



FIRE PROTECTION SOLUTIONS FOR WASTE & RECYCLING FACILITIES



GASEOUS SUPPRESSION



WATER SUPPRESSION



FOAM SUPPRESSION



EXPLOSION PROTECTION



FIRE DETECTION



MILITARY & DEFENCE



SPECIAL APPLICATIONS



SUPPORT SERVICES

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INTRODUCTION

Waste fires can occur at various stages of the waste management chain. These include but are not limited to:

- Waste Collection
- Transport
- Transfer Stations
- Recycling Processes
- Disposal at Landfill

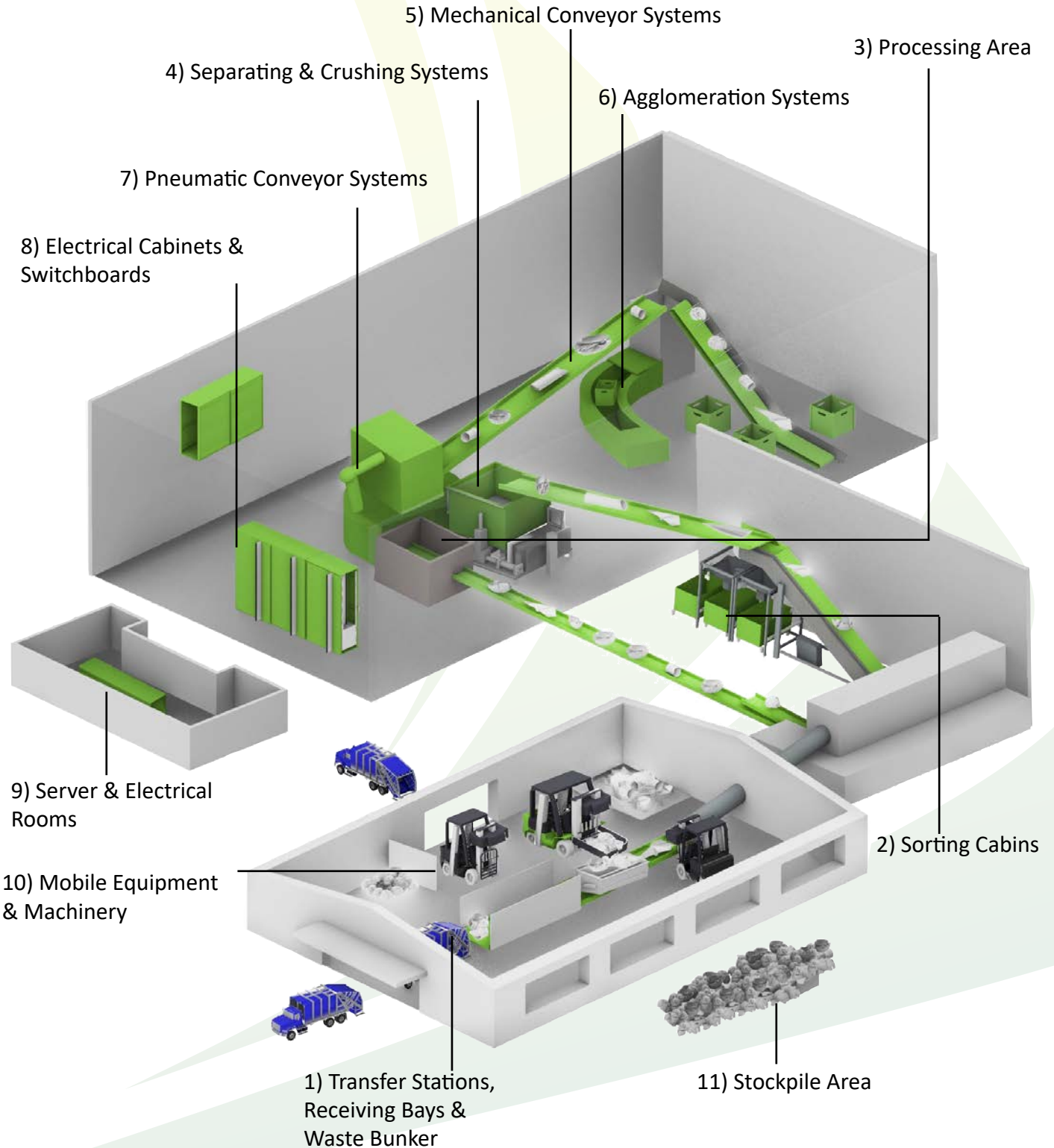
The source of combustible material also varies greatly and includes tyres, used oils, green waste, wood waste, solvents, batteries, municipal solid waste and so on. In fact, increasingly the cause of a large and growing portion of fires has been directly attributed to improperly discarded lithium-ion batteries. Fires have the potential to cause significant harm to people, property and the environment through the release of hazardous chemicals to the atmosphere and ground water supplies.

