MINING

FIRE & LIFE SAFETY SOLUTIONS

We Protect Lives & Assets through Technology

WHO WE ARE

Without being able to reliably monitor and have early warning of fire across an entire site, the possibility of containing the fire decreases and the risk of injury, damage and downtime increases.

The FS Group understands that downtime on site causes significant financial loss, and that monitoring threats across site can be difficult. This is why we custom design and install fire protection and life safety solutions that work in extremely harsh environments and provide the earliest warning possible of fire.

Allowing you to quickly investigate, control and extinguish the fire to minimise downtime, damage and prevent injury.

INDUSTRIAL & ELECTRICAL EQUIPMENT

We protect industrial and electrical equipment by providing early warning smoke detection that detects fire quickly and minimizes damage caused to equipment.

Electrical substations, switch-rooms, plant or transformer rooms are highly vulnerable to fire and smoke, which can cause significant damage to components. Smoke contains chloride and sulfur particles that react with humidity, leading to corrosion and potential equipment failure.
Prompt detection and response to fires are crucial to prevent irreversible damage and costly downtime.

Conventional detection methods can be compromised by dust, dirt, and high airflows from cooling systems, leading to decreased performance and increased nuisance alarms

Since these sites are often unmanned, swift and efficient fire detection is essential to minimize response delays and avoid unnecessary activation of suppression systems, which can also be costly.

We offer advanced fire detection solutions tailored for electrical equipment environments. Aspirating Smoke Detection systems provide early fire detection by actively sampling air and testing it for smoke with a laser light source after filtering out dust and contaminants.

Additionally, Fibre Optic Linear Heat Detection is perfect for areas with high voltages or strong electromagnetic fields, as it contains no metal and is immune to interference from EM fields. Together, these systems ensure reliable and efficient fire detection in challenging electrical settings.

Watch the video case study here:

PROTECT E-HOUSES FROM IRREVERSIBLE FIRE DAMAGE

E-Houses are prefabricated transportable substations, designed to house medium voltage and low voltage switchgear, critical power equipment and automation cabinets. An E-House solution is a cost effective, risk reduced alternative to conventional concrete block and brick construction.

Each E-House module is custom engineered to meet application requirements with respect to equipment layout, site footprint limitations and logistics considerations.

The components within these E-Houses are vulnerable to fire. Naturally, fire itself can cause extensive damage to the components but even the smallest amount of smoke released through electrical equipment can cause latent contamination and failure.

A typical Fire Protection system would include a primary fire control system, Conventional Detection and Gas Control unit, Conventional Point Type Heat and Smoke Detectors, an Aspirating Smoke Detector, Gas Fire Suppression system and appropriate warning devices, bells, re-entrant speakers and strobe lights.

*Note that these installations are custom engineered for the E-House application

Watch the video case study here:

CONVEYOR SYSTEMS

Prevent injuries and downtime on conveyor systems with early warning of overheating components, embers and fires on conveyor belts, drive gear, idler rollers and motor casings. Fires are a common reason for downtime of a belt conveyor, caused by either overheating of belt conveyor components or ignition of the transported goods. An outage of a belt conveyor can have a significant impact on the business continuity of the facility.

Key benefits of early warning monitoring system for conveying systems:

- Multi-level warning allows for a staged response according to temperature development
- Reliable fire detection at transfer points and along the belt conveyor
- Simple handling due to zones defined in accordance with maintenance process in effect
- Maintenance free sensor cable

CABLE CHAMBERS, TUNNELS & LADDERS

Prevent significant damage and lower the risk of downtime to Cable Chambers, Tunnels, Ladders & Trays by detecting overheating cable insulation before charring occurs.

Heat Detection Systems:

- Detects heat by forming an electrical circuit when the polymer melts, indicating a fire event.
- Ideal for monitoring above each level of cable ladders and trays for rapid detection of overheating due to electrical malfunctions or external conditions.

Smoke Detection:

- Identifies minute combustion byproducts from overheating cable insulation and electrical components.
- Provides early warning of imminent fire situations, allowing for prompt action.

DIESEL GENERATOR BAYS & FUEL TANK FARMS

Ensure the safety and continuity of your operations with our specialized fire detection and suppression solutions for high-risk environments, including fuel storage areas and diesel generator bays.

