

A photograph of a modern high-speed train, likely a Shinkansen, stopped at a station platform. The train is white with a pink and blue stripe. The platform has glass safety barriers and some passengers are visible. The image is overlaid with a semi-transparent white box containing the text.

Early and Reliable Threat Detection on Trains

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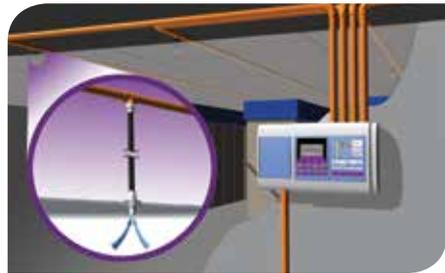
Trains — A Unique Fire and Safety Engineering Challenge

Maintaining high service levels and protecting passengers, staff and property in a cost-effective manner is a unique challenge within rails/metros when it comes to the design of safety systems. Fires in particular can compromise life safety, operational continuity and assets with severe and sometimes tragic consequences.

Smoke detection is a key safety system component, but the type of smoke detector chosen will determine whether a fire threat can be identified early and reliably. Traditional point-type detectors (heat or smoke) are not suited to trains because high levels of dust and lint frequently cause them to false alarm. In addition, high airflow in an open train compartment or an incipient fire from concealed areas dilutes smoke, making low levels of smoke with low heat intensity difficult to detect by these passive detectors, which must wait for a sufficient amount of smoke to reach them before sounding an alarm.

Protecting Trains and Rail/Metro Operations from Fire

For more than 30 years, Xtralis has manufactured VESDA, the world's No. 1 aspirating smoke detection (ASD) system, which provides the earliest possible warning of a potential fire by detecting smoke particles at the incipient stage. Detection at this early stage of a fire enables proactive investigation and early and appropriate emergency response to protect passengers and staff.

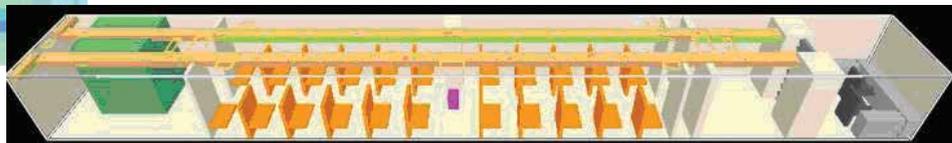


VESDA actively samples the air for even the smallest trace of smoke.



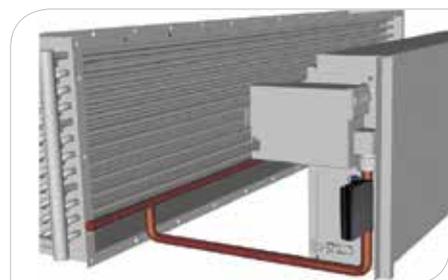
Xtralis provides a value-engineered solution in rolling stocks using state-of-the-art fire modeling software and in-situ fire testing.

Protection of service continuity is an additional benefit of very early warning. The overheating of dense electrical and switching systems is a common cause of service disruption. The detection of very low levels of smoke produced by such overheating allows appropriate actions to be taken before service is disrupted.



Integrating Smoke and Gas Detection within HVAC Systems

The VESDA solution can be extended to include reliable and cost-effective gas detection and environmental monitoring. For example, if placed in the plenum of the HVAC system, VESDA ECO can be used to detect carbon monoxide (CO), using an existing or new VESDA pipe network to actively sample the air without major construction or retrofitting. This ability provides a single and simple platform for future expansion of the system to protect against known or potential gas threats without the need to run expensive cable and conduit.



VESDA ECO integrated smoke and gas detection within HVAC systems



Reducing the Cost of Ownership

Programmable sensitivity enables the VESDA smoke and VESDA ECO gas detectors to reliably distinguish between low-level risks and real threats to life, property and service continuity, reducing the cost of responding to alarms without compromising safety. Specifically, costs are reduced through:

- Use of the VESDA pipe network eliminates the need to run cable and conduit to detectors in the monitored space
- Centralised location of VESDA ASD and VESDA ECO detectors provide non-intrusive ability to service and maintain them without service disruption
- Easy access to detectors for routine maintenance

