

MAGNETOSTRICTIVE PROBES

AT A GLANCE

WHESSOE VAREC

Magnetostrictive Sensing Probe (MSP) offers a multiple parameter measurement instrument specially designed for the oil, gas and chemical industries.

The MSP is most suitable for clean and finished products such as fuel, diesel and propane at refineries, natural gas storage facilities, marine terminals and airport terminals

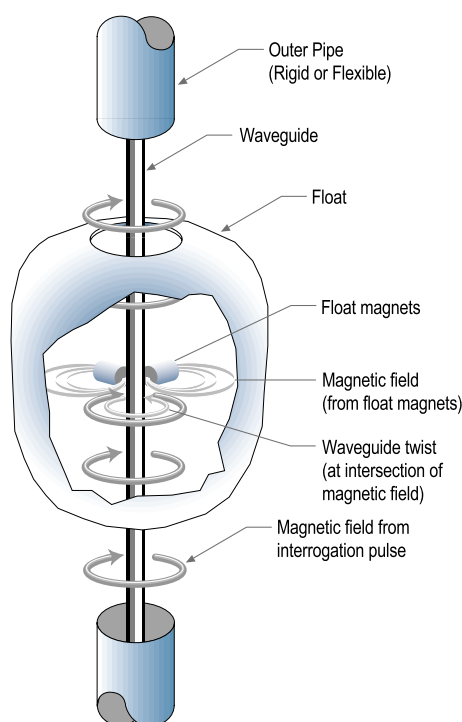
The Magnetostrictive Probe (MSP) offers both a precise and cost efficient method of measuring up to 3 parameters (level, temperature and BSW) using a single device. The probe is available in a rigid probe format which is ideally suited for small vessels and a flexible probe version for vessels greater than 7.6M (25 ft) high. All probes provide highly accurate continuous measurement for:

- **Level measurement**
- **Base sediment & water (BSW)**
- **Multi-spot temperature**

OPERATING PRINCIPLE

The Magnetostrictive probe (MSP) is composed of three concentric members. The outermost member is a protective outer pipe made from a product compatible material. The middle member is a tube which has resistive temperature devices (RTD's) mounted on it for accurate temperature monitoring.

The heart of the probe design is the innermost member, is the waveguide which is manufactured from a proprietary magnetostrictive material.



A low current interrogation pulse is generated in the gauge electronics and transmitted down the waveguide creating an electromagnetic field along the length of the wave guide. When this magnetic field interacts with the magnet contained with the float, a torsional strain pulse, or wave guide twist results which is detected as a return pulse. The time period between the initiation of the interrogation pulse and the detection of the return pulse is used to determine the level measurement with a high degree of accuracy $\pm 0.5\text{mm}$ (0.02").

- **ONE PROBE – 3 MEASUREMENTS**
Provides the inputs required for complete and accurate inventory management.
- **EASY TO INSTALL**
Requires only one small vessel entry to install the probe
- **HIGH ACCURACY**
Provides improved inventory management with an accuracy that exceeds American Petroleum Institute (API) accuracy recommendations
- **FLEXIBLE PROBE OPTION**
Allow the probe to be utilised on vessels up to 18M (60ft) high.
- **NO MOVING PARTS – EXCEPT FLOAT**
Minimal maintenance required





For most versions of the MSP multiple spot bulbs can be incorporated within the probe, equally placed along the full length of the probe in order to obtain a true average temperature.

MATERIAL CONSTRUCTION

Using resilient lightweight materials, all wetted parts are constructed from of stainless steel as standard. The electronics housing is manufactured from a chemical resistant epoxy painted aluminium enclosure. The MSP probe is available with special material options such a Hastelloy, Monel and Teflon for aggressive products and extreme tank environments.

COMMUNICATIONS

The MSP can be used as a single measuring point or be fully integrated into a system. The probe is available in a number of communication options which include:

- 4-20mA analogue
- HART
- DDA Protocol (EIA-485)
- MODBUS
- PROFIBUS



FLOATS

In order to meet specific application requirements such as product specific gravity and operating pressure, a variety of floats are available. In practice the standard 1.85" (47mm) diameter 316L stainless steel float is suitable for most applications.

Please refer to separate data sheet detailing float options available and/or your local Whessoe Varec representative for assistance in selecting the correct float option for your needs.

SYSTEMS & ANCILLARIES

In order to ensure seamless system integration of the MSP probe, we are able to offer a range of field interface units and monitoring systems to suit most applications including the ability to interface with other manufacturers' equipment and systems.

MAINTENANCE

All versions of the MSP utilise non-contacting magnetostrictive technology with the only moving parts being the floats. This simple design ensures that any scheduled maintenance will be minimised.

LEVEL OUTPUT

Measured Variable

Product level, interface, temperature

Measuring Range

Flexible probe - 152 mm – 12.2M (0.5 – 40 ft)

Rigid probe - 152 mm – 7.6M (0.5 – 25 ft)

Typical Level Accuracy

Flexible - 0.005% F.S. or 0.508 mm (0.020 in)

Rigid - 0.025% F.S. or 0.794 mm (1/32 in)

Sensor Operating Temperature

-34 to 149°C (-30 to 300°F)

TEMPERATURE MEASUREMENT

Measured Variable

Averaging and multi-spot temperature (Up to 5 RTDs)

Temperature Range

-34 to 71°C (-30 to 160°F)

Typical Accuracy

+/- 1.0°C (+/-0.5°F)

ENVIRONMENTAL

Enclosure

Aluminium housing,
O-ring sealed for outdoor use
(IP 65, NEMA 4)

Humidity

0 to 100% R.H.

Electronics Operating Temperature

-40°C - 65°C (-40°F - 124°F)

Maximum Operating Pressure

1.896 Mpa (275 PSIG)

Materials

Wetted parts - Stainless steel
Non-wetted parts - Aluminium

Safety Approvals

FM & CSA
CENELEC (PTB)

Other Approvals

CE mark

FIELD INSTALLATION

Tank Mounting

¾, 1 in NPT adjustable fitting or flange mounting

* To order a Magnetostrictive Probe please refer to the individual Technical specification sheets containing the product order codes.

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WHESSOE VAREC

A member of the Endress+Hauser Group

Whessoe Varec are BS EN ISO 9001 Approved.
The company reserves the right to change the specification or design without prior notice.
The Magnetostrictive Probe is manufactured by MTS Systems Corporation.
Visit Whessoe Varec's internet site at <http://www.whessoevarec.com>