

## 784 – Theoretical and Experimental Investigations on Flameproof Enclosures for Ex Area

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Abstract: More and more often, electrical equipment needs to be monitored and supervised by operators. So often the electrical equipment is inside enclosure that can be opened when necessary. Nowadays, most of equipment used in industries, such as Oil&Gas, chemical and pharmaceuticals plant, are electrical devices that can be exposed to flammable GAS or DUST. In this kind of ambient, any ignition source like a spark could ignite the substance and leads to a fire or explosion, therefore, the opening of the enclosure is not allowed. Flameproof enclosure (Ex d) with large window is becoming very important for hosting electrical devices in Ex area. These new products need to be designed and validate to support so, high mechanical strength (to avoid any possible deformation, failure of enclosure and flame transmission) and normally this validation is obtained by realizing real enclosure and doing experimental tests. To reduce the number of experimental tests, cost, and time of products design to validate a Flameproof enclosure in this paper the use of Finite Element Method (FEM) for stress analysis of an enclosure EJB stainless steel and Aluminum with large window has been described.