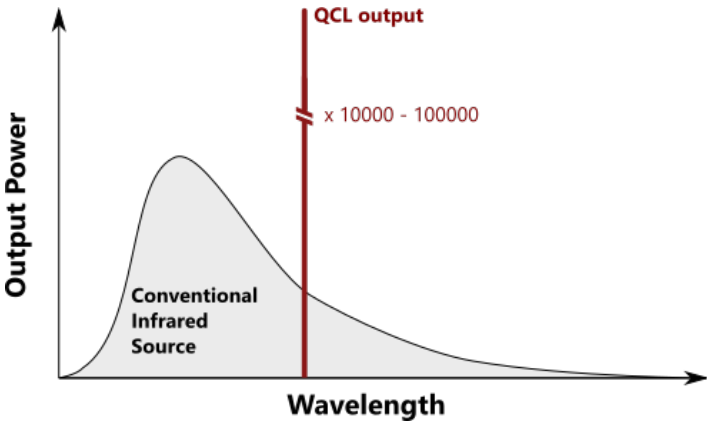


ECOSPEC

Knowing the oil-content in the process streams, the treatment of the resulting waste-water can be optimized and production costs can be lowered. Historically, the measurement of the oil-content in produced- and waste-water was either time-consuming or required ozone depleting CFCs as solvents. The use of these solvents has been forbidden or restricted by the United Nations Montreal Protocol. The ASTM D7678 standardized test method offers an eco-friendly alternative to measure oil-in-water using non-ozone depleting chemicals. The patented **ECOSPEC** oil-in-water and oil-in-soil analyzer from QuantaRed Technologies GmbH required to run ASTM D7678 yields results within minutes and at unrivaled precision.

Quantum Cascade Laser (QCL) offer a significantly higher power output at specific wavelengths than conventional infrared sources used in conventional infrared spectrometers.

This enables sensing of trace contaminations in liquids with the highest accuracy. QuantaRed Technologies GmbH has a track record of developing cutting-edge liquid sensing technology based on QCLs.



Quantum Cascade Lasers can have up to 100000 times the output power of conventional infrared sources. This results in measurements with the highest precision.



The **ECOSPEC** is designed to quantify the oil and grease content in aqueous samples, such as produced- or waste-water. Compared to other measurement techniques, it is eco-friendly (CFC-free extraction), fast and easy to use. Its patented technology allows to measure oil and grease in the sub-ppm range within a short measurement time.

Key features

- Based on QCL-IR technology
- Designed to quantify oil and grease in water or soil
- CFC-free extraction
- High precision (SD: 0.05 mg/L below 10 mg/L)
- Wide measurement range (0 - 2000 mg/L)
- Fully portable, rugged design

Principles of operation

The oil and grease content of water or soil is extracted using cyclohexane or cyclopentane. Residual water is captured with sodium sulfate. The water-free extract is then analyzed with QCL Infrared Absorbance Spectroscopy using the **ECOSPEC** Oil-in-Water analyzer. Ready-made cartridges to measure Total Oil and Grease (TOG) or Total Petroleum Hydrocarbons (TPH) are available.

Applications

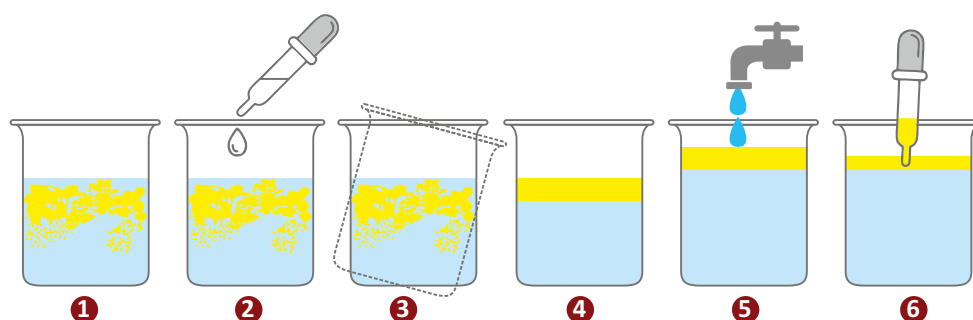
- Oil exploration and production
- Refinery
- Water processing
- Waste water treatment
- Environmental monitoring of water and soil

Technical specifications

ECOSPEC

Analytes	Total petroleum hydrocarbons (TPH) Total oil and grease (TOG)
Matrices	Water Soil
Method	ASTM D7678
Correlation to	Infrared spectroscopy: ASTM D3921, ASTM D7066, ASTM D8193, IP426 Gas chromatography: ISO 9377-2, ISO 9377-2 mod (OSPAR), ISO 16703, EN 14039, NEN 5733, MADEPH-EPH, DIN 38409-H53 Gravimetry: EPA 1664A, EPA 9071B, ASTM D4281, ISO 9377-1, EN 14345, SS 028144, NEN 6671, NEN 6672, SFS 3009, DS 208, NS 4752
Measurement Principle	Quantum Cascade Laser Infrared Absorbance Spectroscopy
Sample Volume	Typically 900 mL water
Sample Clean-up (TPH)	Polar substances are removed via attachable Na ₂ SO ₄ /Florisil [®] cartridges
Extraction Method	CFC-free external liquid-liquid (solid-liquid) extraction
Extraction Solvents	Cyclohexane (recommended) Cyclopentane
Measurement Time	1 minute (+ 1 minute background)
Measurement Range	ASTM D7678: 0 – 2000 mg/L oil-in-water (900:50 mL H ₂ O:Solvent) Up to 36 000 mg/L oil-in-water (50:50 mL H ₂ O:Solvent) Up to 72 000 mg/kg oil-in-soil (20 g:40 mL Soil:Solvent)
Method Detection Limit (MDL)	0.1 mg/L oil-in-water (900:50 mL H ₂ O:Solvent) 7 mg/kg oil-in-soil (20 g:40 mL Soil:Solvent)
Repeatability (SD)	0.05 mg/L from 0 to 9.9 mg/L 0.15 mg/L from 10 to 99.9 mg/L 0.25 mg/L from 100 to 199.9 mg/L 1.0 mg/L from 200 to 2000 mg/L
Result Database	Over 100 000 detailed test reports stored in internal memory
Warning Database	All system warning and error messages are stored in the database together with the results
System	Embedded computer
User Interface	9" color touchscreen
Data Interface	2 x front USB (Optional input by external keyboard, mouse, data output to external drives) Ethernet LAN (direct LIMS connectivity, remote service capability) internal RS-232
Voltage/Power	Auto-switching 85-264 V AC, 47-63 Hz, typ. 50 W, max. 160 W (built-in multi-voltage power supply)
Operating Conditions	10 – 40 °C (50 – 104 °F), Humidity up to 90 % RH, non-condensing
Dimensions	25 x 36 x 36 cm ³ / 9.84 x 14.17 x 14.17 inch ³ (1- port) 33 x 36 x 36 cm ³ / 13.00 x 14.17 x 14.17 inch ³ (10-port)
Weight	10 kg (22 lb)

¹Due to continuing product development, specifications are subject to change



1. Take a sample.
2. Add extraction solvent (cyclohexane or cyclopentane).
3. Shake.
4. Wait for phase separation.
5. Add tap water.
6. Draw extract. The extract is ready for measurement with the ECOSPEC oil-in-water analyzer.

Request a Demo!

QuantaRed Technologies GmbH

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