LEAKWISE®
Oil on Water Detection & Monitoring

Agar Environmental Ltd.
Application Note

Groundwater Remediation

The unique capabilities of the Leakwise Oil on Water Monitoring Systems enable remote measurement of oil presence for:

- Site assessments
- Recovery wells and remediation systems
- Well closures

The data can be transmitted to remote data loggers or computers via local wired processor or via satellites, cellular, or point-to-point wireless communications.

1. Site Assessments

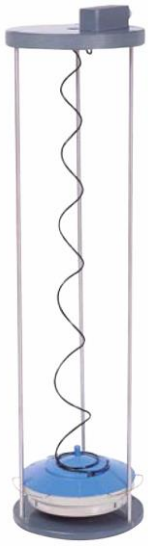
Remote Monitoring of Plume Movement

The Leakwise ID-221 Floating Sensors can detect on-line the presence of as little as 0.3 mm (1/80 in.) hydrocarbons and other immiscible organic solvents on water much earlier than any current method of physical sampling. This sensor can also monitor free product layer growth up to 25 mm (1 in).

Remote monitoring of hydrocarbon presence and plume movements (plume front) in peripheral wells can also be reported through optional wireless data transmission.

ID-221

ID-225/100



ID-223/500

2. Recovery Wells and Remediation Systems

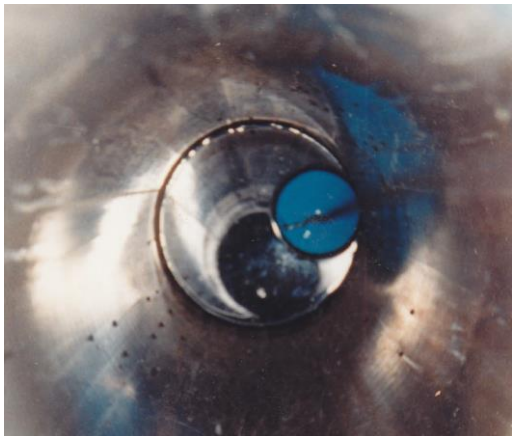
Efficiency of Remediation

The Leakwise ID-225 Hydrocarbon Thickness Monitor is capable of monitoring hydrocarbon layers in the range of 1–200 mm (8 in). This sensor can be used during remediation to indicate the efficiency of remediation by monitoring on-line the thickness reduction of free oil layers. ID-225 Sensors installed in sites with many recovery wells can be used to assist in determining pumping strategy. For example, the project manager can decide to pump from wells with thicker hydrocarbon layers.

Remediation Pump Control

The ID-221 Detector and ID-225 Oil Thickness Monitor can be used to start and stop pumps upon detection of free oil layers, thus reducing the amount of water which is otherwise pumped out with the oil and saving on treatments costs. “Pump and treat” sites are very costly because they mainly treat water for long periods of time.

The use of ID-221 Sensors may save much of these costs. In sites with pump and treat remediation, the ID-221 Detectors can be installed in peripheral wells. These detectors will activate pumps in remediation wells only when oil is detected and thus increase the probability that oil will be recovered - not just water.



ID-221 Inside a Groundwater Well

Skim Control in Oil/Water Separator

Some skimming pumps operated by conductivity sensors will pump substantial amounts of water together with the oil. An ID-225 hydrocarbon thickness monitor installed in a separator can activate the skimming pump at a certain thickness of hydrocarbon layer (for example at 100 mm) and stop the pump at a reduced thickness (for example at 10 mm), until additional thickness growth is detected again. This method ensures that only hydrocarbons and no water will be removed, and reduces the high costs of transporting large quantities of water with the oil, saving unnecessary treatment costs.

Protection of Air Stripper, Biological Treatment System, Activated Carbon

Water with dissolved oil is pumped out of the separator for treatment in an Air Stripper, Biological Treatment System, or Activated Carbon. A free hydrocarbon layer, which may be present in the water, can clog the air stripper or activated carbon, or upset the biological treatment system. An ID-221 Oil Sheen Detector can be installed in a settling tank after the separator and before the treatment system. Upon detection of oil sheen, the pump bringing water from the separator will be stopped and the alarm set off. An oil skimmer can then be turned on until the oil sheen is removed.

Monitoring of Water Discharge After Treatment

Environmental authorities allow treated water with only a few ppm of hydrocarbons to be discharged back into the groundwater or public drainage. Therefore, redundancy is important in this application.

On-line ppm monitors are used for this purpose, however the monitoring can be complemented and enhanced with Leakwise. A Leakwise ID-223 Oil Sheen Detector installed in a settling tank mounted on the discharge pipeline will set off an alarm upon detection of oil sheen and shut the discharge valve. This will indicate to the operator that an upset in the treatment system occurred, and prevent unauthorized discharge.

3. Site Closure After Remediation

An ID-221 Detector, installed in wells for remote monitoring after remediation, may reduce the high cost of consultants and technicians who are required to monitor these wells, taking numerous manual samples, for a substantial time before the authorities accept that the remediation is complete.

ID-221 Monitoring in a Tank

ID-223/500 in a Settling Tank

More Information at: www.leakwise.com

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