignite and persons can be protected.
Protection objectives such as: EI 90, EI 120, EI 180

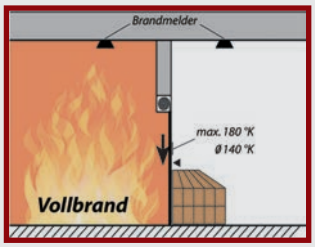
Protection objectives/classifications

The creator of the fire protection certificate must observe the technical building provisions and achieve the general protection goals (see MBO 2002 §3(1)) and the fire protection objectives (see MBO 2002 §15). It is possible to deviate from these technical building provisions if the protection objectives can be implemented equivalently using a different solution (e.g. a fire protection curtain, possible in connection with compensation measures) (see MBO 2001 §3(3)).



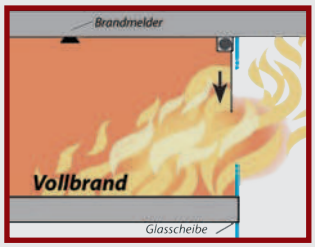
Heat insulation in case of exposure to fire with water film (E + Water film)

(surface temperature is less than the allowed limit values)
EI 90, EI 120, EI 180



Heat insulation Fire effect without water (EI dry)

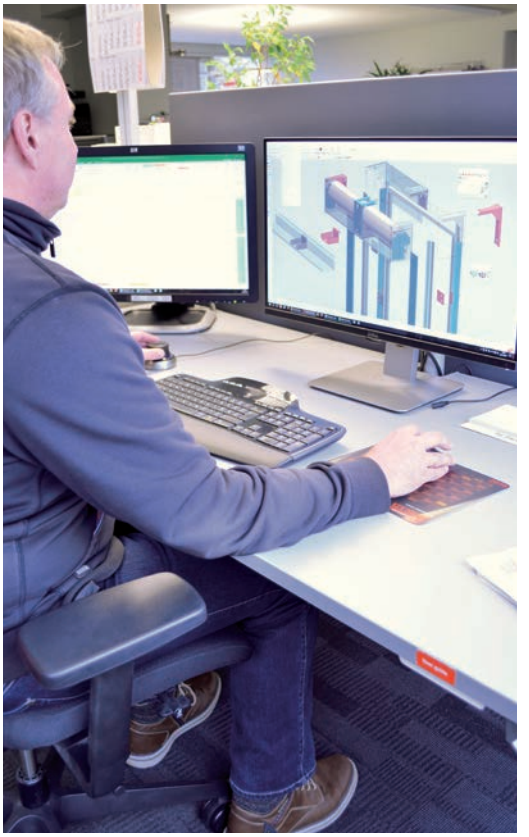
EI 30, EI 60, EI 90, EI 120



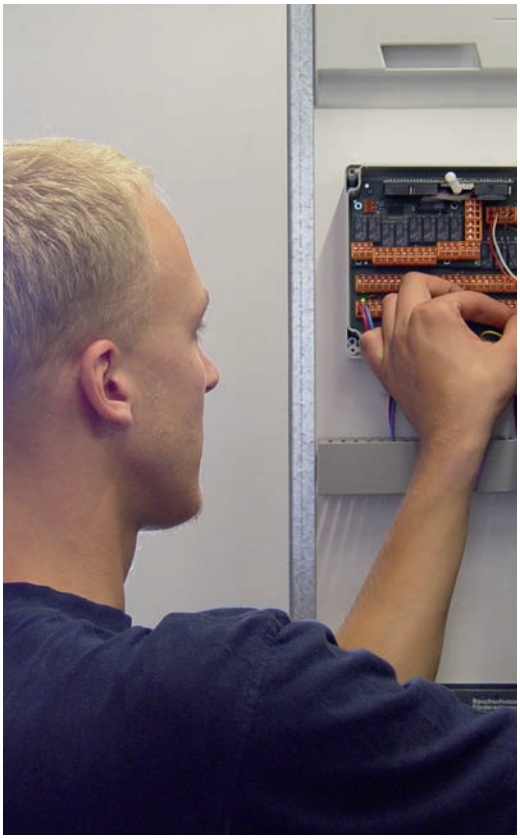
Prevention of flames spreading from storey to storey (with) railing (storey spread)

