

Project Titel: Development of an automatically activated and high temperature combustion gas tight flame protection barrier based on high temperature resistant textiles
(Short: AbschirmTec)

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Wenzel & Hoos GmbH

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Mission Statement:

In Germany there are **more than 170,000 fires every year**. Due to the increasing number of electronic devices, toxic components are increasingly contained in the flue gas. Even a lung filling of the toxic components can have fatal consequences. In 2017, 2922 cases of toxic effects from other gases, vapours or other smoke and 3694 cases of toxic effects from carbon monoxide were diagnosed in German hospitals. This corresponds to annual treatment costs due to fire gas inhalation of approximately **31 mio. €**. In addition to personal injury, inventory damage also occurs due to the spread of smoke gas in the event of fire. Inventories can be contaminated or machines can start to rust due to corrosive components in the smoke gas. These consequential damages account for approx. 50 % of the extent of damage in case of fire.

Fire protection doors are used for fire containment. However, fire protection doors are only gas-tight to a limited extent. Smoke protection doors use EPDM seals and are not fire-resistant. Special multifunctional doors combine fire and smoke protection. **However, currently used room closing elements for the containment of the spread of smoke gas are not completely gas-tight, as they have a leakage rate.** Furthermore, the room closure elements are only **tested for flue gases up to 200 °C**. **Therefore the aim of the research project is to develop a hermetic barrier against fire and high-temperature flue gas.** This will on the one hand protect potential victims inside a room and on the other hand prevent the toxic flue gas from spreading and depositing on the inventory.

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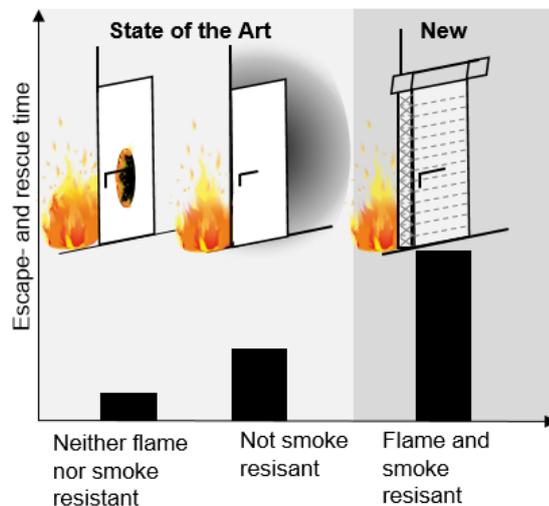
Mein Zeichen: LH/ KH

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Solution:

The textile barrier is able to react autonomously to fire events and effectively seals off a room from flames, smoke and fire gases. The basic structure of the barrier consists of a new type of metallic frame which can be installed in wall openings. Furthermore, the frame contains a storage space for the shielding textile in the head part and a mechanism for closing the wall opening with the shielding textile. The shielding textile consists of a multi-layer glashtextile with a gastight coating to directly prevent the penetration of smoke and combustion fumes. The construction of an air barrier between the fabric layers is ensured by a foldable inner framework. In the case of fire a sensor initiates the shielding textile to fall down to the floor, guided by rails on both sides of the opening. The rails are equipped with high temperatur resistant seals. An hermetic and gastight sealing is realised through a new type of edge sealing.

Central diagram:



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