Optical Flame and Open Path Gas Detector Applications

SPECTREX

Spectrex is a world leader in Optical Flame Detection and Open Path Gas Detection. They were the first to launch major innovations that have become trade standards such as the first UV/IR and IR3 Flame Detector designs, with continuing new designs meeting application challenges from Offshore to Mall Floors. Spectrex was first to incorporate the Xenon Flash in OPGD detectors to solve false alarm issues common in the industry.

Contents

Oil and Gas

Floating Roof Tanks

Industry | Oil & Gas

Application Description

Flammable and combustible liquid storage tanks are found in industrial facilities such as refineries, petrochemical facilities, bulk storage plants, and marine terminals. Power plants, airports, local fuel companies, and large manufacturing facilities such as automotive and steel plants may also have bulk storage of flammable and combustible liquids. Atmospheric storage tanks are used to store or mix flammable and combustible liquids in various ways, depending on the facilities. These tanks can range from 10 feet to more than 350 feet in diameter and have an average height of about 45 feet. Such tanks can hold more than 1.5 million barrels (6 million gallons for crude oil and other petroleum products).

In a floating roof tank, a floating roof with a rim seal rises and falls with the level of surface liquid. This minimizes liquid loss through evaporation. However, when crude oil and petroleum products are stored in these tanks, there is a risk of vapor leaks around the rim seal. These vapors could ignite, destroying the rim seal and causing a large fire, unless first detected by a suitable flame detector.

Other examples of natural causes include:

» Lightning strikes and the creation of static electricity when tanks are filled or emptied.

» Human error, such as overfilling tanks, ineffective grounding of tanks, and allowing pumping equipment to become overheated are cases where human error can yield ignition.

» Fire sources tied to equipment malfunction include:

» Pipe/valve failures.

» Improperly operating venting devices.

Challenges

Flame detection around the rim seal must occur at the earliest stage to enable prompt activation of suppression, before the rim seal is damaged and more vapors can escape.

Other areas that require continuous monitoring include:

» Tank piping manifolds

» Valves and surrounding areas

» Laboratory and quality control facilities

» Control rooms

» Compressors and turbine enclosures

» Loading/filling stations for rail cars and automotive tankers

Products

» Flame - Next Generation 40/40 Series

» Hydrocarbon gases - Quasar 900

» H2S – Quasar 950

Fixed Tanks

Industry | Oil & Gas

Application Description

Fixed roof tanks are used to store petroleum products with vapor pressures close to atmospheric pressure. Pressure-vacuum valves purged with natural gas prevent air intake into the vapor space. Evaporative vapor loss through the pressure vent valve can be very high. Dangerous levels of toxic H2S can also be present.

Typical fire sources include overfill ground fires or dike fires, resulting from leaking pipes or tanks. Sometimes, fires are a result of operation error or equipment malfunction. These incidents are the least severe. In the event of a leak without ignition, all ignition sources should be isolated. If ignition occurs, the fire should be treated as a large pool fire.

Overfill ground fires are common to fixed-cone roof, internal floating roof, external floating roof, and domed roof tanks. Vent fires are associated with fixed roof tanks, such as cone and internal floating roof tanks. The main cause of a vent fire is a lightning strike which ignites fugitive vapors present at the vent.

Obstructed full liquid surface fires can occur in fixedcone roof, internal floating roof, or external floating roof tanks. They are challenging, as the roof or pan blocks access to the burning surface.

Unobstructed full liquid surface fires are easy to extinguish when the tank diameter is less than 150 feet, there are trained personnel, and sufficient resources. Larger tanks are more challenging, as a large amount of resources are needed in order to control and extinguish a fire with such a large surface area.

Unobstructed full surface fires can occur in fixed-roof tanks without internal roofs, if the frangible weak seam at the roof-shell joint separates, as a result of an explosion or similar event, leaving a full surface tank. External floating roof tanks are also prone to unobstructed full surface fires in the event of heavy rain. With closed roof drains, the roof can quickly sink, leaving the exposed liquid surface vulnerable to a lightning strike.

Challenges

Perimeter monitoring is required for fixed roof areas, to check for escaping vapors. Other areas that require continuous monitoring include:

» Tank piping manifolds
» Valves and surrounding areas
» Laboratory and quality control facilities
» Control rooms
» Compressors and turbine enclosures
» Loading/filling stations for rail cars and automotive tankers

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

Refining

Industry | Oil & Gas

Application Description

Continuous combustible and toxic gas monitoring is a critical facet of operation within a refinery. There are many hazard locations, including:

» Production areas
» Storage hangars and utilities
» Office and control room areas
» Turbine enclosures
» Storage tanks (within the refinery)
» Separate storage tanks farms and filling stations (for crude or distillate automotive tankers or rail-cars)

Many refinery processes and special production units create specific process safety hazards, as follows:

Crude Desalting, Thermal Cracking, Coking, Catalytic Cracking, Isomerization – Gas or vapor leaks from these closed processes may create a potential for fire if they come into contact with a source of ignition. Possible sources of ignition include nearby heaters or exchangers. Some of these processes also produce wastewater streams (sour waters), which contain dissolved hydrogen sulfide and ammonia gases in the form of ionic ammonium hydrosulfide. These can occur at lethal concentrations, necessitating toxic gas detection.

Catalytic Dust - Explosive concentrations of catalyst dust can accumulate. Handling coked catalyst can result in fire if iron sulfide ignites spontaneously.

Hydrogen generation – This process creates a hazard in the event of a gas leak.

Hydrogen Sulfide – Monitoring the Hydrogen Sulfide content of the feedstock is essential to prevent harm to personnel or the environment.

Sweetening – If too much oxygen enters the sweetening process, a fire may occur due to static electricity generation in the settler.

Challenges

Detectors must be able to detect flame, toxic gases, and combustible gases, functioning optimally under challenging environmental conditions, including extreme temperatures and harsh winds.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

Oil Rigs

Industry | Oil & Gas

Application Description

In an oil rig, with high usage of electricity and fuel to run the machinery, a tiny spark could have devastating consequences for the workers on board.

Oil and gas rigs deal with a large number of highly combustible and toxic chemical and gases. This increases the risk of fire and explosions, which can occur spontaneously, without warning. There is also an increased risk of exposure to dangerous levels of toxic gases such as H2S and NH3. Consequently, there is a critical need for continuous gas and flame detection.

A single spark can start a rapid fire breakout if it exposed to the fuel on an oil platform. Many fires have begun during the oil drilling process, when a large pocket of gas is discovered. As the gas rises to the surface, it can cause a blowout and subsequently, a fire. Oil rig blowouts are the leading cause of explosions on oil rig platforms. These blowouts occur when the gravity of the drilling mud fails to counteract the pressure of a pressurized gas zone underground. The pressurized gases cause a kick when exposed to the less pressurized atmosphere.
To prevent a blowout and the resulting damage, a blowout protector (BOP) must be activated as soon as a kick is detected.

Challenges

Detectors must be able to detect flame, toxic gases, and combustible gases, functioning optimally under challenging environmental conditions, including extreme temperatures and harsh winds.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

Storage Tank Farms and Terminals

Crude oil and refined products are stored in tanks at pipeline origination points, where they await shipment. Then, crude oil is delivered to refinery storage tanks in preparation for processing. Refined products are delivered to terminal storage tanks and then distributed to the consumer.

Some tanks are used to collect crue oil from productions wells, and others are used to store seasonally refined products that are only available during certain times of the year.

Storage tank farms, which often contain hundreds of tanks, are sometimes located near urban areas. This poses a huge explosion and fire risk.

There are two main types of storage tank – fixed roof tanks, and floating roof tanks. Each presents its own set of risks. Many farms contain both types of tank, sometimes in separate areas.

FPSO

Floating Production Storage and Offloading Units

Industry | Oil & Gas

Application Description

Offshore oil and gas platforms, rigs, and FPSOs require flame detectors and open path gas detectors to protect equipment, personnel, and the installations themselves. The potential for gas leaks in an FPSO is enormous. Many types of gas leak are possible- hydrocarbons, hydrogen, H2S, and more. Each type of gas leak presents its own set of risks to both personnel and the plant. Both PFSO and oil and gas rigs hold many hazards areas, such as:

» Production areas (drilling pits and pipes)
» Offloading areas (piping connecting to loading vessels)
» Turbines/engines enclosures
» Heating ventilation and air-conditioning ducts (HVAC)
» Control rooms, operation cabins, and captain bridges
» Residence cabins and recreational areas
» Kitchen areas and dining rooms

Challenges

Detectors must be able to detect flame, toxic gases, and combustible gases, functioning optimally under challenging environmental conditions, including extreme temperatures and harsh winds.

Products

SharpEye IR3 Flame Detectors and SafEye Open Path Gas Monitoring Systems enable early detection of flames and gas leaks in FPSO units, to minimize the risks of fire and detect the presence of toxic gases.

» Flame – Next Generation 40/40 Series
» Hydrocarbon gases – Quasar 900
» H2S – Quasar 950

Marine, Rail and Road

Loading and Offloading Of Flammable and Toxic Products

Industry | Oil & Gas

Application Description

Flammable and toxic products are often transported by sea, rail, or road. When these products are loaded or offloaded, there is an increased risk of spillage or leakage. Handlers must pay careful attention to avoid the accidental release and ignition of flammable gases, and the release of toxic gases.

There are various hazards associated with loading and unloading, for both road and rail transport. The severity of these hazards is dependent on the ambient conditions and other circumstances. For example, releasing methanol from pressurized piping can cause instant liquid flashing and vapor generation. From a gravity transfer system, methanol leakage would result in liquid pooling and less vapor generation. Combustion and toxic hazards are always present, to a varying extent, in loading and offloading processes.

Challenges

Flammable and toxic gas leaks must be detected quickly and reliably. Fires must be detected and suppressed swiftly.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

Pumping Stations

Industry | Oil & Gas

Application Description

Pumping stations, also known as compressor stations, are located along pipelines and facilitate the transportation of natural gas from one location to another. The gas is repeatedly pressurized every 40-100 miles, to allow its transportation. The stations have engines or special turbines to pressurize the gas.

