Protecting rail passengers and infrastructure from fire

Ensure safe evacuations by increasing the available time

Avoid major asset loss

Reduce false alarms

Lower maintenance costs

Yield improved service continuity and efficiency

VESDA® by xtralis™

In 2006 a subway fire started in stored wood ties (wooden sleepers for rail tracks) in Brooklyn, NY, requiring 4000 passengers to be evacuated, injuring at least 25 people, and causing delays to thousands of peak hour commuters.

The consequences of smoke or fire in a crowded rail facility are dangerous and possibly fatal. The feeling of panic spreads quickly and hampers any chance of a safe and orderly evacuation.

Exit from a railway station is often along the same path as smoke will travel. Escalators and stairways act like chimneys for smoke – and smoke kills!

Trying to evacuate a train is difficult and dangerous. Even evacuation does not guarantee escape from the smoke trapped in a tunnel or an underground station.

Service interruption can impact thousands of commuters, and service level obligations and profitability will be threatened.

What are the risks?

Fires in rail facilities result from:

- High current electrical faults.
- Friction caused by mechanical faults, fueled by a build-up of oil, dirt and lint.
- Arson, which commonly occurs in unsupervised areas, and may be started using discarded litter.
- Unauthorized cigarette smoking.

What makes a fire spread?

In rail facilities, the growth and spread of fire is fueled by:

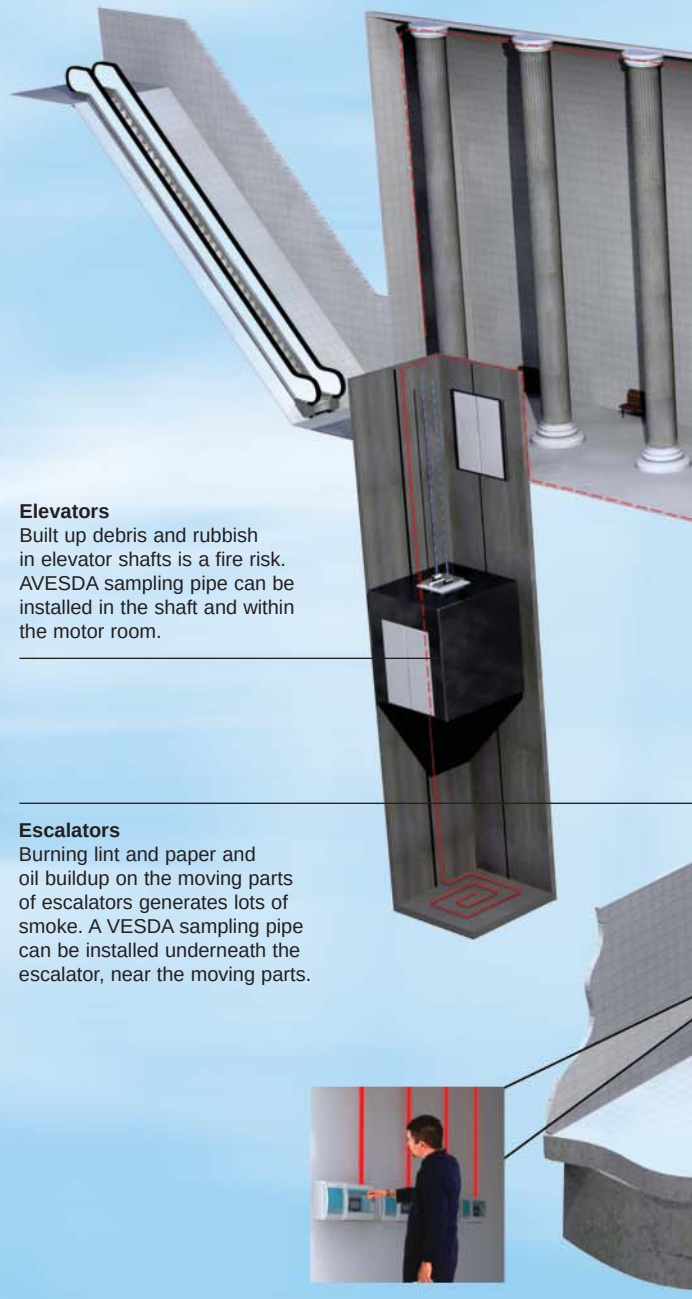
- Dirt and lint, which builds up on the moving parts of mechanical equipment and acts like a wick.
- High airflow, resulting from Heating Ventilation and Air Conditioning (HVAC) systems and the motion of trains.
- Litter, in the form of newspapers and other rubbish.

