



# ATEX – European moves to increase safety in explosive atmospheres.



After June 30th 2003, two important new safety directives become fully operational across Europe. These new regulations are known as the ATEX Directives (from the French words ATmospheres EXplosibles) and apply to manufacturers, suppliers and users of equipment designed for use in potentially explosive atmospheres (also known as hazardous areas). ATEX 95, the “equipment” directive, is essentially a development of existing hazardous area equipment classification and approval methodology, although there are important new implications for manufacturers of mechanical equipment, and in the treatment of Gas/Vapour and Dust atmospheres. ATEX 137\*, the “use” directive, is intended to ensure that employers adequately protect workers from the risk of explosive atmospheres, and applies widely to many industrial sectors.

There are various routes to ATEX 95 compliance for Manufacturers and Suppliers of Electrical and Mechanical Equipment intended for use within explosive atmospheres, depending on the category and type of equipment (see Fig 1).

Fig 1. ATEX 95 Equipment Categories

Equipment Category	Equipment Group	Marketing under ATEX 95 (G=Gas/Vapour, D=Dust)
1 Zone 0 - Gas/Vapour Zone 20 - Dust	II	II 1 G and/or D
2 Zone 1 - Gas/Vapour Zone 21 - Dust	II	II 2 G and/or D
3 Zone 2 - Gas/Vapour Zone 22 - Dust	II	II 3 G and/or D

(Above categories are for surface industries - mining is equipment group 1)

Generally, for higher risk equipment and/or atmospheres the product assessment must be carried out by a “Notified Body.” These are independent 3rd party organisations who are appointed by the responsible authority in the country as being technically competent and capable of carrying out the conformity assessment to the appropriate European Standards. Each country will have a number of such Notified Bodies (for instance at time of writing there are ten ATEX Notified Bodies in Germany), but it is possible for manufacturers in one country to have their products assessed by a Notified Body in a different member state. The end result of such a conformity assessment will be a special CE and EX marking permanently affixed to the product providing the user with important safety information and noting any limitations of use (see Fig 2).

Fig 2. Typical ATEX 95 CE / EX Marking



If it is the manufacturers' and suppliers' duty to only place suitably assessed and compliant equipment on the market, it then follows that it is the users duty to carry out a risk assessment and zone classification and to properly select suitably approved equipment for use within these areas. Furthermore the user must also ensure that the equipment or protective system is installed according to the instructions and is only used for its intended purpose. Under ATEX 137, the starting point for this is by classifying the working areas with potentially explosive atmospheres into “zones”, which should be verified by a suitably competent person, for example a process safety consultant. From this, equipment may be selected in accordance with ATEX 95, meeting the appropriate requirements of the zone classification.

At this stage it is also the duty of the person responsible for the safety assessment to consider other potential ignition sources: **electrostatic is specifically highlighted in the directive.** Even if properly selected electrical and mechanical equipment is used, potentially dangerous static

discharges can occur from fixed and mobile plant, packaging, process materials and even people working within the explosive atmosphere, and this hazard should not be overlooked. Having controlled all likely ignition sources, attention should also be given to minimise the harmful effects of any accidental fire or explosion such as explosion relief and suppression systems. Finally, all zoned areas containing potentially explosive atmospheres should be clearly marked using Ex hazardous area warning signs.

## ATEX - Summary of duties and responsibilities.

### ATEX 95 (“Equipment Directive” – applies to equipment manufacturers and suppliers)

1. Draw up EC declaration and proof of conformity for each product (may involve Notified Body)
2. Affix appropriate CE/EX marking
3. Provide instructions (in relevant community language)

### ATEX 137 (“Use Directive” – applies to operators of workplaces with potentially explosive atmospheres)

1. Carry out risk assessment
2. Classify the work place into Zones
3. Implement safety measures
  - Elimination
  - Hazard Reduction
  - Control (ignition sources and dangerous releases)
  - Mitigate (explosion relief)
4. Select ATEX 95 compliant equipment for intended Zones
5. Maintain explosion protection document covering
  - Risk assessment
  - Zone identification and area classification
  - Maintenance schedules
  - Staff training requirements

There are a surprisingly large number of areas affected by the new regulations, covering many sectors of industry and commerce. In addition to the more obvious forms of chemical manufacture, processing and distribution, other activities are also affected including storage and display of flammable goods (such as paint or gases) in the retail sector, deliveries involving road tankers (such as petroleum or bulk powder), welding with flammable gases and handling and storage of wastes including fuel oils.

The responsibility of enforcing the ATEX 137 directive will fall on the relevant safety/standards organisation in the individual member states (in the UK this will be via the Health and Safety Executive for industrial premises, and Local Authority Environmental Health Officers for retail premises).

It can therefore be seen that although the ATEX 95 Equipment regulations build on existing approvals and certification obligations for manufacturers and suppliers, ATEX 137 for the first time formalises the responsibilities for safe practice within potentially explosive atmospheres. Under ATEX 137 employers are required to ensure that safety risks are either completely eliminated or reduced to a reasonably low level. Where it is not practical to completely eliminate risks, employers must take measures to control possible ignition sources, and minimise the harmful effects of fire or explosions. It is expected that this new legally enforceable duty will improve safety for all personnel working in hazardous areas, and reduce the harmful environmental effects from fires, explosions and the resulting dangerous releases.

\* In the United Kingdom, ATEX 137 has been combined with the Chemical Agents Directive to form the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).

Further information about the new ATEX directives can be found on the European Union web site at [www.europa.eu.int/comm/enterprise/atex/index.htm](http://www.europa.eu.int/comm/enterprise/atex/index.htm)