VESDA®

Aspirating
Smoke Detection

With VESDA, you will never have to worry about smoke going unnoticed in your Data Center facility

xtralis®

At a large data center facility, a VESDA system alerted staff to a problem. A capacitor on an emergency generator was having electrical problems. They found the source and prevented a fire.

Scott Lacey, Engineer, Cromwell Architects Engineers, U.S.A

What are the consequences of fire?

The implications of downtime or equipment failure in a data center or telecommunications facility (data center) are massive. The US Federal Communications Commission (FCC) estimates that the cost of downtime in a large data center facility is upwards of US $2 million per hour.

A fire in or near a data center facility can cause:

- equipment failure or loss.
- latent equipment failure due to smoke contamination.
- service disruption to businesses, services and customers.
- loss of the building or other physical structure.

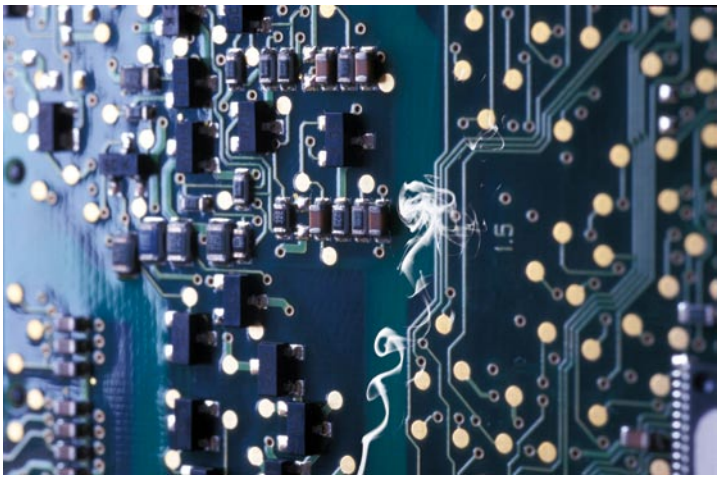
In 1999 a fire sparked by a dropped tool burnt down a Pacific Bell Telephone Exchange. The incident took down 110,000 phone lines, airline networks, lottery terminals, emergency service communications and security services.

Smoke causes computer cancer

According to the FCC, 95% of all fire damage within facilities housing electronic equipment is corrosion.

The fire may do little immediate damage, however, the chloride and sulfur deposited on delicate electronic equipment will react with humidity in the air to start the corrosion process.

Redundant systems within the same building may be contaminated if they share the same air-conditioning system.



What are the risks?

According to the FCC, the most common instigator of fire events in telecommunication facilities are building systems, especially the power distribution equipment.

The trend towards faster, more compact and higher functionality data center equipment has led to:

- increased power consumption, which has led to higher heat density.
- more time being spent on server and equipment upgrades than on assessing the associated risks.
- inadequate heating, ventilation and air-conditioning (HVAC) systems to support new generation equipment.
- HVAC systems aiding the spread of incipient smoke and fire, leading to equipment contamination.

"Through rapid alarm notification to our security console, building management team and via wireless paging to our 24 x 7 operations staff, the VESDA system gives our staff and customers confidence to place their mission critical telecommunications systems within the worlds most connected facility"

John R. Savageau SVP of Operations for CRG West

Unique detection challenges:

- Air movement from air-conditioning interferes with the normal dispersion of smoke; often drawing it away from conventional detectors.
- Smoke dilution occurs in areas of high airflow and in large open spaces; delaying the time it takes for conventional point-type detectors to detect smoke.
- Many HVAC systems employ a filtration system, which will remove smoke particles from the air, delaying the time it would take to detect smoke.

VESDA systems are designed to overcome the difficult challenges present in data center facilities. VESDA air sampling smoke detection is focused on life safety, asset protection and business and service continuity.

