

# ID-225 OIL THICKNESS SENSOR

## ID-225 APPLICABILITY

Leakwise ID-225 sensor continuously measures varying layers of hydrocarbons on the surface of water in many locations where oil leaks accumulate and cleaned up. The sensor provides an on-line trend of oil layer thickness. Many petroleum and power companies use it for monitoring and control of oil layers in typical applications such as:

### Remediation Control

On-line monitoring of oil thickness changes over time in groundwater wells, enabling effective oil cleanup by using automated control of remediation.

### Skim Tanks

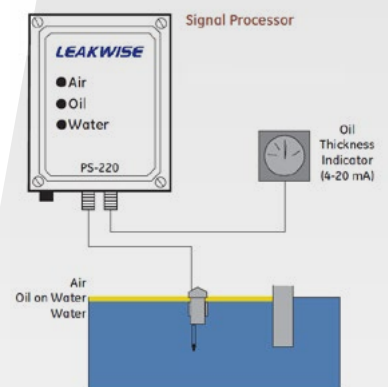
In many processes, a skim tank is used for collecting wastewater containing oil. The ID-225 may be inserted into a tank through an inspection hatch, enabling automatic start and stop of oil skimming operation.

### Monitoring Oil / Water Separators

Environmental regulations require oil / water separators effluent monitoring. An ID-225 can monitor oil layer buildup in the separator without human intervention. When installed before the separator, it indicates when oil separation capability of the separator is close to maximum and pumping of the thick oil layer should be done.

### Wastewater Sewer Monitoring

An ID-225 installed in a sewer near the process area will detect and control big oil leaks at the source, reducing treatment plant load and immediately alarming on big spills.



## ID-225 DESCRIPTION

A Leakwise system consists of a controller and one or more sensors. The ID-225 sensor has a high-frequency transmitter mounted on a float that maintains its position precisely at the liquid/air interface, despite fluctuations in liquid level up to 45 m (150 ft.) variation, with 30 cm (12. In) minimum water level. Oil layer measurement is already linear at the sensor.

Leakwise ID-225 is available in two sub-models according to maximum measured oil layer thickness:

- ID-225/100 for 1 - 100 mm (0.04 - 4.0 in)
- ID-225/200 for 1 - 200 mm (0.04 - 8.0 in)

A single ID-225 sensor is controlled by the analog PS-220 Controller, which has two field-adjustable alarm points:

- Low oil alarm - Detection of a first predefined layer thickness of hydrocarbons
- High oil alarm - Detection of a hydrocarbon layer at a second predefined thickness

Controller relays are used for local and remote alarms and control, and a 4-20mA output indicates the oil thickness. Continuous built-in diagnostics monitor sensor operation. The SLC-220 digital controller handles up to four sensors. A stilling well is recommended for all ID-225 installations (available as an optional accessory).

## PRINCIPLE OF OPERATION

Leakwise sensors use a high-frequency Electromagnetic Absorption technique. Each floating sensor houses high-frequency electromagnetic energy transmitting and receiving antennas that continuously monitor the liquid surface. Since water absorbs more electromagnetic energy than hydrocarbons, changes in the absorption rate of water indicate the presence or buildup of hydrocarbons. Leakwise sensors are used for detection and monitoring the buildup of separated or emulsified non-soluble hydrocarbons on water and other aqueous solutions. In addition, the sensors differentiate between a wet and a dry sump. No other oil monitoring system does this.