Advanced Fire Detection Systems:

- Infra-Red and Ultraviolet Detectors: Ideal for detecting excessive heat and radiation from fuel fires at an early stage, ensuring prompt intervention.
- Heat and Flame Detectors: Specifically designed for areas with high ambient smoke levels, such as diesel generator rooms, where traditional smoke detectors may be ineffective.

Integration and Emergency Response:

- Emergency Shutdown: Automatically initiates the shutdown of pumping systems upon fire detection.
- Fire Suppression Activation: Discharges appropriate fire suppression materials over the risk area to contain and extinguish the fire.
- Incident Notification: Alerts emergency response teams immediately to ensure a swift and coordinated response.

MITIGATE THE RISK OF POISONOUS GAS BUILD UP

Prevent, control and mitigate the risk of buildup of gasses by detecting them before dangerous or explosive levels are reached.

Numerous poisonous or flammable gasses are always present in the mining process. By selecting the correct type of detector and siting the detectors in the correct locations, The FS Group can ensure that a buildup of gasses can be detected before dangerous or explosive levels are reached.

These detectors can be used as stand-alone warning devices, be integrated directly into PLC systems using popular 4-20ma protocols or from part of a wider fire and gas detection system for the site.

This type of detection is used to monitor toxic gasses during day to day operations such as blasting, excavation, and from diesel engines.

HARSH & EXTREME ENVIRONMENTS

Protect industrial sites and equipment by providing early warning smoke detection to prevent fires and minimize damage. In extremely harsh environments where most detectors are rendered useless, Linear Heat and Aspirating Smoke Detection is used which provides higher sensitivity and very early warning capabilities.

The FS Group has developed and installed various Linear Heat and Aspirating Smoke Detection systems for applications such as:

- Areas where corrosive liquids and gasses are present
- Areas where extremely high ambient temperatures are present
- Areas with high levels of dust, vapours and atmospheric contaminants
- Extreme Industrial Environments where an extreme amount of contaminants such as dust, smoke, vapours, vibrations etc are present
- Damp, condensing or submersed environments such as water handling areas, tanks or vessels where liquids or condensing gasses are present
- Areas where high resolution and realtime temperature monitoring is required such as Underground Tunnels and Cold Storage

Whether the challenge in the environment is dust, dirt, water, corrosive chemicals, extreme low or high temperatures, or is a hazardous location, this type of detection has the ability to survive these conditions.

FIRE SUPPRESSION

Our Fire Suppression systems are designed to automatically extinguish a fire in a protected space and ensure that the re-ignition of the fire is delayed long enough for the first responders to take appropriate action.

The Fire Suppression systems are designed to do one or both of the following:

- Reduce oxygen levels in the protected space,
- Inhibit the reproduction of heat in the combustion process by method of heat exchange and inhibition of the chemical reaction

The type and design of Fire Suppression system proposed will be determined by the classification of the fire risk in the protected space, with 4 primary non-self-oxidizing risk types: Class A to Class F.

Watch the video case study here:

CRITICAL ELECTRICAL ASSETS

Protect electrical infrastructure and equipment by quickly extinguishing fires without causing damage to sensitive equipment.

Electrical equipment requires an electrically non-conductive suppression system.
Cardon Dioxide fire extinguishing systems are useful in protecting against fire hazards when an inert, electrically non-conductive, three dimensional gas is needed, and where clean up from the agent must be minimal.

WARNING! Co2 is extremely hazardous to humans and is lethal at the design concentrations used in fire suppression systems. These systems should only be designed and installed by qualified persons.

FM200 and Novec 1230 are effective fire suppression systems for areas containing high voltage electrical equipment as it is electrically non-conductive, does not leave a residue and is safe for humans.

HAZARD FLUID BUNDS

Prevent ignition of hazardous fluid bunds and quickly extinguish possible fire with a custom gas suppression solution.

CO2 Suppression systems are effective fire extinguishment for fluid bunds as they are ideal for areas with highly reactive and flammable fluids that cannot be contaminated with water, powders, or foam. CO2, being heavier than air, settles above the fluid in the bund, creating an oxygen-free layer to extinguish fires and prevent ignition.

Our CO2 fire suppression solution offers comprehensive protection for flammable storage areas, ensuring both environmental safety and effective fire prevention.

