

REFERENCES



Proven Performances : CostalGuard Patrol Boat

- Fire outbreak and spread caused by overheating port side engine and combust exhaust manifold and rubber seal
- Successful activation of installed Pyrogen EXA-M
- Effectiveness of Pyrogen EXA-M in extinguishment of fire

OTHER SOLUTIONS

PYROprevent Hypoxic Fire Prevention System

Unlike traditional fire suppression systems which designed to extinguish fire upon detection, the PYROprevent system prevent fires from occurring by continuously monitoring and maintaining the proportion of Oxygen to Nitrogen in the enclosure so that it is not even possible for fire to ignite.

Key Features

- Eliminates every risk
- Non-toxic
- Non-polluting
- No residue
- No aesthetic impact on the protective space
- Easy installation
- The plant is customisable and expandable

Applications

- Data processing centers
- Finance institutions, banks and insurance companies
- Petrochemical and pharmaceutical industries
- Large warehouses, store rooms
- Libraries and bookshops
- Museums and archives
- Rooms containing high value equipment or instruments



PYROinert IG01; IG100; IG55; IG541 Inert Gas Fire Suppression System

PYROinert is Clean Agent system comprising of Nitrogen and Argon, PYROinert extinguish fire by lowering oxygen content in protected enclosure to below the level that supports combustion or re-ignition of fire. At that level, personnel present inside protected enclosure would still be able to breathe.

Key Features

- Non conductive
- Non-corrosive
- Colourless and odourless
- Chemically inert (non-reactive)
- Zero ozone depletion potential
- Zero global warming potential
- 300Bar allows for 30% extra filling capacity and further delivery distance
- Low refilling cost

Applications

- Archive rooms
- Data centers
- Control rooms
- Vaults
- Electrical rooms



IPEX Impulse Podwer Extinguishing Modules

IPEX modules is a non-pressurised self-contained metal canister delivering a gas-powder extinguishing medium into a fire zone within seconds from activation.

Key Features

- Cost effective
- No pressure cylinder
- Extremely high performance
- Impulse/rapid agent delivery
- No agent caking
- Versatility of applications
- Suitable for aggressive environments

Applications

- Transport – engine compartments of buses, construction / forestry and other vehicles
- Mobile Equipment – air compressors, diesel generators
- Rail – engine compartments, depots, relays
- Military armoured vehicles
- Mining vehicles,
- Mobile equipment
- Oil transformers



WE PUT A FULL STOP TO FIRE



EXA / EXA-M

Condensed Aerosol Fire Suppression



PT. Trinitas Victori Pyrogen Nusantara
Total Fire Protection Specialist
Products - Services - Solutions
www.tvpn.co.id

Awards, Recognitions and Certifications



Pyrogen Manufacturing Sdn Bhd
No. 17 Jalan Pemberita U1/49,
Temasya Industrial Park,
40150 Shah Alam, Selangor
Malaysia
Tel. +60 3 5569 9988 Fax. +60 3 5569 6999



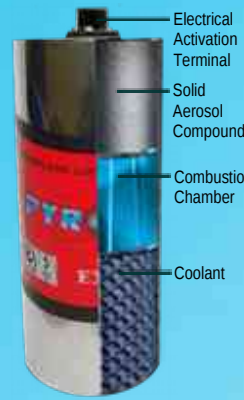
www.fireprotection.co.id

Pyrogen Technologies (Aust) Pty Ltd
P.O. Box 694 Hurstville 1481,
18 Barry Avenue, Mordale NSW 2223
Australia
Tel. +61 2 9586 3200 Fax. +61 2 9586 3211

Authorised Dealer Indonesia :
PT. Trinitas Victori Pyrogen Nusantara
Komplek Duta Harapan Indah Blok OO 53
Jl. Kapuk Muara Penjarangan, Jakarta Utara 14460
Tel. +62 21 2608 0740 ; 6682 815 Fax. +62 21 6682 815
Email. info@fireprotection.co.id

Authorised Agent :

www.fireprotection.co.id



How Pyrogen Work

Pyrogen is an aerosol fire-extinguishing agent. The principle extinguishing action employed by Pyrogen is unique - a special solid chemical, when electrically activated, produces combustion products - micron-sized dry chemical particles and gas. The Pyrogen fire-extinguishing aerosol is a mixture of dry chemical particles and gasses. Before being released into a protected area, the aerosol propels itself through a unique physical coolant, which absorbs and re-distributes heat, thus ensuring flameless discharge and uniform distribution of the aerosol within the area.