It is therefore important to provide adequate and suitable protection to the growing waste & recycling facility space in Australia to eliminate any risk of fire events.

Fire Protection Technologies is the leading independent supplier of product, design and engineering services in Australia, New Zealand and Asia Pacific. In conjunction with our 'whole of life' approach to our product range, technical support, design and engineering solutions are available throughout all stages of a project from development to delivery and we continue to provide ongoing support for the life of the product.



FIRE PROTECTION ZONES



PROTECTION ZONES TABLE

PROTECTION ZONE	CAUSES OF FIRE	TECHNOLOGIES USED
1) Transfer Stations, Receiving Bays & Waste Bunkers	<ul style="list-style-type: none"> Mechanical damage to Lithium-ion batteries due to loader, wheel or tipper contact Hot loads caused by lithium-ion batteries, hot garden waste etc Sparks caused by metal waste scraping together or on hard surfaces 	<ul style="list-style-type: none"> Flame Detection Thermal Imaging Detection Lithium-ion fire extinguishers Water & Foam Monitors Water Mist
2) Sorting Cabins	<ul style="list-style-type: none"> Defective electrical equipment Batteries mixed with general waste Other hazardous material mixed with general waste 	<ul style="list-style-type: none"> Water Mist Linear Heat Detection Flame Detection Thermal Imaging Detection Lithium-ion fire extinguishers
3) Processing Area	<ul style="list-style-type: none"> Shredders Crushers Bag Breakers/Openers 	<ul style="list-style-type: none"> Water Mist Water & Foam Monitors Linear Heat Detection Thermal Imaging Detection Flame Detection
4) Separating & Crushing System	<ul style="list-style-type: none"> Sparks caused by friction Spontaneous combustion of materials while being transported due to aeration Other hazardous material mixed with general waste 	<ul style="list-style-type: none"> Water Mist Flame Detection Linear Heat Detection Thermal Imaging Detection
5) Mechanical Conveyor System	<ul style="list-style-type: none"> Belt slippage or misalignment can cause heat generation causing fires on the conveyor system Failing idlers creates friction which can lead to combustion of product around the roller Ignited waste can be transferred to other parts of the facility if not detected 	<ul style="list-style-type: none"> Water Mist Flame Detection Linear Heat Detection

PROTECTION ZONES TABLE

PROTECTION ZONE	CAUSES OF FIRE	TECHNOLOGIES USED
6) Agglomeration Systems	<ul style="list-style-type: none"> Fluids igniting on hot surfaces Oil carrying lines having leakages Accumulation of hazardous waste in processing machine 	<ul style="list-style-type: none"> Water Mist Flame Detection Thermal Imaging Detection
7) Pneumatic Conveyor Systems	<ul style="list-style-type: none"> Sparks in the processing machinery 	<ul style="list-style-type: none"> Spark Detection & Suppression
8) Electrical Cabinets & Switchboards	<ul style="list-style-type: none"> Overheating Overloaded Circuits Faulty wiring and electrical faults 	<ul style="list-style-type: none"> Micro Environment Gas suppression
9) Server & Electrical Rooms	<ul style="list-style-type: none"> Overheating Short Circuits 	<ul style="list-style-type: none"> Gas Suppression
10) Mobile Equipment & Machinery	<ul style="list-style-type: none"> Ignition sources in engine and loader compartments 	<ul style="list-style-type: none"> Vehicle Suppression System Lithium-ion fire extinguishers
11) Stockpile Area	<ul style="list-style-type: none"> Self generating spontaneous combustion 	<ul style="list-style-type: none"> Thermal Imaging Detection Water & Foam Monitors



TECHNOLOGIES USED

FIRE DETECTION

FLAME DETECTION

Flame Detectors operate in the harshest environmental conditions and offer a solution for virtually any application, both indoors and outdoors, where there is a fire risk to personnel and high value plant and capital equipment.