WARNING: CO2 is hazardous to humans at design concentrations used in fire suppression; systems must be designed and installed by qualified professionals.

FLAMMABLE STORAGE AREAS

Foam Deluge Suppression systems provide rapid and efficient fire protection for flammable and combustible materials. This advanced system combines water with a foaming agent to quickly extinguish large-scale fires, cooling and smothering flames and vapors to prevent reignition. This system can extinguish fires in mere seconds with incredible efficiency.

Key Advantages:

- Rapid Extinguishment: Quickly suppresses extensive fires in seconds.
- Effective Fire Suppression: Cools and separates the ignition source from the fuel surface, preventing reignition.
- Environmentally Friendly: Uses foam that is readily biodegradable in natural environments and water treatment facilities.
- Large Area Coverage: Ideal for large spaces, such as warehouses, ensuring comprehensive protection.
- Cost-Effective: Economical in both installation and maintenance.

Our foam suppression systems are the ideal solution for protecting large storage areas with significant quantities of flammable or combustible liquids such as fuel tank farms.

Aerosol Fire Suppression systems offer a cost-effective, stand-alone fire protection solution for flammable storage areas where residue is not a concern. These systems use a combination of microparticles and gaseous matter to effectively flood the protected area and suppress fires.

Key Advantages:

- Effective Fire Suppression: The system releases microparticles that cool the flame and absorb heat, breaking the fire tetrahedron and extinguishing the fire.
- Rapid Deployment: The suppression agent transitions from a vapor to solid particles and gas upon discharge, ensuring quick and thorough coverage.
- Cost-Effective Solution: Provides reliable fire protection at a relatively low cost.
- Minimal Residue Impact: Ideal for areas where the presence of residue from the suppression system is acceptable.

Aerosol fire suppression systems are perfect for flammable storage areas, providing reliable and efficient fire suppression to protect your valuable assets.

HAZARDOUS & TOXIC MATERIAL STORAGE AREAS

Ensure the safety and security of your toxic and hazardous material storage areas with our advanced containment and Carbon Dioxide (CO2) Fire Suppression solutions.

Key Materials Managed:

- Cleaning Agents: From organic compounds to chlorine-based cleaners and hydrofluoric acid.
- Mining Chemicals: Including sodium cyanide, polymeric compounds (PUR, urea silicate, phenolic resins), quicklime, slaked lime, hydrocarbon solvents, sulphuric acid, and xanthates.
- Fire Hazards: Stored oil-based paints and other flammable substances.
- Toxic and Flammable Decomposition: Manage risks associated with high moisture and temperatures during storage.

CO2 Fire Suppression Systems are non-reactive and safe for use on highly reactive substances like alkali metals (lithium, sodium, potassium) and other reactive materials. It suppresses fires by creating an oxygen-free environment, preventing ignition and extinguishing flames without reacting with the stored chemicals.

Our fire suppression solution provides robust protection for toxic and hazardous material storage areas, ensuring safety, environmental protection, and effective fire management.

WARNING: CO2 is hazardous to humans at design concentrations used in fire suppression; systems must be designed and installed by qualified professionals.

Watch the video case study here:

FIRE SPRINKLERS & WATER SUPPLIES

We cover a variety of sprinkler installations including design, supply and installation of fire protection within warehouse, offices and in-racks.

These conventional sprinkler systems are hydraulically calculated and designed to FM, NFPA, ASIB or local authority standards.

All fire systems are designed by our experienced draughtsman along with hydraulically calculated system to give you the most viable and cost effective protection.

When it comes to supplying your system with fire sprinkler water it is crucial that your water supplies are sized properly for your sprinkler application.

We provide designs and calculate the required fire pumps and water storage tanks for your premises. Our team also fabricates, supplies and installs both pumps and tanks to your required specification.

UNDERGROUND EXPLOSIVES STORAGE

Prevent injury from underground explosives storage areas and excavation tunnels with highly sensitive fire detection and suppression systems. Keeping explosives in underground storage for close and quick access poses a risks to the safety of miners, operations and regulatory compliance.

Explosives are transported in vehicles and fire can potentially start through ignition sources such a faulty electrical equipment, a spark or metal on metal.