The occurrence of fires in natural gas compressor stations is fortunately infrequent. The consequences, however, are often severe, leading to destruction or extensive damage of equipment to the loss of an entire station, and even loss of lives.

The two major causes of compressor station fires are failures of the gas piping systems and failures of the lubricating and seal oil systems ,on the compressor units.

Challenges

Detectors for both flame and gas must be able to function optimally under challenging environmental conditions, including extreme temperatures and harsh winds.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

Gas Stations

Industry | Oil & Gas

Application Description

Gas stations sell vehicle fuels such as gasoline and diesel, and condensed gas. Fuel dispensers are used to pump the fuel into vehicles. Gasoline and diesel are obviously highly flammable, presenting a significant fire risk.

Challenges

The detection systems must be highly reliable and cost effective, with the ability to swiftly detect hydrocarbon flames.

Products

» Flame - 20/20MI

Compressor Stations

Industry | Oil & Gas

Application Description

Compressor decks require continuous gas and flame monitoring due to the following factors:

» Constant high stress on the machinery.
» Vibration, spills, high pressure leaks and fugitive emissions
» In the natural gas stream, hydrogen sulfide, liquids, and undesirable particles can corrode components such as pipelines.
» Possibility of seals or gaskets failing, allowing the fuel to come into contact with heated parts and an ignition source.

Challenges

Flame detection and suppression systems must detect flames rapidly to prevent a widespread fire within the compressor station. Gas detection systems must also be present to detect a build-up of combustible gases that may come into contact with an ignition source and cause a fire. Detection needs to occur in all areas of the compressor station to protect equipment and personnel.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

LNG and LPG Facilities

Industry | Oil & Gas

Application Description

Liquefied natural gas (LNG) is 600 times denser than the gas form, making it more feasible and less expensive to transport. Several processes are used to make LNG, all of which involve refrigerating the gas and expanding it, to turn into a cryogenic liquid. Spills, leakage, and subsequent explosion are a risk in every operational step of LNG production, from compression and odorization through to storage and distribution. Although the cryogenic liquid is non-flammable, if LNG warms and vaporizes in the air, it may form a rising cloud of methane gas which presents a risk for ignition. In a contained area, this could form an explosion.

The presence of refrigerants also necessitates toxic gas detection in LNG facilities, to protect personnel from harm.

Challenges

Due to the high flammability of the gas, quick, reliable detection is critical. Both flame and gases, such as butane, propane, and methane, must be detected at storage, compressor and filling areas. Toxic gas detectors are also necessary to detect harmful concentrations of leaked refrigerants.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950

Petrochemical

Petrochemical

Industry | Petrochemical

Application Description

The production of petrochemicals creates significant risks. Both natural gas and petroleum are highly combustible products. Such production processes may include the production of plastics, paints, solvents, adhesives, agricultural products, or specialty gases. The chemicals and feedstock involved in each process present their own individual hazards that must be monitored.

In addition, many petrochemical processes have dangerous byproducts, like toxic H2S. One such process is the production of aromatic hydrocarbons Benzene, Toulene, and Xylene.

Challenges

Detection systems must function in a variety of different situations and conditions.

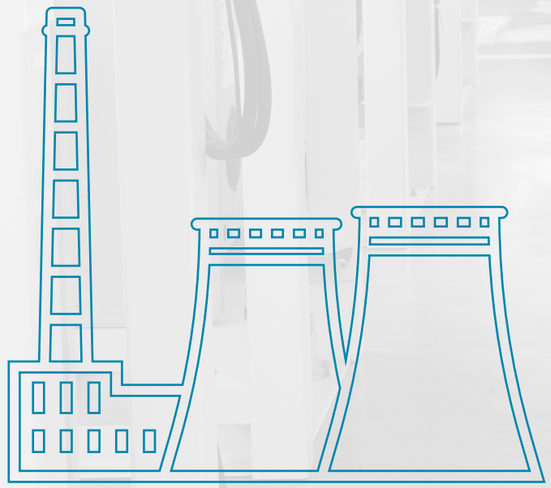
Specific application that require continues monitoring are:

» Processing units including ovens, boilers, reactors, catalyzers, hydro-crackers, separators, heaters, and coolers.
» Storage containers within the production area
» Control rooms
» Waste collectors, cooling water and spill pits
» HVAC ducts
» Labs and quality control areas
» Pipelines with intermediates and final products

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950
» NH3 - Quasar 960

General Industry



Battery Charging Areas

Industry | General industry

Application Description

Battery charging areas are common across many occupancies and industries. Damage to equipment, such as cables, connectors, charging units, or the equipment being charged, can result in a short circuit.
In turn, this could create a fire. Also, charging leadacid batteries may produce hydrogen gas, which can cause explosions or fire.

Improper charging practices, such as the presence of combustible materials close to a charger, poor condition and management of electrical cables, and the location of battery chargers within warehouse storage racking, increase fire and explosion risk. The resulting fire can be widespread and challenging to suppress, especially in storage facilities with a high combustible load.

Challenges

Flame detection systems are needed to respond quickly to the presence of flames after a short circuit, before a fully-fledged fire occurs.

Products

» Flame - Next Generation 40/40 Series

HVAC

Industry | General industry

Application Description

Electrical faults and high gas pressure can result in overly hot heat exchangers, creating damage and the risk of a Heating Ventilation Air Conditioning (HVAC) Unit catching fire. Leaking fuel lines and cracked heat exchangers can also cause fire. If the furnace is crowded, this is also a dangerous situation that increases the risk of a fire. Flame detection systems should be used to prevent injury or damage in the event of an HVAC fire.

Challenges

Flame detection systems must be used to detect flames at an early stage, and prevent HVAC fires.
The systems must be able to function at a range of different temperatures.

Products

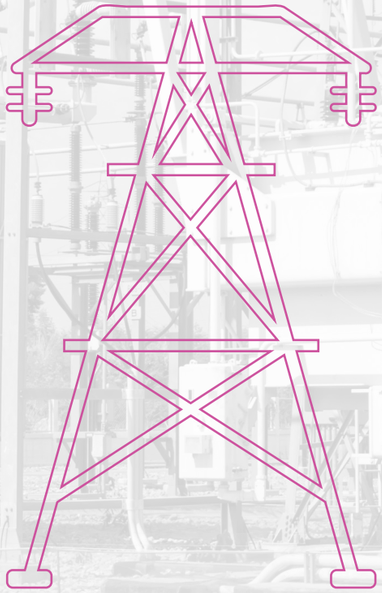
» Monitoring of vented air - SafEye 300

Power Plants and Electricity Suppliers

Power plants that supply electrical energy either from coal, gas, or atomic energy, pose major explosion and fire risks within several specific areas in the plant:

» Fuel (coal, gas, diesel) storage and supply areas
» Turbines areas
» High voltage facilities
» Cooling and waste water collectors
» HVACs, corridors, and elevators in process areas
» Control rooms

Power Generation



Power Generation

Industry | Power Generation

Application Description

Gas detection requirements for power generation can vary widely based on the fuel source, which may be coal, oil, natural gas, or nuclear.
Hydrogen gas is found in two main areas of the power plant:

» **Generators** - These often use hydrogen as a coolant, to keep the turbine generators from overheating. Hydrogen may leak from the coolers, dryers, or filters. These links present a two-fold risk. Firstly, the leaked hydrogen gas is highly combustible, leading to a risk of fire or explosions.
Additionally, the resulting absence of hydrogen as a coolant can result in the machinery overheating and causing extensive damage.

» **Lead Acid Battery Rooms -** Here, hydrogen is produced by electrochemical batteries, as a by-product of their chemical reactions. Leaked hydrogen may accumulate, creating a combustible hazard. Therefore, these rooms require careful monitoring.

When it comes to coal-powered power plants, there are extra monitoring requirements.

» Coal dust is highly combustible and may accumulate in coal conveyers.

» Methane and carbon monoxide is produced when coal burns. These gases may accumulate in hazardous concentrations, thus necessitating toxic gas monitoring and oxygen deficiency monitors. This monitoring safeguards air quality, minimizing risks to the health of personnel.

Other processes involve toxic gases, such as NH3 and H2S, as a by-product.

Challenges

Detection systems must be able to detect the presence of hydrogen gas in generators, turbine rooms, and lead battery rooms. In coal-fired power plants, detectors must enable effective detection of coal dust and methane gas in areas such as coal chutes, conveyers, and employee tunnels.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» Monitoring of vented air - 300 Series
» H2S - Quasar 950
» NH3 - Quasar 960

Transformer Stations

Industry | Power Generation

Application Description

Transformer stations use a variety of equipment and systems, each of which present their own set of fire risks. Fires may involve DC valves, outdoor or indoor oil-insulated equipment, oil-insulated cables, hydrogencooled synchronous condensers, or PCB insulation.
The oil used in oil-insulated equipment may ignite due to electrical malfunction. Internal arcing may occur within the oil due to infiltration of water, failure of core insulation, exterior fault currents, or tap-changer failures

Challenges

Flame detection and suppression systems must detect flames rapidly to prevent a widespread fire within the transformer station. This is crucial, as fires in transformer stations have a severe impact on power supply to customers and affects the utility company's assets and revenue. The fires are also hazardous to personnel and the general public.

Products

» Flame - Next Generation 40/40 Series

Pharmaceutical

Pharmaceutical Plant

Industry | Petrochemical

Application Description

From the outside, pharmaceutical production looks controlled and safe. Every production process involves a carefully maintained and sterile working environment. However, drug production and processing often involves exposure to combustible or toxic industrial chemicals.

The main detection risk in the pharmaceutical plant is that of solvent vapors and fugitive emissions. As surveillance and safety is of utmost importance in the pharmaceutical industry, explosion-proof video cameras should be installed in hazardous areas.

Challenges

Detection and suppression solutions must detect the presence of both combustible and toxic chemicals and gases, including hydrogen gas, in different processing areas.

