

# Explosion Protection for Vapor Pressure Analyzers in the Oil and Gas Industry

Customized Solution with Purge and Pressurization System and Touch Screen HMI

## At a Glance

- Application-specific solutions for electrical explosion protection
- UL Type X or ATEX/IECEX purge and pressurization system for vapor pressure analysis
- Engineering and project support from the design phase through to product acceptance
- Integration of HMI systems with touch screens for easy operation and control



## The Application

In the case of hydrocarbon mixtures such as gasoline, crude oil, and LPG, the vapor pressure of the components can be used to determine the quality of the medium. At the same time, vapor pressure analysis provides crucial information for the safe storage and transport of petroleum products, and for the prevention of unwanted emissions. Such vapor pressure values can be determined using special online vapor pressure analyzers. These analyzers are integrated into the respective process control systems and provide all the important information immediately.

## The Goal

For efficient processes and accurate results, the vapor pressure analysis should take place directly in the hazardous area. The entire analysis system must be designed for this purpose. In view of the typical areas of use in the oil and gas industry, approvals for hazardous areas according to Class I & II, Division 1 and ATEX and IECEx Zone 1 and Zone 21 are required. In addition, it should be ensured that the analysis equipment can be replaced quickly, so that a serviced and re-calibrated instrument can be easily inserted when needed. The goal is for the system to operate with up to four flow channels, to easily set up, monitor, and control communication from the outside, and to ensure that measurements can be performed without any problems at temperatures below freezing.

## The Solution

The analysis equipment with all necessary electrical components, such as the electric power supply, temperature hub, and Ethernet communication unit, including a heater for use at low ambient temperatures, is contained in a stainless steel housing separated from hazardous gases by a purge and pressurization system. To realize the Ex p type of protection, Bebcó's EPS 6000 series purging system, including vent and valve, was selected. This system performs the purging procedure fully automatically, and ensures and continuously monitors the necessary overpressure in the housing. The analysis equipment used, which does not have an explosion protection approval, can be operated using this method in Zone 1 and Zone 21 Class I & II, Division 1. For easy initial setup and use during normal operation and service work, the front of the housing features an explosion-protected touch screen HMI in the form of a VisuNet FLX monitor from the DM-320P series.

## The Benefit

The customer receives a plug&go solution designed and tailored to their needs, ready for immediate use in hazardous areas. These purge solutions are fully certified with approvals for all relevant zones and divisions. The 15-inch HMI touch screen enables intuitive control of the analysis equipment. This allows control measurements and purge cycles to be initiated or liquid inlet flows and the communication input to be set up. The flows are configured, for example, as sample flows, quality control flows, or as cleaning flows for crude oil applications. The mount for the analysis equipment allows quick and easy replacement, thereby minimizing downtimes. The integrated heater enables use in ambient temperatures down to  $-10\text{ }^{\circ}\text{C}$  ( $14\text{ }^{\circ}\text{F}$ ).

### Technical Features

- Certified for Zone 1 and 21/Class I & II, Division 1
- Ex pxb/Type X system conforms to ATEX, IECEx, UL Type X
- 316L stainless steel Type 4X enclosure
- Degree of protection IP6X
- User-configurable programming features

