



ProGauge

Environmental and wetstock
management solutions



MAGNETOSTRICTIVE PROBES

Filling stations
and fuel depots



Magnetostrictive liquid level gauges

with rigid stainless steel shaft up to 5,5 meters suitable for gasoline, gasoil, LPG, adblue, solvents, with multipoint technology.

Different versions for different applications

- radio wireless, battery powered
- wired with RS485 communication
- wired RS485 LOG: tank measure recording if power and communication are lost.

ATEX, CE, IP protection, OIML compliance

- intrinsically safe or explosion proof versions
- submersible IP68 protection certified
- metrological certification:
 - OIML R85 for fixed tanks.

Magnetostrictive level probe

Operating principle

The operation of **Magnetostrictive Level Probe** is based on the principle denominated **Wiedemann effect** and allows a continuous and highly accurate reading of the level of liquids inside a tank.

The **level transmitter XMT** consists of an electronic circuit with microprocessor located in the head and of a stainless steel rod housing a wave guide located inside the tank.

A high frequency electric impulse is generated by the electronic device.

In the exact point of intersection with the magnetic field generated by the permanent magnet housed in the float, a mechanical impulse caused by the magnetostrictive torsional deformation is generated.

The mechanical impulse travels at the speed of sound in the wave guide up to the detector located in the measuring housing.

By measuring of the time elapsed between the sending of the initial signal and its return the exact position of the floats along the rod is defined with 0,01 mm. resolution.

Main features

Supports tele-diagnostic/maintenance functions.

Internal sensor replacement without removing rod from the tank. Remote configuration of operation parameters. Connection to the tank: fixed or adjustable thread flanged/inside riser.

Stainless Steel AISI 304/316 shaft

Measuring range from 500 mm. up to 5.500 mm

Calculation of data relating to:

- Product level in 0,01 mm
- Interface level in 0,01 of mm. (water presence detection)
- Product mean temperature up to max. 5 integrated digital sensors

Standard measuring accuracy: +/- 0,5 mm

Standard resolution: +/- 0,01 mm

Temperature accuracy range -20 +70 °C: +/- 0,2 °C

Temperature resolution: ± 0,0625 °C

I.S. wireless probes XMT-SI-RF

New generation of magnetostrictive wireless level gauge with the ultimate low frequency wireless technology

Advantages

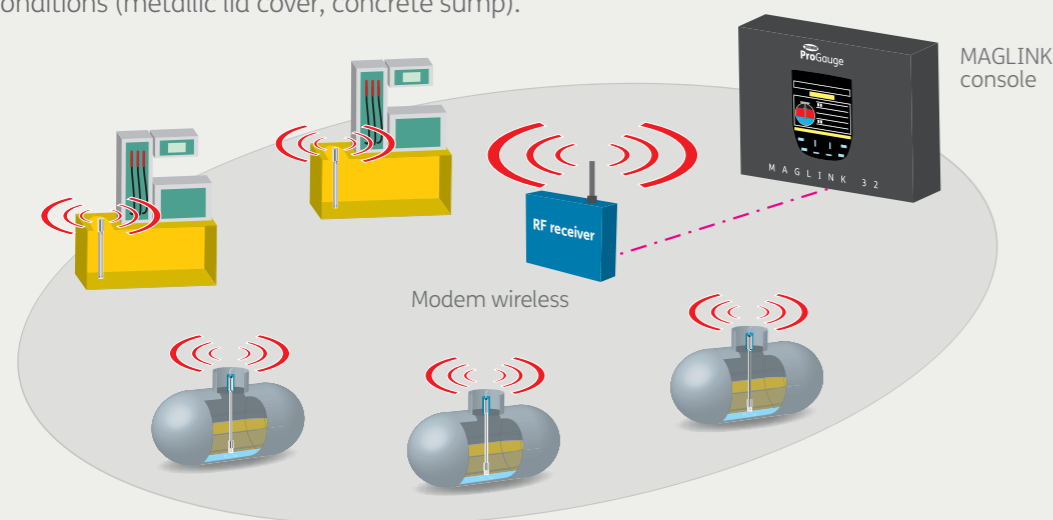
- Avoid expensive costs for digging, wiring and cables.
- Low power consumption with save energy management.
- Long life lithium battery up to 5 years.

