HydroSense **4410-LMP**
ppm Oil in Water Monitor

On-line monitoring for ppm concentrations of petroleum oils in effluent and produced water

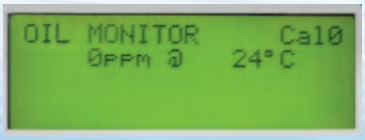
The HydroSense 4410 is the engineered combination of three unique designs by Arjay. The sensing chamber contributes a continuous controlled water sample while the optical sensor package hovers above the passing stream. The Arjay controller then monitors the multiple signals to provide a reliable ppm concentration output.

- Non-contacting sensor design minimizes system maintenance
- Fluorescence technology is selective to petroleum hydrocarbons by targeting their aromatic faction
- Continuous on-line monitoring without chemical or lag time

The HydroSense 4410 uses a UV fluorescence technique to target the aromatic component of the oil contamination. Through a site calibration this aromatic tag provides an indication relative to total oil.

A continuous sample flow is tapped or pumped off the process line and directed through the HydroSense chamber. It passes behind the non-contacting UV light source and is targeted with filtered light energy. The soluble and emulsified oils in the water will excite from this light energy and fluoresce light energy back out of the water at a signature wavelength. The intensity of light energy at this wavelength is measured to provide an indication of the ppm concentration.

Available accessories include air pressurization/purging system, sample coolers and pumps.



The backlit 4-line display provides easy menu driven commands for set-up, calibration, and diagnostics.

HydroSense 4410

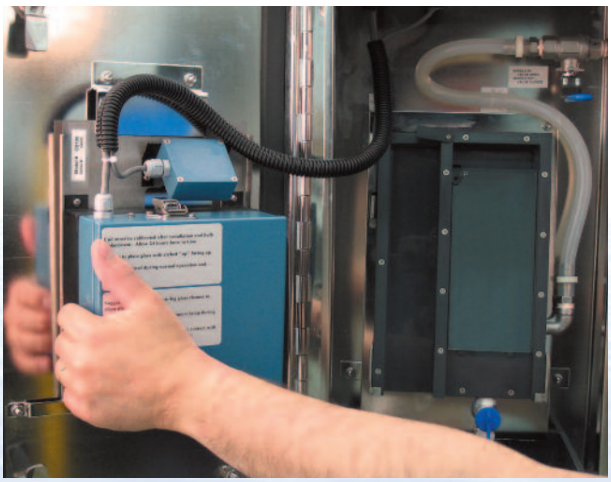
System Maintenance

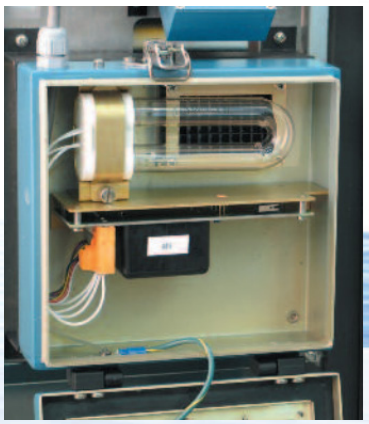
To ensure a long term and reliable operation a routine maintenance schedule should be implemented. Arjay has made this operation quick and easy. The following are a few of the standard maintenance and design features built into every unit.

- The sensing chamber is hermetically sealed from the upper control unit. This not only keeps the control components dry but also allows keypad and wiring access without opening the sensing chamber.
- Operator clean time is less than 2 minutes and no tools are required for any procedure. Power or sample flow do not need to be turned off.
- Lamp replacement is equally easy. A sensor independently monitors the lamp life. The LCD display and a maintenance relay will warn of an impending need for replacement so an operator can schedule this replacement without any downtime.
- Full diagnostics are accessed on the LCD display
- The system automatically compensates for tempearture and zero calibration (offset) shifting due to lamp aging.
- The system automatically compensates for background or stray light energy.
- The controller reads the sample over 50 times per second and averages these readings to provide an updated output.
- The unique glass flow plate design provides a stable representative sample of the passing stream.
- All modular components are plug-in for easy servicing.

Features and Benefits

- The special UV absorbing flow plate sheens the water over a large surface area. The resulting high surface area to depth ratio provides many benefits:
  - The sensitivity to oil molecules is increased by maximizing the optical viewing area
  - The minimal depth discourages oil molecules from 'hiding' behind particulates in the water
  - The large lamp source targets the water from multiple angles to get a representative sampling of all oil
  - The large sample target area ensures a representative and stable snapshot of the water conditions
  - The unit can tolerate suspended solids up to 400 mg/l
- Non-contacting optics minimizes maintenance
- Compensation for temperature and lamp degradation minimizes recalibration requirements
- Alarm warns of impending lamp replacement
- Long life lamp expectancy of 18 months
- Continuous on-line monitoring reads the water 50 times/second with an averaged display update every one second
- No consumables or chemicals used
- Sample flow gravity outfalls to drain
- Designed for harsh environments with a 316 SS housing
- No tools necessary for routine maintenance or lamp replacement
- The flow or power does not require to be turned off during routine maintenance
- Flow chamber diversion system conditions and clarifies sample
- Multi-point calibration available to customize response curves





The unique sensing chamber design alows easy access to the controls and wetted components. The lamp/receiver unit is simply lifted and placed onto the convenient door rack. For any routine cleaning, the flow plate can be wiped in place or removed.

