

# A brief look at ATEX and its impact in the US

## Application Note

### What is “Intrinsically Safe?”

Intrinsic safety is a protection standard employed in potentially explosive atmospheres. Devices that are certified as “intrinsically safe” are designed to be unable to release sufficient energy, by either thermal or electrical means, to cause ignition of flammable material (gas, dust/particulates).

Intrinsically safe standards apply to all equipment that can create one or more of a range of defined potential explosion sources:

- Electrical sparks
- Electrical arcs
- Flames
- Hot surfaces
- Static electricity
- Electromagnetic radiation
- Chemical reactions
- Mechanical impact
- Mechanical friction
- Compression ignition
- Acoustic energy
- Ionizing radiation

### What industries are intrinsically safe products designed for?

- Petro-chemical
- Oil platforms and refineries
- Pharmaceutical
- Bulk materials (e.g. grain)
- Mining
- Pipelines
- Any environment where explosive gases are present

### What organizations are defining intrinsically safe standards?

#### **ATEX**

The primary intrinsically safe standard has been set in the European Union with the **Directive 94/9/EC**, commonly called **ATEX** (“**A**tmosphères **E**xplosibles,” French for explosive atmospheres). The stated goal of the guidelines is to “help ensure the free movement of products in the European Union” by “minimizing the number of safeguard clause applications, at least those originating from divergent interpretations.” ATEX is intended to serve as total harmonization directive, laying down essential health and safety requirements, and replacing existing divergent national and European legislation which covers the same subjects.

The ATEX rules have been in place as a voluntary standard since March 1, 1996. The rules are mandatory on electrical and electronic equipment for use in environments subject to explosion hazard sold in the EU as of July 1, 2003.

#### **IEC**

The International Electrotechnical Commission (**IEC**) is responsible for setting international standards for electrical technology. Its technical committee TC31 deals with explosion protection for electrical apparatus. It has introduced a procedure, the IECEx Scheme, which is intended to become a globally recognized test and certification procedure for explosion protection.

The objective of the IECEx Scheme is to facilitate international trade in electrical equipment intended for use in explosive atmospheres by:

- reducing testing and certification costs to manufacturers
- reducing time to market
- providing international confidence in the product assessment process
- providing one international database listing

The IECEx has not yet been ratified.

#### **Factory Mutual**

In The United States, **Factory Mutual Research**, managed by Factory Mutual (FM) Global, is a not-for-profit scientific and testing organization that has tested and certified over 40,000 products in the last 165 years. FM Research has set certification guidelines for equipment used in potentially explosive atmospheres.

#### **NEC**

The NFPA (National Fire Protection Association) **70, National Electrical Code**, also known as the NEC, is the basis for all electrical codes in the United States. Classifications and related product markings for hazardous areas are covered in NEC 500 and 505. These are similar to, but not exactly the same as, those in ATEX.

#### **OSHA**

OSHA (Occupational Safety & Health Administration of the U.S. Department of Labor) participates in the **US-EU Cooperation on Workplace Safety & Health**. This is a project of the U.S. DOL, OSHA, and the EU European Agency for Health and Safety at Work. The

goal is to promote sharing of information on current safety and health topics of common interest.

Intrinsic safety is covered under Regulations (Standards – 29 CFR), Hazardous (classified) locations 1910.307 and 1926.407. OSHA references the NEC guidelines for determining the type and design of equipment and installations which will meet this requirement.

There are no global intrinsically safe standards or certifications.

### Who is affected by the ATEX intrinsically safe standards?

Currently the standard affects only manufacturers who are selling product into the European Union (EU) that are intended for environments subject to explosion hazard. Considering the joint effort of OSHA and the EU, the long-term effect of ATEX may be a global standard to which all manufacturers would need to comply.

### What is the impact of ATEX on manufacturers?

For manufacturers selling devices designed to be used in potentially explosive environments into the EU, they will need to redesign the devices to meet the standard and have those devices certified that they meet the regulations.

Manufacturers not selling product in the EU are not impacted.

### Why is there so much interest in intrinsically safe products now?

The new ATEX regulations have focused attention on the issue of providing intrinsically safe products in potentially dangerous environments. However, there has already been a great deal of attention placed on workplace safety by regulatory groups as well as manufacturers.

Fluke has always focused strongly on safety in all its products. The company has sought industry-wide protection measures to help ensure safe working conditions and product specifications for electrical technicians, whatever the field in which they work.

The Fluke 707Ex mA Calibrator is the first test tool from Fluke developed specifically for use in hazardous environments such as petrochemical plants, oil platforms and refineries and other locations subject to risk of explosion.

The ATEX-compliant 707Ex mA Calibrator is compliant in relation to Zones 1 & 2 as defined by CENELEC (the European Committee for Electrotechnical Standardization, which is recognized by the EC as the European Standards Organization in its field). In these zones hydrocarbons and/or gases may be present during either normal or abnormal operation, respectively. This means that in Zone 1 potentially explosive atmospheres may be present occasionally, while in Zone 2 they may be present only rarely and will be of a short duration.

### 707Ex: Intrinsically Safe mA Calibrator



N.I. Class I Div 2 Groups A-D T4



II 2 G EEx ia IIC T4  
ZELM 02 ATEX 0120 X

Ta = -10 °C to +50 °C

### 718Ex: Intrinsically Safe Pressure Calibrator



I.S. Class I Div 1 Groups A-D T4  
AEx ia IIC T4



II 1 G EEx ia IIC T4  
KEMA 04 ATEX 1061

Ta = -10 °C to +55 °C

### 725Ex: Intrinsically Safe Multifunction Calibrator



I.S. Class I Div 1 Groups B-D 171 °C  
AEx ia IIB 171 °C



II 1 G EEx ia IIB 171 °C  
KEMA 04 ATEX 1303X

Ta = 0 °C to +55 °C

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