A complete fire detection solution.

In recent years, many recycling plants have had fires due to various external events and equipment failures. These events and failures have caused combustible waste products to be ignited often with catastrophic results.

Recognising this, Patol recommend a combination of specialist products for early detection of potential and actual fires in harsh environments.

Typically plants process mixed recyclable waste, which is collected, sorted, stockpiled and processed from a number of materials such as wood, plastic, paper, cardboard, rubber and carpet / tiles. The waste products are highly combustible and susceptible to potential ignition from the processing machinery.

Fire detection systems need to be able to detect quickly and reliably, with minimum long term maintenance and crucially without causing unwanted alarms. Fire detection systems not only have to protect life, but also the building and expensive plant and machinery.

Conveyor systems in general have a fire risk due to external events and equipment failure. However, the flammable nature of products including the ability of some types to self ignite, introduces an exceptional hazard.

Fast, reliable detection can reduce damage to equipment and the high cost of repair or replacement, minimise down time and consequential loss and lessen the impact for potential pollution from toxic fumes.

Patol is a global leader in the design and manufacture of specialist fire detection products for Industrial applications. Founded in 1968 Patol is a privately owned British company located near Reading UK.

Patol has strong domestic and export business experience historically within the Power Generation and Petrochemical sectors around the world. We also partner leading Fire Protection companies by providing a solution based approach with our products

Fire Detection and Suppression

Despite the most stringent measures to prevent fires, even the best managed sites can experience fire events from time to time.

The faster that these are detected and addressed (extinguished) the lesser will be the cost due to plant damage and down time.

Different fire scenarios require a different form of fire detection to provide a reliable fast responding and trouble free system.

A fire condition within a conveyor system will often be a moving hazard - hot or burning product imported onto a traveling conveyor belt.

Modern recycling plants are by their very nature, dirty and dusty environments. Patol have four specialist detection products that provide a complete solution for dusty environments. These products have been extensively used for many years to protect high value assets such as coal fired power stations and steel mills.

They are:

- Infrared Transit Heat Sensors for monitoring waste on conveyor systems.
- Linear Heat Detection Cable for machinery or internal waste reception and storage areas.
- Thermal Infrared Cameras for internal waste reception and storage areas.
- Aspirating Smoke Detection for general areas.

The Infrared detection products incorporate air purging to keep the optics free from dust and reduce maintenance.

The Aspirating Smoke Detection systems can incorporate automatic blow out devices to reduce dust build up and maintenance.
Fire Safety in Recycling Plants

IR Transit Heat Sensor

The Patol 5610 infrared transit heat sensor is an early warning device, which can trigger at temperatures as low as 100°C, when monitoring materials being transported on conveyor systems, before they have reached the ember or flame condition.

Its unique detector with enhanced Infrared monitoring has been created to detect black body heat. Black body emissions occur for all material, the detector is designed to detect a change in these emissions even at relatively low temperatures, when the material moves through its field of view.

Thermal Infrared Camera

The FireTIR is an early fire detection system based on radiometric infrared cameras to monitor internal waste reception areas, internal storage areas, warehouses of raw materials, silos, storage areas and for other flammable substances or hazardous environments, including ATEX classified zones.

A customised design offering full remote control of all thermographic cameras with fast and precise temperature measurement, FireTIR can capture the temperature distribution of a surface in milliseconds. Automatic detection evaluates objects to determine any hot and cold spots. Configuration of different inspection zones, facilitates processing parameters of each zone; emissivity, measurement temperatures, colour palettes, dimensions, etc., offering recording functions and analysis of measured data. Advanced concepts of interface allows easy integration into networks and automated systems with email notification of alarms.

The system offers real time inspection for early detection. Definition of alarm zones and related temperatures and also including discrimination to avoid false alarms due to work vehicles, forklifts etc.

Linear Heat Detection Cable

The Patol Linear Heat Detector Cable (LHDC) is designed to provide early detection of fire conditions and overheating in circumstances where other forms of detection would not be viable, due to the inability to sustain the environmental requirements. Extensive single zonal lengths of the LHDC may be installed with the ability to trigger alarms for hot spots occurring on very small sections of the overall cable. The LHDC may be employed in a wide variety of applications but is particularly suited where there are harsh environmental conditions.

To detect static fire and to protect the upper side of the conveyor, the cable should be installed above the centre of the belt at a height of 1 - 1.5m. Normally this is achieved by the use of a steel catenary support wire to which the LHDC is affixed.

LHDC is typically installed above and below the conveyor belts.

Aspirating smoke Detection

The Patol ASD is a highly sensitive, active smoke detection system, offering application specific sensitivity adjustment alongside pre-signalling and pollution analysis. Detecting miniscule glowing and smouldering fires and can be deployed practically anywhere. A high-power LED combined with a Large Volume Smoke Chamber results in unparalleled, adjustable sensitivity with the lowest aerodynamic resistance and the utmost resistance to pollution and soiling. These features ensure long system service life and durability.

The ASD units consist of one or two independent sampling pipes with sampling apertures, each with a variable sensitivity smoke detector. A high performance ventilator draws air from the facility being monitored through the sampling pipe, the air is continuously evaluated by the smoke sensors. Any increase in the smoke concentration is detected very early. Three pre-alarms and two main alarms can be programmed for each and signalled via volt free relay contacts.

Aspirating Smoke Detection is ideally suited to be used in internal waste reception areas and storage areas. An automatic blow out device is used as an accessory part for the ASD system in areas with high levels of dust and dirt. With the blow out device, the aspirating smoke detectors suction pipe is automatically blown through and cleaned to prevent air flow fault messages due to contaminated sample points and false alarms. This way, the lifespan of the smoke sensor in the aspirating smoke detector is increased considerably.

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