The Xtralis Rail-ruggedized Solution

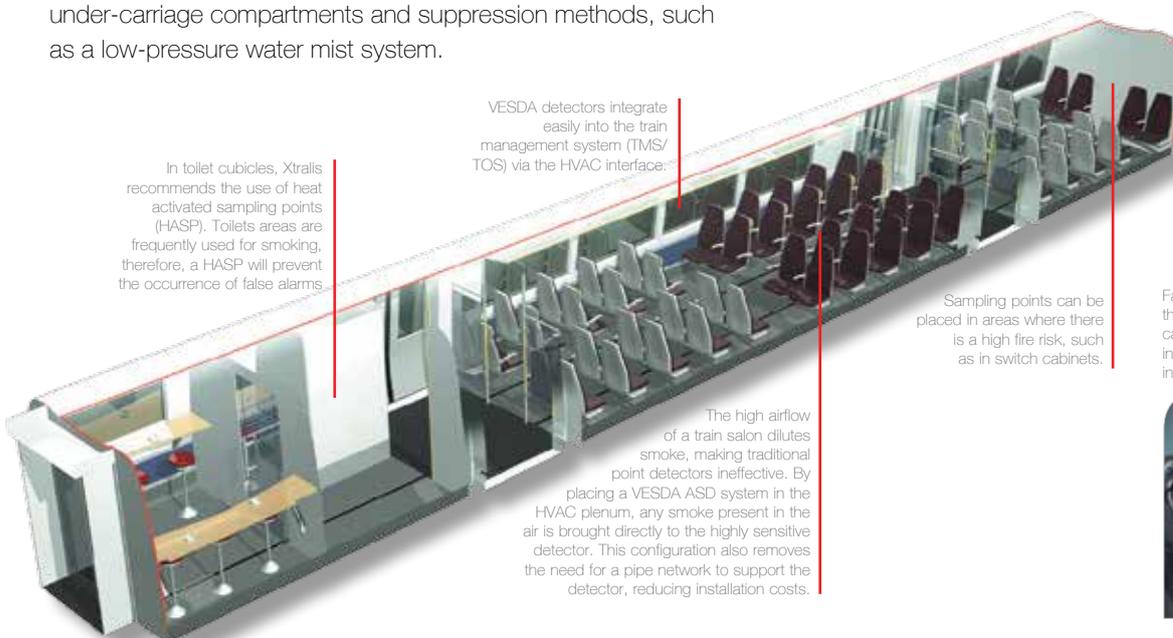
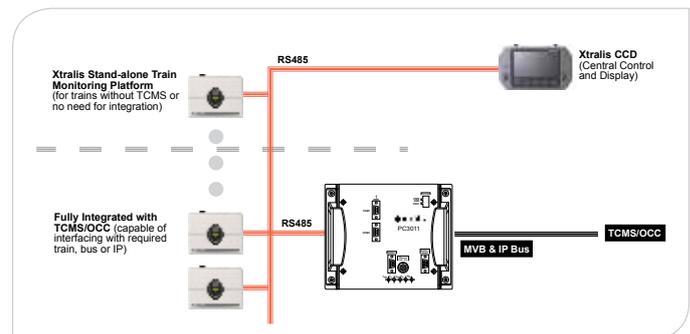
Xtralis Train Control Management System (TCMS) Interface

Networked VESDA ASDs can be integrated seamlessly with Train Control Management Systems (TCMS) so major fire events, system configuration and faults are reported and addressed in real time.

Stand-alone Onboard Xtralis Central Control and Display

Onboard, stand-alone Xtralis Central Control and Display (CCD) provides a simple yet cost-effective solution for trains with or without TCMS and is suitable for monitoring Xtralis ASDs throughout the train. A rail-ruggedized CCD system can be located in the driver's cab and optioned in the engineer's cab. This simple yet reliable connectivity ensures onboard safety system monitoring and management. Other system features include local annunciation and integration of heat detection for under-carriage compartments and suppression methods, such as a low-pressure water mist system.

Networked and Integrated Technology Platform



In toilet cubicles, Xtralis recommends the use of heat activated sampling points (HASP). Toilets areas are frequently used for smoking, therefore, a HASP will prevent the occurrence of false alarms

VESDA detectors integrate easily into the train management system (TMS/TOS) via the HVAC interface:

The high airflow of a train salon dilutes smoke, making traditional point detectors ineffective. By placing a VESDA ASD system in the HVAC plenum, any smoke present in the air is brought directly to the highly sensitive detector. This configuration also removes the need for a pipe network to support the detector, reducing installation costs.

Sampling points can be placed in areas where there is a high fire risk, such as in switch cabinets.

Faults and alarms can be relayed to the driver interface within the engineer's cab. The VESDA detector generates an incident log that can be used later in an investigation.



About Xtralis

Xtralis® is the leading global provider of converged solutions for the early detection and remote visual verification of fire, gas and perimeter threats.

Our technologies prevent disasters by giving users time to respond before life, critical infrastructure or business continuity is compromised. We protect high-value and irreplaceable assets belonging to the world's top governments and businesses. Our brands include the VESDA-E – the next generation of aspirating smoke detection technology; VESDA® – the world's No.1 very early warning aspirating smoke detection (ASD) systems; ICAM™ for flexible ASD; ECO™ – Gas detection & environmental monitoring modules for VESDA & ICAM systems; OSID™ – easy to use smoke detection for open areas; ADPRO® –passive infrared sensors, perimeter, multi-site, and enterprise security; HeiTel™ – digital video remote monitoring; and, ASIM® – intelligent traffic detection.

To learn more, please visit us at www.xtralis.com.

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