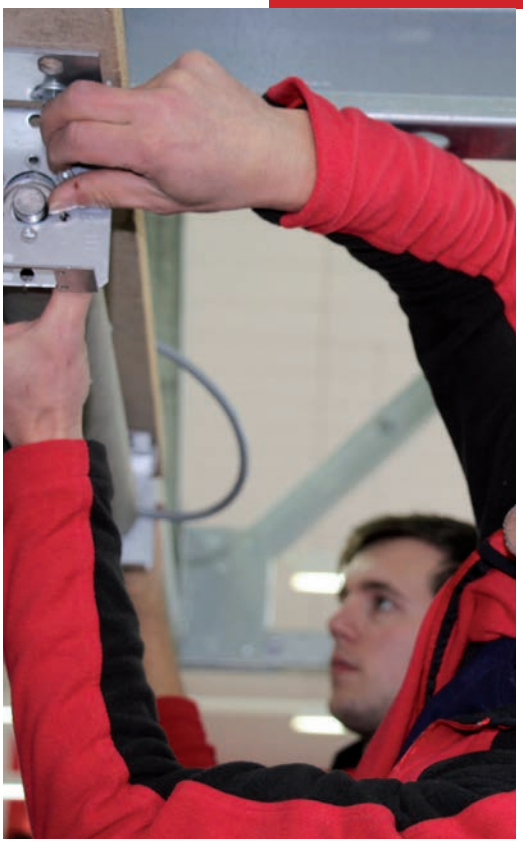
The necessary 1m high railing (camber) is automatically created in the event of a fire.

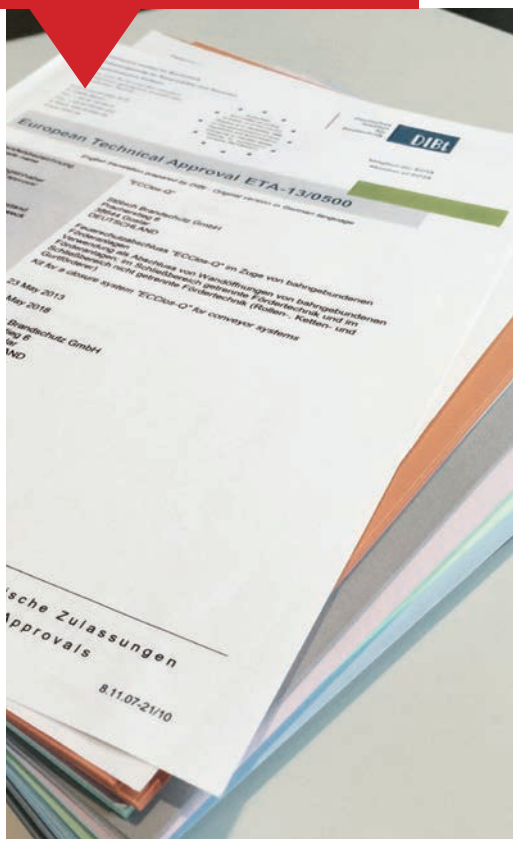
In accordance with the general building approval Z6-60-2127 the fire protection curtain is able to prevent flames and smoke from entering for 90 minutes (see E90 according to DIN EN 13501 Part 2, tested to DIN EN 1634 Part 1). Any thermal insulation effect required to reach the protection goal can be realised alternatively by means of the described measures. Proof of suitability is provided by one or several test reports.
The following table describes which protection goals (not classifications) that are conventionally reached in compliance with the technical building provisions (stated classifications according to DIN EN 13501 Part 2, tested to DIN EN 1634 Part 1), can be implemented alternatively by the installation of a fire protection curtain.



