Product Note, PN 410
Explosive Atmospheres and AP Tech Pressure Regulators

June 28, 2007

Introduction

On 23 March 1994, the Directive 94/9/EC (commonly referred to as “ATEX”) of the European Parliament was issued regarding potentially explosive atmospheres. Advanced Pressure Technology (“AP Tech”) manufactures pressure regulators that could be installed in such environments.

Why Explosion Protection for Pressure Regulators?

In the event of a leak in a flammable gas piping system, a potentially explosive atmosphere can envelop the pressure regulator. While many existing standards and regulations concern electrical components and electrical equipment used in these applications, ATEX requires that all components and equipment be evaluated. AP Tech pressure regulators are considered *component*s. Based on the ATEX Directive, AP Tech considers the location where the pressure regulators are installed to be classified Equipment-group II, Category 3 because flammable gases would only be present for a short period of time in the event of a leak. It is possible that the location could be classified Equipment-group II, Category 2 if a leak is likely to occur. Please note that the system owner, not AP Tech, is responsible for determining the classification of a particular installation.

Product Assessment

AP Tech performed a conformity assessment and risk analysis of all pressure regulator models with respect to the Essential Health and Safety Requirements in Annex II of the ATEX directive. The assessment found two potential ignition sources related to the pressure regulator, a potential misuse of the regulator, and some other options that require evaluation.

One ignition source is the ABS plastic adjustment knob used on some regulator models that could potentially build a static charge. It has not been confirmed that a static charge from the ABS plastic knob could cause an ignition. The other ignition source is from static charge build-up arising from the flowing media. To eliminate the potential ignition sources, regulator models with an ABS plastic adjustment knob must be ordered with the *MK* (metal knob) option or preset. In addition, all regulator models must be connected to earth ground. The regulator can be grounded through the mounting holes on the bottom of the body or the system piping can be grounded and electrical continuity verified through the body metal face seal connections. Grounding of the regulator should follow the same requirements for the piping system.

Repeated operator misuse of tied-diaphragm regulators with high outlet pressure ranges by closing the regulator with full outlet pressure applied could lead to an early diaphragm fatigue failure. A diaphragm failure will result in an outboard leak that can form an explosive atmosphere. Tied-diaphragm regulators with maximum outlet ranges above 100 psig should be

ordered **preset** to minimize this risk or the system design and operation must have sufficient engineering controls in place to ensure proper use of the regulator.

In addition, it was determined that optional pressure gauges, pressure switches, and pressure transmitters have not been evaluated to determine if they comply or are outside the scope of ATEX.

The European Commission has published guidelines that state “simple” mechanical devices that do not have an “own source” of ignition except for the flowing media are outside the scope of the directive. AP Tech pressure regulators (without ABS adjustment knobs) would fall into this category.

Product Declaration

AP Tech declares that all regulator models identified below fall outside the scope of the ATEX directive because the products do not have their own source of ignition and fall under the “simple” products application of the directive.

Series AP500, AP9000, AP9100, and SL5200

AP Tech declares that all regulator models identified below, **when ordered with the MK option or preset to specific conditions so that the standard ABS adjustment knob is not used,** fall outside the scope of the ATEX directive because the products do not have their own source of ignition and fall under the “simple” products application of the directive.

Series AP1000, AP1100, AP1200, AP1400T, AP1500, AP1600, AP1700, AP1900, AK1000, AK1200, AK1400T, AP2700, AZ1000, AZ1200, SL5400, SL5500, and SL5800

Conditions for use

1. The body of all regulators must be grounded (earthed) to prevent static charge build-up due to the flowing media.
2. Regulators may not be ordered with the pressure gauge, pressure switch, or pressure transmitter option because these options have not been evaluated to determine compliance with the ATEX directive.
3. Special or custom options require a review to determine acceptability with the exception that any custom body porting, weld configuration, or port size does not affect the above declaration.
4. Tied diaphragm regulators with maximum outlet ranges above 100 psig must be either ordered preset or the system design and operation should have sufficient engineering controls in place to ensure proper use of the regulator.
5. User installation of heating systems applied to the regulator body or system piping that affects the surface temperature of the pressure regulator is outside the scope of this declaration and is the responsibility of the user.
6. The user is responsible for considering the effect of a rise in surface temperature due to adiabatic compression (rapid pressurization of the system).

Conclusion

A review of the ATEX directive has determined that AP Tech pressure regulators fall outside the scope of the directive provided the regulator has a metal adjustment knob and is used under the specified conditions for use.

Products that are outside of the scope of ATEX are not labeled with the CE mark unless covered by another European Directive.