We offer flame detection solutions with fast response times, the best area coverage, the highest immunity to false alarms and all the performance and safety approvals you need. Before you decide which detector fits your requirements you need to know the 'pros and cons' of each type of detector as no single detector is suitable for every situation.

Our wide range of flame detectors even includes a triple IR (IR3) detector with a built in HD-CCTV camera making it the perfect device for fast detection with the ability for remote viewing of the facility and fire incidents.

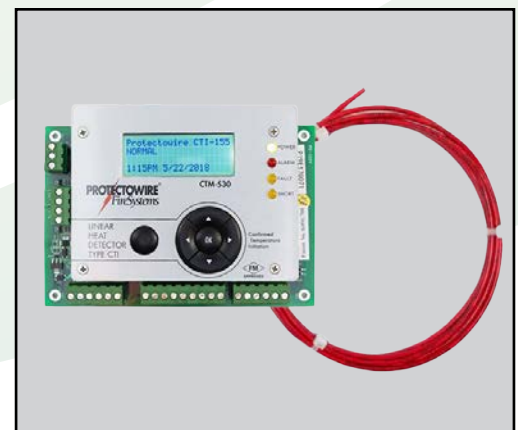


LINEAR HEAT DETECTION

Digital linear heat detection cable is a conventional style heat detector, capable of detecting a fire along the length of the cable.

The product range consists of a standard two core cable of various temperature ranges, as well as detection modules to provide exact alarm point locations. Our Confirmed Temperature Initiation (CTI) range also can differentiate between a mechanical short and an actual thermal fire event, eliminating the possibility for false alarms.

Digital linear heat detection is a cost effective and simple way to provide heat detection with continuous detection along its total length.



TECHNOLOGIES USED

FIRE DETECTION

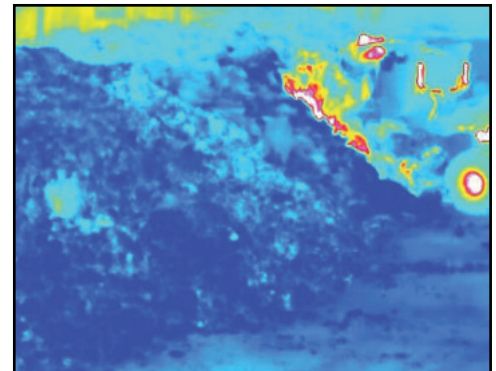
THERMAL IMAGING DETECTION

Our thermal imaging fire detection systems are a reliable choice for surveillance and recognition of spontaneous fires on conveyors, at waste transfer stations and stockpiles. The probability of spontaneous combustion in these areas is high with disastrous effects for personnel and the environment.

Thermal imaging detection systems utilise high performance infrared cameras coupled with a powerful software package to analyse thermographic images to detect hot spots making it a very early warning fire detection system.

The infrared cameras can either be fixed or mounted on a pan-tilt arrangement which automatically monitors a defined area, continually measuring the surface temperatures. Hot-spot differentiation is possible to mitigate false alarms caused by operational heat sources such as hot exhausts from plant machinery, motor housings etc.

Features include remote viewing via event management software, image and video storage, hot-spot targeting, facility heat mapping and automatic operation of remote-controlled water or foam spray monitors.



TECHNOLOGIES USED

WATER & FOAM SUPPRESSION

WATER & FOAM MONITORS

The use of Fire Monitors in industry applies to areas where there are large distances between accessible points, and the risk of fire or exposure to radiant heat/toxic smoke is severe. Fire monitors use water or foam solutions to project over long distances and provide coverage over a wide area.

It is with this in mind that the range of monitors provided by Fire Protection Technologies are specifically selected to consider optimal throw projection performance, using oval shaped waterway designs, reducing flow friction and turbulence in the water stream.

When combined with our interchangeable nozzle selection we can effectively deliver accuracy and projection performance with straight stream applications using water or foam solution, and wide angled, directional spray fog patterns across singular or adjustable flows.

