

Oil Spills Detector

The **Leak wise** sensor detects the presence and monitors the buildup of thin layers of hydrocarbons in wet and dry environments.

Many petroleum and power companies have installed the system in wet or dry sumps for early detection, warning and control of oil leaks and spills from:

- Above-ground oil storage tanks
- Transformer sumps in switchyards and remote power distribution substations
- Oil/water separators
- Cooling water systems and trenches
- Storm water run-off
- Wastewater sewer systems

Other common applications include detecting and monitoring Hydrocarbon leaks and spills in canals, retention ponds, and boiler condensate tanks. In addition, the sensor monitors wastewater treatment plant discharge to ensure regulatory compliance and can alert plant operators of any upsets in the treatment process.



System Description

A Leak wise system consists of a controller and one or more sensors (also called detectors). The sensor has a high frequency transmitter antenna mounted on a float built in a guiding cage. The floating sensor maintains its position precisely at the liquid/air interface, despite fluctuations in the liquid level. The sensor is controlled by the Controller, which has adjustable alarm points for:

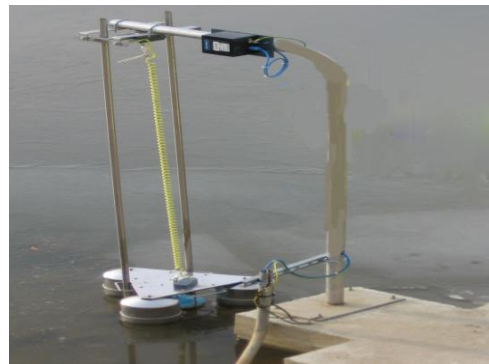
- Low oil alarm — Detection of a first predefined layer thickness of hydrocarbons
- High oil alarm — Detection of a hydrocarbon layer at a second predefined thickness, or detecting a dry sump situation in certain applications



Principle of Operation

The Leak wise sensors use a patented, high-frequency Electromagnetic Absorption Technique. Each floating sensor houses a high-frequency electromagnetic energy transmitter and a receiving antenna which 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.

The Leak wise sensors can be used to detect and monitor the buildup of free or emulsified non-soluble hydrocarbons on water and other aqueous solutions. No other oil sheen monitoring system does this.



Offshore Oil Spills Detector

The **Leak wise** Oil Sheen Monitoring System is a floating wireless sensor that detects the presence and monitors the buildup of hydrocarbons on water. The system is designed for installation offshore.

Applications include detecting and monitoring floating hydrocarbons near the intake of desalination plants, jetty and mono-buoy oil loading terminals, and oil rigs and platforms; as well as in ports, lakes, rivers, open channels, and large retention ponds.



System Description

This system has a wireless oil detection unit mounted on a wave rider buoy and a wireless data receiver unit.

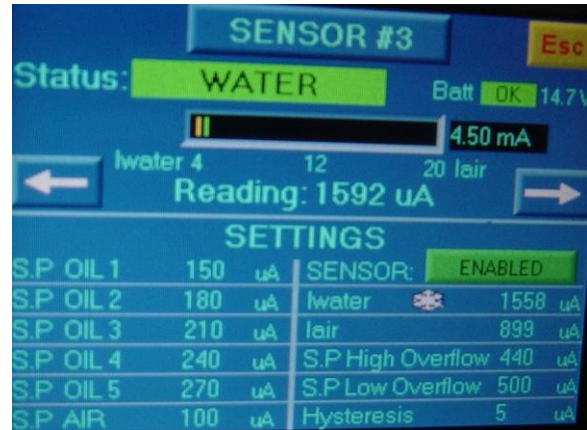
The oil detection unit includes:

- A wave rider buoy
- An oil detection sensor
- An integrated wireless transmitter with antenna
- A solar panel with battery and battery charger

The receiver includes:

- An integrated wireless receiver with antenna
- A digital controller with display and keypad
- Various output options
- A power supply

The wave rider buoy is designed to maintain the sensor's detecting antenna at the liquid/air interface.



Principle of Operation

The Leak wise sensor uses an industry leading technology of Electromagnetic Energy Absorption.

A high-frequency signal is transmitted through the liquid/air interface to the antenna immersed in the monitored fluids. Higher energy absorption of the fluid causes more loading on the antenna. Since water absorbs more energy than hydrocarbons and air, the loading in water is higher. If the antenna is surrounded by an oil layer or an oil/water mixture, the loading is reduced in proportion to the reduction in water content. This unique, patented technique enables the detection of small layers of oil.

Furthermore, it enables continuous monitoring of an oil buildup and the measurement of its thickness.