The FS Group has developed and installed a fully functional, quick response, electronically actuated Water Deluge system for an Underground Explosives Magazine. The system is designed so that all sprinklers in the area will discharge water in the event of a confirmed fire event, resulting in complete saturation of the entire area.

By installing Industry leading flame and heat detection equipment configured in double knock operation, the system provides the highest fire detection sensitivity capabilities and the maximum immunity against false alarms.

Furthermore, the deluge system is connected via Fiber Optic components into the site wide fire detection network allowing full off site monitoring at the mine's Security and Safety Control Room. Further integration into the mine's Data Collection Systems is possible through software level integration using the Fire Control Systems' onboard MODBUS over tIP capabilities.

The system complies to best engineering practices and current regional mining regulations.

Watch the video case study here:

QUICKLY COMMUNICATE EMERGENCIES ACROSS SITE IN REAL TIME.

Enhance the safety and efficiency of your emergency response with our advanced Voice Evacuation Systems. These systems provide clear communication and guidance during emergencies, facilitating organized evacuation or relocation procedures.

Key Advantages:

- Mass Notification: Acts as an enhancement to traditional fire alarm systems, offering mass notification alerts and evacuation instructions.
- Spoken Messages: Utilizes clear and coherent voice messages instead of anxiety-inducing sirens and strobes, reducing panic and providing specific evacuation directions.
- Comprehensive Coverage: Suitable for diverse environments, including mines located above or below ground or spanning vast distances.
- Durable Communication Units: Weather and vandal-resistant intercom and help point units ensure reliable lines of communication in all conditions.
- Public Address System: Provides effective communication to all staff onsite, delivering both fire warning signals and verbal instructions during emergencies.

Our Voice Evacuation Systems ensure a safe, controlled, and efficient evacuation process, enhancing the overall safety and security of your facility during emergencies.

CUSTOM INTEGRATIONS

Custom integration packs are fitted to allow all the fire protection systems to integrate into the site PLC or Data Acquisition systems. Integration can be done via simple potential free contacts that change state under certain conditions or via complex field server protocols such as Modbus or BacNet. These integrations can be used to automate emergency shut down procedures in the event of a fire event or activate secondary standby systems should the need arise.

Integrations are also done into most building management, safety and security systems found in mining, industrial or commercial operations.