A VESDA system will ensure your Data Center facility is protected from fire

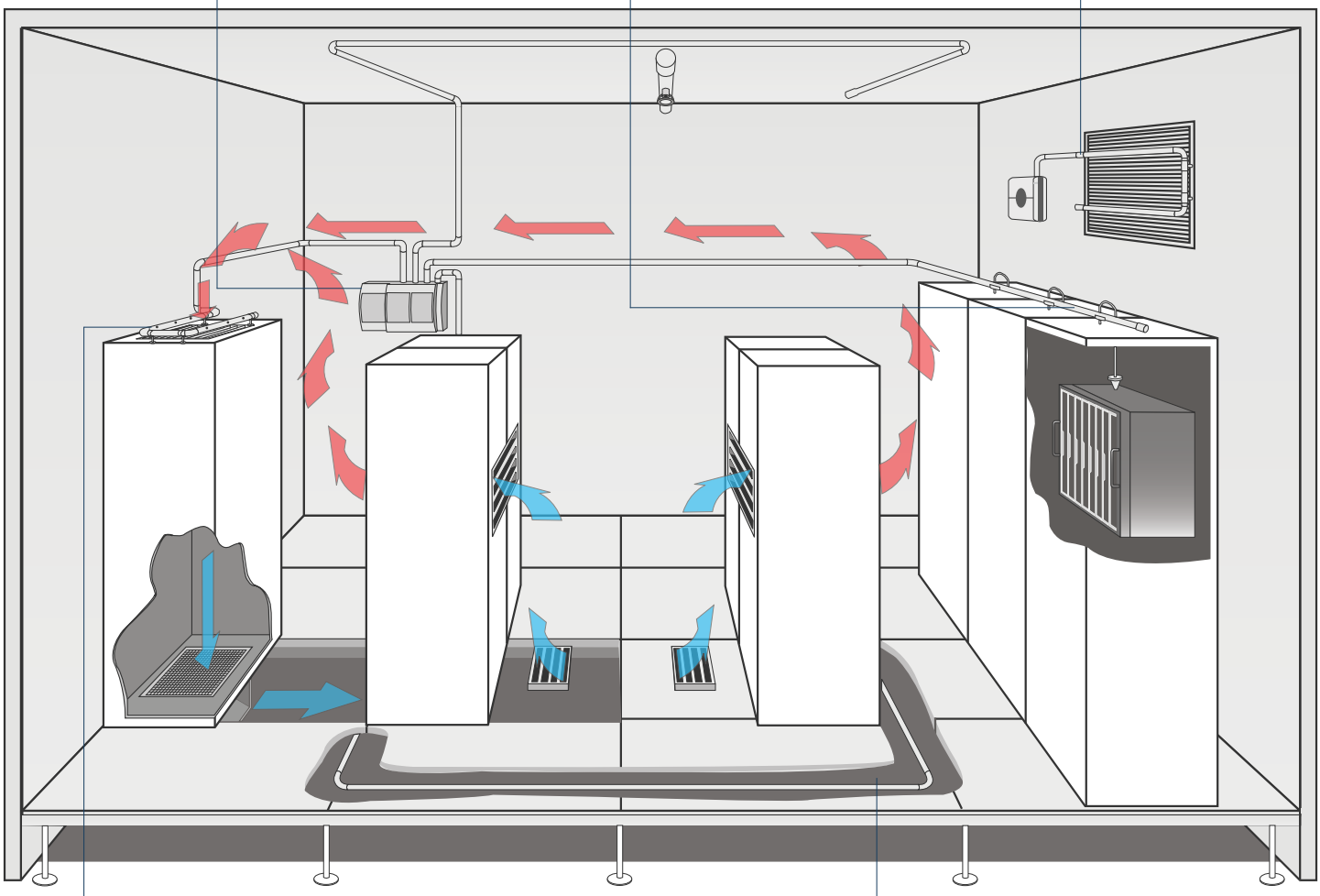
In 2006, a fire in a cable tunnel in Manchester, UK, wiped out voice & data services to 130,000 homes and businesses. The cost of the ensuing chaos to the area's economy reached a staggering £10m. Litigation may continue for years to come.

The most effective use of a VESDA system to protect a data center facility, is to install sampling points near the most likely sources of electrical fire, and along the path that smoke will be carried by air-conditioning. The Xtralis Datacom Design Guide should be consulted when designing and specifying VESDA ASD systems.

In small facilities one VESDA detector can be used to protect several areas e.g. ceiling, return air vent and under the floor.

Capillary tubes branch off the main VESDA sampling pipe and into the equipment cabinet, allowing the earliest possible warning of smoke within the cabinet.

Sampling across the fresh air make-up vent can be used to prevent the introduction of external pollutants, and to prevent internal detectors from issuing false alarms.



Smoke in an air-conditioned room travels with the airflow to the return air vent, rather than to the ceiling. VESDA sampling pipe can be installed across the vent to detect smoke early.

VESDA sampling pipe should be installed under the restricted area of the raised floor and near high-risk cabling, this enables early detection of any smoke in that space.

NB: All designs should be tested to comply with VESDA Design Guide recommendations and local codes and standards.

VESDA® – Sensing danger

VESDA buys time. Time to respond to a fire threat, minimizing damage and business downtime. VESDA systems are highly sensitive, have a wide sensitivity range and can be strategically positioned where smoke will travel. This enables the very early detection of smoke, and in the unlikely event that a fire cannot be controlled, a VESDA detector can be used to actuate suppression systems. Unlike conventional point-type detectors, VESDA systems actively draw air samples to a central detector, they monitor airflow, and a clean air barrier is used to protect the optics. This ensures that air is reliably and actively sampled for smoke and that the optics are protected from contamination, thereby, reducing nuisance alarms and maintaining the sensitivity of the detector over time.

VESDA systems comply with local fire codes and standards

- NFPA - 75 - Standard for the protection of computer EDP/ Clean Agents.
- NFPA - 76 - Standard for the fire protection of telecommunication facilities.
- TIA - 942 - Telecommunications infrastructure standard for data centers.
- FFIEC - The U.S. Federal Financial Institutions Examination Council recommendations.
- BS6266 - 2002 - Code of practice for fire protection for electronic equipment installations.
- BFPSA - British code of practice for design, installation, commissioning and maintenance of ASD systems.

Companies that have installed VESDA systems

AT&T	Verizon	AIS (Thailand)	BellSouth
Sprint	Cable & Wireless	TELUS	Qwest Communications
Vodafone	British Telecom	Bank of China	Orange Telecom
T-Mobile	Cingular	Entel	Telefonica de Movistar
Charter Communications	IDT	DELL	Lynx
Time Warner Cable	Time Warner	HSBC	Nextel
TeleGlobe	MCI	IBM	Telstra (Australia)
China Mobile	China Netcom	JP Morgan	Bank of England
Korea Telecom	SingTel	Standard Chartered Bank	Telecom New Zealand
AboveNet	Optus (Australia)	Bank of Scotland	Telmex

Approvals

VdS · FM APPROVED · LPCB LOSS PREVENTION CERTIFICATION BOARD · c UL us · ACTIVFIRE LISTED · CCCF · NF SERVICE

Call the Xtralis office closest to you, to access VESDA Design Guides and other information.

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