

MEASURING OIL IN DRILL CUTTINGS WITH THE INFRACAL TOG/TPH ANALYZER



INTRODUCTION



Oil wells produce large amounts of drill cuttings during the drilling process. For off-shore oil drillers, the allowable concentration level of oil in the drill cuttings that may be dumped back into the ocean can be strictly regulated. The North Sea currently has a 1% total petroleum hydrocarbons (TPH) concentration limit and the level in drill cuttings, prior to any remediation process, typically starts around 22%.

Since the off-shore drilling process generates a large volume of drill cuttings, a common method of disposal is to haul the cuttings on-shore by boat for remediation. This process is labor intensive and costly. Bad weather can impact the hauling process and force drilling to stop. The ability to quickly and easily measure the oil (TPH) levels in the drill cuttings on-site can have a significant cost savings benefit and enable oil platform operators to dump overboard the drill cuttings that meet the allowable limit.

The InfraCal TOG/TPH Analyzer, Model CVH-1, can measure the oil concentration level in drill cuttings in less than 10 minutes. The results verify if the amount of oil in the drill cuttings is below the allowable limit and can be returned the ocean, saving the need to transport the cuttings on-shore for remediation.

PRINCIPLE OF OPERATION

The InfraCal Analyzer is a compact, fixed-filter mid-infrared analyzer with no moving parts and an insignificant optical air path. It weighs less than 5 pounds and can be operated from a battery pack or a cigarette lighter adapter cable. This makes it portable, sturdy and operable in a range of ambient conditions typically found in field environments. An internal calibration table and easy-to-use operator interface allows for analysis by non-technical personnel. Hydrocarbons have a characteristic infrared absorption band at $3.4 \mu\text{m}$ (2930 cm^{-1}). As hydrocarbon concentration increases, the infrared absorbance increases. An internal calibration table converts the absorbance to the desired unit of measure. In less than one minute a result is displayed.

PRODUCT SPECIFICATIONS

Dimensions: 6.5 x 6.5 x 5" (165 x 165 x 127 mm)

Weight: 4.5 lbs. (2.0 kg)

Display: 4 digit, 7-segment red LED, 5/8 in. character height

Power Requirements:

Voltage - 12 V dc, +2% max.

Power - 7.5 watts max., 5 watts typical

Input - Switchcraft 760 plug or equivalent, center positive

Suggested Power Sources:

Wall supply; AC/DC converter type (supplied as standard)

12 volt auto battery adapter connector

Portable 12 volt battery pack

Measurement Range:

2 to 5000+ ppm (Dependant on InfraCal Model)

Operating Temperature Range:

40°F (4°C) to 110°F (45°C)

User Selected Calibration:

Zero balance adjustment

Up to 20 point curve fitting calibration

Communications Port:

RS232 port, 9-pin D-Sub female, PC compatible, for upload to PC, datalogger or printer

InfraCal TOG/TPH Analyzer, Model CVH-1

For S-316, perchloroethylene AK 225-part number 405-0014



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