Micron-sized aerosol particles exhibit gas-like three dimensional qualities that allow the agent to rapidly distribute throughout the enclosure and reach concealed and shielded locations. Homogeneous distribution is achieved in a matter of seconds, while long holding times help to prevent fire re-ignition.

Products Ranges & System Designs

Pyrogen offers a choice of applications - Total Flooding (protection of the entire premises) or Direct-To-Source (protection of individual enclosures within the premises). In case of a bank of electrical cabinets located in a large room, such individual protection of each cabinet is more effective both fire wise (targets fire at its source and therefore extinguishes fire at a very early stage) and cost wise (a fire incident requires a fire system replacement in an affected cabinet only, not in the entire premises).



Pyrogen also offers EXA-M range specifically designed for the aggressive environments and heavy-duty applications.

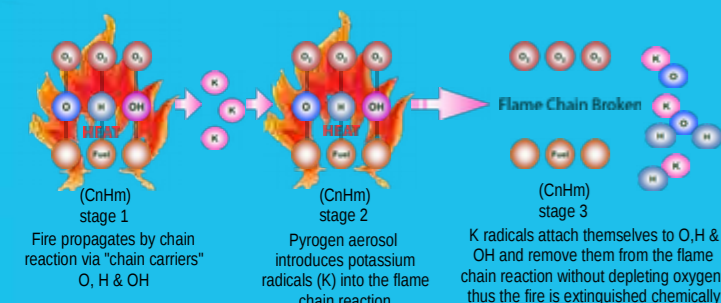
- Heavy-duty execution;
- Elevated ambient temperature environments;
- Resistant to high vibration, dust, salt sprays and other aggressive environments.

Pyrogen offers a complete range of modules for various applications. There are cylindrical units for cabinet and confined areas; drum units for larger enclosures and room total flooding; units for raised floors and ceiling protection.

Each generator is hermetically sealed to maintain the internal integrity of all components within the unit. For the smaller cylindrical units, the casing is made of tough and corrosion resistant stainless steel and military alloy connectors are used.

The drum units are mild steel with corrosion resistant epoxy powder coating. These units come complete with attached mounting brackets.

Fire Suppression Mechanism



Benefits

- **Environmentally Friendly**
 - Zero Ozone Depleting Potential (ODP);
 - Zero Global Warming Potential (GWP).

- **High Performance**

- Fast response after detection of fire;
- Rapid system discharge – instantaneous extinguishing action;
- Low agent concentration.

- **Low Maintenance Cost**

- No pressure cylinders or pipe work;
- No moving parts;
- No gases, no liquids, no leakage;
- No pipe work or manifold;
- Simple to install & re-commission;
- No maintenance on aerosol modules. Only electrical circuit check required.

- **Compact & Versatile**

- Smallest & lightest fire extinguishing system. Most compact when compared size for size with other fire extinguishing systems;
- Resistant to high humidity, corrosive and salty atmospheres;
- Choice of system operation modes – automatic, manual, electrical, thermal;
- Can be fully autonomous stand-alone systems when coupled with our TAD detection and activation devices – no power source or battery required.

- **Tested & Certified**

- Activfire, Active Fire Protection - Product Certification by CSIRO Australia*;
- Approved alternative to Halon under Significant New Alternatives Policy (SNAP) program by United States Environmental Agency (USEPA);
- National Maritime Safety Committee Australia;
- American Bureau of Shipping (ABS);
- Certified & recognised by various certification bodies worldwide.

