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The importance of the certification of an accredited laboratory also for 'Ex nA' or 'Ex nR' equipment suitable for installation in environments with explosive atmospheres

1. Introduction

The choice of the specific construction design, whether 'Ex d', 'Ex e' or 'Ex nA' or 'nR', is in accordance with the hazardous areas classification normed by IEC 60079-10 and EN 60079-10 standard.

Cortem Group, for almost fifty years present on the ex-protected international market, produces various types of equipment and products that meet plant requirements in accordance with international standards such as IEC 60079-0, 60079-1, 60079-7, 60079-15, 60079-31 etc., as well as for similar European EN standards. Also for the 'Ex nA' or 'Ex nR' restricted breathing devices, Cortem Group decided to appoint accredited certification bodies aiming to ensure full credibility to the quality of these products instead of using self-certification procedures as many companies are still following today.

2. The certificates

There are several types of certification, as stated in the introduction, which must validate specific construction methods such as:

Methods of protection for installation with presence of flammable Gases or Dusts:

- 'Ex d I' method of protection (mines)
- 'Ex d II' method of protection (non propagation of flame in case of internal explosion)
- 'Ex e' method of protection (no arc or sparks or hot surfaces inside)
- 'Ex i' method of protection (limit the energy of sparks and surface temperature)
- 'Ex m' method of protection (inhibits the ingress of flammable gas with encapsulation)

Method of protection for installation with presence of flammable Powders

- 'Ex t' method of protection (inhibits the access of combustible dust).

These methods of protection may be applied to all areas of the plant that have specific characteristics by type of gas or dust of specific weight, volatility, partial or totally prevented ventilation, presence of hazardous points of first or second degree.

An exception is the mine protection method that is not currently part of our production range.

There are also other types of certification relevant to equipment and products suitable for installation in areas with a higher risk of fire and, therefore, do not require expensive construction methods such as 'Ex d'. These devices refer to International Standards IEC 60079-15 and the EU Standards EN 60079-15.

Methods of protection for installation with presence of flammable Gases:

- Ex nA method of protection (Spark-proof, -no arc, spark or hot surface)
- Ex nR method of protection (Housing with perspiration simplified (does not allow the entry of flammable gases)
- Ex nC method of protection (Not flammable - containment and extinguishing the flame)

3. The method of protection 'Ex nA' or 'Ex nR'

Whereas, for 'Ex d' equipment and materials, the form must meet the standard requirements and be able to contain every explosion generated and not propagate it to the environment, 'Ex nA', 'Ex nC' and 'Ex nR' methods of protection follow specific concepts and security methods that can be summarized in:

- nA: these are non-sparking equipment such as lighting fixtures, low power equipment (electronic devices)
- nC: these are non-triggering devices such as relays, small motors, "Rid" type contacts in vacuum (hermetically sealed) ampules, fuses etc. etc.
- nR: these are limited breathing apparatus, which reduces the input of explosive atmosphere in the equipment enclosure. For example, generating an internal overpressure that ensures the non-entry of the explosive atmosphere or by a seal suitable for the requirement of not allowing the entry of the explosive atmosphere inside the equipment.

4. Self-certification for 'Ex nA', 'Ex nR' equipment

There are several manufacturers around the world with 'Ex nA' or 'Ex nR' products, but most of these manufacturers do not have a certification issued by an accredited and legally recognized Certification Body but only a self-certification.

However, it should be pointed out that for such constructions no third party certification is currently required but a self-certification is sufficient.

Cortem Group, not to taking anything away from others manufacturers, has opted to use accredited certification bodies, in order to avoid any possible problem or notification relevant to its equipment made under the aforementioned IEC 60079-15.

Cortem's choice comes from the belief that a self-certification is a biased evaluation aligned with the product underlying it. It dictates also the seriousness and attention of the company of making customers certain about the selected product covered by an indisputable certification of an accredited body.

5. Conclusions

Any system that reduces the risk level is essential for a good plant management, considering that safety is a primary factor in every workplace and, more important, when operating in potentially explosive atmospheres, where the risks are significantly widened. Cortem Group decided to appoint accredited certification bodies aiming to ensure full credibility to the quality of these products instead of using self-certification procedures as many companies are still following today.