ZETTLER

The benefits of installing
MZX Technology into an Oil and Gas production and storage facility.

// Overview:

Installing a suitable fire detection and alarm system within an Oil and Gas production and storage area facility is subject to stringent requirements due to the risk of explosion created by the presence of highly flammable substances. Current standards include **EN60079-14** (gas vapour or mist) and **EN50281-1-2** (dusts). In addition there is a European directive, **(ATEX)** with which all equipment installed in hazardous areas must fully comply. Further requirements relating to Safety Integrity **(SIL)** are also in place, ensuring the highest levels of system integrity. The treatment of dangerous substances where there exists the risk of explosion or fire that can be caused by an electrical spark or a hot surface requires special precautions, including equipment which is designed to reduce the risk to an acceptable level. Risk is categorised as a zone and is based upon the probability of an explosive mixture being present, and a method of protection or piece of equipment used to minimise risk is subject to a) the zone classification and b) the type of gas that is likely to exist. Dust atmospheres have their own zone designation. Circuit design can also be a factor where the current flow in electrical circuits is limited to a level below which a spark or hot surface can exist.

MZX technology offers a comprehensive range of equipment and systems to meet even the most stringent of requirements, whilst providing fast response to fires.

// Risk: Flame detection is often the favoured technology for detecting fires in hazardous areas.

Response to any detector alarm needs to be positive and fast, however mobilising in a hazardous area is usually more difficult and takes more time. How sure can you be that the alarm is genuine and not caused by some unusual occurrence or extreme condition. How large is the fire and is it spreading, where is the source, all important in terms of responding and setting up to fight the fire. If fixed fire suppression is available will it discharge automatically and irrespective of the nature of the alarm. Will the suppression system have to cover a large area, by design, to ensure it reaches all possible parts of the risk.

// Solution:

The FV300 Array Based Flame Detector uses a 256 cell multi infra-red array to detect fires.
Not only does this allow the detector to provide the same degree of coverage across its full field of view, whereas most other detectors are most sensitive only down their axis, it pinpoints the position of the fire. This is especially useful to fire-fighters in making their approach as the extent of the fire can be more or less determined by the cells affected. Additionally the detector can incorporate an integral CCTV camera which can transmit a bird's eye view of the fire allowing the response to be more precise. Fixed suppression systems can be dis-charged manually eliminating the risk of a discharge due to a false alarm or a small incident which can be effectively extinguished with a hand appliance. Fixed suppression systems can also be designed to cover smaller areas minimising the cost of refilling.

Flame Vision provides confirmation of a real incident, saving time and money throughout its lifetime.

// Risk: Pinpointing the device in a hazardous area is a real benefit in terms of providing a fast response. Not all systems are addressable; some addressable systems also have limited detection technology.

Searching a zone (area) is not ideal as it takes time and possibly further endangers the occupants. Alternatively selecting an inferior device simply because it's addressable may well delay the response to a fire, with similar consequences.

// Solution:

MZX System 800 provides a full range of approved, EX addressable detector technologies including, mutisensor smoke and heat detector, mutisensor carbon monoxide and heat detector, heat detector with two rate of rise and a fixed temperature mode and an infra-red flame detector, all of which mount to a standard EX base.

The FV400 addressable Enhanced Triple Infra Red Flame Detector is available in both Ex 'ia' and Ex 'd' formats and is suitable for both indoor and outdoor use. The detector is Solar Blind and capable of filtering background radiation (black body) caused by other heat sources or reflected sunlight. The detectors range is adjustable up to 65 metres and will detect at that distance an 0.1m2 petrol pan fire. The detectors field of view is not affected by any window attachments such as guards. The FV400 will interface directly to the **MZX** system, to **conventional** systems or to third party systems using, **MODBUS, 4-20mA or HART** protocols, all of which are available as standard.

// Risk: Safety Integrity Level is a measurement of performance relating to a safety device or system. It becomes a requirement in a high risk environment; as part of the risk management to provide safety systems which control and help minimise the risk. In the European standard **EN 61508**, four SILs are defined with 4 being the highest. SIL 2 is a common requirement in the field of oil and gas. This is not an easy standard to achieve and not many systems have SIL certification.

// Solution:

MZX technology offers a range of controllers with SIL2 approval including the **MX4000, ZX4, T2000** and the **MZX2** panel which extends up to 8 loops .Devices are connected to an MX loop through a **Galvanic Isolator** which has the advantage over a zener diode barrier in not requiring a high integrity earth connection. This not only offers a saving in cost but ensures continuous safe operation, as high integrity earths are not always maintained as they should be.

Controllers can be easily networked by adding the **TLI800EN network** card in up to 99 panels (99000 addresses), with panels interacting with each other where required. The MZX network is a robust and true peer to peer network which remains unaffected by a single node failure. Furthermore failure of any panel's main processor will not inhibit transmission of any fire alarm or fault signal from that panel across the network to a designated panel's zonal display. **The network is LPCB, EN54-2 and EN54-13 approved.**

Additionally a windows based **TXG graphics system** can be installed providing a layout of the site, with additional text, emergency file data, instructions to staff and other useful functions, ideal for the larger sites.**Third party interfaces** are standard with MZX technology and include the **MZX BACnet and MODbus (CCU3)** converters allowing the full networked system to be easily interfaced with third party systems such as **SCADA**.

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Fire Protection Products