



Representation of the surface temperature of T5 fluorescent lamps without sleeve (above) and with sleeve (below)

Advantages

- Can be used for T5 fluorescent lamps up to 54 W in explosion-protected luminaires
- Increases cut-off thresholds of the electronic ballast up to 7.5 W (T5 fluorescent lamp)
- No additional maintenance effort when changing the lamp

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"Increased Safety" Against the Ignition Risk of Explosion-Protected Luminaires

Due to hot spots on the surface, it has so far been a problem to use commercial T5 fluorescent lamps with higher power in explosion-protected areas. The new PTB invention – a small, novel component – makes it now possible to reduce the surface temperature that is relevant to ignition. This allows T5 fluorescent lamps up to 54 W to be used in explosion-protected luminaires.

The lamps which are most currently used in explosion-protected luminaries are T8 fluorescent lamps. Under economic aspects, T5 fluorescent lamps with higher power are becoming increasingly interesting. Compared to T8 fluorescent lamps, these lamps have a smaller diameter. Their disadvantage: At the end of their service life, the surface of the T5 lamps becomes very hot in the area of the spirals. Therefore, their use in potentially explosive atmospheres is problematic under different aspects. This is where the new solution of PTB starts. The safety concept for the use of fluorescent lamps in explosion-protected luminaires of the "increased safety" type of protection is complemented in the area of the spirals by a facility for heat distribution which surrounds the fluorescent lamp. The distribution of the heat is realized by two movable half cylinders. The overall design takes into account the tolerance ranges of the T5 lamp diameters of different manufacturers, the spatial variation of the lamp's axis when the lamp is turned into place inside the socket, as well as further degrees of freedom. The half cylinders close automatically when the lamp is placed into the socket. When a defective lamp is removed, the facility remains in the luminaire. The construction can be used on fluorescent lamps in luminaires of categories 2 and 3.

Economic Significance

Due to their better efficiency and because of technological considerations, T5 fluorescent lamps are becoming increasingly used. PTB's development extends the field of application of T5 fluorescent lamps to lamps with greater power in explosion-protected luminaires in connection with a possible longer retention time of the lamps in the luminaire.

Development status

The system has been thoroughly tested in the laboratory. A German patent application is pending. A manufacturing procedure has been evaluated. The constructive adaptation to a concrete luminaire construction is required.