* CSIRO, Australia - Activfire listing program which complies with : AS/NZS 4487:1997 - Pyrogen Fire Extinguishing Aerosol Systems ; AS/NZS 1851.16:1997 - Maintenance of Fire Protection Equipment - Pyrogen Fire Extinguishing Aerosol Systems; CEN prEN 15276-1 (2004-10) - Fixed Firefighting Systems - Condensed Aerosol Extinguishing Systems - Part 1: Requirements and Test Methods for Components (00191148); CEN prEN 15276-2 (2004-10) - Fixed Firefighting Systems - Condensed Aerosol Extinguishing Systems - Part 2: Requirements and Test Methods for Components (00191149); NFPA Standards, NFPA 2010-2005 - Fixed Aerosol Fire Extinguishing Systems



Applications

Some of the critical areas protected by Pyrogen are :

Electrical	Protection of transformers, sub-stations, switchgear room, cable tunnels, electrical cabinets.
Industrial	Protection of machinery and equipment in factories, generators.
Commercial	Protection of warehouses, storage areas, raised floors/above ceiling areas, garages
Marine	Protection of engine spaces/compartments of ships, boat, ferries.
CNC Grinders	Specially developed system for protection of oil coolant based CNC machines
Computer Room	Protection of data storage and data processing areas
Trains	Protection of locomotives, electrical cabinet of trains



Proven Performance

Power Substation, Malaysia



- Flashover at switchgear cabinet
- Pyrogen successfully extinguished fire by flooding the enclosed area with Pyrogen Aerosol, preventing the fire from spreading to other cabinet.



Telecommunication Room, Malaysia



- Fire in communications equipment room.
- Air-con cable shorted - causing the mains blower unit to combust.
- Fire activated and discharged all 3 Pyrogen generators which successfully extinguished the fire. No collateral damage nor downtime was reported.



Server Room, Thailand



- Fire at the Server Room of Ministry of Interior.
- Pyrogen successfully extinguished the fire thus preventing the fire from spreading to adjacent rooms.



EXA-M Pyrogen Marine Application

Pre-engineered Aerosol Fire Suppression System Kit

Pyrogen EXA-M Marine Application is Pre-engineered aerosol fire suppression system specifically designed for protection of engine room / compartments, machinery spaces and fuel room, has been our prime market in Asia, Australia, US and Europe for many years. We have protected thousands of vessels including Sydney Ferries, Cruises, Police Boats, Yachts, Fishing Boats, Fuel Barge and many other small to medium vessels worldwide.

Pyrogen has been approved by the CSIRO Australia under Activfire Registration Scheme National Maritime Safety Committee under the Register of Compliant Equipment and ABS Certification for International Vessels.

Pyrogen Marine Kit is a complete aerosol fire suppression system kit specifically designed as a low cost, simple solution to the difficult task of protecting your vessel from ravages of fire.

Pyrogen Marine Kit consists of an EXA-M extinguishing module and accessories with an option of a automatic and manual electrical operation or manual pull-ring operation.

Unique Characteristics :

- Rapid System Discharge
- Non Pressurised Modules
- No Piping
- No Liquids, No Gases, No Leaked
- Ambient Operation Temp up to 95°C
- Resistance to Vibration, Corrosive, High Humidity and Salty Atmospheres
- Easy Installation
- Minimal Maintenance (only electrical)
- Environmentally Friendly



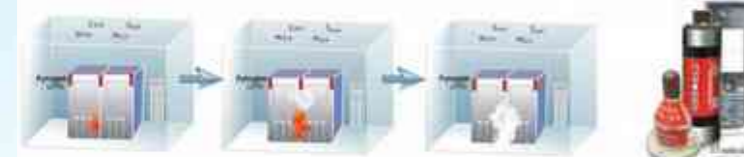
Total Flooding



- Outbreak of fire in electrical control panel
- Heat/smoke detectors activated
- Signal transmitted to control panel
- Pyrogen unit discharged
- FIRE EXTINGUISHED



Direct-To-Source



- Outbreak of fire in electrical control panel
- DTS canister activated automatically
- Spread of fire contained
- Pyrogen unit discharged
- FIRE EXTINGUISHED
- Minimal collateral damage & downtime



Pyrogen Kits

Pre-engineered Pyrogen Packaged Systems designed for specific installations.

Pyrogen Packaged Systems come in kits containing a complete set of components for a system installation.

Available kits include :

- Pyrogen Electrical Cabinet
- Pyrogen Marine
- Pyrogen CNC Grinder
- Pyrogen Industrial / Modular Enclosure
- Pyrogen Vehicle
- Pyrogen Stand-Alone Autonomous System



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