Access Control & Elevator Management

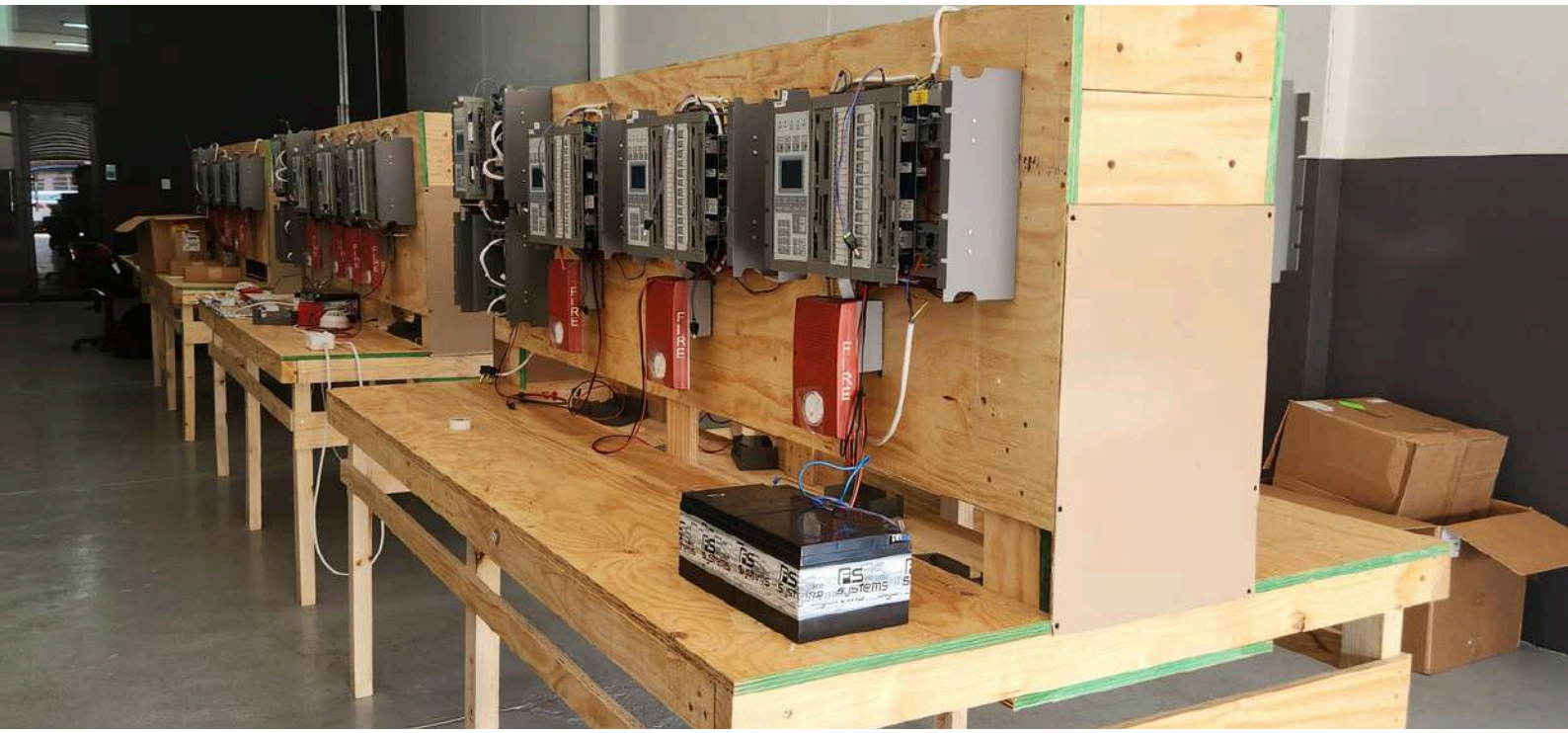
Easily evacuate people in case of an emergency by integrating your fire detection system with your access control and elevator management systems, automatically restricting, and opening up access points to get people to safety.

By integrating the Fire Detection system into the Access Control system, a confirmed fire event can cause certain access control points to open for unrestricted egress while other points can lock down for added security. Fire systems are integrated into the lift management systems which, in the event of a Fire Event, will cause all lifts to “home” to a specific floor not affected by fire (normally the ground floor) and cause them to become inoperable thereafter.

Electrical, HVAC, Smoke & Mechanical Fire Management Systems

Control and reduce the spread of fire throughout buildings by integrating your fire detection systems with your building management system, controlling the transport of smoke, bringing smoke extraction into operation, shutting down electrical systems, causing suppression systems, dampers and fire doors to operate.

The Fire Alarm system is integrated into various building systems which cause the movement of air.
This is carefully controlled to avoid transporting smoke to non affected areas, bring smoke extraction systems into operation, shut down electrical systems that could propagate the fire, manage and monitor water deluge systems that may come into operation, and even cause fire doors or dampers to close to contain the fire.



FACTORY ACCEPTANCE TESTING

Factory Acceptance Testing (FAT) is a quality assurance process conducted to verify that fire system equipment is correctly configured, assembled, and packed before it is dispatched to the installation site. Our off-site FAT service ensures that all components meet stringent operational standards and customer specifications, minimizing the risk of installation issues and ensuring smooth commissioning. Our FAT includes:

1. Comprehensive Testing Procedures:
   - Detailed inspection and functional testing of fire system equipment.
   - Verification of compliance with industry standards and client requirements.
   - Simulation of real-world operational conditions to ensure reliability and performance.
2. Configuration and Assembly Verification:
   - Assessment of equipment configuration to match design specifications.
   - Validation of the assembly process to ensure all components are correctly installed.
3. Quality Assurance:
   - Rigorous quality control checks to detect and rectify any defects or issues.
   - Documentation of test results and any corrective actions taken.
4. Packing and Shipping Inspection:
   - Examination of packing materials and methods to ensure safe transportation.
   - Verification of proper labeling and documentation for efficient site handling.
5. Expert Team:
   - Experienced engineers and technicians conducting thorough FAT procedures.
   - Collaboration with clients to address specific requirements and concerns.

WE PROTECT LIVES AND ASSETS THROUGH TECHNOLOGY

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