

## Boil Off Gas Flow Meter On LNG Tankers Helps Prevent Global Warming

*Supports International Maritime Organization (IMO) CO<sub>2</sub> Limits*



**San Marcos, CA**—LNG tanker operators in search of a next-generation air/gas flow meter to measure boil-off gas (BOG) accurately will find that the [ST100 Series Thermal Mass Air/Gas Flow Meter](#) from [Fluid Components International \(FCI\)](#) helps enable ship propulsion systems operate efficiently while complying with International Maritime Organization (IMO) regulations.

LNG tanker fleets are unique because LNG cargo generates waste gas, commonly known as boil-off gas (BOG). In order to transport natural gas, it is economical to convert it to LNG. The conversion process involves cryogenically cooling the natural gas to -163°C at atmospheric pressure, at which point the gas condenses to a liquid and is ready for transport. BOG results when the LNG vaporizes due to subsequent ambient heat input during transport.

In recent years the ships have been using the LNG BOG that is produced during transport as fuel for the ships boilers. On January 1, 2013 the International Maritime Organization (IMO) implemented an amendment to the International Convention for the Prevention of Pollution from Ships whereby they added a new regulation to increase the energy efficiency for ships in order to reduce the CO<sub>2</sub> emissions that are a cause of global warming. Accurate flow measurement of BOG piped to the boilers is critical to help the boilers run more efficiently.

The ST110 Series Flow Meter from FCI meets the accuracy requirements for measuring BOG aboard tankers, at land terminals, storage facilities and points of distribution. This advanced air/gas flow meter combines powerful electronic features and an advanced flow sensor design to provide precision measurement, reliability and economy.

The ST110 Flow Meter is designed with FCI's unique VeriCal In-Situ Calibration Verification System. Flow meters equipped with the VeriCal System can perform periodic field functional testing and calibration verification of the flow meter's measurement performance without extracting the flow meter from the pipe or process to avoid shutting down the process for a lengthy period.

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For BOG measurement, the ST110 Flow Meter with VeriCal features an internal purge tube that runs the length of the probe to the sensor and allows the operator to generate a known flow across the sensor element. The resultant signal output can then be compared to the factory baseline test certificate.

The ST110 Series' electronics can meet both current and future need for BOG measurement outputs, process information and communications. Whether the need is for 4-20 mA analog, frequency/pulse, alarm relays or digital bus communications such as HART, Fieldbus, Profibus or Modbus, it provides a solution.

For LNG operators, the ST110 Flow Meter features a graphical, multivariable, backlit local LCD display/readout. It provides local information with a continuous display of all process measurements and alarm status, as well as service diagnostics.

Designed for complex gas measurements such as LNG and methane, the ST110 Flow Meter stores up to five calibration groups to support a broad flow range, differing gas mixtures, multiple gases, and obtains up over a 500:1 turndown. An on-board data logger with a removable 2-GB micro-SD memory card that stores 21 million readings is also included.

The ST110 can be calibrated to measure LNG, methane and other process gases. The insertion style ST110 Flow Meter features a thermal flow sensing element that measures flow from 0.25 to 1000 SFPS (0.07 NMPS to 305 NMPS) with accuracy of  $\pm 0.75$  percent of reading,  $\pm 0.5$  percent of full scale.

Designed for demanding oil/gas industry applications, the ST110 Flow Meter operates at up to 850°F (454°C) and is available with both integral and remote (up to 1000 feet [300 meters]) electronics versions. The ST110 includes system wide agency approvals for hazardous environments, and a rugged, NEMA 4X/IP67 rated 316 stainless steel enclosure. Approvals include SIL-1, ATEX, IECEx, FM and FMc.

Fluid Components International is a global company committed to meeting the needs of its customers through innovative solutions for the most challenging requirements for sensing, and measuring flow, pressure and temperature of gases.