



LASER DIAGNOSTIC INSTRUMENTS

ROW

EARLY DETECTION
SYSTEM FOR OIL
ON WATER



LDI ROW REMOTE OPTICAL WATCHER

ROW DETECTS:

motor oils, turbine oils, vegetable oils, fuel oils,
marine diesel oils, crude oils, heating oils,
lube oils, hydraulic oils,
gas oils, motor oils,
mineral oils

Autonomous non-contact sensor for detection of oil on water and land. Highly accurate, easy to maintain, finds oil spills and leaks early so you can respond faster.

› 24/7 OPERATION EVEN IN HARSH ENVIRONMENTS

Day or night, in arctic cold or scorching heat, ROW helps you pinpoint the polluter, take action, and avoid lasting damage. Available in anodised aluminium, 316 stainless steel and EXd enclosures for even the toughest locations.

› LONG LIFE, LOW MAINTENANCE

Robust IP68 certified hermetic design and 5 year LED lifetime. Low power consumption of < 2W with optional remote operation using solar panels & battery.

› NON-CONTACT DETECTION INSTRUMENT

This means easier installation, no water contamination, and no maintenance.

› SOLD GLOBALLY, SERVICED LOCALLY

We can ship the product anywhere in the world, safe in the knowledge that it will work. On-site service is provided by our local partners, ensuring timely and competent care for your ROW system. Where needed, LDI specialists in Estonia can be reached for consulting and feedback.



HOW ROW WORKS

THE SCIENCE

To detect oil slicks as thin as a single micron from up to 10m above the water, the ROW pulses a UV beam at the surface and excites any oil molecules in the target area. Using oil's native fluorescence, ROW is calibrated to identify the specific wavelength signal of oil and send out an alert.

After 20 years of developing remote-sensing systems, LDI has mastered the technology better than anyone else.

INDUSTRY LEADING SENSITIVITY - 1 μ m

Advanced software algorithms are calibrated to detect oil down to single-micron layers and minimize false alarms.

CUSTOMIZATION

With its various common industrial inputs & outputs, the ROW can be installed off-grid and communicate wirelessly.

Pulsed UV beam



Oil's native fluorescence



Excites oil molecules in target area



ROW picks out spectral distinction



Alerts the site operator



Italy,
Oil
Terminal

France,
Sewer
Monitoring



Belgium,
Steel Mill

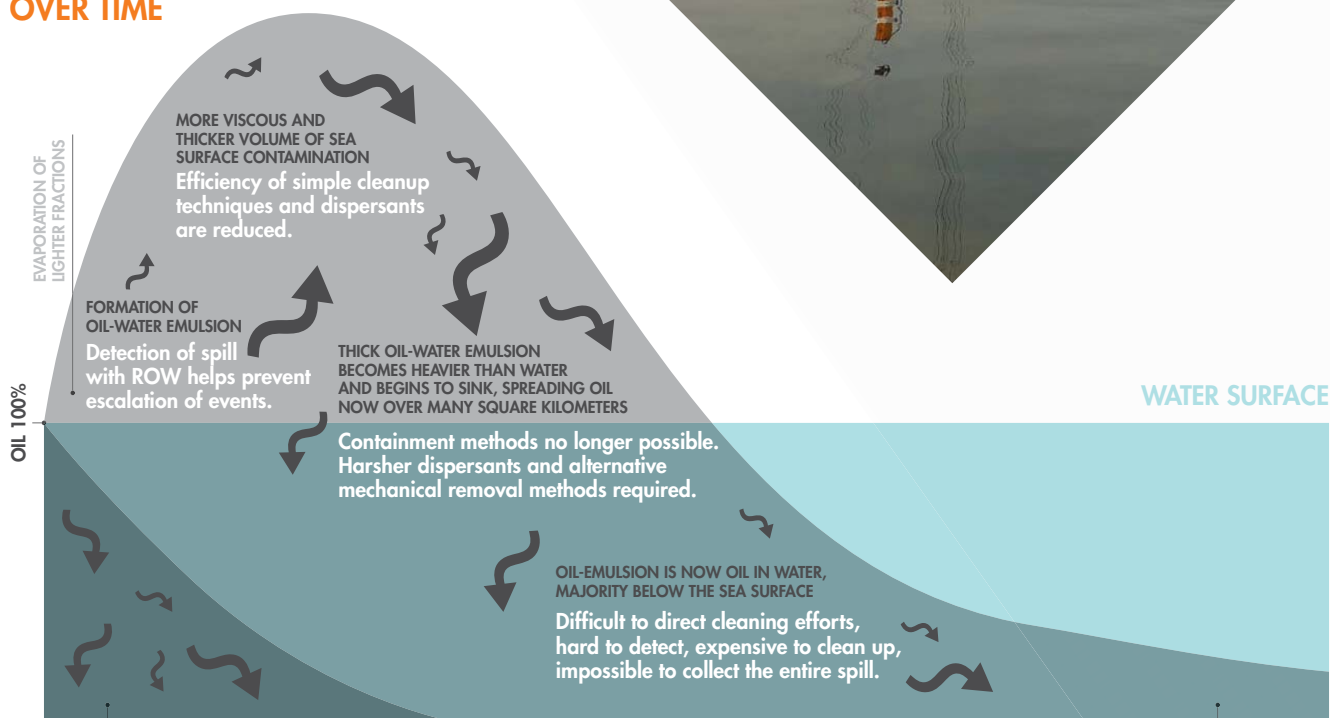
TIME IS OF THE ESSENCE

An hour could mean the difference between a simple scoop-up job and an ecological disaster. ROW detects oil spills earlier and more reliably than any manual system ever could.