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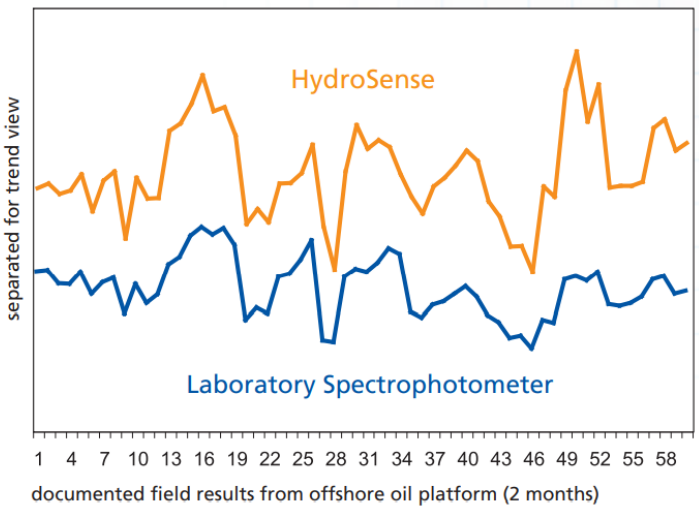
Technical Specifications - Control Unit

Range	User selectable 0-10 ppm to 0-5,000 ppm minimum alarm setpoint 3 ppm
Display Resolution	0.1 ppm
Instrument Accuracy	+/- 0.1 ppm
Oil Type	All PAH hydrocarbons, free and dissolved
Sensitivity	145 ppb diesel reference 463 ppb crude reference
Ambient Operating Temp.	5°C to 55°C (best accuracy between 10°C to 40°C). Protect from direct sun or rain. Instrument shelter or indoor use is recommended. Air Conditioners available.
Ambient Process Temp.	0°C to 40°C (optional cooler for temps > 40°C)
Power Input	24 vdc or 100-240 vac, S.P.
Alarm Relays	4 x 10 amp, SPDT, dry
Output	4-20 mA, Isolated
Interface	RS-485 standard (optional HART and FF modules)
Certifications	CSA SPE-1000 Canadian Electrical Code (CEC) USA National Electrical Code (NEC)
Enclosure	316 SS, Type 4X, IP65

Performance

The performance is based on the site calibration to a known hydrocarbon concentration in stable background water. Changes in hydrocarbon make-up and background stability may affect the output. Through a simple calibration, this unit correlates well with laboratory ISO and EPA methods.



The HydroSense 4410 correlates well against laboratory methods and is ideal for process trending and continuous on-line monitoring.

All calibration, relays, signal outputs and power wiring are available at the main control unit.

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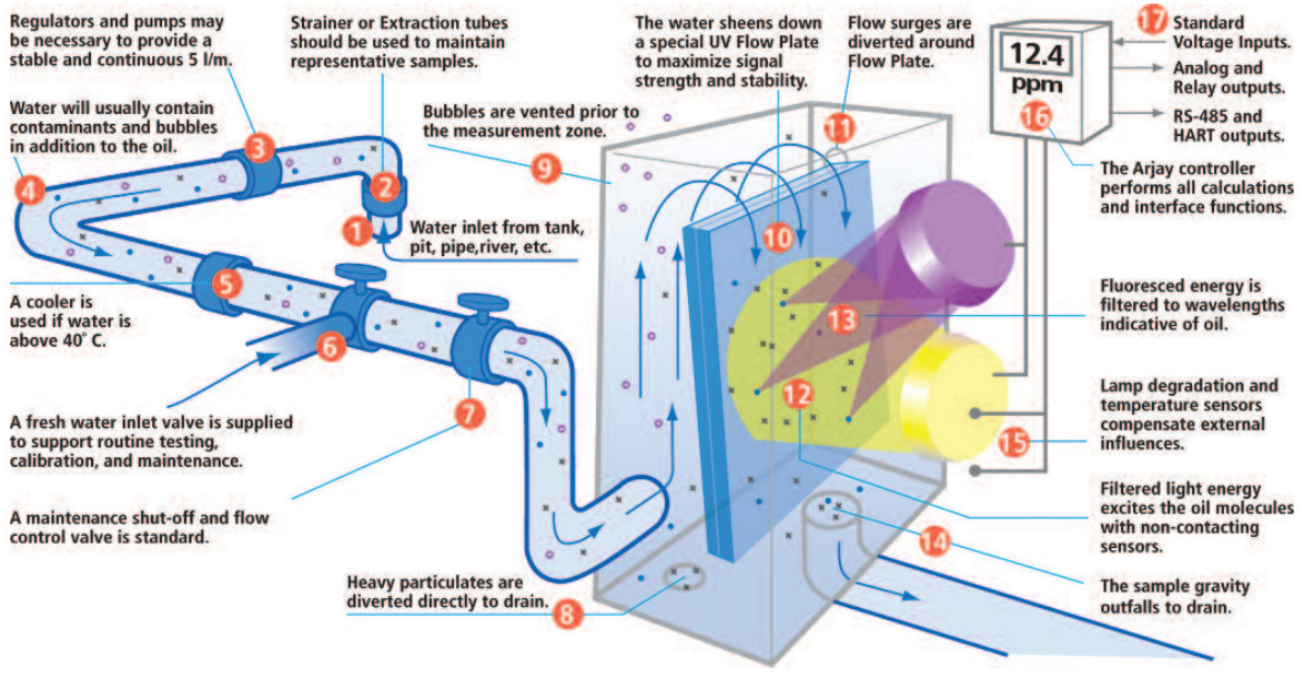

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