

EUR21_35 - Efficacy comparison of PV Panel for Ex environment

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Abstract - The production of electricity from renewable sources, avoiding the use of fossil fuels that are running out, is proposed as an important topic on which to conduct innovative studies in favour of the environment and safety in particularly sensitive areas. Among the production methods, the greatest potential as regards the possible contribution of energy is the photovoltaic one which, with cost of materials accessible and increasing efficiency, is proposed as a solution to the electricity generation needs. In particular, the presence of solar systems on islands, i.e. separated from the public grid, makes it possible to meet the needs of particularly remote areas, difficult to connect or areas with explosive atmospheres (offshore platforms) thanks to the storage systems and connected regulation devices.

A characteristic environment for a possible and essential application is the Explosion Atmosphere, for which energy generation systems, according to necessity, are always a particularly sensitive topic. In these areas, safety is not insignificant and, as can be easily understood, the use of static and combustion-free components can be much more suitable for the environment than traditional methods, i.e. combustion Diesel Engines or other technologies based on the use of fossil fuels or rotating mechanisms. Power generation systems based on solar technology are not, in fact, free from sources of danger for environments at risk of explosion, as it is possible that faults or operating conditions may occur that could trigger an explosion. Leaving each manufacturer the freedom to choose the protection mode he considers the best for this type of apparatus, it has been instead decided to deal with aspects considered "transversal" for the compliance of the photovoltaic panel. The results of a test campaign carried out on photovoltaic panels that can be installed in explosive atmospheres will then be shown in order to assess their efficiency under different conditions according to the impact test.