Poland, Shipping Port

South Korea, River Monitoring

FATE OF OIL IN WATER OVER TIME



REFINED FUELS

ROW helps you to spot the spill before it evaporates. Clean-up isn't the issue, it's finding the cause to prevent a repeat event.

CRUDES AND OTHER OILS

The volume of oil and water-in-oil emulsion remaining on the sea surface shown as a percentage of the original spill volume (100%). The behavior of a particular crude oil may differ from the general pattern depending on its properties and environmental conditions at the time of the spill.



Belgium, Oil Refinery

Poland,
Power Plant

Poland, Power Plant

South Korea, Oil Refinery

Industrial Site Monitoring

› TIME TO REACT

Oil spreads quickly and changes its consistency, making cleanup more difficult and expensive as time goes by. Catch a spill early, and this scenario can be avoided.

› TIME BETTER SPENT

The ROW's non-contact technology means the device never touches the water. Unlike conventional in-water or contact probes, the ROW system provides fast detection without the headaches. No biofouling, no instrument contamination from water, no maintenance.

› TIME TO PREPARE

Power plant turbines and machineries can leak lubricant oil into the discharge water. Early detection means time to plan and conduct necessary repairs.

› TIME IS MONEY

Major oil spills grab headlines, but minor leaks into the water environment are the most common sources of pollution. Just one liter of oil contaminates up to a million liters of water. Whether your industry is beside a river or the coastline, if your plant property is contaminating oil into the local water, your company risks government fines, bad press, and devastating environmental damage. Best to get ahead.

ROW IS PERFECT FOR:

- Oil & petrochemical facilities (refineries, terminal)
- Power generation facilities (hydro, nuclear, thermal)
 - Water treatment facilities (municipal water)
 - Environmental monitoring of ecological sites
- General manufacturing plants
 - Major shipping ports
 - Agricultural farms

**UP TO
10m RANGE**
means that ROW can
be installed almost
anywhere.

Taiwan, Water Plant

**Netherlands,
Oil Terminal**

**China,
River Monitoring**

NO SUBSTITUTE

ROW can hand
even the roughest
maritime
conditions.

UAE, Power Plant Offshore

SAVE ENERGY, SAVE THE ENVIRONMENT

Human vigilance can be costly and
limited. Spend your resources
elsewhere; let the ROW monitor
24/7.

IDENTIFY, CORRECT, PROTECT

At critical points such as drinking water intake
pumps, a quick contamination alert helps you
take action, prevent equipment damage and
reduce downtime

**France,
River
Monitoring**

Laser Diagnostic Instruments develops and makes sensing systems that analyze substances in real time. Combining photonics with software analysis, our products excel at detecting specific molecules in complex solutions.

LDI has been working on remote-sensing technologies since 1991. Our most sophisticated products are laser-based aircraft and ship-mounted systems (LiDAR) that can detect spills once oil has sunk beneath the surface. Demand for simpler, more flexible devices that would catch early surface spills and leaks in real-time led us to develop ROW.

What is the thickness of detectable oil films?

Depending on the type of oil and its viscosity, the ROW can detect oil films down to a 1 µm thickness from 1 m. The average thickness of an oil slick is 0.1 mm (100 µm), which is possible to detect at up to 10 m. For most installations, 2-5 m is optimal.

Case study: a client wants to install the ROW in a sump pit. However, water rushes from the drainage ditch into the detection area, churning the water mimicking a boiling effect.

Will the ROW work in this case?

Churning water would mean the oil would emulsify with water, so the ROW will detect oil in this solution. Ideally, the ROW works best in calm water areas, so selecting the appropriate location is important.

How wide is the LED scanning area on the water's surface?

This varies with the distance between the water surface and ROW detector. From 2-5 m for example, the field of view of the ROW is about 1 m².

Can the ROW be used when there is material floating on the channel surface?

Yes. Appropriate alarm levels are set depending on the customer's circumstances to cut false alarms to a minimum.

Can oil films be detected on a water surface with bubbles?

Yes. The ROW scans the surface of its field of view, whether bubbles or water. If there is oil, the ROW detects.

What should be done to prevent the detector's window glass from becoming dirty by rain, wind, and dust?

The ROW's sunshield amply protects the lens. Simply wipe the front lens with a cloth if it's dirty.

