



Early Fire Detection with Aspirating Smoke Detectors for Elevators

TITANUS® – One of the highest levels of safety in fire detection



Introduction

Elevators are usually located in elevator shafts which, depending on the type of building, extend from the basement to below the roof of the building. The elevator shafts fulfil various functions such as the unrestricted connection of several floors, noise shielding from the elevator drives, but also the stabilization of the building. Elevator systems are subject to stringent requirements in order not to endanger the safety and health of people or the safety of the goods being transported. This applies in particular to fire protection.

An overview of the specific fire risks in elevators and elevator shafts illustrates the risk potential in these applications.

The Risk Analysis

The structural design of elevators and elevator shafts in particular favors the development and spread of fires in the event of an incident and poses a particular challenge for fire protection.

THE RISKS AT A GLANCE

Rapid spread of smoke

In the event of a fire, stack and piston effects favor the spread of heat, smoke and toxic gases in the elevator shaft, which can thus quickly spread to the floors.

Stack effect

In the so-called stack effect, the spread described above is favored by the vertical shafts and the shaft ventilation of the elevator systems.

Piston effect

In the so-called piston effect, the spread

described above is favored by the movement of the elevator car itself and the resulting pressure change in the elevator shaft.

Operation in the event of a fire

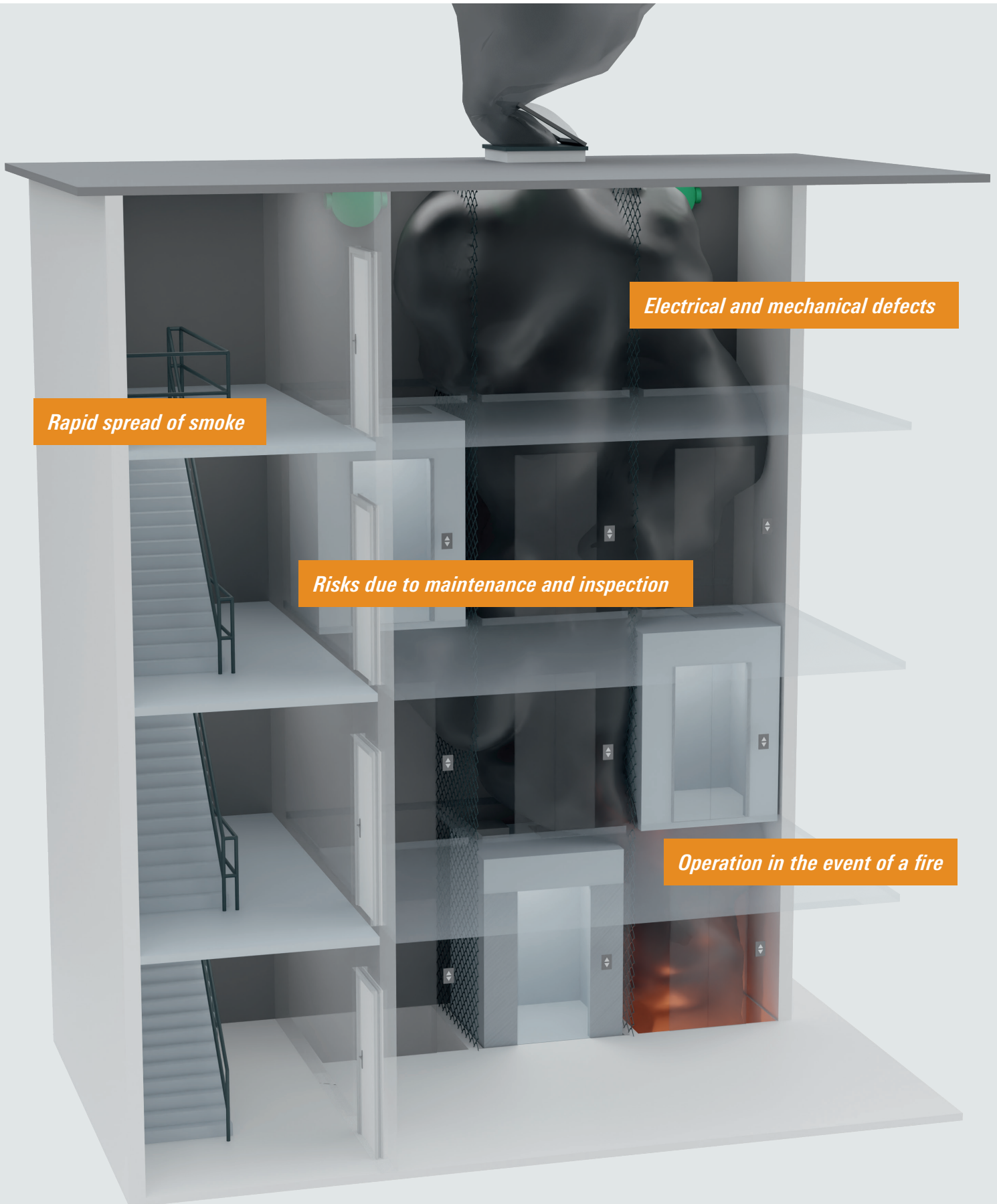
In the event of a fire, an elevator is generally not automatically shut down. People can still be transported.

