

Custom purge systems for oil field controls

Working with a client to develop a purged solution for upgrading oil field equipment control systems



Overview

The client, who manufactures centrifuges and shale shakers for land drilling operations, had an existing safe area controls enclosure that they wished to make suitable for hazardous area applications.

Project Brief

To develop a purged and pressurized solution for an existing controls enclosure suitable for Class I Div.1 & Zone 1 hazardous areas.

Challenges

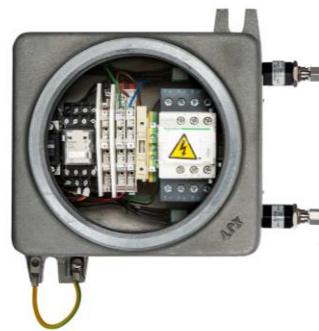
- The existing enclosure was relatively large and had not been designed originally with pressurization in mind, hence we needed to understand its leakage characteristics.
- Many of the installations would be in warm climates, such as the Middle East & West Texas, often in desert or semi-desert locations.
- The enclosure contained heat-generating components, such as VFDs, hence hazardous area air conditioning was to be used.
- Pressure fluctuations inside the enclosure, caused by cycling of the air conditioner, would cause frequent high- and low-pressure alarms if standard purge & pressurization systems were used.
- For CID1 / Zone 1, power isolation was required, with current handling capabilities greater than 70 amps.

Solution

- The system was too large for an explosion-proof/flameproof (Ex d) solution, so purge & pressurization (Ex p) was the preferred method of protection.
- The leakage rate of the existing enclosure was ascertained and, after some modifications, was within the normal operating range of Expo's leakage compensation type systems.

- After reviewing the scale and frequency of the enclosure pressure fluctuations, it was decided to incorporate Expo's proprietary CLAPS technology into our standard Minipurge type X enclosure purge system. CLAPS is a feature of Expo's large motor purge systems and is specifically designed to mitigate the effects of sudden pressure changes within a large motor enclosure, that would otherwise cause nuisance trips.
- A special Minipurge isolation unit (MIU) was developed to control the high current loads to the enclosure.
- The resulting custom purge system was certified for ATEX, IECEx, and cULus, thus the client was able to offer his system across multiple hazardous area markets.

Expo Products and Services



- Deep understanding of purge and pressurization and its application to challenging purged applications.
- Hybrid/custom X purge system.
- High current isolation unit.
- Engineering, Consultancy & Certification services.
- On-site service for installation and set-up at the prototype stage.

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