Detection challenges:

- Air movement from drafts, air-conditioning and train motion interferes with the normal dispersion of smoke; often drawing it away from conventional detectors.
- Smoke from small or smouldering fires lacks sufficient thermal energy to rise to conventional detectors located on the high ceilings of atriums and concourses.
- Within escalators and other concealed mechanical equipment, fires tend to smoulder for a long time. This delays detection by conventional detectors.

How can you protect lives and rail services?

A specialized design approach and the early detection of smoke will save lives, maintain business continuity and protect assets.



Elevators
Built up debris and rubbish in elevator shafts is a fire risk. AVESDA sampling pipe can be installed in the shaft and within the motor room.

Escalators
Burning lint and paper and oil buildup on the moving parts of escalators generates lots of smoke. A VESDA sampling pipe can be installed underneath the escalator, near the moving parts.

false

In 2003, over 100 people were killed by a fire that started in an underground station in South Korea.

Atriums and concourses
Smoke dilutes and stratifies below high ceilings, never reaching the conventional detectors above. VESDA sampling pipes can be located where smoke is likely to spread, ensuring early detection.

Data Centers
Positioning a VESDA sampling pipe across the return air vent of an air conditioning unit detects smoke as it is carried with the airflow. Sampling on the ceiling can be used for actuation of suppression systems.

Emergency Control Rooms
By installing VESDA sampling pipes inside equipment cabinets and in the sub-floor space, any smoke is quickly drawn to a detector.

Substations
High voltage cables, switch gear and uninterrupted power supply batteries are a fire risk.
A VESDA solution provides targeted equipment protection, allowing early warning of a fire, and time to plan.

Air handling and exhaust systems
Air handling systems can purge smoke and buy time for evacuation. A VESDA sampling pipe can be positioned across the exhaust fan vent. VESDA detectors can also be used for air quality management and energy consumption reduction.

Service cupboards
High current electrical equipment and densely packed cables are a fire hazard. VESDA sampling pipes can be installed in cable trays and within equipment cabinets.

Trains
High voltage electrical systems and the fuel loads brought aboard (e.g. newspapers) increase the risk of fire. High airflow within and around the train makes the detection of smoke difficult. VESDA can detect invisible, incipient smoke.

Service Ducts and Tunnels
Dusty service ducts and tunnels can be protected with VESDA detectors – without e alarms or excessive maintenance costs.

31 people died in the tragic 1987 escalator fire in Kings Cross, London, when the presence of smoke caused panic.

The VESDA Solution

A VESDA air-sampling smoke detector works by continually drawing air into a series of pipes attached to a detector unit. Air is moved through a laser detection chamber where it is analyzed for smoke. The detector can be positioned in an area that allows easy access for maintenance.

VESDA detectors can be connected to a standard fire alarm control panel, a building management system or a software-based monitoring system. They are ideally suited to the diverse environments found in a rail facility. The key advantage they offer is detecting smoke at the earliest stages of a fire.

This allows:

- Investigation of what caused the alarm.
- Preventative action to stop the spread of fire or toxic smoke.
- Safe and orderly evacuation.
- Prevention of damage to expensive and vital equipment.
- The avoidance of service disruption and breaches of service level obligations.

Rail facilities and fleets that have a VESDA system installed

London Underground
Moscow Metro
Hong Kong KCRC
Shanghai South Station
Madrid Metro
Queensland Tilt Train
Perth Urban Rail
XPT High Speed Express
China Star Express
RailCorp Hunter DMU
City Rail Explorer

Global Approvals

CCCF

Need more information?

Call the Xtralis office closest to you, as listed below.

www.xtralis.com

The Americas +1 781 740 2223 **Asia** +852 2916 8894 **Australia and New Zealand** +61 3 9936 7000
Continental Europe +32 56 24 19 51 **UK and the Middle East** +44 1442 242 330

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