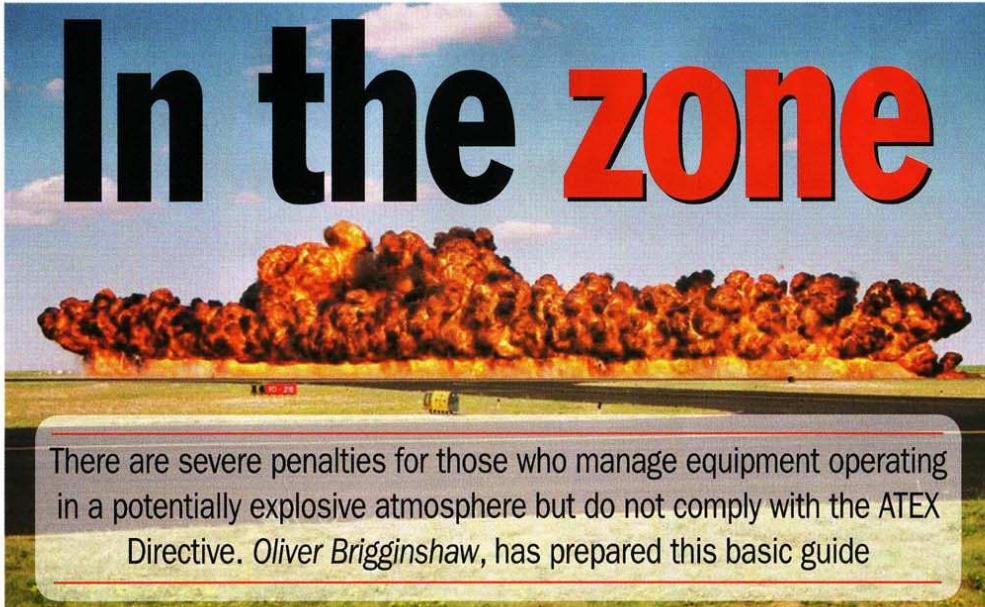


# In the zone



There are severe penalties for those who manage equipment operating in a potentially explosive atmosphere but do not comply with the ATEX Directive. *Oliver Brigginsshaw*, has prepared this basic guide

**A**TEX has been in force since 1 July 2003 and covers potentially explosive gas and dust atmospheres, and products that pose electrical and non-electrical hazards including pumps. Potentially explosive atmosphere legislation is split into two distinct parts.

The first is for products and is referred to as ATEX 95 (European Directive 94/9/EC) Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres. In the UK, this is implemented as the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 1996.

The second part is for the protection of workers and is called ATEX 137 (European Directive 99/92/EC) Protection of Workers at Risk from Potentially Explosive Atmospheres. In the UK, it is implemented as the Dangerous Substances and Explosive Atmosphere Regulations (DSEAR).

Equipment manufacturers are responsible for ensuring that their products are safe, but you, as an end-user, are responsible for ensuring that the correct equipment is chosen

for your particular hazardous area and that it is installed, maintained and operated correctly.

Even if you do not intend to buy new equipment or modify your existing plant, you still have responsibilities. Where a potentially explosive atmosphere cannot be prevented, ATEX 137 (through DSEAR in the UK) requires the user to assess the risks from sources of ignition and types of explosive materials – both gas and dust – and to produce an explosion protection document.

The timing of the ATEX requirements for users can be

confusing because it depends on the status of your plant, but it can be broadly categorised as:

- Already in use before July 2003 – requirements must be met by July 2006.
- Already in use before July 2003 but modified before July 2006 – requirements must be met from time of modification.
- Coming into use for the first time after 30th June 2003 – requirements must be met from the time it comes into use.

ATEX 137 requires the user to eliminate or reduce to a minimum the identified risks.

There is also a requirement to provide accident and emergency procedures and equipment, and to give employees information and training.

Potentially explosive areas are classified into 'zones' and these must be clearly marked. The zoning is based on whether the hazard is created by a gas or by dust, and the likelihood of occurrence of the hazardous atmosphere.

Explosive gases are grouped according to key characteristics and are designated:

- Gas Group (I and IIA, IIB, IIC) or Dust Type.
- Auto-ignition temperature class codes (T1-T6).

Equipment that is ATEX certified must carry both codes to identify the type of explosive atmosphere in which it can be safely installed. And don't forget, if you repair, modify or change your process or plant in some way, you must re-evaluate.

What are the manufacturer's responsibilities? From 1 July 2003, the manufacturer has had responsibilities under ATEX 95 to produce a safe product for the intended potentially explosive atmosphere and to ensure that the product meets the essential health and safety requirements.

Manufacturers tend to use what are known as 'transposed harmonised standards' as their design guidelines. These are agreed European standards that demonstrate conformity with the safety requirements of the directive. For example, non-electrical

equipment would probably use one of the EN13463 series.

The manufacturer must conduct a conformity assessment, which may involve third party attestation. The manufacturer then affixes a CE Mark, and the equipment can be sold anywhere in the European Economic Area.



With a pump it may be feasible to leave the liquid end *in-situ*

For some categories of equipment, the manufacturer can self declare. Reputable manufacturers will apply the correct self-declaration process and conduct design calculations, stress analysis, temperature and load testing and conduct a formal ignition hazard assessment for their products. There is, however, a risk of malpractice or misinterpretation.

Even if a declaration of conformity and CE Mark are available, you should still be cautious. There are a number of ways in which less scru-

pulous manufacturers could obtain these. Remember – the onus is on the plant operator to ensure that equipment is compliant; everyone in the supply chain is complicit.

When you buy a piece of equipment, the key piece of information the manufacturer will need to know is your ATEX zone details, which you can find in the explosion protection document for your plant:

- Is the application underground mining or other places?
- ATEX Zone. Is it a gas or dust environment (0, 1, 2, 20, 21, 22)?
- Gas group (I, IIA, IIB, IIC) or dust type.
- Temperature class limits (T1 – T6).
- Any particular protection required at your site (such as flameproof motors or immersion protection).

Once the manufacturer understands your requirements, it can choose the right product for you based on the environment you have described.

When the product arrives, check for the CE Mark; the documents that explain how to install, operate and maintain the product correctly; and the CE Declaration of Conformity. Make sure the details match your requirement in the explosion protection document before you install and use the equipment.

Remember, as the end user, it is your responsibility to ensure that the correct equipment is purchased for your hazardous area and that it is installed, maintained and operated correctly.

Next year, the tightening of ATEX means that all plant operators must start to plan for changes to their existing equipment. This doesn't mean that all equipment has to be changed. For example, with a pump, it may be feasible to leave the liquid end *in-situ* and simply replace the rotating assembly with a new ATEX-compliant stem.

Product repair and refurbishment has to be completed by parties that conform to ATEX 95 or ATEX 137. Some original equipment manufacturers can already repair or refurbish old pump equipment to a conformant level. Increasingly though, independent repair shops will have no option but to align to the manufacturers in order to meet the requirements of the directives.

For plant operators, ATEX cannot be ignored. However, through careful planning and ensuring that old equipment is replaced with independently certified products, the risk is reduced and the problem of subsequent changes, as and when the directive changes, is minimised.

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