xtralis®

VESDA

WASTE RECYCLING FACILITIES

VESDA PROVIDES DEPENDABLE SMOKE DETECTION IN WASTE RECYCLING PLANTS

- MECHANICAL CONVEYORS
- SIEVES
- DIGESTERS
- LOADING DOCKS
- ELECTRICAL ROOMS/HIGH-LOW VOLTAGE ANNEXES
- EXTRACTION SYSTEMS
- CYCLONES
- SILOS

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Waste Recycling Facilities involve a large variety of risk factors which could cause a fire. The materials are widely varied and are highly flammable. The processed materials are transferred throughout the entire facility via conveyor belt systems. Whether a spark occurs or a hot surface inflames the material, the fire can easily spread throughout the entire facility.

The combustible nature of waste management and recycling sites make a fire an ever-present possibility. Operators need to ensure they have adequate controls in place to prevent fires and should a fire occur, minimize the consequences to human health and the environment.

HARSH CHALLENGING CONDITIONS

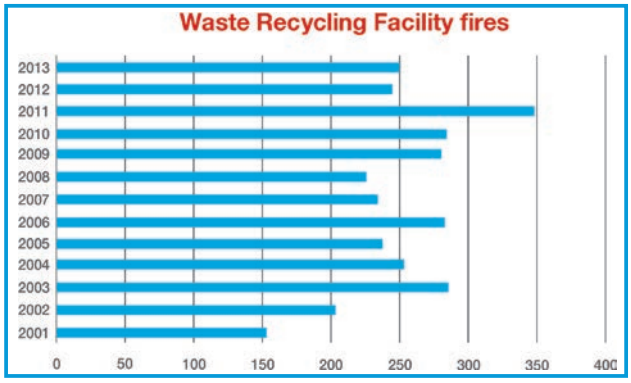
Waste recycling facilities are challenging to protect with conventional smoke detection technologies for various reasons. Most common are:

- **Dirty processes and dusty environments** when sorting and processing materials that can **contaminate** traditional detectors resulting **in false alarms** and/or **reduced sensitivity**
- **High airflows** in sorting areas **dilute smoke** and make detection difficult
- **Potentially hazardous atmospheres** due to material decomposition that can lead to **spontaneous combustion** and generate toxic and flammable gas leaks
- **Slow growth fires** originating from within electrical equipment, mechanical systems or other confined spaces are difficult to identify and cause damage
- **High frictional heat sources** from large collection and sorting equipment such as conveyor belt systems that can quickly spread the fire into the whole building
- **Arcing spots** due to electrical faults, or **creeping current** in high voltage machines due to humidity and dirt deposits

CONSEQUENCES OF SMOKE OR FIRE IN A WASTE AND RECYCLING PLANT

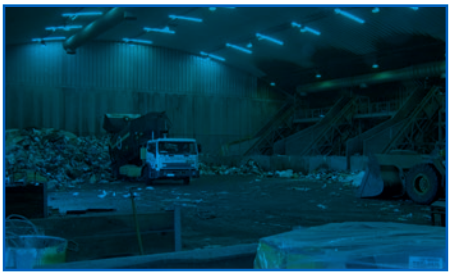
The consequence of loss due to a fire is inversely proportional to how well the detection system can detect smoke. That is, the higher the sensitivity and performance reliability of the detection system the lower the risk and losses will be. Equally important, the detection system needs to be able to cope with the environment where it is installed, offering longevity with minimal service and maintenance. Smoke or fire in a waste recycling facility may:

- **Endanger the lives** of employees
- **Cause enormous damage to equipment** including smoke contamination particularly within electrical equipment requiring long downtimes to be repaired
- **Take days to extinguish** consuming valuable fire brigade resources
- **Cause excessive pollution** to the environment
- **Lead to service penalties** for breach of Service Level Agreements (SLA)
- **Lead to negative publicity** which will impact turnover and profits



There is a fire at a recycling or waste management facility almost every day, according to figures from the Environment Agency (Source FIA).

Source: FIA (2001 to 2013).



WHY USE A VESDA ASPIRATING SMOKE DETECTION SYSTEM?

