GE
Water & Process Technologies
Analytical Instruments

Application Note

Groundwater Remediation

The unique capabilities of the Leakwise* Oil on Water Monitoring Systems enable remote measurement of key parameters 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.

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 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). Optional wireless data transmission capabilities of the Leakwise systems can be used for remote monitoring of hydrocarbon presence and for monitoring of plume movements in peripheral wells.

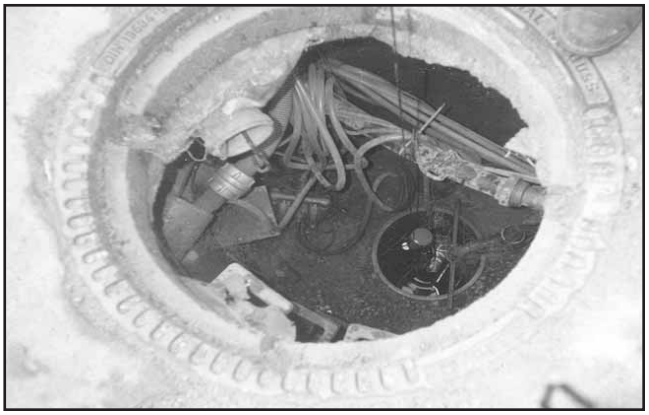
Water Level Change Monitoring
The Leakwise fixed water level sensors can accurately monitor as little as 2 mm changes in well water level and transmit it to a remote data logger, thus enabling remote monitoring of water elevations and gradients change.

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. 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 the project manager in choosing to pump from wells with thicker 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.

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). This method ensures that only hydrocarbons and no water will be removed. This will reduce the high costs of transporting large quantities of water with the oil, and will save additional treatment costs.



imagination at work

Protection of Air Stripper, Biological Treatment System, Active Carbon

Water with dissolved oil is pumped out of the separator for treatment in an Air Stripper, Biological Treatment System, or Active Carbon. A free hydrocarbon layer, which may be present in the water, can clog the air stripper or active 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 water pump bringing water from the separator will be stopped and the alarm set off.

Monitoring of Water Discharge After Treatment (See also Application Note, Oil Sheet Detection: An Alternative to On-Line PPM Analyzers)

Environmental authorities allow treated water with only a few ppm of hydrocarbons to be discharged back into the groundwater or public drainage. On-line PPM monitors are rather expensive and not reliable. 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 an upset in the treatment system and prevent unauthorized discharge. In addition, the operator could take manual samples periodically to a lab for PPM analysis and reporting to the authorities.

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 before authorities give permission to close them.

PROCON SYSTEMS INC.

Calgary: 403-255-2921
Edmonton: 780-437-0244

300 00062 Rev B
MC05-165