Electrical and mechanical defects

Elevator systems have a large number of electrical cables. If electrical cables are damaged or faulty, smoldering or cable fires can occur. The large number of moving parts can also lead to defects, overheating and, in the worst case, fire.

Risks due to maintenance and inspection

Elevator shafts are usually difficult to access. This makes it difficult to maintain all the components inside, which means they are subject to high levels of dust and dirt. Elevators are therefore considered a high-risk maintenance application where appropriate safety standards are required to reduce the risk of injury to service technicians.



Rapid spread of smoke

Electrical and mechanical defects

Risks due to maintenance and inspection

Operation in the event of a fire



The Protection Goals: Fire Protection Requirements

Smoke in elevator shafts poses a high risk to the elevator users in the event of a fire. For this reason, fire detection technology is mandatory for elevator systems in most countries. The use of appropriate fire protection systems is essential for the optimum protection of life and for the best possible prevention of elevator downtimes.

THE PROTECTION GOALS AT A GLANCE

Personal protection

- Protection of elevator users from smoke and fire
- Protection of service technicians from hazards during maintenance

Building protection

- Prevention of structural damage caused by the effects of fire-related heat
- Prevention of damage caused by water-based extinguishing agents

Environmental protection

- Protection against toxic gases that are released as a result of a fire
- Avoidance of contamination (e.g. from extinguishing water)

Protection against business interruptions

- Avoidance of elevator system failures for users
- Avoidance of disruptions to the transportation of goods and people
- Avoidance of interruptions to production or logistics

Protection against consequential and reputational damage

- Avoidance of lengthy renovations or new construction
- Ensuring the accessibility of floors
- Avoidance of user complaints
- Avoidance of customer and sales losses

The protection goals described form the basis for the development of an individual, holistic fire protection solution.

STANDARDS & GUIDELINES

National standards and guidelines for fire detection in elevator systems must be taken into account. In the absence of legally binding regulations, the project planning of fire detectors in elevator systems is usually based on existing guidelines for other applications (room monitoring, monitoring of high-bay warehouses).

TITANUS® Aspirating Smoke Detectors for Early Fire Detection – Better Solutions in Fire Protection

Very early fire detection, as made possible by the systems of the TITANUS® product family, provides the decisive time advantage that can save lives. Because the earlier a fire is detected, the faster appropriate countermeasures can be initiated and major damage can be prevented.

TITANUS® aspirating smoke detectors are used in numerous elevator systems and elevator shafts worldwide and set new standards with their reliable early fire detection.

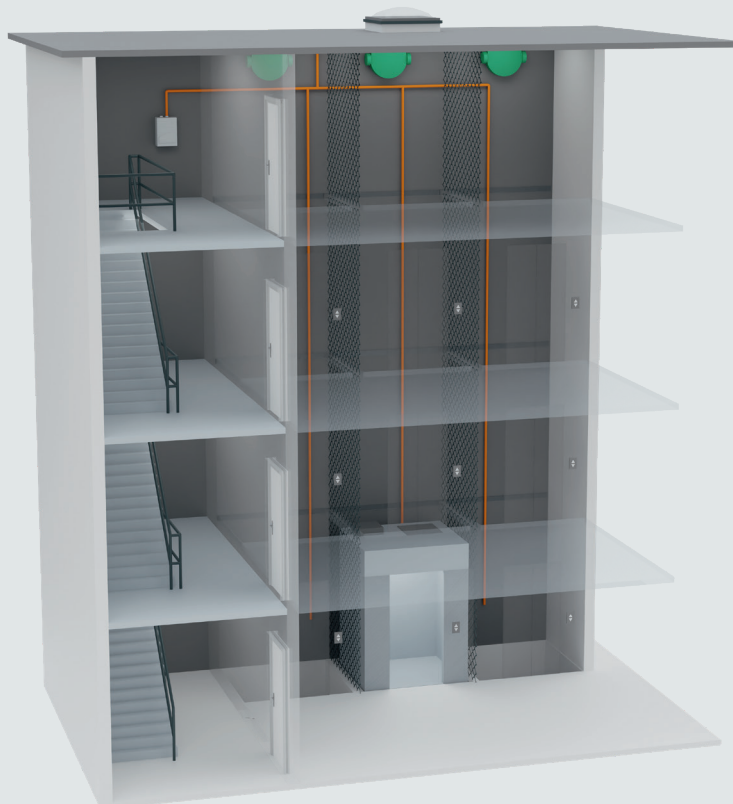
Our early fire detection systems are installed outside elevator shafts. They therefore allow easy access for maintenance purposes at all times without having to interrupt the operation of the elevator system during this time. Our aspirating smoke detectors meet the relevant safety standards to reduce the risk of injury to service technicians.