Ares of concern include:

» Powder granulation, grinding, slugging, or compression operations
» Loading and unloading granulators using mechanical equipment
» Equipment used for milling, blending, and compression
» Drying and dehydration processes
» Solvent facilities
» Chemical mixers and reactors
» Separation and filtration areas
» Bulk agent, byproduct and intermediate storage (vessels, portable containers, pumps, piping, storages areas
» Capsule filling machines and tablet presses
» Packaging and filling machinery with repetitive manual tasks and varying containers (glass, blister packs, pouches, tubes, sachets).

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» H2S - Quasar 950
» NH3 - Quasar 960

Food and Beverage

Food and Beverage

Industry | Food and Beverage

Application Description

The processes involved in the food and beverage industry often utilize flammable or toxic materials that present a risk to equipment and the health and safety of personnel, if left to accumulate.

Challenges

Natural gases in the process of baking, drying, and industrial steam generation must be detected. Ammonia may accumulate in refrigeration units. Chlorine is often used as a disinfectant or bleaching agent.
Hazardous gases such as Hydrogen Sulfide may be present as a by-product of various processes. All of these gases must be detected swiftly to prevent damage to equipment and personnel.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» NH3 - Quasar 960
» H2S - Quasar 950

Refrigeration Facilities

Industry | Food and Beverage

Application Description

Refrigeration facilities in the food and beverage industry are used to keep food cool for long periods of time. These facilities often use ammonia based cooling systems, as ammonia is efficient and economical for large scale food processing and storage. Ammonia is flammable if released in an enclosed space, with a source of ignition present, or if a vessel of anhydrous ammonia is exposed to fire. Its primary hazard, however, is toxicity. The explosive range of ammonia is from 16% (LEL) to 25% (UEL) when mixed with air. It is highly toxic above 500 parts per million (ppm).

Challenges

Gas monitoring systems must be in place to detect the presence of ammonia before it reaches dangerous concentrations.

Products

» Flame - Next Generation 40/40 Series
» NH3 - Quasar 960»H2S - Quasar 950

Industrial Kitchen

Industry | Food and Beverage

Application Description

Fires in commercial kitchens are a frequent occurrence, and can have devastating effects. According to UK government statistics, over half of all fires attended to by the fire service involve kitchen cooking equipment. Many of these fires occur in restaurants, hotel kitchens, and canteens. With the fast pace of the professional cooking environment, the potential for accidents is great. The presence of cooking oils, naked flames, and high heat sources greatly increase the risk of a fire.

Challenges

Flame detection systems must be installed in every industrial kitchen, to detect fires in the early stages and prevent injury or damage to equipment. These detectors must allow cooking processes to be carried out without false alarms, yet still alert to any potential dangerous

Products

» Flame - 20/20MPI, 20/20MI

Flour and Grain Milling

Industry | Food and Beverage

Application Description

Flour dust suspended in the air is more explosive that coal dust. Therefore, the risks of dust explosion are highly important in the flour milling industry. The presence of explosible dust, together with air/oxygen, and a source of ignition, creates the possibility of a dust explosion. Flour, wheat and related dusts have explosive qualities.

Challenges

Fire must be detected at each stage of production, including:

» Cleaning processes, waste disposal
» Grain blending
» Milling
» Post-treatment including heating, coating, and addition of additives and supplements
» Packaging and storage
» Bulk transportation, shipping containers

The fire and explosion hazard is present at all the above production stages, requiring fast and reliable early detection of a combustible dust atmosphere, and also of the ignition process.

Products

» Flame - Next Generation 40/40 Series

Renewable Energ

Hydrogen Fuel Cell Industry

Industry | Renewable energy

Application Description

Fuel cells are usually powered by the highly flammable and abundant gas, hydrogen. Hydrogen is lighter than air and very diffusive, allowing it to diffuse quickly when it escapes into the air. However, if the hydrogen accumulates in a confined space, without sufficient ventilation, such as under a ceiling, it may ignite or cause explosions.

Challenges

Hydrogen fires present specific risks, as they are almost invisible to the naked eye during daylight hours. If a worker believes that there is a hydrogen leak, it should always be presumed that a flame is present. In addition, they have low radiant heat, so the fire may not be detected until a person is actually close to or inside the fire itself. Without a detection system in place, a hydrogen fire could go entirely undetected.

Hydrogen must be handled properly to prevent fire. High expertise, together with fast and reliable hydrogen emissions monitoring, and early fire detection, are required in fuel cell production facilities, storage and shipping areas, and when integrating fuel cells in various automotive vehicles or industrial sites.

Products

» Flame - Next Generation 40/40 Series

Wind Turbine

Industry | Renewable energy

Application Description

Wind turbine fires can occur due to lightning strikes, which are more common due to the turbine's height, as well as its exposed, high-altitude location. Another significant percentage of fires are caused due to mechanical or electric malfunctions. As the turbine's nacelle contains up to 200 gallons of flammable hydraulic fluid and lubricants, and the nacelle itself is made from flammable resin and glass fiber, the risk of ignition is high. This risk is increased by the presence of internal insulation that may be contaminated by oil deposits.

Electrical equipment, such as capacitors, transformers, generators, electrical controls, and transmission equipment all have the potential to catch fire, as do Supervisory Control and Data Acquisition (SCADA) systems. Loose or broken electrical connections or overloaded electrical circuits are also a cause for concern.

Braking systems are also a high fire risk, as they may overheat. In this process, hot fragments of brake material may break off, and become combined with expelled hydraulic fluid from ruptured hydraulic hoses. Hydraulic pumps and connections can also fail, allowing the fluid to ignite when it meets a hot surface.

Challenges

Due to the many fire risks present, a flame detection system is a critical component of every wind turbine configuration. The system must be able to detect and suppress flames at the earliest stage, before a large fire erupts.

Products

» Flame - Next Generation 40/40 Series
» Flame - 20/20MI
» Flame - 20/20MPI

Aviation

Aircraft Hangars

Industry | Aviation

Application Description

Highly combustible aviation fuel leaks can occur in aircraft hangars and fuel storage areas. Therefore, these areas must be monitored constantly, to prevent fires. Fires in aircraft hangars are extremely costly, as they can damage valuable equipment and endanger the lives of personnel.

Challenges

Current flame detection solutions usually focus on the aircraft rather than the aircraft hangar. An aircraft hangar has its own set of challenges.

The system should avoid false alarms, use a minimal number of detectors, and be able to obtain coverage over hangars that may be upwards of 200 feet wide

These are the main challenges involved:

» Large detection areas with significant obstacles - hangars are spacious, rectangular buildings with large obstructions in the form of aircraft bodies and wings. Detectors must be able to cover the whole area economically.

» Large hangar doors - these create variable conditions. When open, a detector's field of view may include the runway, triggering false alarms if non-threatening flames are present, such as from jet afterburners or auxiliary power units in a parked aircraft.

» Radio frequency interference (RFI) - interference from avionics, ground-seeking airport radar and various communication devices can cause false alarm conditions.

» Varying hangar types - hangars are classified in compliance with NFPA 409 and the International Building Code, into four hangar group types, depending on construction, door height, building dimensions and the hazardous materials stored. Every hangar holds its own type and number of aircraft as well. When it comes to detection systems, they must be specific to the hangar, taking into account each facility's characteristics and requirements.

Products

» Flame - Next Generation 40/40 Series

Automotive

Hydrogen Vehicle Parking and Refueling

Industry | Automotive

Application Description

In the area of hydrogen vehicles, there is a risk of hydrogen ignition in fuel storage, fuel supply lines, and fuel cells. Although rupture of the fuel cell membrane would result in combination of oxygen and hydrogen, this would usually be detected by the control system, as the fuel cell would lose potential. The fuel cell also has a low operating temperature, so does not present a significant thermal ignition risk. However, the combination of hydrogen and oxygen on the catalyst surface is a possible source of ignition.

Challenges

Hydrogen fires present specific risks, as they are almost invisible to the naked eye during daylight hours. In addition, they have low radiant heat, so the fire may not be detected until a person is actually close to or inside the fire itself. Without a detection system in place, a hydrogen fire could go entirely undetected.

Products

» Flame - Next Generation 40/40 Series

Vehicle Manufacturing

Industry | Automotive

Application Description

Many processes in the manufacturing of automobiles involve the presence of combustible gases that create a fire risk. Fire or explosions may damage equipment or the facility as a whole, and can be a threat to the lives of personnel.

Challenges

When the automated fuel pump fills the automobile's gas tank at the end of the production process, fuel may spill and accumulate, creating a fire risk. In addition, electrostatic spray booths are also a source of combustible gases. The paint source, which is an electrically charged powder, creates a risk of fire or explosion. Flames must be detected as early as possible to prevent a fully-fledged fire.

Products

» Flame - Next Generation 40/40 Series

Engine Test Benches

Industry | Automotive

Application Description

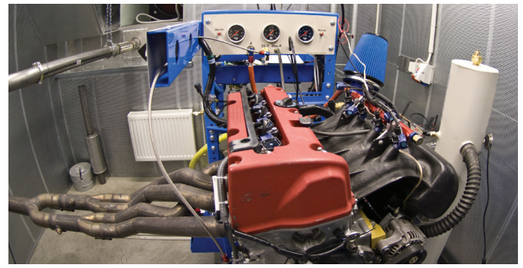
Engine test benches can reach temperatures up to 800°C during engine safety checks, thus creating a high fire risk. Fire detection systems are necessary to protect personnel and valuable equipment.

Challenges

Fire detection and suppression solutions must be able to detect flames at the earliest stages, before a fire spreads and causes damage to expensive equipment or endangers the lives of employees. The equipment must be able to function at high temperatures.

Products

» Flame - Next Generation 40/40 Series, 20/20MI



Chemical

Petrochemical

Industry | Chemical

Application Description

The chemical industry involves the use and production of many hazardous substances, including both toxic and hydrocarbon gases. Every facet of the chemical industry must be monitored, to ensure the safety of equipment, personnel, and the general population. Chemical manufacturers who mix and distill combustible chemicals require flame and gas detection systems, particularly in distillation columns and the tank farm area. Distributors of chemicals must also implement gas monitoring systems to detect leaks in tanks, pipelines, mixing equipment, valves and compressors. These systems must be installed at loading docks and in the transport materials themselves for maximum safety. Both flame and gas detectors are needed in chemical storage facilities, where hazardous gases may accumulate.