The robust materials of construction and movement flexibility of our monitors are available across the whole product range tackling flows from 500 L/min through to 12000 l/min and higher. All monitor/ nozzle combinations are available as manual lever, hand wheel operated units OR as remote controlled 24 VDC, 230 AC, 440 VAC assemblies when used in conjunction with our purpose-built control equipment options.

The remote-controlled options for the monitor assemblies are built around tailored interface requirements that allow for functional control from fixed analog (joystick) panels to touch screen displays and radio-controlled portable belly packs.

Monitor operation can be integrated to operate on pre-programmed movement patterns, initiated from user interfaces or condition input signals for given scenarios, such as integration with thermal imaging detection systems forming a 24/7 automated response for detection and suppression of hot spot fire scenarios.



TECHNOLOGIES USED

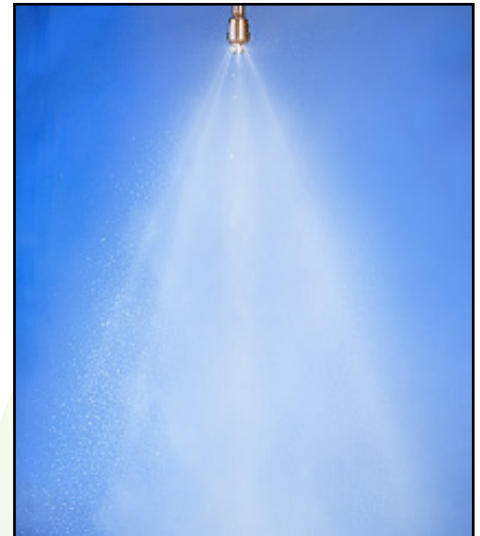
WATER SUPPRESSION

WATER MIST

Conventional Sprinkler Systems are designed primarily to control the fire and prevent building structural collapse, and pre-wet the surrounding combustibles to prevent fire spread. This is achieved using copious quantities of water.

Water Mist suppression systems are specifically designed to either suppress or extinguish a fire. Water is an outstanding fire suppression agent due to its high heat capacity and latent heat of vaporisation. Critical to water mist efficacy is the nozzle which is specially designed to produce a specific range of droplet sizes and velocities.

The larger droplets have sufficient energy and momentum to penetrate the fire plume and cool the fuel. The smaller droplets increase the overall enthalpy of the enclosure as well as being converted to steam at the flame front and entrained into the plume thereby displacing oxygen. Extinguishment is achieved by a combination of these mechanisms.



TECHNOLOGIES USED

GASEOUS SUPPRESSION

Gaseous Fire Suppression or Clean Agent fire suppression are terms used to describe gases used to extinguish fires. Typically gaseous agents work in one of two ways, the first is to inert the atmosphere reducing oxygen levels to a level that will no longer sustain combustion, the second is to react chemically with the fire absorbing heat and causing the chain reaction of combustion to break down.

Clean Agent fire extinguishing systems are typically used to protect three dimensional enclosures containing high value assets that are vital for business continuity, and assets that cannot be protected by traditional sprinkler systems due to the potential for water damage. Typical examples of system applications include server and electrical rooms.

Clean Agent fire suppression products supplied by Fire Protection Technologies are environmentally friendly and cost effective solutions and meet all regulatory authority requirements