YOUR PROJECT-SPECIFIC DOCUMENTS



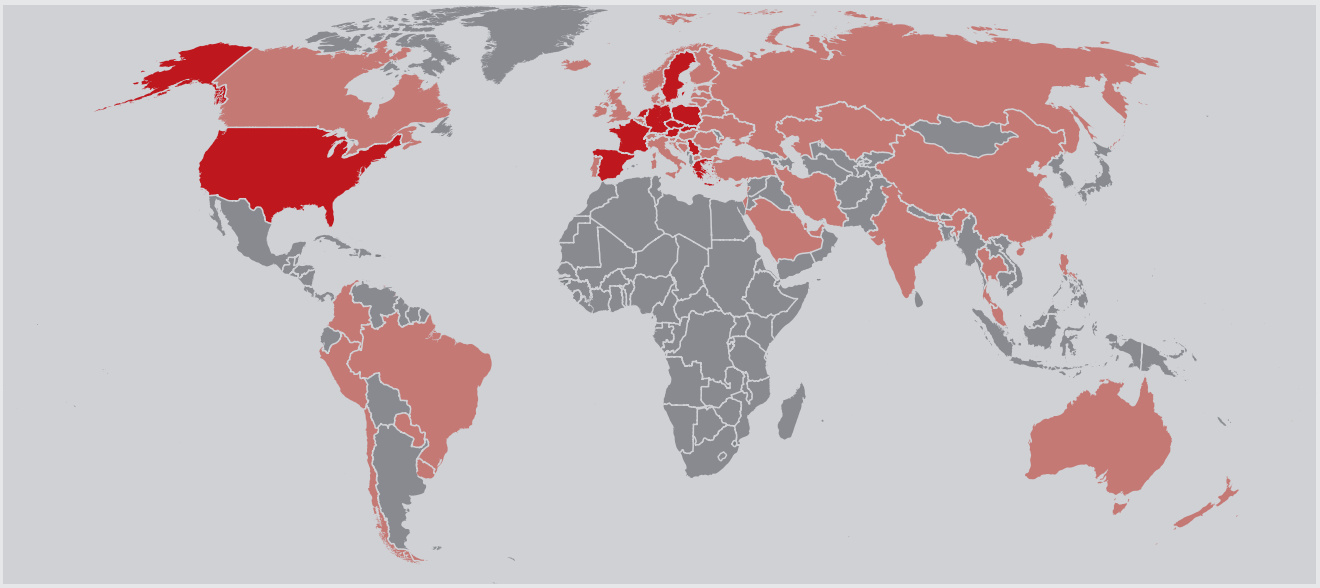




One-stop-shop

The company Stöbich Brandschutz is part of the Stöbich Group. Thanks to the numerous upstream and downstream activities by other companies in the group, we are able to bundle and confirm the quality of our competence, know-how and work in all processes and to ensure the quality of our actions.
One-stop-shop!

STÖBICH BRANDSCHUTZ - THE GLOBAL MARKET LEADER



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- USA
- Uzbekistan
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- White Russia

German Branch Offices

Branch office North/headquarters
Stöbich Brandschutz GmbH
Pracherstieg 6
38644 Goslar
Telefon +49 (0) 5321 5708-19
Telefax +49 (0) 5321 5708-88

Branch office South
Stöbich Brandschutz GmbH
Gewerbehof 8
73441 Bopfingen
Telefon +49 (0) 7362 9614-0
Telefax +49 (0) 7362 9614-50

Branch office East
Stöbich Brandschutz GmbH
Geltestraße 12
06188 Landsberg OT Queis
Telefon +49 (0) 34602 552-0
Telefax +49 (0) 34602 552-50

Branch office West
Stöbich Brandschutz GmbH
Max-Planck-Straße 13
59423 Unna
Telefon +49 (0) 2303 98689-17
Telefax +49 (0) 2303 98689-50

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