We hold nine core technology patents and continue to innovate. We aim to ensure that industrial processes remain safe and risks to the environment are managed responsibly. Because remote sensing is our passion, you can count on our support for years to come.

Can oil films be detected in locations with vapor (steam) rising from the water surface?

This would depend on the amount of the vapor, which could scatter the signal (UV pulse). We recommend installing the ROW closer to the target area to improve signal strength. Steam and fog will not affect the ROW unit, but could interfere with the signal strength. This is compensated by adjusting the distance to the water surface and software calibration.

Can oil films be detected on a frozen water surface?

Oil on ice (frozen water) is just like any other surface. If there is oil present on the surface, the ROW will detect it.

Can I install the ROW in hot, arid, sunny, and humid conditions?

Yes. The ROW unit has been tested up to 60°C. The ROW's sunshield blocks out excess sunlight. The ROW is hermetically sealed according to IP68 so humidity is no problem.



**LASER DIAGNOSTIC
INSTRUMENTS AS**

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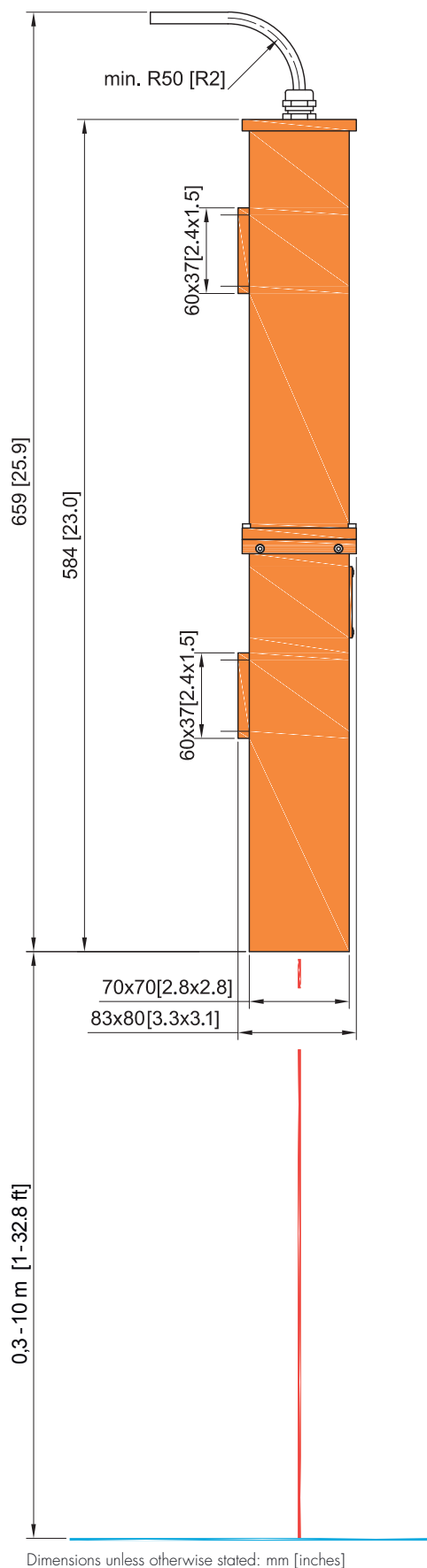
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Optical non-contact and autonomous sensor for real-time detection of oil contamination – UV fluorescence method.

TECHNICAL SPECIFICATIONS



MODEL	O-2311A	
SENSITIVITY	> 1 µm (micrometer) oil film	
RANGE	up to 10 m above surface (water or ground)	
OPERATION TEMPERATURE	-30°C to +60°C [-22°F to 140°F]	
ENCLOSURE	IP68, pressurised (Ar) hermetically sealed, weather proof, powder painted, anodised aluminium Stainless steel and ATEX Ex d available	
DIMENSIONS	659 x 83 x 80 mm [25.9 x 3.3 x 3.1 in]	
WEIGHT	1,7 kg [3.7 lbs]	
POWER OPTIONS	12 VDC (10V - 30V) as standard other options: 110/220 VAC 60/50 Hz AC/DC adapter, solar/battery options available	
POWER USAGE	< 2 Watt (DC)	
LIGHT SOURCE	pulsed UV LED	
LED LIFETIME	5 years typical, thereafter, LED replacement	
OUTPUT	relay contacts, RS-485, 4-20 mA (as standard)	
COMMUNICATION OPTIONS	RS-232 ethernet/LAN audio alarm wireless radio link WiFi GSM custom solution	optional adapters available – contact Sales Engineer for additional information
USER INTERFACE	ROW Configurator for setup & adjustment ROW Manager for network visualization	
CERTIFICATIONS	CE: EN 61000-6-2, 61000-6-3 EN 61326-1, 61000-4-2, 61000-4-5, 61000-4-6, 61000-4-8, EN 61010-1 IP68: EN 60529 US EPA: (EPA/530/UST-90/009)	
WARRANTY	2 year factory warranty as standard, supported worldwide	