

Mercury analysis in natural gas

Working with a leading trace contaminant analyser OEM to develop a hazardous area solution for a Mercury analyser

Overview

Trace levels of Mercury (Hg) can be present in natural gas wells and natural gas production streams, depending upon factors such as the local geology, and may be present in either elemental form or in compounds such as chlorides. Measuring Hg content is important for natural gas producers as, even in trace amounts, it can damage gas processing equipment, various metal parts, and gas pipelines due to steady Hg accumulation over time.



Project Brief

Work with the customer to develop a hazardous area enclosure solution for a Mercury analyser for installation in Zone 1 and Class I Div. 1 areas.

Challenges

Although the analyser requires only a small sample flow of natural gas, the enclosure would still be classed as having an internal source of release (ISOR - the potential for a release of hazardous gas inside the protected enclosure itself). This requires additional safety features and a more complex certification process under hazardous area standards, including EN 60079-2 in Europe and NFPA496 in North America.

Outcome

Expo's engineers worked with the client to design a bespoke Ex p enclosure that would meet the stringent requirements of systems with an ISOR.

The enclosure was compartmentalised to separate the gas sample components from the main electronics area

The purge system was configured as a continuous flow (CF) X purge system to provide a suitable dilution flow to ensure that, in the event of any sample leak, the maximum concentration would remain below 25% of the lower explosive limit (LEL)

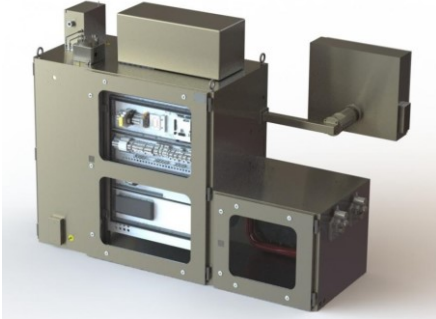
The system also series purged the electronics compartment before the gas sampling area

In line with the requirements to isolate the power automatically in the event of purge gas failure, a minipurge interface unit was installed

Expo's consultancy team developed the certification plan along with a Notified Body to deliver the required certification.

Expo Products and Services

Custom Enclosure Service



With Expo's fully custom process, a dedicated engineer will work with you to develop exactly what you need and agree on a detailed budget and project timeline with milestones. As this is a highly flexible service, we can adapt the plan if your project requirements change.

[Click here](#) for more information.

MiniPurge Type X

IECEX, ATEX & UL certified purge and pressurization systems for Zone 1, Class I Div 1 applications



Features

- Global approvals
- Purge flow capacity up to 900 NI/min
- Leakage Compensation or Continuous Flow
- Stainless steel enclosure construction

Expo's Minipurge type X range provides a full purge and pressurization solution for electrical enclosures and other equipment installed in Zone 1 or Class I Div 1 hazardous environments. With a range of flow capacities up to 900 NI/min, the systems are suitable for large enclosures up to 5.4m³ volume.

[Click here](#) for more information.

MiniPurge interface unit (MIU)

IECEX, ATEX & INMETRO Ex d certified solutions for enclosure power and signal isolation.



Features

- Global Ex d approvals
- Isolates low power signals and up to 32 A power
- Compatible with MiniPurge & SmartPurge II
- Aluminium construction

Expo's Interface Units provide switching of power and signals to the pressurized enclosure, using a control signal from the purge system. This capability is required for enclosures installed in Zone 1/21 or Class I/II Div 1 hazardous locations.

[Click here](#) for more information.

Design and Consultancy services

Expo Technologies' team of consultants and certification engineers have the experience and knowledge to support our customers through the certification process for equipment to be used in Hazardous Areas.

From concept design through to maintenance, Expo Technologies works with you to reduce the risks and accelerate your entry into global markets.

[Click here](#) for more information.



Certification consultancy

Our Certification Engineer works with the customer through a standard, well-proven process to make sure the design is compliant with the Expo's Schedule of Limitations (SoL), ensuring successful project completion. The SoL defines the scope of what can be certified under Expo's populated enclosure certificate and is broad enough to cover most applications.

[Click here](#) for more information.