

## Conveyor system closures as part of rail-bound conveyors





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- **Three quarters of all companies that suffer a large fire do not survive.**
- **43 % open insolvency proceedings within the first year.**
- **A further 28 % fail within the next three years.**



## Fire protection – a question of existence

Investment in fire protection is an investment in the security of the existence of your company!

A large fire not only means the loss of production equipment or warehouses for companies; it has consequence for the medium and long term that could be disastrous. Delivery problems cause otherwise loyal customers to search for other sources and buy goods from other suppliers resulting in the loss of hard-fought market shares. If this situation continues, it could have a permanent negative consequence, if customers cannot

wait until the company has recovered from the effects of the fire. Recovering market share cannot be compensated in the short term by increasing investments in marketing activities. Whilst fire and business interruption insurances may cover the immediate damages, they cannot usually mitigate the damage to the company's image or the changing market situation.



- **Building laws demand that buildings are divided into fire protection segments.**
- **Necessary openings must be closed using suitable systems.**



## Statutory requirements

Official building regulations and insurances demand that buildings are split into segments, i.e. into areas separated by fire protection equipment. Openings between these separate areas are always prohibited, unless they provide a necessary function of the building.

If rail-bound conveyor systems pass through a fire wall, the openings must be equipped with self-closing, fire-resistant conveyor system closures (CSC) (in Germany: fire resistance of at least 90 minutes). In Germany, the general building approval proof of usability for these closures is provided by means of a General Type Approval by the German Institute of Structural Engineering (DIBt) (in case of important deviations from this, approval for individual cases) or

by the European Technical Assessment (internationally, country-specific assessments are required). The issue of the proof of usability are based on fire tests according to valid standards. Conveyor system closures must have been successfully tested according to DIN EN 1366-7 (European harmonised test procedure) or according to DIN 4102-5 in connection with the „Guidelines for the approval of fire conveyor closures as part of rail-bound conveyor systems“ by the DIBt. Both test norms make different demands of fire conveyor closures than for instance the standard DIN EN 1634 for doors, gates, closures and windows. Classification according to DIN EN 13501-2 of Class Sm.



- **Persons and vehicles can pass fire segments through doors and gates close to the ground.**
- **Conveyor systems can penetrate the fire wall at all levels.**





## Differences between doors and gates

Due to the different installation positions of the CSC (close to the ground, elevated, horizontal), the doors and gates are subjected to higher than normal pressure levels during the fire test in the test furnace. Also, in the event of a fire, the linear thermal expansion and heat transfer of functional parts of the conveyor system or a necessary function gap should not have a negative impact of the fire resistance of the closure. In Germany, the mechanical load and durability of the self-closing mechanism of the conveyor system closure must be verified in an endurance function test of more than 200,000 cycles (Class -C5 acc. to DIN EN 13501-2, European: Class C0-C5 acc. to DIN EN 14600, international: country-specific). Only 10,000 cycles (Class C2 acc. to DIN EN 13501-2) are specified for gates.

- 1 Conveyor system closures for 22 different conveyors types (interrupted or continuous), e.g. roller conveyor, belt conveyor, suspension chain conveyor, circular conveyor etc.
- 2 Closures tested according to the special standard DIN EN 1366-7 with the much stricter requirements compared to the test norm for gates DIN EN 1634-1 (e.g. high furnace pressure levels, to allow installation in higher positions and the necessary sealing-off of conveyor equipment etc.).
- 3 Tested for various types of walls, solid construction types up to lightweight divider walls.
- 4 Control system with building approval (locking devices systems) that are specially tested and designed for conveyor system closures (e.g. signal exchange with conveyor equipment).
- 5 If the closure is triggered, closing areas are cleared by monitoring the closing areas or by clearance systems.
- 6 Ensuring an uninterrupted conveyor process because there is no impact by the conveyor system closure.
- 7 Complete sealing-off of continuous conveyor equipment, even with complicated designs.
- 8 Various closing directions due to space restrictions.
- 9 Designed for durability up to 200,000 cycles – and, if required, even higher.
- 10 Decentral standby power units for clearing the closing area even in case of a power failure.



- **There are numerous, different types of conveyor systems.**
- **The challenge is to find the right combination of conveyor system and conveyor system closure for the available space and installation situation.**



Ceiling damper



Flap



Tube sealing

## Construction forms and parts of a conveyor system closures

Be it a slider construction design, flap construction, swing doors, collar, sectional gate or a textile, roll-up conveyor system closure: Today, there is a suitable protection solution for almost every situation and conveyor equipment variant. If a standard solution is not possible, various customised solutions are possible.

Manufacturers or users of conveyor systems demand secure closing of the CSC when an alarm is triggered, but also require that the conveyor system functions uninterrupted in the normal operating mode.



