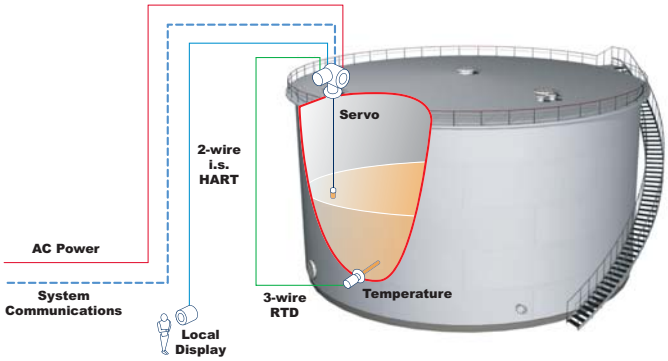
4539 Average Temperature and Water Bottom Sensors

Intrinsically safe temperature and water bottom measurement for inventory control and custody transfer tank gauging applications

Highlights

- Continuous measurement of average liquid and /or average vapor temperature -
- Variety of process connections and cable entries available to meet worldwide classifications
- Options available for Pt100, Cu90, Cu100 and PtCu100 input conversion to HART compatible outputs
- Measurements based on API (American Petroleum Institute) Manual of Petroleum Measurement Standard, Chapter 7



Typical Tank Gauging System Diagram

Applications

The 4539 Series of Average Temperature/Water Bottom Sensors and Convertors (ATC) provide a highly capable solution for a variety of bulk storage tank gauging applications. Temperature profile throughout the tank is available by reading the position and temperature of each element.

They can be combined with various HART compatible devices and tank sensors, such as Varec's 6000 Servo Tank Gauge, 7500 and 7200 Radar Tank Gauges and 4590 Tank Side Monitor.

- Average Temperature Convertor - The 4539 ATC can be retrofitted onto an existing average temperature sensors (Cu90, Cu100, PtCu100 and Pt100). It is compatible to both multi-resistance thermometers (MRT) and multi-spot thermometers (MST).
- Average Temperature Converter and Sensor for custody transfer applications, the 4539 ATC sensor and convertor combination is intrinsically safe and provides a maximum of 16 class A Pt100 elements for average temperature measurement.
- Water Bottom Converter and Sensor - Combining only the 4539 ATC water bottom sensor with convertor allows independent measurement of water interface level.
- Average Temperature & Water Bottom Sensor and Convertor - Both high accuracy temperature and continuous water interface measurement data are transmitting along only one pair of HART signal cables to the host device.

Product Options

Approvals

- FM
- Contact Varec for ATEX or IECEx approved devices

Measuring Function

- Temperature and Converter
- Water Bottom and Converter
- Temperature and Water Bottom and Converter

Water Bottom Measuring Range

- 1 m (3.3 ft) to 2 m (6.6 ft)

Number of Elements

- 2 to 16

Element Spacing

- 1 m, 1.5 m, 3 m, 3 m

Various Probe Lengths

- 3 ft (0.91 m) to 131 ft (39.93 m)

Various Mounting Attachments

Note: Please complete an Application Data Sheet for this equipment to facilitate proper selection of options for your unique application. Contact your Varec Customer Representative for more information.

4539 ATC Technical Specifications

3rd Party Probe Compatibility

Compatible element types	Pt100, Cu100, Cu90, PtCu100, JPt100 Examples include the Varec 9909, 1700 or Weed Beacon MWR. Other manufacturer multi-resistant and multi-spot average temperature probes may be compatible

Physical

Enclosure	Explosion-proof die-cast epoxy-coated aluminium, Weather Proof - IP 65
Process connection	PF 3/4" (NPS 3/4") universal coupling M20, Varec 1700 probe connection only

Field Communications

Output	2-wire (is) HART multi-drop

Power

Input	16.... 30VDC (via HART line from host gauge)
Power consumption	6mA@16VDC (HART converter only) 6mA@16VDC (Temp. probe + HART converter) 12mA@16VDC (Water Bottom sensor + HART converter) 12mA@16VDC (Temp. probe + Water Bottom sensor + HART converter)

Environmental

Ambient temperature	-40...+85 °C (-40...+185 °F) Housing
Climate class	DIN EN 60068-2-38 (test Z/AD)

Temperature Probe Specifications

Temperature element	Class A Pt100, IEC PUB 751 1995 Maximum 16 elements
Installation height adjuster	±360mm threaded, (SUS 316)
Probe material	SUS 316 flexible tube
Operation temperature	-170...+235 °C (-274...+455 °F)
Temperature accuracy	±0.15 °C (±0.27 °F), or better Based on IEC 60751 class A standard

Water Bottom (Capacitance) Sensor Specifications

Sensor material	SUS 316 (center rod SUS 304 & PFA protected)
Operation range	1m (3.3 ft) and 2m (6.6 ft)
Operation temperature	-0...+100 °C (-32...+212 °F)
Data transmission	2.5mm coaxial cable & common ground
Water bottom accuracy	4mm (±2mm) or better (at reference condition)

Certifications and Approval

CE approval Factory Mutual (FM) Intrinsically Safe - Class I, Division 1, Groups C & D

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