Further information on our
TITANUS® portfolio:



FUNCTIONAL PRINCIPLE

The structure of an aspirating smoke detection system is based on a basic device with a detector module and a pipe system with sampling points. A sampling point corresponds to a point-type smoke detector. The aspirating smoke detector uses a fan to constantly and actively take air samples from the ambient air via the pipe system and feeds them to a sensitive optical detector, which examines the air sample for the smallest smoke particles. The integrated airflow sensor constantly checks the pipe system for possible blockages and breakages to ensure the functionality of the air sampling system.



Service friendliness

Very high immunity to false alarms

Reliability

Valuable time advantage

High modularity

Customized solution

Approved quality



TITANUS® Advantages

The outstanding suitability of TITANUS® aspirating smoke detectors for monitoring a wide range of applications is based in particular on the following system features, which help you to achieve your protection goals:

VALUABLE TIME ADVANTAGE

- Very early and reliable fire detection with info notification from a smoke density of 0.005% obs/m (0.0015% obs/ft) for the earliest possible countermeasures to be taken

VERY HIGH IMMUNITY TO FALSE ALARMS

- Proven LOGIC·SENS® fire pattern recognition for detection of deceptive scenarios
- Algorithms for consistent detection quality

RELIABILITY

- Maximum immunity to faults thanks to patented PIPE-GUARD airflow monitoring
- Use of an external filter tailored to the application to prevent contamination of the detector modules while extending the service life at the same time

SERVICE FRIENDLINESS

- Easy accessibility thanks to installation of the basic device in an easily accessible location
- Maintenance without interrupting operation
- Quick diagnosis without technical aids

HIGH MODULARITY

- Reduced costs with low detection requirements thanks to a graduated product portfolio
- Simple retrofitting and conversion when requirements change

CUSTOMIZED SOLUTION

- Can be used with 2 detector modules per detector to monitor two separate zones or for a double-knock alarm verification
- TITANUS® network technology for remote diagnosis and direct connection to hazard management systems
- Detector variants for use in cold storage areas down to -40 °C (-40 °F)
- Operation from 23 dB(A) for monitoring noise-sensitive areas
- Almost invisible installation possible
- Extensive range of accessories for perfect adaptation to the application, even with heavy dust exposure and condensing humidity

APPROVED QUALITY

- Auditing by UL, FM and VdS as well as worldwide certifications prove compliance with the highest safety standards
- Made in Germany, tried and tested hundreds of thousands of times worldwide

TITANUS® Product Family

TITANUS® allows optimum fire detection in areas where other fire detection solutions reach their limits. The extensive product portfolio allows a cost-efficient solution to be tailored precisely to application-specific requirements.

TITANUS® basic devices	Suitable for elevators	Main approvals	Temperature range ¹	Double-knock option	Max. total pipe length	Max. no. of sampling points ¹	Min. noise level [dB(A)]
TITANUS MICRO-SENS® 2-channel small sized aspirating smoke detector - up to 2 alarm levels, depending on variant - optional smoke level bar graph display - up to 2 x 400 m ² (2 x 4,300 ft ²) area of coverage - optional Ethernet/SNPC networking and SD data logger	✓	VdS, LPCB, CE, CPD	−40 °C (−40 °F) to +60 °C (+140 °F)	No	50 m (164 ft)	8	40
TITANUS FUSION® 2-channel economic aspirating smoke detector - 1 alarm per detector module - up to 2 x 1,600 m ² (2 x 17,200 ft ²) area of coverage	✓	VdS, CE, CPD	−30 °C (−22 °F) to +60 °C (+140 °F)	Yes	2 x 160 m (525 ft)	2 x 20	45 (23 ²)
TITANUS PRO-SENS® 2-channel basic aspirating smoke detector - 1 alarm per detector module - up to 2 x 3,000 m ² (2 x 32,000 ft ²) area of coverage	✓	UL, ULC, FM, VdS, LPCB, CE, CPD	−40 °C (−40 °F) to +60 °C (+140 °F)	Yes	2 x 300 m (984 ft)	1 x 100 or 2 x 72	45 (23 ²)
TITANUS PRO-SENS®/net 2-channel universal aspirating smoke detector - up to 3 alarm levels per detector module, depending on variant - up to 2 x 3,000 m ² (2 x 32,000 ft ²) area of coverage - optional Ethernet/SNPC networking and SD data logger	✓	UL, ULC, FM, VdS, LPCB, CE, CPD	−40 °C (−40 °F) to +60 °C (+140 °F)	Yes	2 x 300 m (984 ft)	1 x 100 or 2 x 72	45 (23 ²)
TITANUS TOP-SENS® 2-channel fully equipped aspirating smoke detector - 3 alarm levels per detector module, depending on variant - smoke level bar graph display - up to 2 x 3,000 m ² (2 x 32,000 ft ²) area of coverage - optional Ethernet/SNPC networking and SD data logger	✓	UL, ULC, FM, VdS, LPCB, CE, CPD	−40 °C (−40 °F) to +60 °C (+140 °F)	Yes	2 x 300 m (984 ft)	1 x 100 or 2 x 72	45 (23 ²)

¹ Depending on equipment variant

² When using the SL variant and the type SD-1/a sound absorber

Fire protection as holistic solution. Trendsetting. Worldwide.



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BETTER SOLUTIONS IN FIRE PROTECTION

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