The “ATEX” Directives: technical and legal framework for the safety in workplace with explosion hazards

ATEX DIRECTIVE AND STANDARDS, MAIN TOPICS, ZONE CLASSIFICATION AND HAZARDS ASSESSMENT: SUMMARY OF BASIC YOU NEED TO KNOW ABOUT THE THEME OF EXPLOSIVE

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Explosive atmospheres are generally "classified" with the term "Atex" and defined as hazardous areas or places, mainly workplaces, where the dangers are caused by the presence of flammable gases, mists or vapours of flammable fluids or combustible dusts with small particle size, caused intentionally or unintentionally, as the result of the transformation of materials into intermediate processes.

Some typical place include the oil and gas environment (LPG, NCG), hydrogen technology, flammable refrigerant and mining.

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The most echoed incidents in the media are generally those related to fires and / or explosions on oil rigs or in underground mines. And such was the incident that historically gave way to the request for a technical regulatory and legal framework for the safety of European workers. We are talking about the explosion of the Piper Alpha, an oil platform that operated in the North Sea and that in 1988 caused 167 victims. But unfortunately there are numerous other known cases, such as the Deepwater Horizon incident of April 20, 2010, an explosion that caused a fire and triggered an immense spill of hydrocarbons from the seabed of the Gulf of Mexico up to the incident in Texas just a few days ago, with a series of explosions involving a chemical plant in Port Neches, Jefferson County.

Numerous are the Explosion hazardous areas.

Other areas at risk of explosion are, for example, food processing plants (the first confirmed dust explosion in Turin in a flour warehouse in Turin on 14 December 1785), sugar refineries, service stations, areas with handling and grain storage, automotive production and repair, pharmaceutical production, wood industry. Areas with risk of explosion are all those areas that involve hazardous materials such as dusts, mists or flammable vapors.

Therefore most industrial sectors can have at least one area qualified as an explosive atmosphere (storage of gas cylinders, dust, etc.).

Directives 1999/92/CE and 2014/34/UE are the legal and technical framework.

In the mines, due to the presence of firedamps and in the gassy tunnels of the carboniferous material, unfortunately the explosions caused in past centuries and even recently, risen unjustifiable human and economic damages. In 1913, a frightening explosion in a Wales mine caused the death of 439 miners; the commission of inquiry, in charge of ascertaining the causes of the accident, came to the conclusion that the disaster was due to the reporting system. The inductance of the bell coil was decisive for the trigger; during the circulation of current, the inductance stores energy which is then released, in the form of an electric arc, at the point where the circuit is

opened and can cause the gas cloud to ignite. By carefully designing the circuit, limiting the energy of the arc to a level lower than that required for the trigger, making the system "safe", the accident could have been avoided.

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Measures must therefore be taken to mitigate the hazards, lower the risks and make sure that those who work in Ex environments (or Atex) do so in the safest way possible. This can be achieved with the use of equipment and components that incorporate explosion protection and prevention techniques as an integral part of design and production, up to the first installation and commissioning. During all the Life-cycle of the Ex-plant.

The two "ATEX" Directives, Directive 1999/92 / EC and Directive 2014/34/EU (previously 94/9/EC) constitute in Europe the legal and technical reference framework that, with its application, aims to achieve the most high level of protection of installations and in workplaces where the risk of explosion could be present.

The legal framework recalls a complex system of connections to the European technical Standards (standards) CENELEC and CEN, as well as International Standard IEC and ISO with relevant IECEx Conformity Assessment System, to which manufacturers and designers, installers and employers (users) are each called in their role and responsibility by maintaining an adequate level of protection.

Francesco Alessandro Esposito - short CV
Thirty years of experience in the ATEX sector gained in primary certification bodies and international manufacturer; Chairman of the Italian Technical Committee CEI CT31 and Chairman of the European CEN TC305 (Explosive Atmosphere); member of international IEC and IECEx working group; lead assessor and product assessor.