Normal operation

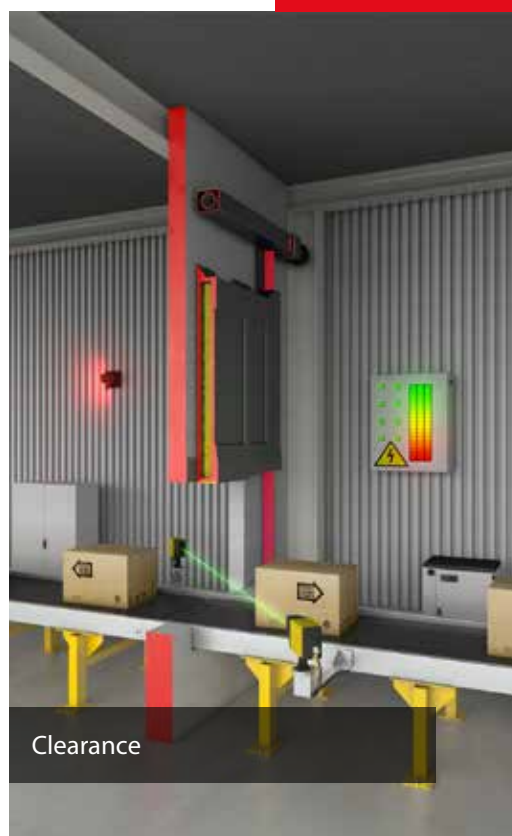


In the event of an alarm



Closing area blocked

- **Approved locking devices for rail-bound conveyor system closures.**
- **Safe clearance of the closing area even in case of a power failure.**



## Locking devices and clearance equipment

Approved locking devices control units are mandatory for fire protection closures as part of rail-bound conveyors. A locking device comprises of at least one fire detection element (for instance a smoke or heat detector), a locking device (for instance a magnetic clamp), a trigger unit (for instance a manual button) and an energy power supply.

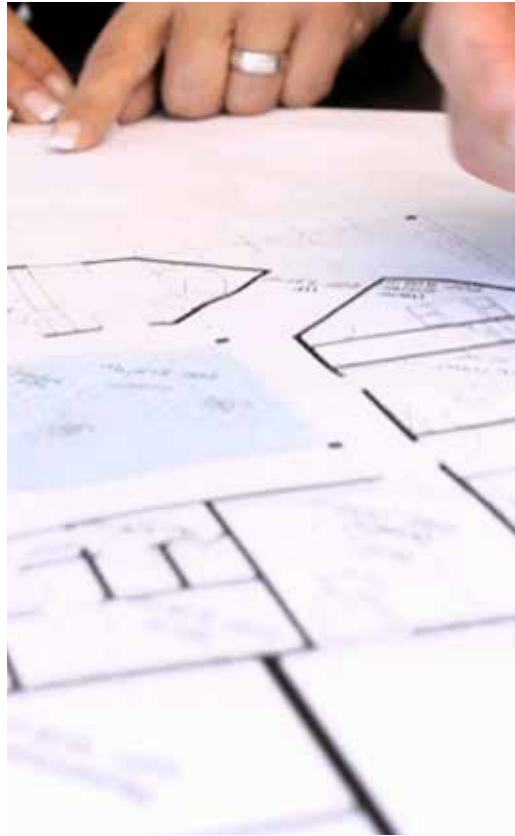
The fire protection closures are usually kept open in normal operating mode by means of a locking devices.

When an alarm is triggered, the open closures close automatically via a closing mechanism (for instance, a counterweight or a pre-loaded spring).

A prerequisite for the safe closure of a wall opening with an CSC is that the closing area is free of conveyed goods. The so-called problem-oriented clearance of a closing area, also in the event of a power failure, depends on the type and design of the conveyor

equipment and the conveyed goods themselves. To ensure reliable clearance, a secure signal exchange needs to take place between the fire alarm system (locking devices, the clearance logic, for example, secured backup power supply, or secured mains supply) and the conveyor system., Due to this, special hardware is required, for instance a secure backup power supply (if necessary armoured cabling), clearance equipment etc.

Other alternative clearance equipment including the retention of bulk goods by means of dampers, gravity roller tracks, blowing out of conveyed goods, pulling out piece goods, light barrier control systems and destruction of the conveyed goods.



- **Standard solutions and customised designs.**
- **Competent support from the planning phase through to assembly and maintenance.**
- **Ensuring national and international application-suitability certificates.**



## One-stop-shop

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



## Stöbich Brandschutz

Pracherstieg 6  
38644 Goslar  
Germany

+49 5321 5708-0

[info@stoebich.com](mailto:info@stoebich.com)  
[www.stoebich.com](http://www.stoebich.com)

