

Purge and Pressurization Solutions on FPSO Tankers

The 6500 Series Purge and Pressurization System Controls and Monitors the On-Board Processes

At a Glance

- Fully automatic Ex p enclosure solution from Pepperl+Fuchs
- Developed, engineered, and certified according to ATEX and IECEx
- Automatic monitoring and control of enclosure pressure and temperature
- Redundant power supply with automatic switching
- Additional override function for safe operation even when the control unit is shut down
- Enclosure made entirely of SS316L stainless steel, incl. coating and protective cover



The Application

A floating production storage and offloading unit (FPSO) is a vessel used in offshore production for producing, storing, cleaning, and loading extracted oil or natural gas. Systems like this have become the main method in many offshore production regions around the world. As with other applications in flammable environments, the electrical control of certain processes requires explosion-protected solutions to minimize the risks to people, the environment, and the machine.

The Goal

A well-known American control system manufacturer wanted to equip an FPSO vessel belonging to one of their end customers with a complete electrical solution. To achieve this, the control system manufacturer required different ATEX- and IECEx-certified enclosures for Zone 1 and temperature class T4 so that the solution could be equipped with remote I/O systems. The enclosure dimensions ranged from 1000 × 1500 × 450 mm to 800 × 2100 × 1000 mm (W/H/D). All enclosures should comply with the Ex pyb type of protection. In addition, the control system manufacturer required an external override function to enable the remote I/O systems to continue operating safely even when the purge and pressurization control unit is shut down.

The Solution

To meet these requirements, the Pepperl+Fuchs engineers opted to use the 6500 Series purge and pressurization system. This system consists of a control unit, an enclosure protection vent, and a manifold valve, forming the basis for the required explosion-protected enclosure solution. The enclosures themselves are made entirely of SS316L stainless steel, making them suitable for the harsh offshore conditions aboard the FPSO vessel. Special vibration dampers installed between the base and the enclosure protect the enclosures and electrical components from any potential mechanical damage caused by engine vibrations and sea conditions.

To ensure that the solution included the required external override for the purge and pressurization system, a combination of relays and contactors certified for use in Zone 1 had to be installed in the circuit. In the event of problems on the FPSO, the remote I/O system is now able to override the purge and pressurization system control unit via an output and continue to operate safely, since air continues to flow through the needle valve and pressure is maintained. This function also makes it easier to carry out maintenance work on the control unit, since the entire process does not need to be shut down.



Cabinet solution used on the FPSO tanker

The additional contactors and relays ensure that the system is able to switch automatically between two power sources, in the event that one of the two power supplies fails.

With this sophisticated purge and pressurization solution from Pepperl+Fuchs, the control system manufacturer's customer is now able to control and monitor processes on its FPSO in the Indian Ocean safely and efficiently.

The Benefits

The end customer was provided with durable enclosure solutions suitable for use in ATEX and IECEx zones, designed to withstand the harsh offshore conditions on board the FPSO vessel. The previously costly and time-consuming process of coordinating various suppliers of individual components and applying for system certification was replaced by one-stop shopping at Pepperl+Fuchs: All services, such as design, construction, production, and end certification, were handled under one roof by the electrical explosion protection experts.

For more information, visit:

pepperl-fuchs.com/px-ep-purge