Challenges

The gas detection systems used in the chemical industry must be able to detect a wide range of different gases. Flame detectors must be able to detect flames at the earliest stage, to prevent a large fire from occurring.

Products

- **» Flame - Next Generation 40/40 Series**
- **» Hydrocarbon gases - Quasar 900**
- **» NH3 - Quasar 960**
- **» H2S - Quasar 950**

Water

Water and Wastewater

Industry | Water

Application Description

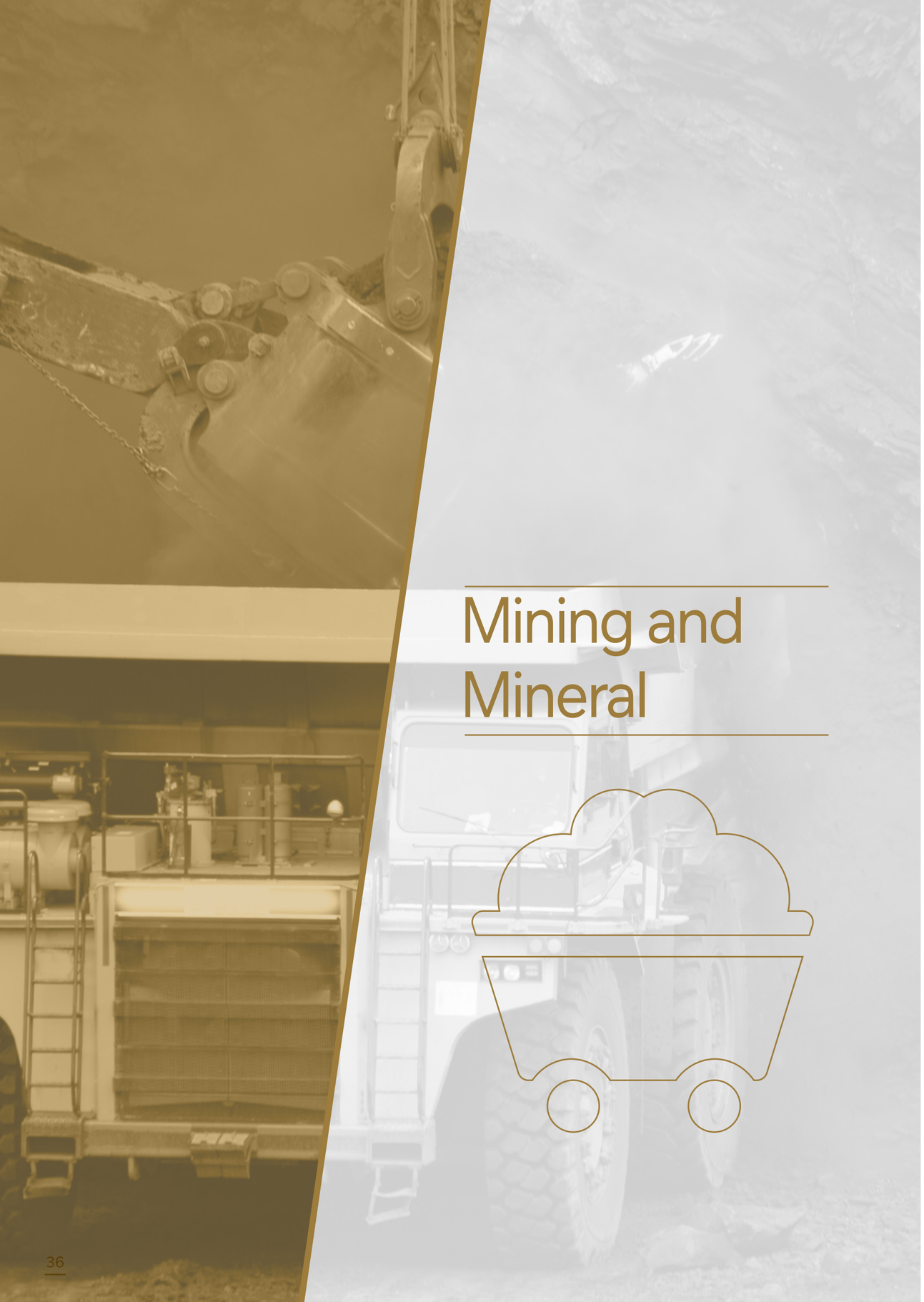
The increasing world population, and its resultant effect on the environment, has led to a proliferation of wastewater treatment plants across the globe. Wastewater treatment processes use and produce a variety of highly toxic and combustible gases. This necessitates close monitoring to ensure the safety of equipment, personnel, and the general environment. H2S is a toxic gas that is naturally present and produced in the wastewater treatment process. It is found in raw sewage and during the processing of sludge. Therefore, monitoring is essential in sewers, sludge de-watering systems, anaerobic digesters, and wet/dry wells. Highly flammable methane gas is also produced during wastewater processing, especially during sludge decomposition. Ammonia (NH3), ozone (O3), and chlorine (Cl2) are used during the decontamination stage.

Challenges

Monitoring systems must be located in every area of the wastewater treatment plant that toxic gases are stored or produced. This will allow quick detection and prevent people from being exposed to harmful concentrations. Flame detection must also be installed to prevent damage due to the ignition of combustible gases in the plant.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» NH3 - Quasar 960
» H2S - Quasar 950



Mining and Mineral

Mining and Mineral

Industry | Mining and Mineral

Application Description

Mining and mineral processing often leads to the production of several different hazardous gases. These products include methane, carbon monoxide, hydrogen sulfide, and hydrogen cyanide. In high concentrations, methane can cause death by asphyxiation, or explosions if ignited. Harmful concentrations of toxic hydrogen sulfide are often found in gypsum mines, tunnel digging, and caissons. Continuous gas monitoring is required to detect accumulation of these toxic gases, and protect both mining equipment and personnel from exposure.

Challenges

Methane is lighter than air, so tends to rise to the ceiling of a mine or tunnel, where it is undetectable by the senses. Hydrogen sulfide, on the other hand, is heavier than air, so it accumulates at the bottom of poorly ventilated spaces. Although it has a strong odor, it quickly deadens the sense of smell, leaving potential victims unaware of its presence. The installed toxic gas detection systems must be able to detect methane close to the ceiling, and Hydrogen sulfide close to the ground, to ensure employees are adequately protected. In addition, flame detectors must be able to detect the methane ignition to prevent fire.

Products

» Flame - Next Generation 40/40 Series, 20/20MI
» Hydrocarbon gases - Quasar 900
» NH3 - Quasar 960
» H2S - Quasar 950

Pulp and Paper

Pulp and Paper

Industry | Pulp and Paper

Application Description

Pulp and paper mills utilize toxic gases and produce them as by-products of various processes. Due to the flammable nature of pulp and paper, facilities are at high risk of catastrophic fires. Therefore, pulp and paper facilities require comprehensive, continuous toxic gas monitoring and flame detection to keep equipment and personnel safe.

The general processes involved in pulp and paper making include:

» Mechanical and chemical pulping
» Re-pulping of waste paper
» Papermaking, converting
» Bleaching and other treatments

The Kraft process is a specific process that involves the use of caustic sodium hydroxide and sodium sulfide, to extract the lignin from wood fiber, in large pressure vessels called digesters. The spent pulping liquor, called black liquor, is concentrated and burned to generate steam for the mill processes. Part of the black liquor is then used to regenerate the sodium hydroxide and sodium sulfide for pulping. Following the Kraft process, pulp from the digesters is washed, screened and bleached. Pulp and paper mills that use the Kraft process involve the use and production of ammonia (NH3), hydrogen sulfide (H2S), and other volatile Sulphur compounds.

Challenges

Toxic gas detection systems must be able to detect a variety of toxic gases at each stage of every process in the pulp and paper mill. In addition, flame detection must be extremely swift, as fire would quickly cause extensive damage in a facility filled with flammable pulp and paper.

Pulp is usually manufactured in large mills where fibers are harvest, for example, in forest regions. These mills often manufacture paper for newsprint, tissue paper and the like.

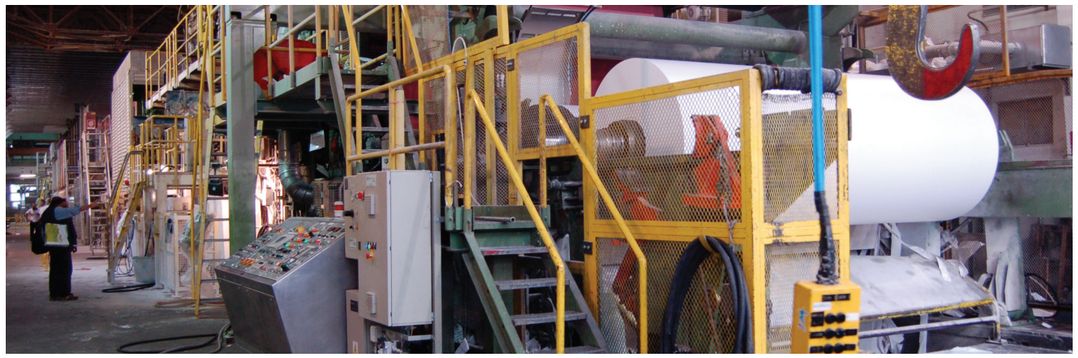
There are other specialist areas of the industry that must be adequately protected, such as:

» Shipping locations including rail yards and docks
» Areas for storage of chips
» Conveyors to take chips to the digester
» Recovery boiler, effluent clarifying ponds.

