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FACTORS INFLUENCING THE DETERMINATION OF MAXIMUM SURFACE TEMPERATURE FOR EXPLOSION-PROOF LUMINAIRES

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Abstract

Explosion-proof equipment must be designed so that the ignition of the surrounding explosive atmosphere to be avoided. This is very important because an explosion can have particular implications over goods, life and not least over the environment. One of the ignition sources of an explosive atmosphere is represented by hot surfaces. Each equipment designed to operate in explosive atmospheres develops a maximum surface temperature. The specific standards used to assess explosion protection characteristics cover only indirectly and in part the factors influencing the maximum surface temperature. By this study, using a standardized testing methodology, the factors influencing the maximum surface temperature in case of explosion-proof luminaires with type of protection flameproof enclosure “d” and increased safety “e” were pointed out and analyzed (i.e. maximum designed ambient temperature of the luminaire; placement of temperature sensors to capture the points where the maximum surface temperature is recorded; type, power and size of the light source installed in the luminaire; operating position of the luminaire; supply voltage of the luminaire). The measures to be taken, in order to determine as accurately as possible the maximum surface temperature, in relation with the influencing factors, were also identified.

Keywords: luminaire, maximum surface temperature, type of protection

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