

PROTECTION AGAINST EXPLOSIONS

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WHITE PAPER

PROBLEM

Working with highly volatile substances such as crude oil and flammable gas means that extra care must be taken to prevent explosions of leaks which not only damage the environment and property, but injure or kill workers and taint the company's image.

Hazardous areas can be found in a range of industries where explosive atmospheres are present. The Queensland Government describes a hazardous area as "an area in which an explosive atmosphere is present, or may be expected to be present, in quantities that require special precautions for the construction, installation and use of electrical equipment. The explosive atmosphere may be caused by the presence of flammable liquid, gas or vapour, or by the presence of combustible dust."¹ Examples can be found in places such as petrol stations; sewage treatment; oil and gas refineries and processing facilities; mining; and laboratories to name a few.

Electrical equipment, such as electric process heaters, in hazardous areas often include controls and accessories that may involve sparks as part of their normal operation. Leaving these 'sparks' unchecked could lead to ignition of the explosive atmosphere and, of course, an explosion which might result in property damage, injuries or even loss of life.

SOLUTION

Minimising the risk of ignition within a hazardous area is paramount to ensuring the safety of both equipment and workers in that area. In order to assist in standardising the level of safety in these areas, a variety of certifications can be achieved based on the product, use or location.

For electrical equipment used in various countries, the International Electrotechnical Commission (IEC) provides a set of standards relating to various aspects of ignition protection. The IECEx Scheme is used in a number of countries throughout the world, including Australia. According to the IEC, "the objective of the IECEx system is to facilitate international trade in equipment and services for use in explosive atmospheres, while maintaining the required level of safety."²

In this scheme, the Ex 'd' and Ex 'e' classifications are found to be the most commonly used for electric heaters in hazardous areas. Ex certified heaters are available throughout the world and had primarily been manufactured outside of Australia.

Now that a large range of certified IECEx heaters are available within the country, various aspects of the project can be drastically reduced, most notably lead times and shipping costs.

Having certified IECEx manufacturers like Thermal Electric Elements closer to home can also assist with after-sales servicing and technical advice for the products, since many manufacturers overseas can be operating on a 17 hour time difference. Thermal Electric Elements manufactures all of its products in Australia and provides extensive technical advice based on decades of experience.

CONCLUSION

Safety in hazardous areas is paramount. In order to prevent explosions that could result in property damage, lost production and, most importantly, loss of life, measures need to be taken to reduce the risk of igniting the flammable atmosphere.

Using safety standards and product certification like the IECEx scheme ensures the risk of ignition is minimised or removed altogether, creating a safe environment for the use of electric heating.

References

1. Electrical Safety Information Sheet – Connection and reconnection of hazardous area installations, Queensland Government, Sept 2010, http://www.justice.qld.gov.au/_data/assets/pdf_file/003/9057/es-hazardous-installs.pdf
2. IECEx website – About IECEx, International Electrotechnical Commission (IEC), <http://www.iecex.com/about.htm>