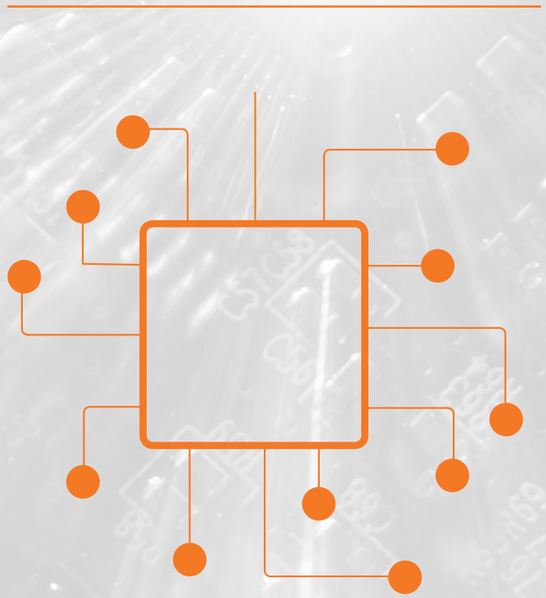
Converting operations are usually separate to the mills, located closed to consumer markets. They use market pulp or paper to manufacture containers, tissues, decorative materials etc. These areas contain highly flammable materials thus require special fire monitoring. Aside from the flammability of pulp and paper, some of the solvents used for extraction, and many byproducts, are highly toxic, necessitating toxic gas monitoring and detection.

Products

» Flame - Next Generation 40/40 Series
» NH3 - Quasar 960
» H2S - Quasar 950



Semiconductor



Semiconductor

Industry | Semiconductor

Application Description

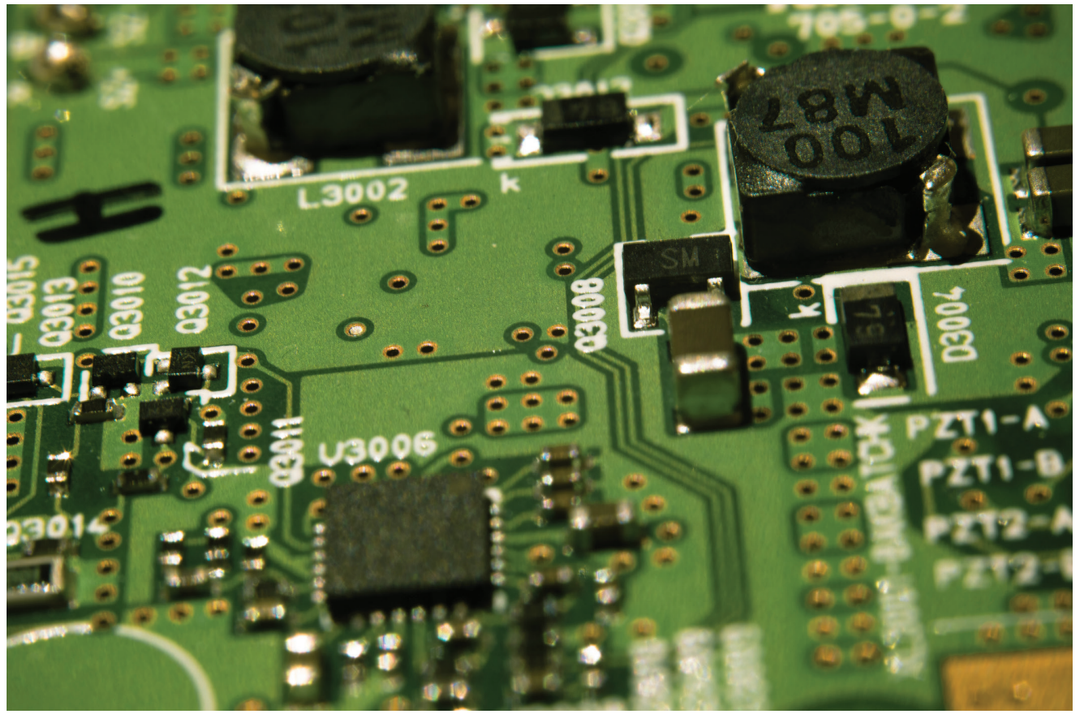
Semiconductor facilities involve many combustible hazards. Alcohol bath drying, a process in wafer manufacturing, involves flammable alcohols and gases. The wafers are dipped in an alcohol bath to remove any moisture. Hydrogen gas (H2) is used to remove oxygen and dopant gases. Plating operations, crystal growing, diffusion, oxidation, ion implantation, metallization, etching and cleaning involve various toxic and flammable solvents – especially during evaporation processes.

Challenges

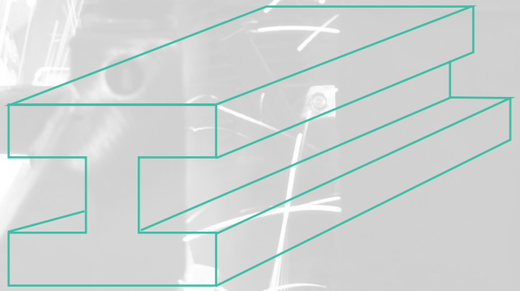
Combustible and toxic gas detectors must be present at the facility's ventilation and air intake ducts, where evaporated solvents may accumulate. Flame detectors must also be present as a second line of defense, due to the presence of pyrophoric materials such as inorganic hydrides, silane, diborane, dichlorosilane, metal alkyls, and organometallics. These materials ignite easily when a leak occurs, so flame detectors must be installed in areas where these materials are present, to detect any ignition as soon as it occurs and allow for effective suppression.

Products

» **Flame - Next Generation 40/40 Series**
» **NH3 - Quasar 960**



Steel



Steel

Industry | Steel

Application Description

There is an immense fire risk in the steel industry.

Areas of risk include:
» Warm and cold strip plants
» Welding machines
» Central control and hydraulics rooms
» Oil cellars
» Cable channels
» Diverse coating and staining units

Production machines are particularly vulnerable to fire, as they contain oil or other flammable liquids and sediments, together with hot components and electric ignition sources. Moreover, plastics, lines, and oil storage also create high risks of fire.
Some of the processes carried out in the furnaces of a steel mill have H2S as a by-product. When combined with other airborne particles from smelting and steelmaking, this creates a potentially fatal situation for personnel at the mill.

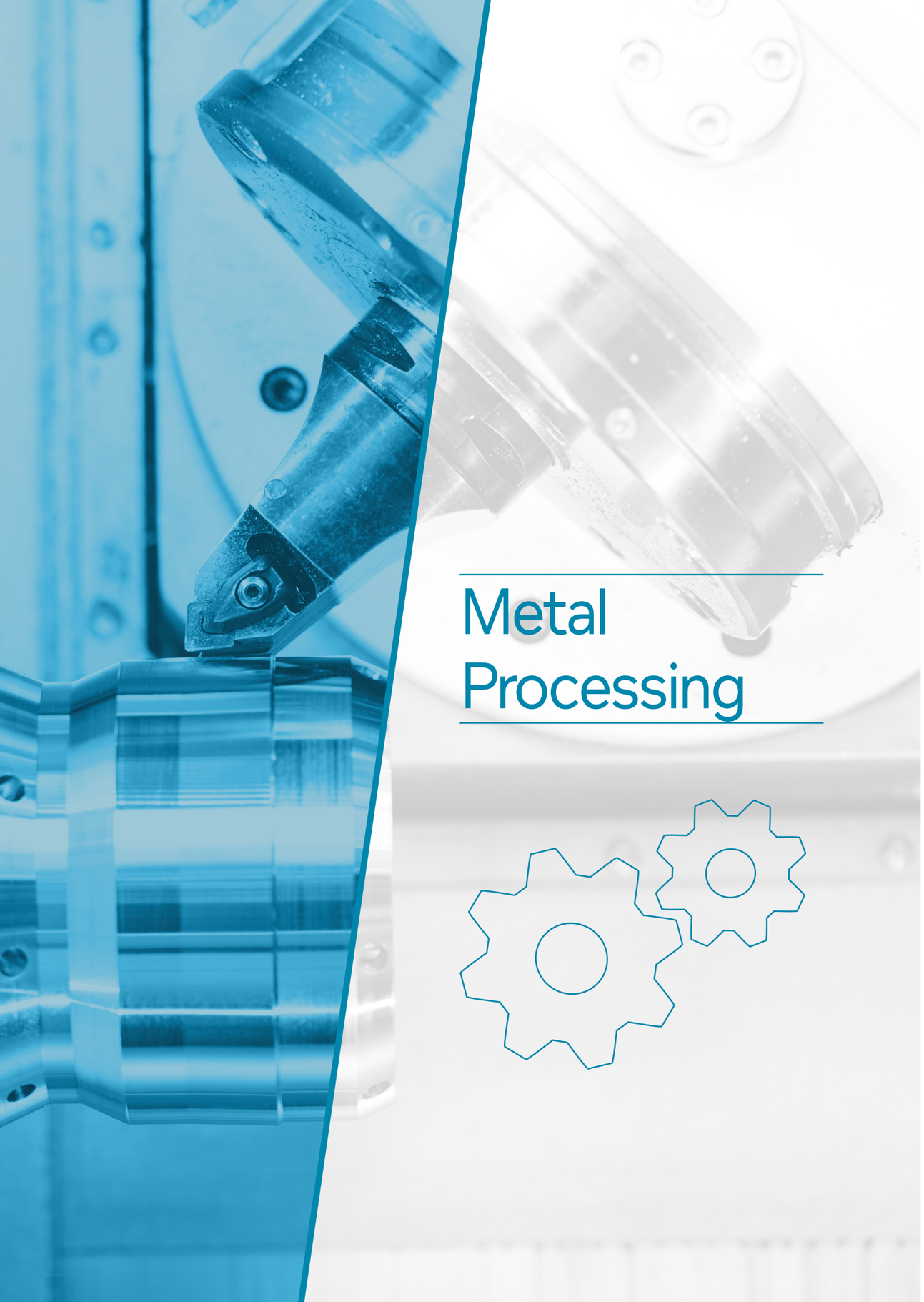
Challenges

Gas monitoring systems must be in place to detect the presence of H2S before it reaches dangerous concentrations. The high fire risk of the steel industry necessitates the use of a comprehensive fire detection and suppression system.

