

BlueTrace

Fluorescence Sensor for BTEX, PAH & Refined Oils

Solutions by GO Systemelektronik



Introduction Fluorescence Oil in Water



Calibration



Functions & Features



Application Areas



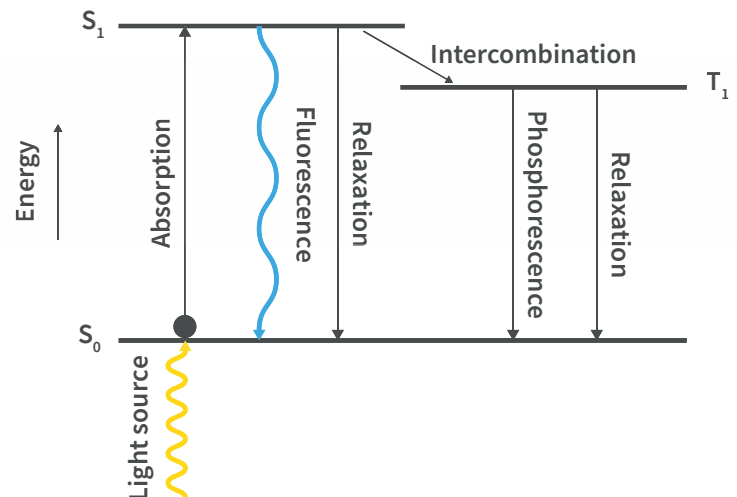
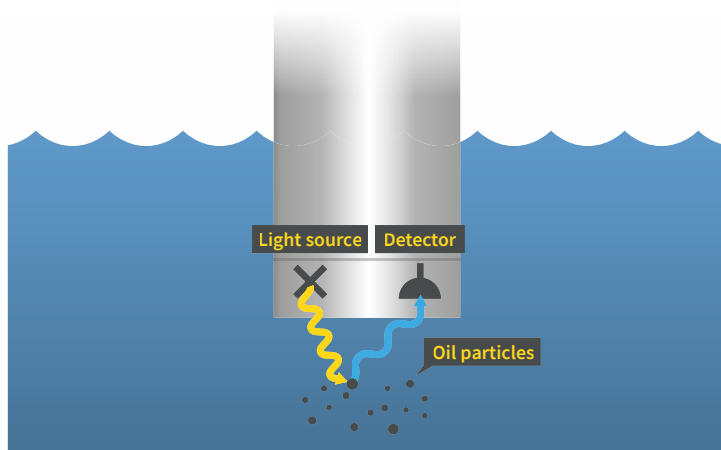
BlueTrace Product Solutions

Introduction Fluorescence - Oil in Water

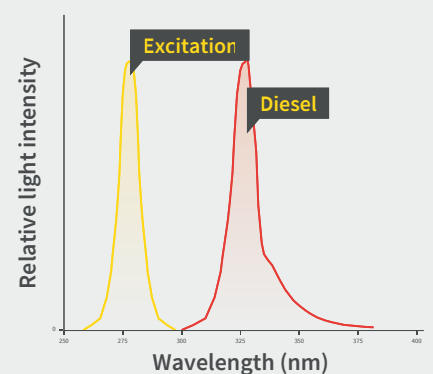
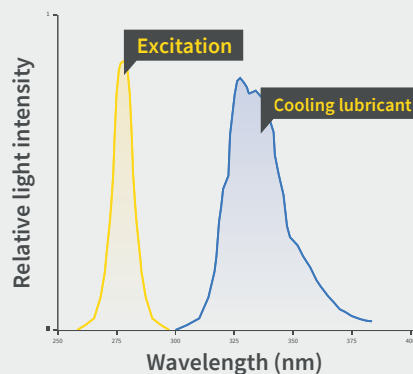
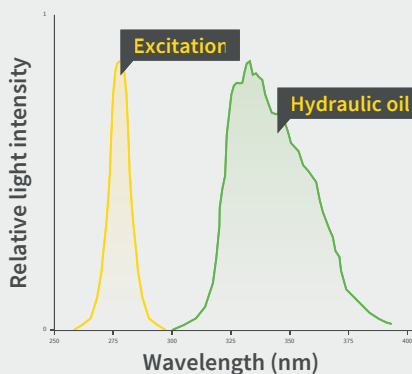
When light of a certain wavelength hits an oil particle, the oil emits light of a different wavelength shortly after excitation. This effect is called fluorescence. Fluorescence occurs not only in oils, but also in other substances. The BlueTrace oil in water sensor uses this effect to determine the concentration of refined oils in water.

A transmitter installed in the sensor emits light at around 280 nm. The oil particles in the water absorb this energy and then emit light in a range from 300 to 400 nm. This light is measured by a detector.

The Jablonski diagram shows the fluorescence effect in detail. The oil particle absorbs the energy of the light, changes to a higher, unstable energy level and then falls back to the lower energy level. Part of the energy is released by the fluorescence effect. The intensity of the fluorescence is directly dependent on the concentration. By measuring the intensity at the detector, the concentration of the oil in the water can be determined.