In order to minimize the risk of fire, it is essential to reduce hazards that could trigger a fire as early as possible. Therefore, a recycling plant needs a reliable active smoke detection system that responds within seconds as the consequences of a fire could be fatal.

An Aspirating smoke detection system provides the designer flexibility by meeting the design requirements of prescriptive codes as well as facilitating the use of today's performance-based fire engineering methodologies. VESDA VLI buys time, time to respond to a fire threat, minimizing damage and business downtime. VLI provides:

- Detection of both **small incipient smouldering fires and large flaming fires**
- **Superior lifetime** in harsh environments given the **IP66 enclosure** and **conformal coating**
- **High resistance to contamination** through the use of **clean air barrier** technology that protects the detection chamber
- **Flexibility to design** on ceiling, underfloor voids, cable ducts and across return air intakes, as well as in targeted equipment sampling such as electrical cabinets and conveyor belt systems
- **Multiple configurable settings** to provide, for example, very early warning for investigation, and subsequent warnings to initiate a fire response plan, evacuation and ultimately suppression if needed

VESDA VLI PARTICULARLY DESIGNED FOR WASTE RECYCLING INDUSTRY

Xtralis is protecting waste recycling facilities around the world by offering an actively monitored sampling system, robust detection performance, reliability and consistent sensitivity consistency over time.

VESDA VLI

- Maximum area coverage of 2,000 m^2 (21,520 sq. ft.)
- Up to 4 inlet pipes
- Total pipe length 360 m (1,181 ft.)
- Maximum single pipe length 120 m (394 ft.)
- Absolute smoke detection
- Clean air barrier for optics protection
- Patented fail-safe intelligent filter
- Air flow continuous monitoring
- Patented In-field Clean Air Zero
- Auto learn smoke levels and thresholds
- IP66 enclosure
- Conformal coating for improved corrosion resistance
- Suitable for Class 1 Division 2 applications - Groups A, B, C & D
- SIL 2 rated according to IEC 61508

APPLICATIONS THAT OFFER A PARTICULAR STRONG SOLUTION-FIT

Waste Recycling Industry applications are wide and varied and present various challenges to effective and reliable smoke detection and on-going maintenance.

Applications	Causes	Consequences	Detection Challenges
Loading and offloading docks, sorting areas, large open areas 	Reception of hot loads, or hazardous materials (gas cylinders, flammable liquids) which can subsequently cause a fire. Some materials can spontaneously combust under certain conditions, and the risk generally increases when materials are stored for prolonged periods	The fire might spread via cable trays. Smoke, toxic and corrosive gases are generated during these fire events that can affect the whole building, and impact the operational functions	High level of dust, various particle sizes, humidity and high airflows creating dilution
High machinery voltages 	• Generation of arcs due to contact faults at the screw-type or clamp connections of contactors, switches and other components • Creeping current due to humidity, dust, oil and coalification • Mechanical damage due to shocks, vibration stress and rodent attack • Insulation faults	Impact on operational functions due to power failures that may affect the entire premises	Heat build-up due to insufficient discharge of heat, too densely arranged connections, or dirt deposits on electrical equipments High ambient temperatures
Electrical and processing cabinets 	Electronics, electrical circuits, power supplies	Critical impact on operational functions, risk of downtimes	Incipient slow-growth fires, low smoke levels, diluted at source by electronics cooling systems
Conveyor belts 	Friction caused by the build-up of material around a roller, resulting in a heat source sufficient to ignite nearby materials Electrical and mechanical faults resulting in a smouldering fire within the conveyor's mechanism or housing	Critical impact on operational functions, risk of disruptions	Fire risk from burning flammable loads, such as paper or cardboard, travelling along the conveyor belt at fast speed

ABOUT XTRALIS

Xtralis is a leading global provider of powerful solutions for very early & reliable detection of smoke, fire, and gas threats. Our technologies prevent disasters by giving users time to respond before life, critical infrastructure or business continuity is compromised.

We protect highly valuable and irreplaceable assets and infrastructure belonging to the world's top governments and businesses.

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

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