Products

» H2S - Quasar 950
» Flame - Next Generation 40/40 Series

Metal Processing



Metal Processing

Industry | Metal Processing

Application Description

CNCs have become the tool of choice for milling, drilling, grinding, tapping, honing, turning, and other manufacturing operations. This has led to a drastic increase in the number of CNCs worldwide. These machines cost up to $200,000 each and work 24/7 in demanding conditions.

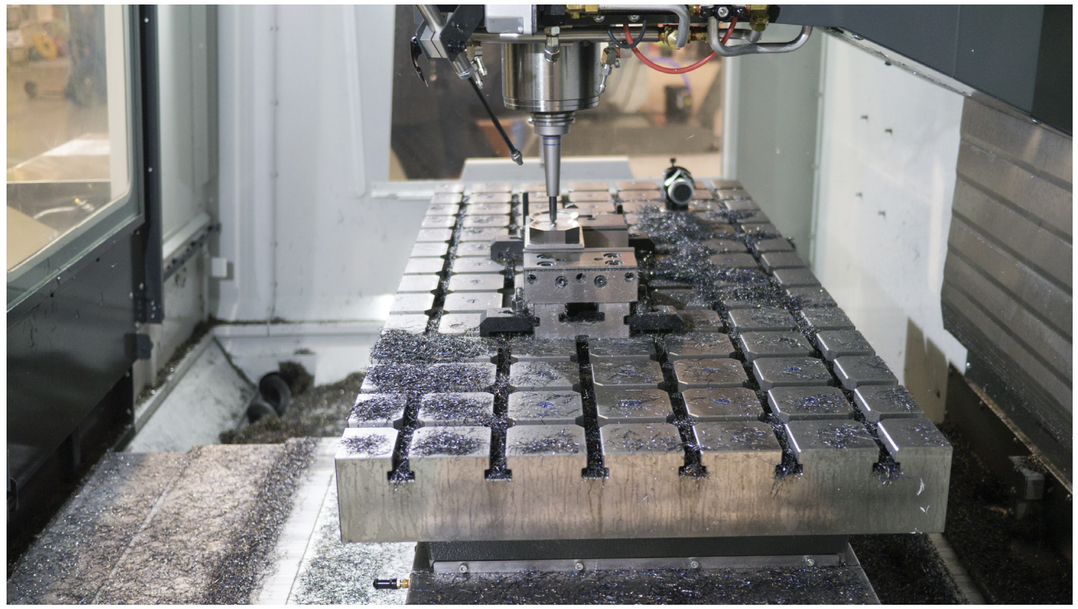
Fires in CNC and other machine tools are common. Many CNCs use oil-based coolants. Oil mist can become ignited and cause ‘fireball’ flash fires. Such fires can result in downtime, great monetary loss, damage to equipment and the plant itself, as well as possible human injury.

Challenges

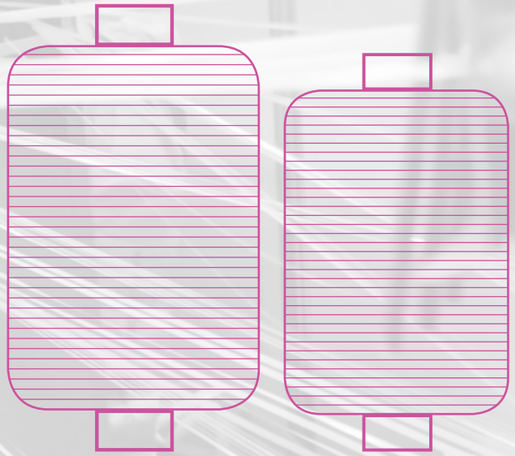
An immediate fire detection system with automatic suppression is needed to stop fires at the earliest stages, before damage is done and the fire spreads.

Products

» Flame - Next Generation 40/40 Series



Textile



Textile

Industry | Textile

Application Description

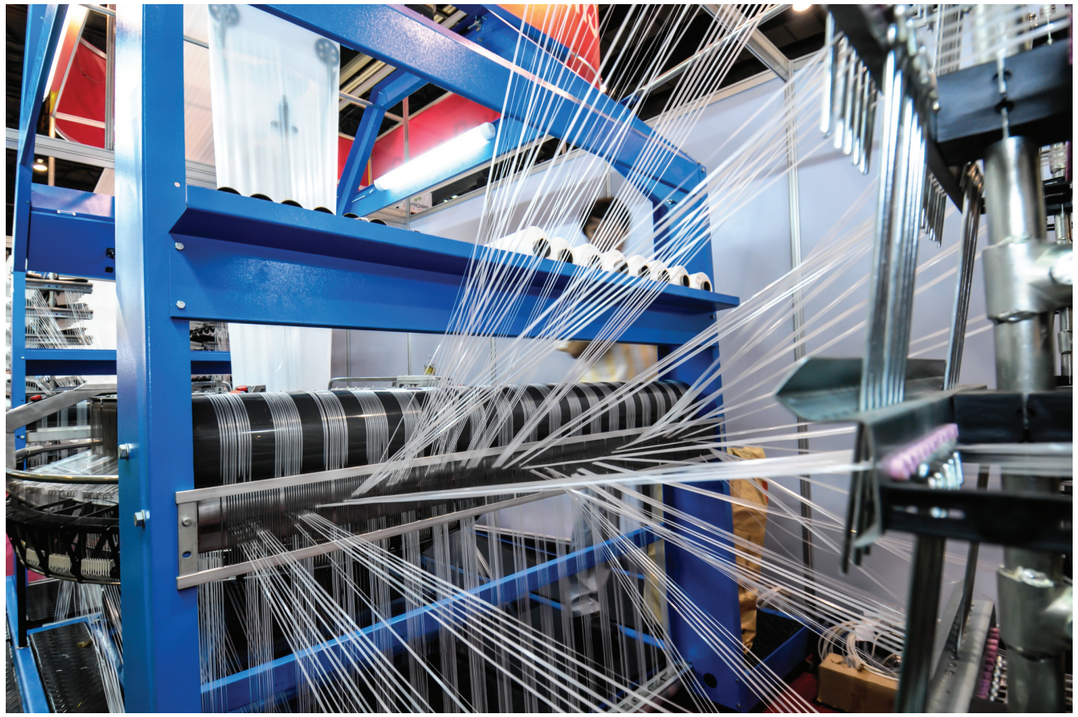
Many areas of textile and nonwoven mills are vulnerable to fires, since the introduction of electrically operated machinery. These areas include opening, blending, cleaning, carding, spinning, weaving, and filtration. High speed production machinery and air filtration systems move the product through the opening and carding processes without human interference, at speed of up to 25 meters per second. If one machine catches fire, the fire can spread quickly with the flammable material, as it moves through the system.

Challenges

Due to the automatic system through which material moves through the factory, fires can spread before personnel have a chance to react and stop the machinery. Even if the machinery is stopped, the enclosure around the machinery often prevents personnel from being able to access the fire with an extinguisher or fire hose. Therefore, an immediate fire detection system with automatic suppression is needed to stop fires at the earliest stage.

Products

» Flame - Next Generation 40/40 Series



Tunnels

Cable Tunnels

Industry | Tunnels

Application Description

Fires in cable utility tunnels can have a large financial impact on the owner companies, due to the critical business-related data and services that the cable tunnels may provide. Also, a fire that is undetected may pose a threat to company equipment and the lives of personnel.

Faulty electric cables within the cable trays and faulty equipment controlling the tunnel environment are the leading causes of fires within a cable tunnel. Also, flammable material discarded by personnel can post a fire risk.

Challenges

Fires in cable tunnels can produce large quantities of toxic fumes and smoke which make it hard for trapped personnel to escape. This also hinders the fire and rescue service from being able to access the location of the fire. Flame detection and suppression systems must be able to stop the fire at its earliest stages, before endangering the lives of personnel and causing damage to equipment. In the event of a fire, systems should be able to pinpoint the origin of the fire, so that the fire and rescue service can extinguish it. Gas detection systems are also required to detect the accumulation of toxic gases.

Products

» Flame - 20/20MI, 20/20MPI
» Hydrocarbon gases - Quasar 900

Marine

Ships, Ferries and Boats

Industry | Marine

Application Description

Fires on board ships, ferries, and boats cause damage and loss of lives every year. Every type of boat is vulnerable, from fishing boats to warships. The fire can come from a number of different sources:

» Electrical systems, control cabinets and machine rooms housing motors
» Oil pipe leakage
» Waste bins storing oily rags
» Engine rooms
» Maintenance work
» Explosive and flammable materials carried on the vessel

Challenges

Flame detection systems must be installed to detect fires at the earliest stages, before damaging the vessel and risking the lives of passengers. Suppression systems must be able to work in a variety of environmental conditions.

Products

» Flame - Next Generation 40/40 Series, 20/20MI
» Suppression system - Combined Combat System

Metal

Magnesium Dry Production

Industry | Metal

Application Description

Magnesium alloys ignite and burn with a white flame when heated in air to a temperature near its melting point. When burning magnesium comes into contact with water is will produce hydrogen gas which may ignite or cause explosions.

Challenges

Flame detection systems must be able to detect the white flames of burning magnesium, as well as the early stages of any fire caused by the hydrogen gas.

Products

» Flame - Next Generation 40/40 Series

Metal Treatment Facilities

Industry | Metal

Application Description

Metal treatment facilities are required to filter wastewater from factories and mines. Many types of waster are flammable, so flame detection is a necessity for any waste treatment facility. The high thermal energy of a fire, and the accompanying smoke inhalation, can threaten the lives of personnel. Airborne pollutants released into the air from waste combustion can cause both short and long term effects on human health and the environment.

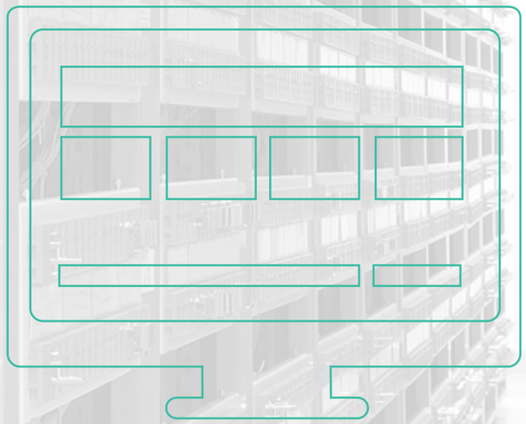
Challenges

Flame detection systems must be located in every area of the metal treatment facility to quickly detect and suppress flames before a large fire occurs. This is especially important due to the negative impact of airborne pollutants released during waste combustion.

