



International Standard “Ex n”

In Zone 2 the probability of presence of explosive atmosphere is between 30” and one hour during a year, and the risk level is very low.

Between 70% and 80% of the hazardous areas inside a plant can be classified as Zone 2, and it is essential that the designer duly knows the protection type of the electrical equipment installable in such areas. The use of oversized equipment, in fact, could involve a huge waste of money and no advantages in terms of safety.

This method of protection has been developed in the United Kingdom many years ago to be used in safety condition in Zone 2 reducing the costs of traditional equipment in Ex “d” or Ex “e” protection.

Ex “n” protection method is applied to the equipment having the features described on the International standard IEC 60079-15:2010.

Main features

Ex “n” protection method is a group of simplified protection methods that allows the use of any electrical equipment without limits of size and electrical quantities.

This method is based on the concept of prevention, as thanks to the adoption of some technical adjustments it is possible to prevent the risk to give rise to an explosive atmosphere on the electrical equipment during the normal operation.

The basic principle of this protection method is not to consider the possible failures or strange situations on the equipment as linked to the protection against the explosions. It is essential, in fact, that the constructive criteria are so specific to prevent that this equipment gives rise to failures or strange situations during the normal operation.

Such a principle is coherent with the global risk criterion: the risk of explosion is due both to the risk of presence of the explosive atmosphere and to the risk that an electrical or thermal phenomenon triggers such atmosphere.

You have to consider that this information is exclusively referred to the equipment installed in Zone 2, where the presence of gas is very limited and the “global risk” is extremely low.

Actually the Ex “n” protection is a group of simplified protection methods that, during the daily operation, allow carrying out any possible electric connection without any limit in terms of dimensions or electrical size.

Constructive features

Ex “n” protection method is a group of simplified protection methods that requires the application of all the techniques known for preventing explosions, that is containment, segregation and prevention, but realized in a simplified way.

Briefly, Ex “n” protection method gathers all the features of the protection methods used for the equipment employed in Zone 1, but the constructive features are modulated for a use that doesn’t include any protection in case of failure.

The new European standard classifies Ex “n” equipment into two main categories:

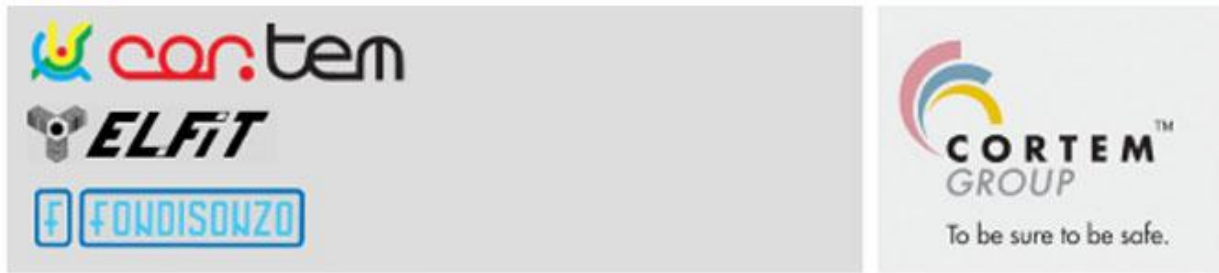
- Not sparking equipment
- Sparking equipment

Not sparking equipment (Ex na)

“Non Sparkling” equipment does not produce any sparks, arcs and not cause high surface temperatures which can trigger an explosion during normal operation.

This category includes lighting fixtures, junction boxes, asynchronous squirrel cage electric motors.

“Non Sparkling” equipment is marked Ex nA.



Sparkling equipment

Equipment that can produce sparks, arcs and cause high surface temperatures during normal operation is a "Sparkling Equipment".

According to the new EN 60079-15 standard, "Sparkling Equipment" is divided into four categories:

- Ex nR – Restricted breathing enclosures
- Ex nL – Energy limited apparatus
- Ex nC – Devices and components
 - Encapsulated devices
 - Enclosed-break device
 - Hermetical sealed device
 - Non-incentive component
 - Sealed device

The significant technical changes with respect to the last same standard is the elimination of n-pressurization (Ex np) because all pressurization requirements now covered by IEC 60079-2.

Conclusions

The type of protection "n", not still used very much in some countries, has a great application in UK.

Using this simplified protection methods, ex-proof equipment manufacturers will be able to issue on the market many new products.

We can conclude that Ex "n" protection method has higher characteristics able to ensure the security in a potentially explosive environment presenting a very limited risk, such as Zone 2 and 22.