

Application story

Fueling the Future: Being part of the solution for safe transportation of LNG

Druck's customer provides marine control and monitoring technologies for the operation of offshore units and various methods of marine transportation including tankers, LNG carriers, cruise ships and bulk carriers.



Industry supplied
Marine



Application
Monitoring pressure in LNG tanks



Product/service
Druck's PDRC 250



Customer type
Supplier of marine control and monitoring technologies

Customer's challenge

An LNG carrier is a tank ship which is designed to transport large amounts of clean natural gas to consumers over large distances. In the LNG carrier, the tank gauging system ensures accurate temperature, level and pressure measurements for inventory control and safe transportation. The storage tanks containing the gas have a large and complex structure and can carry cargo from 90,000 to 175,000 m³. Planning the design and construction of the tanks involves substantial investment, therefore it is vital that operators implement reliable tank gauging systems in order to minimise operating and maintenance costs.

Obtaining accurate and consistent measurements of the liquid level inside tanks allows the operator to regulate inventory. Additionally, level and temperature measurements can prevent overfills, helping to avoid product loss and potential environmental damage.

The radar system in the LNG carrier is a monitoring system for the tank level. It sends micro waves towards the surface of the product to determine distance from the surface and thereby calculate level. To calculate distance accurately, the radar system needs to know the speed of the micro waves in the gas, which is dependent on the pressure and the type of gas inside the tank.

Druck's customer needed a solution to monitor the pressure of the gas inside the LNG tanks in order to calibrate the radar systems, to ensure precise level measurement. The application is on board ships so must be compliant with marine certifications. When Druck considered the most effective solution for the customer's application it was also important to be cognisant that the natural gas found in the tanks has a small amount of Hydrogen Sulphide (H₂S) present.

Druck's solution and added value

The Druck team agreed to develop a customised product designed specifically to meet the many requirements of this challenging application. Druck provided a PDCR 250 digitally compensated pressure sensor which offers high accuracy (0.25% full scale) over the wide operating temperature range of -20 to 80°C, found on the deck of a ship.

In this application, a Hazardous Area Certification was obtained, allowing the unit to be used in a potentially explosive atmosphere, where a gas leak could be catastrophic.

The unit is fully welded offering high levels of protection from any contaminants in the environment or media. By selecting the specific cable that was chosen and the welded construction of the sensor, marine certifications for the customer's tank gauging system were obtained

The sensitive pressure measuring module is made from Hastelloy C to avoid any corrosion issues from any Hydrogen Sulphide (H₂S) present in the natural gas.

A push fit vent tube connection is present on the back of the sensor to allow venting from the pressurised housing to atmosphere in order to guarantee accurate gauge measurements.

A customised version of the MODbus protocol was implemented on an RS485 hardware system to ease integration into existing customer software systems.

These integrated solutions allow Druck's customer to enjoy repeatable, high accuracy measurements of the level of liquid held within tanks, which permits the operator to regulate their inventory levels. Moreover, accurate temperature and level measurement mitigate the potential risk of overfills, meaning the possibility of product losses and environmental damage are also minimised.

Find out more information about Druck's marine Certified transmitters here: https://www.industrial.ai/sites/g/files/cozyhq596/files/2018-07/unik_5600_5700_marine_datasheet.pdf

Find out about Druck's custom product offerings here: <https://www.industrial.ai/measurement-sensing/druck-pressure-measurement/sensors-probes-transducers-transmitters>

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