Products

» Flame - Next Generation 40/40 Series

Computers



Data Centers

Industry | Computers

Application Description

Data centers contain a lot of valuable equipment, such as computer systems, related components for networking and telecommunications, and data storage systems. Electrical faults can cause fire in a data center, resulting in monetary losses due to damaged equipment, and loss of valuable data if data storage devices are damaged.

Challenges

Flame detection systems must be able to swiftly detect fire in a data center's power supply, before it spreads and causes extensive damage.

Products

» Flame - 20/20MI, 20/20MPI

Agriculture

Fertilizer Plants

Industry | Agriculture

Application Description

Fertilizer plants contain a range of flammable gases, like methane and hydrogen, as well as toxic chemicals, such as ammonia. This necessitates a gas detection system to detect accumulation of flammable and toxic gases, as well as a flame detection system to prevent fires.

Challenges

Flame detection systems must be able to swiftly detect fire in a fertilizer plant, before it spreads and causes extensive damage or data loss. Gas detection systems must be installed for both flammable hydrocarbon and toxic gas detection, to protect personnel and the facility.

Areas of concern include:

» Bulk storage of hazardous materials ingredients
» Processing areas – including reaction vessels and mixers
» Dosage and monitoring devices
» Separation and coating processes
» Loading and shipping facility
» Tankers and railcar transportation
» Warehouses (retailers and end-users)

These flammable and toxic substances need fast and reliable early detection.

Products

» Flame - Next Generation 40/40 Series
» Hydrocarbon gases - Quasar 900
» NH3 - Quasar 960
» H2S - Quasar 950

Transportation

Transport Terminals

Industry | Transportation

Application Description

Big halls in the transportation terminals of dense cities require detection and suppression systems to protect personnel and vehicles. Electricity and fuel are both present in these areas, as well as retail and food stores where many people gather. This makes fire detection and suppression a priority. However, in most cases, comprehensive fire suppression and smoke exhaust systems are not installed.

Challenges

The detection and suppression systems must protect a large and complex area, with a high air intake rate that can lead to large-scale fires.

Products

» Flame - 20/20MI, 20/20MPI

Locomotive Engines

Industry | Transportation

Application Description

Locomotive engines have a wide range of features, thus each type of train has a unique set of requirements when it comes to fire detection. Many trains have electric systems, power generation facilities, control cabinets, and machine rooms that house electric and diesel motors – all of these present a fire risk. A train has many areas that must be protected, such as the driver's cabin, machine rooms, passenger areas, and utility areas.

Challenges

The combination of high temperatures, moving parts, fuel, and lubricants presents significant risk. Highly flammable hydrogen gas is also often used as a coolant. Diesel and lubricating oil have lower auto ignition temperatures than gas. In large, hot areas, such as turbine enclosures, the presence of these materials forms an extremely high risk situation. Detection and suppression systems must therefore be able to respond quickly to even the smallest fuel leak, and detect flames at the earliest stages.

Products

» Flame - 20/20MI, 20/20MPI

» Detection and suppression system

Off-Road Vehicles

Industry | Transportation

Application Description

The engine compartment of an off-road vehicle presents a fire risk. In addition, over time, hoses can fail, or twigs, branches, and leaves can accumulate in the engine compartment. Due to the heat of the engine and exhaust systems, leaking fluid or accumulated dry material can easily ignite, and lead to a fire that envelopes the entire machine. Also, breaks in a fuel or hydraulic line could touch spilled fuel or hydraulic fluid, resulting in a rapidly expanding fire. Electrical shorts, particularly in larger mining vehicles, such as shovels and drag-lines, can also create a fire. In some cases, fires could potentially cause a secondary grass or wildfire. Off-road vehicles work long hours, in demanding conditions, increasing the risk of fire.

Common sources of fire include:

» Arcs on the starter or battery cables
» Flammable materials resting on the exhaust or turbo charger
» Fuel line rubs or failures resulting in leakage of fuel on to the exhaust
» Turbo charger failure causing excessively high temperatures
» Hot gas leakage from the exhaust
» Carbon dust and organic residue collection
» Tires catching fire
» Wheel bearing failure
» Debris catching under the vehicle

Challenges

Fires often start in parts of the off-road vehicle where smoke and flames remain unseen until it's too late. Automated flame detection and suppression systems are needed to respond quickly to the presence of flames before personnel or the vehicle comes to harm.

Products

» Flame - 20/20MI
» Detection and suppression system

Helipads

Industry | Transportation

Application Description

The main risk associated with helipads is the outbreak of fire and subsequent damage in case of an accident or incident occuring within its immediate vicinity. The key aim is to save lives in such an event.

The fire and rescue service requires survivable conditions, to rescue and provide escape routes for injured persons.

Challenges

Flame detection and suppression systems must detect flames rapidly to prevent a catastrophic fire.

Products

» Flame - Next Generation 40/40 Series

Underground Car Parking Areas

Industry | Transportation

Application Description

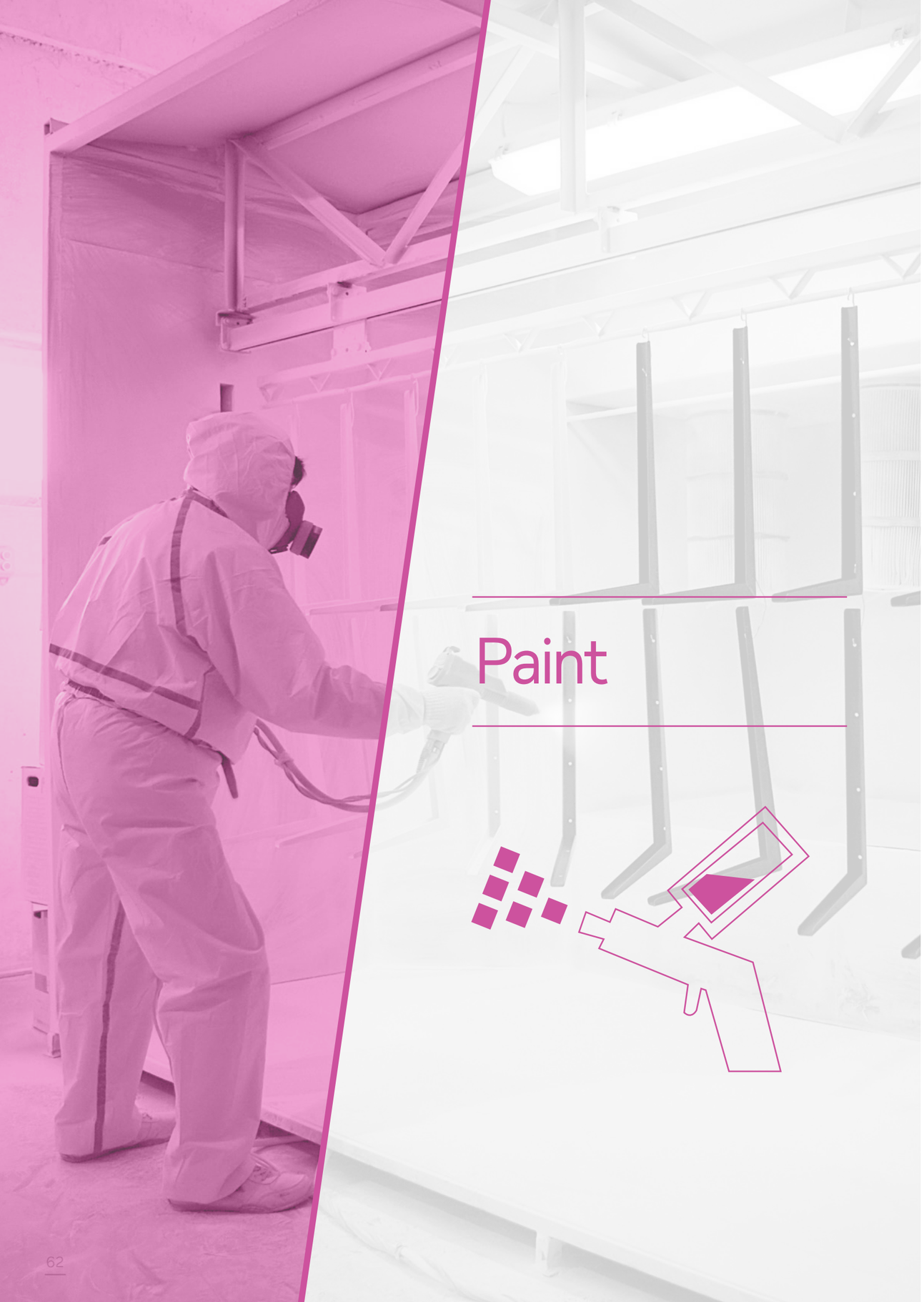
Underground car parking areas are enclosed, and often contain a large number of parked cars. They can be found in numerous locations, from shopping malls to residential apartment blocks. The enclosed nature of an underground car parking area, together with the presence of vehicles, creates a fire risk. In order to prevent damage to vehicles and infrastructure, as well as human injury, flame detection solutions must be installed.

Challenges

Flame detection systems must be able to swiftly detect fire in an underground car parking area, before it spreads and causes damage or injury.

Products

» Flame - 20/20MI, 20/20MPI



Paint

Paint Booths

Industry | Paint

Application Description

Many flammable hydrocarbon solvents are used in powder coating and painting processes. Flammable vapors from solvent paint thinner create an ignition risk, with the possibility of fire spreading to the equipment being painted or the surrounding workshop.