# TECHNICAL SPECIFICATIONS

ID-225 Sensor Specifications	
<b>OPERATION</b>	
<b>Summary</b>	Floating sensor for monitoring thickness of hydrocarbons & organic solvents in wet sumps.
<b>OPERATING RANGE</b>	
<b>Oil Monitoring Range</b>	ID-225/100: 1 - 100 mm (0.04 - 4.0 in); ID-225/200: 1 - 200 mm (0.04 - 8.0 in)
<b>Resolution</b>	1 mm (0.04 in)
<b>Water Level Variation</b>	Minimum: 30 cm (~12 in) (33 cm for ID-225/200) above well/tank/sump bottom; Maximum: 45 m (~150 ft.).
<b>Water Lateral Velocity</b>	~20 cm/sec (~8 in/sec) when installed in a stilling well
<b>Water Temperature</b>	0 - 70 °C (32 - 158 °F); no freezing
<b>Air Temperature</b>	-10 - 80 °C (14 - 176 °F)
<b>PHYSICAL SPECIFICATIONS</b>	
<b>ID-225/100</b>	Diameter: 87 mm (3.43 in), height: 235 mm (9.3 in); fits into 100 mm (4.0 in) stilling well
<b>ID-225/200</b>	Diameter: 87 mm (3.43 in), height: 384 mm (15.1 in); fits into 100 mm (4.0 in) stilling well
<b>Materials</b>	Hydrocarbon resistant polymers, 316 stainless steel.
<b>Integral Cable</b>	10 m (~33 ft.) supplied with sensor, additional length to order up to 50 m (164 ft.) total
<b>Accessories</b>	Stilling well in 1 m and 2 m long sections, which can be assembled to any required length.

PS-220 Controller Specifications and Options	
<b>SPECIFICATIONS</b>	
<b>PS-220 Description</b>	PS-220 Controller is an analog signal processor and power supply in a NEMA 4 enclosure, and supports a single ID-225 sensor.
<b>Temperature</b>	Ambient temperature range: -40 - 85 °C (-40 - 185 °F)
<b>Cable length to Sensor</b>	Up to 1,200 m (3,937 ft.) subject to hazardous area restrictions.
<b>PS-220/RL/LI</b>	Two alarm relays with dry contacts and one fail relay contact: SPDT rated 4A (3A for fail contact) at 250 VAC or 30 VDC, normally open and normally closed, and four status indication lights: Water, Oil, Air/High and Fail. Includes built-in diagnostics.
<b>Wiring Connections</b>	Terminal blocks: 14 AWG maximum for sensor and 4-20 mA output wires; 12 AWG maximum for power and relays wires.
<b>OPTIONS</b>	
<b>Enclosure Options</b>	/N4 for NEMA 4X (IP65): 305 x 195 x 120 mm (12.0 x 7.7 x 4.7 in), 2 Kg (4.4 lb.); /N7 for NEMA 7: 278 x 259 x 166 mm (11.0 x 10.2 x 6.5 in), 8.5 Kg (18.7 lb.); /Exd for Exd: 355 x 276 x 200 mm (14.0 x 10.9 x 7.9 in), 14 Kg (30.9 lb.); /BP: without an enclosure, to be mounted in a local cabinet. 190 x 180 x 130 mm, 1 Kg.
<b>Input Power Options</b>	220 or 110 VAC (50 - 60 Hz) or 9 - 36 VDC (@ 5 Watts); may also be solar powered.
<b>/420</b>	4-20 mA analog output proportional to hydrocarbon thickness up to 100 / 200 mm (4 / 8 in), current source. Highly recommended when using ID-225.
<b>/420/BG</b>	Bar-Graph display (20 bars) of hydrocarbon thickness in addition to 4-20 mA analog output.
<b>/CEN</b>	Zener Safety Barriers to allow installation of the sensor in hazardous areas.
<b>/AUD</b>	Audio alarm option (available in weather-proof or explosion-proof enclosure).

Other Controllers – Refer to separate data sheets	
<b>SLC-220</b>	Digital Signal Processor for up to four ID-220 Series sensors support, with various output options, including relays, lights, 4-20 mA, LCD, Modbus in RS-232 and RS-485 communication, and remote cellular connectivity.

Sensor and PS-220 Controller Certifications	
<b>ID-225 Sensor</b>	ATEX Intrinsically Safe: II1G Ex ia IIC T4 Ga -40 °C to +70 °C. Also: IECEx, UKEX and cETLus
<b>PS-220 Enclosure</b>	For hazardous areas: North America - NEMA 7, Class I, Div 1, Groups B, C & D; NEMA 4. Europe ATEX & IECEx - II2(1)GD, Ex db [ia Ga] IIC T6 Gb, IP66
<b>Combined System</b>	Approved for operation in hazardous locations when Zener Safety Barriers are added.
<b>Performance</b>	EPA - Conforms to Spill Prevention, Control and Countermeasure (SPCC) - Oil Pollution Prevention regulation (40 CFR part 112), and EPA/530/UST-90/009 - Leak Detection Methods.
<b>Manufacturing</b>	ISO 9001:2015 Certified

