

Ex nR Solution for Fire Pump Control System

Ex nR (Restricted Breathing) an alternative method for Zone 2 certification

Application

Purging & Pressurisation is generally the best solution for electrical enclosures with a variety of equipment inside. The traditional collection of explosion proof boxes is always heavier & more cumbersome, difficult to certify & maintain and, in our experience, more expensive to buy.

However, Ex p solutions rely on a ready source of compressed air. In certain circumstances, where critical safety equipment must be available 100% of the time, without fail, then compressed air cannot be relied upon, so Ex nR (Restricted Breathing) offers an alternative method to achieve certification in Zone 2.



Solution

Restricted Breathing (Ex nR) can be a useful technique for Zone 2 applications. It depends on the enclosure design strongly resisting any ingress of external gases & vapours, and the contents being not normally arcing or sparking. In essence, the risk that two independent and low likelihood events will simultaneously occur in the same place is considered to be so low that such an enclosure can be considered safe for Zone 2.

While the enclosure is required to be well sealed for the purposes of certification, that high level of sealing also has to be maintained throughout the service life of the enclosure. Expo carefully selects and pre-qualifies enclosure sealing materials to deliver excellent seal performance for years in a variety of conditions and operating temperatures.

Equipment in the field requires regular maintenance and checking, and particularly so with regard to critical safety equipment in hazardous areas. Opening any door or removing an access plate will generally disturb the enclosure seals and the users need to be sure that the enclosure can be readily re-sealed as originally certified. Expo can provide a testing kit that enables the maintenance team to check enclosure sealing in a simple and reliable way. The kit pulls a small internal vacuum and the return to ambient pressure is timed as a guide to seal effectiveness.

Additionally, the external surface temperature of any Ex nR enclosure is only permitted to rise by 20°C above the maximum external ambient temperature, so careful control of powered equipment is necessary.