Fire sources may include:

» Use of spark producing equipment for cutting, welding, or grinding, near the spray area.
» Friction caused by overheated bearings on the exhaust fan, or the exhaust fan blades rubbing against overspray deposits on duct walls.
» Dirty spray nozzles or other electrical equipment causing arcing.
» Spontaneous combustion
» Ungrounded or erroneously grounded objects near the spray area
» Discharge of static electricity
» Cleaning without fully discharging equipment
» Pinhole leaks in the paint tubing

Challenges

The presence of flammable vapors must be detected and any flames suppressed, to prevent the loss of valuable equipment in the workshop.

Products

» Flame - Next Generation 40/40 Series

Commercial

Atrium

Industry | Commercial

Application Description

Atrium are large open spaces within buildings, often with glass wall panels and high ceilings, and include shopping malls, hospitals, offices, etc.

Challenges

The size of the atria and large window areas presents a challenge for detection and suppression systems. Many heat and smoke detectors have difficulty with this and the time it takes for smoke or heat to reach the detectors is often too long. An effective system must enable rapid detection in large spaces.

Products

» Flame - 20/20MI, 20/20MPI

Historical Sites

Industry | Commercial

Application Description

Life safety is a priority in a historical building or museum, due to the high volume of visitors and staff. Owners and managers of historical sites must ensure adequate fire protection is provided. Care must be taken to also protect the property itself and the valuable exhibits within.

Challenges

The size of the shopping mall, especially its atria and large window areas, presents a challenge for detection and suppression systems. Many heat and smoke detectors have difficulty with this and the time it takes for smoke or heat to reach the detectors is often too long. An effective system must enable rapid detection in large spaces.

Products

» Flame - 20/20MI, 20/20MPI

Warehouses

Industry | Commercial

Application Description

Modern high-bay storage facilities are designed to make goods available on a just-in-time basis. However, this has resulted in an increase in the vulnerability of production processes. Due to the concentration within single, large logistics sites, there is a greater risk of the entire delivery chain ceasing in the event of a fire.

Challenges

The flame detection and suppression systems used in a warehouse must be able to detect flames swiftly before they spread, to prevent downtime and damage to goods.

Products

» Flame - 20/20MI, 20/20MPI
» Flame Next Generation 40/40 Series

Logistic Centers

Industry | Commercial

Application Description

More than one third of all large-scale fires in the commercial industry occur in storage and logistics centers. These centers contain large quantities of goods in a small area, making it easy for fire to spread rapidly, and increasing the monetary losses when a fire does occur. If a fire spreads through a logistics center, this can threaten the survival of the entire business.

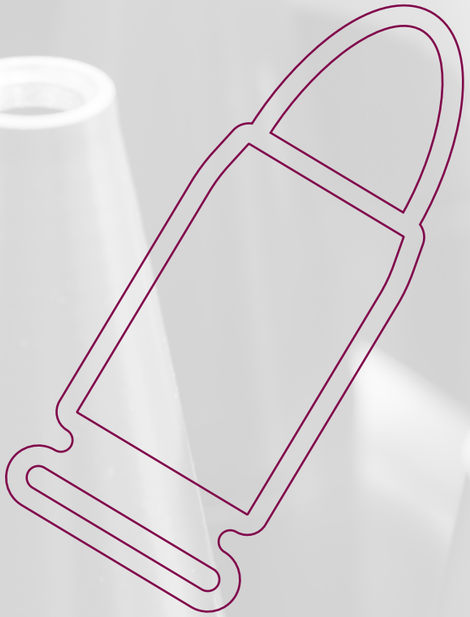
Challenges

In the field of storage and logistics, there are numerous crucial criteria for the selection of the best type of fire protection. How the goods are stored plays a significant role. The type of goods and their material composition will also create specific requirements. For example, the storage of particularly flammable items, such as paper rolls, will require specific fire protection solutions. The solution implemented must be able to detect flames in the server room and other peripheral areas too.

Products

» Flame - 20/20MI, 20/20MPI

Ammunition



Ammunition Factories

Industry | Ammunition

Application Description

Large munitions factories handle huge quantities of flammable substances, and are therefore at high risk of a catastrophic fire. Such as fire could kill personnel, destroy highly valuable ammunition, and threaten the surrounding environment.

Challenges

Flame detection and suppression solutions in ammunition factories must allow for high-speed detection, before a fire can spread and cause disastrous levels of damage.

Products

» Flame - Next Generation 40/40 Series

Ammunition Storage

Industry | Ammunition

Application Description

Large munitions storage facilities contain huge quantities of flammable substances, and are therefore at high risk of a catastrophic fire. Such as fire could kill personnel, destroy highly valuable ammunition, and threaten the surrounding environment.

Challenges

Flame detection and suppression solutions in ammunition storage facilities must allow for high-speed detection, before a fire can spread and cause disastrouslevels of damage.

Products

» Flame - Next Generation 40/40 Series

Waste Management

Waste Management

Industry | Waste Management

Application Description

Fire is a constant possibility at waste management sites, as many types of waste are readily combustible. Operators must ensure that fire detector and suppression systems are in place to prevent these fires from spreading.

At waste management locations, there are several areas that require continues monitoring:

» Waste downloading and separation areas
» Waste dumps (underground storage) – wet and dry
» Waste processing (surface storage and processing)
» Incineration mixers
» Cyclone separators
» Storage containers

Challenges

Flame detection and suppression systems must be able to detect and suppress fires at the earliest stages, to prevent damage to the environment and risks to human health.

Products

» Flame - Next Generation 40/40 Series

Recycling Facilities

Industry | Waste Management

Application Description

Many types of waste material are flammable, and even minor fires can result in the ignition of the methane present around decomposing materials. According to the UK Environment Agency, between 2001 and 2013, there were a total of 4,321 recorded waste fires at regulated and unregulated sites, an average of 332 fires per year.

Most commonly, these fires are a result of the spontaneous combustion of waste at solid waste handling sites. This is challenging to monitor, requiring both expertise and the correct technology. Vehicles that collect municipal waste produce hot particles that combine and ignite, setting the waste site alight, with the high volume of methane present acting as a catalyst. Wastes fire damage often extends across the site and into the surrounding environment.

Challenges

Flame detection systems must be located in every recycling facility, to quickly detect and suppress flames before a large fire occurs.

Products

» Flame - 20/20MI

Spectrex Products

SharpEye Next Generation 40/40 Series

40/40D-I

Multispectrum Quad-Sense IR3 for an exceptional ultra fast detection of hydrocarbon fires at up to 295 ft. (90 m) in under 50 msec

40/40D-M

Multispectrum Quad-Sense IR3 for an exceptional ultra fast detection of hydrogen at up to 165 ft. (50 m) and hydrocarbon fires at up to 295 ft. (90 m) in under 50 msec

40/40D-LD

Integrated UV/IR channels for an ultra fast detection of hydrocarbon-based fuel and gas, hydroxyl, hydrogen, metal, inorganic fires in under 20 msec

40/40D-L4B

Integrated UV/IR channels for an ultra fast detection of hydrocarbon-based fuel and gas fires in under 20 msec

Flame Detectors

40/40D-I

Multispectrum Quad-Sense IR3 detection of hydrocarbon-based fuel and gas fires at up to 215 ft. (65 m)

40/40D-M

Multispectrum Quad-Sense IR3 detection of hydrocarbon fires and hydrogen flames at up to 215 ft. (65 m)

40/40D-LD

Integrated UV/IR channels for a fast detection of hydrocarbon-based fuel and gas, hydroxyl, hydrogen, metal, inorganic fires in under five seconds

40/40D-L4B

Integrating UV and IR Optical Sensors for detection of hydrocarbon-based fuel and gas fires in under five seconds

20/20 Mini Series

20/20MI

High performance featuring lower cost, lower power and more compact structure

20/20ML

Company, lightweight and rugged UV/IR detector providing accurate detection of hydrocarbon-based fuel and gas fired, hydrogen and hydroxyl fires

20/20MPI

Low cost, high performance, compact long distance IR3 detection with highest false alarm immunity

SafEye Open Path Gas Detectors

Quasar 900 Series

High reliability long distance detection of hydrocarbon combustible gases in tough environments over distances of up to 660ft (200m)

Quasar 950

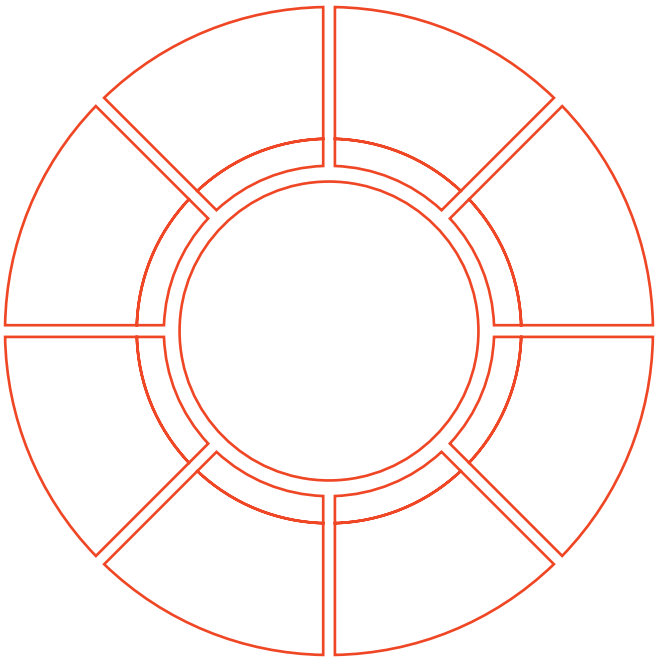
High reliability detection of H2S gas over distances of up to 200ft (60m)

Quasar 960

High reliability detection of ammonia gas over distances of up to 200ft (60m)

300 Series

A unique solution of fast response flammable gas detection in air or turbine intakes



SPECTREX

8200 Market Boulevard | Chanhassen | MN 55317 | USA
Tel: +1 (973) 239-8398 | +1 (800) 452-2107 (US only) | Fax: +1 (973) 239-7614 | Houston: +1 (832) 321-5229
E-mail: spectrex@spectrex.net | www.spectrex.net