



**VESDA®**

## Minimizing the risk of business downtime and loss from fire

Risk management and loss prevention

Early incident detection and planning

Smoke, fire and system modelling

Fire system design and engineering guidance

Empirical fire testing and in-situ verification

Application research and fire science

 **xtralis.**  
VESDA®

AEG – providing specialist fire safety consulting and solutions services for a wide range of industries

**The Applications Engineering Group (AEG) is a specialized team of professional engineers providing fire safety solution services.**

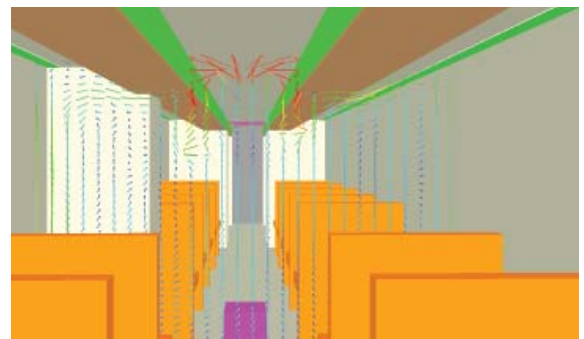
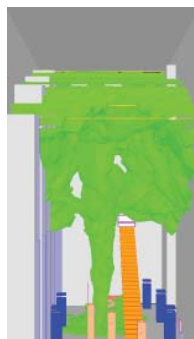
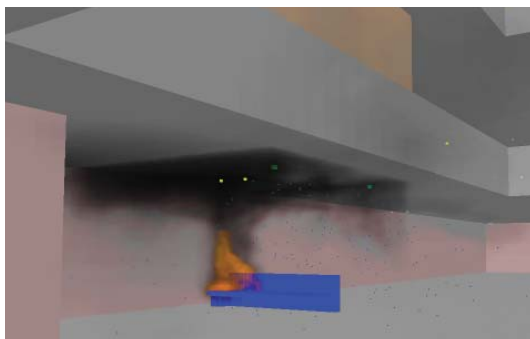
**AEG can assist organizations by:**

- Designing cost-effective smoke detection solutions that are fit for purpose.
- Developing risk-informed, performance-based designs to:
  - address restrictive codes and standards and non-compliance issues,
  - incorporate flexible design features for effective emergency response planning,
  - optimize the use of available commercial building space, while meeting life safety objectives,
  - achieve elegant architectural design,
  - apply sustainable building construction methods,
  - improve business efficiency and profitability and to reduce capital and maintenance costs throughout the system life cycle.
- Conducting computer modeling and empirical tests of smoke and fire to optimize and verify the effectiveness of the proposed fire detection solution in its intended environment.
- Working with fire consultants, authorities holding jurisdiction, insurers and trade associations to:
  - quantify risk to life, property and business continuity from fire and smoke,
  - enhance fire safety system design, assessment methodologies and industry best practices,
  - evaluate rapid incident response and safe evacuation in the event of an emergency,
  - advance fire science through world-wide collaborative application research into the early detection and prevention of fire.

The ultimate objective of AEG's work is to strive towards a balance of investment in life and building safety, while minimizing risk to property damage and business interruption.

**Smoke and Fire Modelling**

Combustion, smoke characterization and propagation are very complex phenomena, and in most situations experimental testing is not practical. Through the use of NIST's (National Institute of Standards and Technology) Fire Dynamics Simulator (FDS) and proprietary system design tools, AEG is able to effectively simulate fire scenarios to determine the critical timeline of fire events. This knowledge is used to design superior fire systems and contributes to corporate risk management and emergency response plans.



## Empirical Fire Testing

AEG can assist clients by conducting in-situ smoke tests to validate the design and assess the performance of fire safety systems in various environments. AEG will ensure prescriptive codes and design objectives are met. Tests can be conducted in AEG's NATA accredited test facility, in research partners' facilities worldwide, or where circumstances allow, at the client's site.



## Research and Fire Science

Research projects conducted by AEG via empirical testing and software modelling provide significant benefit to the relatively young Fire Safety Engineering community. A wide range of industries benefit from the studies relating to the behavior of smoke and fire in these environments and the risk-informed, performance-based design solutions of very early fire detection technologies.

Published studies have often helped engineers to reduce the cost of fire systems, while increasing the safety of client facilities. AEG is recognized for its contribution to the development of codes, standards and industry practices to promote the early detection of smoke for life safety, the protection of assets, property and business continuity.

## Consulting

AEG provide consultancy services that deliver cost-effective, code compliant, and innovative fire systems, including:

- Fire detection system design appraisal.
- Advice on regulation and code compliance and support during the regulatory authorities' approvals process.
- Fire simulation and modelling to evaluate and optimize fire detection system performance.
- Fire risk assessments.
- People movement and egress modelling for the safe evacuation of occupants in an emergency and to formulate emergency response plans.
- Guidance in designing solutions that address maintenance requirements and reliability challenges in harsh environments.
- Advice on integrating detection and gaseous suppression systems for the protection of critical equipment.



By working with engineers and architects during the design stage, AEG can ensure a cost-effective and fire safe building, as well as ensuring that on-going business activities and building system maintenance are considered.



## Solutions for smoke detection in a wide range of industries

### Datacom facilities:

- Smoke detection in a computer server or telephone switching room, where high air movement may carry smoke away from the code-prescribed locations of point-type detectors.

### Utilities and infrastructure:

- Ensure the early detection of smoke in a Power Generation facility, with large quantities of highly combustible materials, high concentration of airborne particulates and usually, very restricted access.

### Semiconductor manufacturing:

- Smoke detection in a Clean Room where there are large amounts of flammable, explosive materials and automation processes. AEG will address the challenges caused by high dilution and interference in these high air movement environments.

### Transport:

- Smoke detection in fixed and rolling stock rail applications where there is a high risk of electrical overloading and/or mechanical faults. AEG will address the challenges caused by smoke dilution in these large open space environments.

### Heritage infrastructure:

- Where unobtrusive and code-compliant smoke detection is required to maintain the aesthetics, and to prevent damage to priceless buildings and artifacts.

### Warehouses:

- Where there are large quantities of stored goods and packing materials presenting a significant fire load. AEG will address the challenges caused by high ceilings, smoke dilution, interference and stratification.

### Refrigerated storage:

- Where there are large quantities of combustible materials, and highly flammable sandwich panels constituting the main structure of the refrigerated storage facility. AEG will address the challenges caused by sub-freezing temperatures

### High-rise buildings and atriums:

- Where commercial space is limited, mass evacuation is dangerous and smoke detection is difficult because of dilution in large open spaces. AEG will address the design challenges caused by mix business uses, floor plan changes, large atrium protection and lift shaft protection.

## Need more information?

Contact your nearest Xtralis office.

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