Stainless steel IP68 compact version:

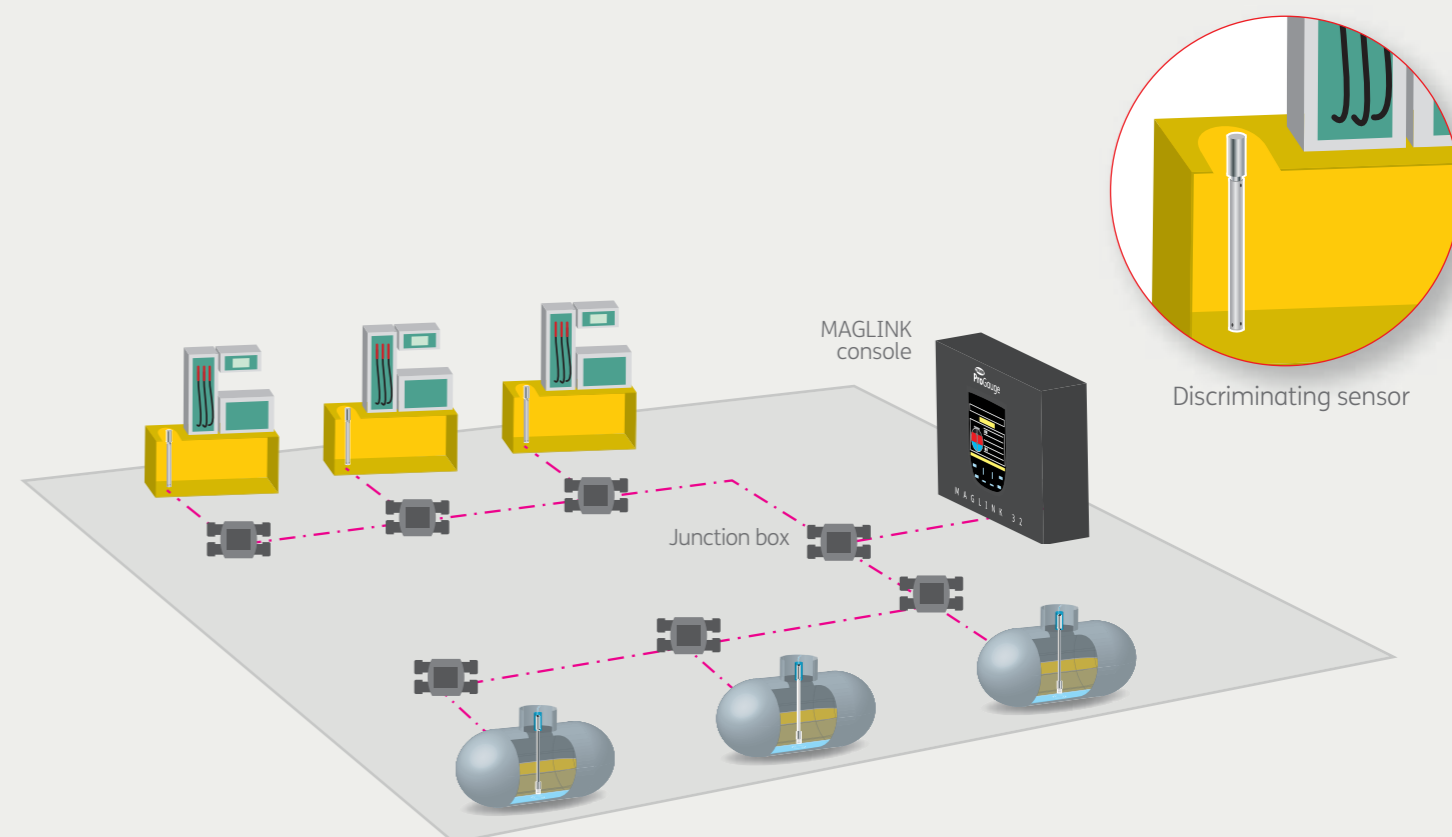
- Battery and antenna embedded inside the probe.
- Suitable for underground and above ground tanks.
- Reliable and guaranteed data transmission in harsh conditions (metallic lid cover, concrete sump).