TECHNOLOGIES USED

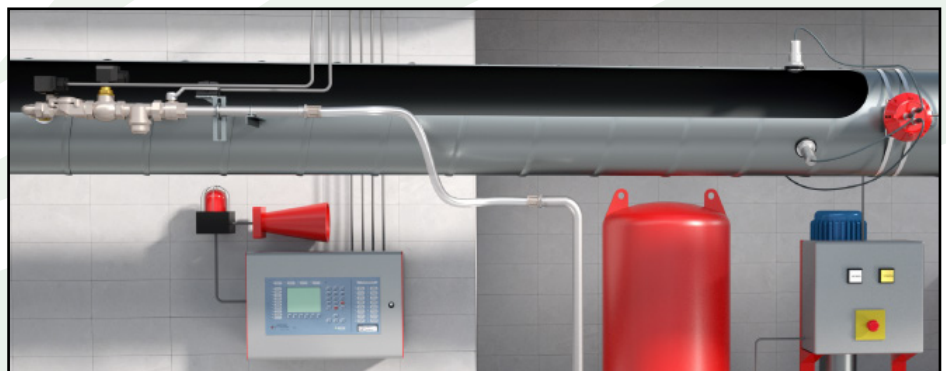
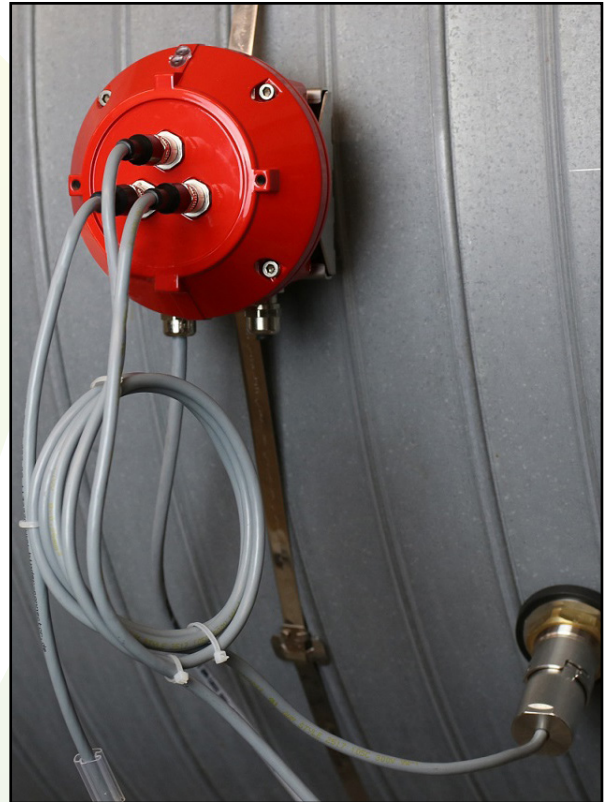
SPARK DETECTION & SUPPRESSION

Spark detection and extinguishing systems detect and extinguish a spark or burning ember in under 300 milliseconds. This rapid detection and suppression can save dust filters or collection bins upstream from destruction caused by fire.

Detecting a spark in a pneumatic material transport duct at speeds that often exceed 25 meters per second requires very sensitive and very fast responding devices. The spark detection and extinguishing system provides the sensitivity, speed, durability and reliability that such an application demands.

High speed infrared detectors that count sparks can quickly operate a suppression system that utilises water, CO₂ or other extinguishing agent of choice to effectively protect the operating plant from fires and explosions.

Since waste and recycling facilities utilize pneumatic conveying and air filtration systems in the recycling process, there is a risk of the hazards resulting from dust fires and explosions. Even one such event can result in damages ranging from costly repairs and down time to loss of plant facilities or even worse an expensive price to pay for something that can be easily avoided.



TECHNOLOGIES USED

SPECIAL APPLICATIONS

VEHICLE SUPPRESSION

Fires have the potential to occur in just about every type of vehicle engine compartment ranging from a below engine pool fire to a pressurised hydraulic line spray fire or combination thereof.

Engine compartments contain a variety of potential ignition sources from electrical to superheated engine surfaces. Additionally, an engine compartment suppression agent must also be capable of dealing with suppression in turbulent conditions. It is critical that these fires be detected and suppressed rapidly to minimise property loss and potentially human lives.

The Reacton Automatic Fire Suppression System will be mounted on the vehicle protecting all the critical risk areas. It will provide rapid fire knockdown minimising fire damage and downtime and also protect those superheated surfaces from reigniting.