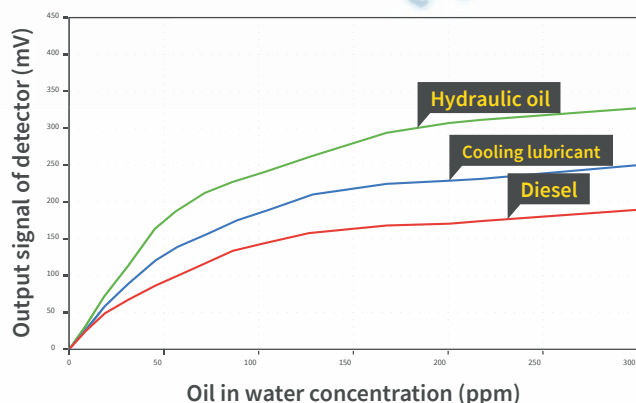


Fluorescence spectral data



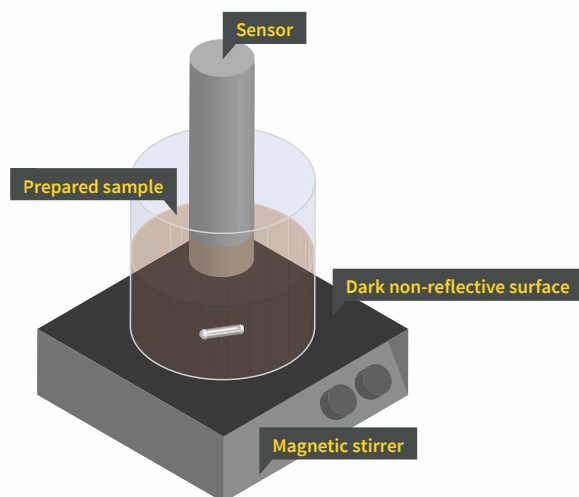
There is no universal fluorescence spectrum for all oils. Rather, the spectrum depends on the composition of the oil. Refined oils consist mainly of aromatic hydrocarbons, which in solution in water are often indicated in the BTEX collection parameter. The graph shows examples for typical fluorescence spectra of some refined oils. The BlueTrace oil in water sensor is suitable for the measurement of refined oils, BTEX and aromatic hydrocarbons.

Calibration



Specific calibration to specific oil types

Since the fluorescence spectrum is extremely dependent on the refined oil, the sensor functions optimally with a specific calibration to this oil. Also, the absorption of the water has an influence on the measurement, so that for the calibration the oil should be mixed in the water, which is to be expected locally. In low concentrations a linear behaviour can be expected, therefore, a two-point calibration can be sufficient. However, at least a three-point calibration is recommended.



Easy calibration

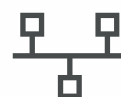
The BlueTrace can easily be optimally calibrated to the specific application. All you have to do is hold the sensor in the prepared samples and then perform a multi-point calibration. For this purpose, only the reference values have to be entered into the BlueBox controller or the corresponding software.

Functions & Features



Selectable Measuring Range

The sensitivity of the receiver can easily be changed either directly on the controllers of GO Systemelektronik, or with the help of the freely available PC program. Thus, the sensor can optimally be adjusted to the required measuring range.



Modbus Interface

The BlueTrace features a Modbus RTU interface. This means that the sensor can not only be connected to a GO Systemelektronik controller, but can also be integrated into third-party controllers or directly to a PLC. The necessary Modbus protocol is freely available. Settings or calibrations are stored directly on the sensor and can be adapted with the freely available PC program. The sensor only needs to be connected to a PC, for example with a Modbus USB converter.



Robust Design

The BlueTrace is available in stainless-steel and titanium. For most applications, stainless steel is sufficient. However, if the sensor is used in corrosive media or harsh environmental conditions, it is recommended to use the BlueTrace in a titanium housing.

Application Areas - BlueTrace



Wastewater

- Influent of WWTP
- Monitoring of wastewater of industrial plants
(e.g. refineries, tire manufacturers, petrochemical industry)



Drinking Water

- Influent of drinking water plants
- Influent to desalination plants



Environmental Monitoring

- Detection of contamination in rivers and lakes
- Maritime applications



Process Monitoring

- Cooling water (e.g. in power plants)
- Leakage detection

BlueTrace Oil in Water Sensor

The **BlueTrace Oil in Water Sensor** is a compact fluorescence probe for the measurement of BTEX, PAH and refined oil in water. The robust design of the BlueTrace Sensor allows for applications in harsh conditions, such as corrosive media or at high pressure.



Parameters

- BTEX
- PAH
- Refined oil in water

Application Areas



Drinking Water

- Quality control
- Alarm systems



Wastewater

- Effluent monitoring
- Trend analysis
- Early detection of discharge



Process Measurement & Control Technology

- Process monitoring in industrial facilities
- Control of process water treatment
- Process optimisation



Environmental Monitoring

- River water
- Surface water

Technical data

Power supply	10 - 32 V DC
Power consumption (typical)	0.5 W
Measuring principle	Fluorescence measurement Evaluation (300 - 400 nm)
Measuring range (typical)	0 - 30 / 100 / 300 ppm
Measuring accuracy	3 % FS
Detection limit (typical)	0.1ppm
Measuring interval	≥ 1 s
Light source	< 300 nm
Material	Stainless steel 1.4404 / Titanium [optional]
Operation temperature range	0 °C to +55 °C
Weight	0.8 kg
Dimensions	Length 150 mm; Ø 38 mm
Maximum pressure	6 bar
Interface	Modbus [RTU]
Art. no.	461 6200

Main Functions & Features



Selectable Measuring Range



Insensitive to Ambient Light



Easy Calibration



High Pressure Resistance



Compact Design



Low Power Demand



Robust & Non-corrosive



Modbus Interface



WE MAKE
LIQUIDS
TRANSPARENT.