Features

- Wireless transmission to the RF receiver up to 2 Km. line of sight.
- RF repeater for difficult environmental application.
- Wake up on radio function.
- Power up 500 mW adjustable.
- Signal measurement and display.



“Multipoint” wiring for wired probes



Magnetostrictive probes

I.S. probes XMT-SI-485/RF Series

Intrinsically safe version.

- Stainless Steel Enclosure Ø 50 mm IP68 (submersible up to 1,2 m per 24 hours)
- In 2" riser installation
- 7/8" circular connector with standard cable length 2 m. Ø 9 mm, hydrocarbon resistant in according ENI specification
- Power supply: 12 VDC
- RS485 serial port / antenna
- I.S. circuits to wire to an intrinsically safe barrier active (BRA-SI) or passive (BRA-SIP) (only for RS485 Series)

I.S. probes XMT-SI-485 LOG Series

This Magnetostrictive probe belongs to the same family of XMT-SI-485 with data logger functionality which is automatically activated when the external power supply and/or data is off.

LOG operating mode

When external power supply is present, as the normal case, the probe works as usual replying to the polling protocol. When the power/data is off, an internal battery is automatically connected to the electronics to store movement data in its internal memory which is available for download when the power is restored. This option is available both for new probes and existing probes as a retrofit.

Black Seal XMT LOG theft-proof with memory

PATENTED

This Magnetostrictive XMT-SI-LOG smart-probe belongs to the same family as XMT-SI but with data logger function and with floats (fuel and water) integrated in an aluminium special profile, hard oxidation treated, up to 5,5 meters, suitable for gasoline and diesel fuel.

Different versions for different applications:

- radio wireless, battery powered
- wired RS485 LOG: tank level data saving in case of power failure, 1 month of memory.

ATEX, CE, IP protection, compliance

- Intrinsically safe certificate CEC 09 ATEX131 REV. 3 II 1G Ex ia IIB T4 Ga II 1D Ex t IIIC T 135 °C Da IP66/68

Black Seal main features

Bend-proof, strong Ø 48 mm. aluminium shaft with special antistatic hard oxidation treatment: stronger than stainless steel pipes.

Integrated floats: preventing theft attempts, suitable for turbulent flowing liquids.

Memory: data saving in case of power failure; should cable be cut or removed, data are saved in probe internal memory.

Supports tele-diagnostic /maintenance functions, remote configuration of operation parameters.

Connection to the tank: inside riser

Circular connection

Power supply: 12 VDC / battery

RS485 serial port / antenna.

IP68 protection (submersible up to 1,2 m. per 24 hours)

Calculation of data relating to:

- Product level in 0,01 mm
- Interface level in 0,01 of mm. (water presence detection)
- Product mean temperature up to max. 5 integrated digital sensors

Standard measuring accuracy: +/- 0,5 mm


Standard resolution: +/- 0,01 mm

Temperature accuracy range -20 +70 °C: +/- 0,2 °C

Temperature resolution: ± 0,0625 °C



Certifications

Explosion proof ATEX certifications

INERIS 06ATEX0051  II 1/2 G Ex d IIA T6
Ex tD A21 IP66/68 T85 °C Tamb: -20 °C to 60 °C.

CESI 06ATEX 020  II 1/2 G Ex db II 2 Ex tB IIIC
T 85 °C IP67.

Intrinsically safe ATEX certifications

CEC 09 ATEX131 REV. 3  II 1G Ex ia IIB T4 Ga
 II 1D Ex t IIIC T 135 °C Da IP66/68.

Metrological certifications

OIML R85/2008-CZ-11.03 of 29.06.2011
for fixed tanks.

Probes XMT



Level & fuel quality analysis and product identification

- Fuel Density ρ (kg/m³)
- Fuel Viscosity μ (cp)
- Fuel Dielectric constant ϵ

DVD description

The Black Seal Magnetostrictive Level Sensor is equipped with an integrated sensor that directly measures the viscosity, density, dielectric constant, temperature of fuels.

Relying on patented tuning fork technology, the sensor monitors the direct and dynamic relationship between multiple physical properties to determine the quality, condition and contaminant of fuels such as diesel biodiesel, gasoline, Jet fuel, kerosene, biodiesel concentration and urea quality.