TECHNOLOGIES USED

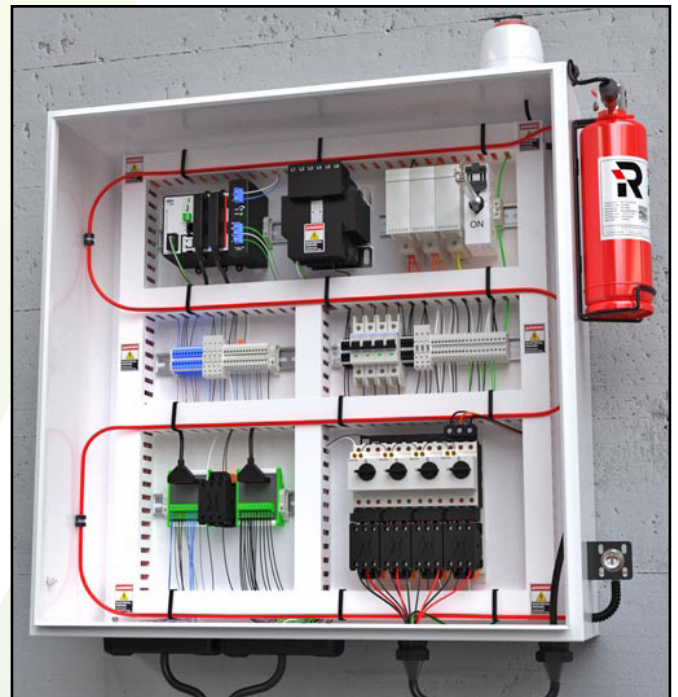
SPECIAL APPLICATIONS

MICRO ENVIRONMENT GAS SUPPRESSION

These systems are small, self-contained detection and suppression systems requiring no external electrical power or fire detection system. They are ideal for the protection of critical equipment, electrical switchboards and various types of small enclosures.

Two system configurations are available, a focus system that delivers the agent through the detection tube directly to the fire, or the multi-point system using the detection tube to detect the fire and discharging the agent through a pipe network with nozzles.

This technology utilises its tubing to automatically detect the fire and actuate the system. The tubing is installed in and around the fire risk areas within the protected area, the tubing is pressurised and in communication with the system contents. When a fire occurs, the tubing will burst at the point of highest heat. As the contents of the systems are directly in communication with the detection tube, immediate discharge of the extinguishing agent is started at the point of detection.



TECHNOLOGIES USED

SPECIAL APPLICATIONS

LITHIUM-ION FIRE EXTINGUISHERS & BLANKETS

AVD fire offers a range of lithium battery fire portable extinguishers, trolley extinguishers and specialized fire blankets.

AVD is an aqueous dispersion of chemically exfoliated vermiculite. It is applied to lithium battery fires as a mist, extinguishing them and preventing the propagation of the fire.

AVD is a new and revolutionary extinguishing agent which has been developed during the past few years in response to the demand for products which can deal with high temperature flammable metal fires and lithium iron and lithium polymer battery fires. AVD offers a significant performance improvement over conventional extinguishing agents when applied to these very particular fire types.

AVD has undergone extensive testing with a variety of delivery systems and is suitable for application using standard fire extinguishing equipment via a specialized misting nozzle.

AVD Fire have developed a specialist range of fire blankets specifically for the Lithium-ion battery market. These blankets are capable of withstanding extremely high temperatures for a prolonged period of time as well as being robust enough to offer protection against potential debris and shrapnel expelled during a battery fire event.



PRODUCTS:

Gaseous Suppression



Inert Gas (IG-01, IG-55, IG-100, IG-541)
Novec 1230™ Fluid (FK-5-1-12)
FM-200® / NAF S 227 (HFC-227ea.)
Ecaro 125® / NAF S 125 (HFC-125)
Carbon Dioxide (CO₂)
Hybrid Systems (N₂ / Water)
Pressure Relief Vents
Enclosure Integrity Testing Equipment
Pipe & Fittings

Water Suppression



Water Mist - High Pressure
Water Mist - Intermediate Pressure
Water Mist - Low Pressure
Hybrid Systems (Water / N₂)
Monitors & Delivery Systems
High Speed Deluge

Foam Suppression



Foam Concentrates
Foam Proportioning
Foam Delivery Systems
Foam Concentrate Testing

Explosion Protection



Explosion Suppression
Explosion Isolation
Explosion Vents & Pressure Relief
Spark Suppression
Explosibility Testing

Fire Detection



Linear Heat Detection - Digital
Linear Heat Detection - Fibre Optic
Linear Heat Detection - Micro Chip
Flame Detection
Video Imaging Detection
Spark Detection
Control & Indicating Equipment
Thermal Imaging Detection
Aspirating Smoke Detection

Military & Defence



Military Vehicles
Naval Vessels

Special Applications



Micro Environment
Oxygen Reduction
Kitchen Protection Systems
Dry Chemical
Vehicle Systems
Compressed Air Foam
Marine & Offshore
Vapour Mitigation
Li-Ion Fire Systems

Support Services



Design / Engineering
Technical Support
Services & Testing

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