The multi-parametric analysis capability improves fluid characterization algorithms.

The BS DVD provides in-line monitoring of fluids for a wide range of applications including fuel tanks, process lines and pressurized high flow conduits.

PATENTED

- Temperature (°C)
- Level and water interface (mm) with multi-parametric calculation

DVD features

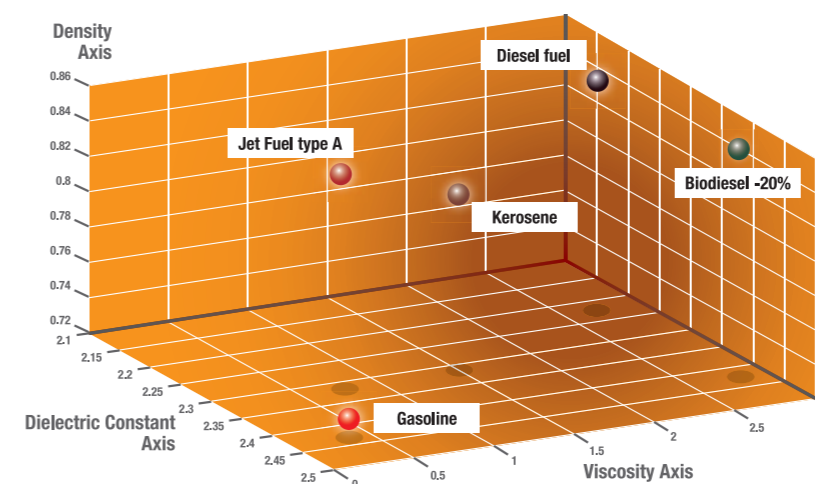
- Patented Tuning Fork Technology with high accuracy
- Static and direct measurement, no moving parts, resistant to turbulence
- No dead zone, full range level measurement
- Rugged construction for high pressure and high flow environments
- Proprietary corrosion and contaminant resistant coating for wetted parts
- On-board microprocessor for real-time data analysis
- Highly reliable and long term stability
- ATEX Compliance, suitable for 0 zone.

DVD application

- Density solution for retail and depots automation
- Real time fuel quality
- Biodiesel in diesel concentration
- Anti-crossover fuels detection
- Sump and interstitial sensors with liquid discriminating (empty status / type of fuel / water).

Fuel types

Simultaneous measurement with DVD sensor for three physical properties enables absolute fuel fingerprint analysis to confirm fuel type.



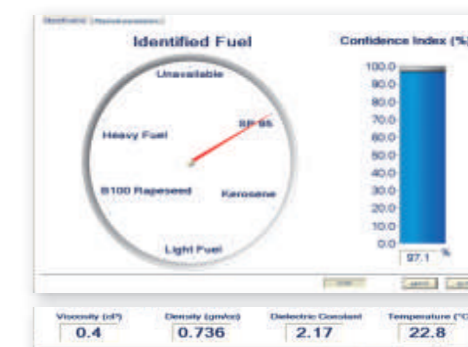
Certifications

DVD integrated XMT probe

II 1 G Ex ma ia IIC T4/T3 Ga
IP66/68 DVD+XMT.

Stand-alone process in-line

II 1 G Ex ma IIC T5/T3 Ga IP66/68.



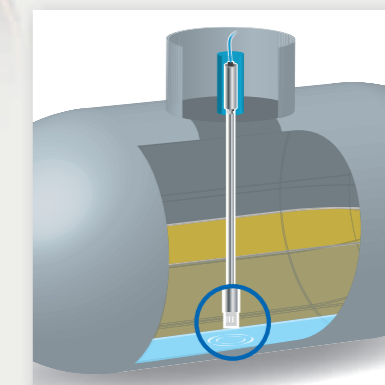
Fuel quality sensor display

Black Seal DVD

Black Seal DVD



Detail of sensing elements
Tuning fork resonator
Temperature sensor



In tank density meter up to 20 meters



ProGauge

**Corporate Headquarters
Tokheim Group**

Paris Nord 2
35, Allée des Impressionnistes
Immeuble Le Cézanne
93420 Villepinte
France

Tel: +33 (0)1 49 90 77 00
Fax: +33 (0)1 49 90 77 77

www.tokheimprogauge.com

