MONITORING EXCELLENCE.

SIGRIST
PROCESS-PHOTOMETER

Application Report

Oil Traces (HC) in Process Water/Waste Water

Discharging industrial waste water is a most sensitive ecological procedure. Due to ever more complex processes, there are an increasing number of possibilities that oil traces can enter waste water without being noticed. This could be because of a leakage, an interrupted process or simply due to carelessness or deliberate antisocial act.

More and more companies are installing monitoring systems to avoid such incidents. Central collecting points or the outlet of the discharge into the external waster water systems are monitored using online analysis systems. Important criteria for the selection of a monitor are an immediate evaluation of the signals and a minimum of maintenance requirements.

Benefit

An operational disorder can be identified quickly using a continuous measurement of the oil traces. The operator can initiate actions to limit the damage, for example by diverting the contaminated water into a separate tank pool or lagoon. This collected water is then cleaned again before it is discharged on the outlet. This will not only avoid a possible ecological damage, but will equally avoid a costly financial penalty or even worse damage to their public image.

Oil traces monitoring of collected waste water from a fuel storage area

Typical Application

Potential areas where oil and grease can enter ground and/or waster water are oil and fuel storage compounds, mineral oil treatment and petrochemical plants (for example refineries) power stations and airports. Generally, the cleaning and rain water is collected in huge storage tanks and there's a controlled discharge via oil-separators into the waster water outlet. Such industrial waste water may contain none or only small traces of hydrocarbons. In many cases, limits set by the government must be respected and monitored.

This waste water has two characteristics: apart from oil traces, the water also often contains solids, which can be material which has accumulated on the surface and is eventually washed into the waste water.

Even more important is the fact that the existing oil traces can arise from different sources. They can consist of a mixture of oil, diesel fuel, gasoline, etc. and the composition of the mixture may vary. Therefore, an oil-specific calibration of a monitoring system is impossible. In addition, various methods exist for the analysis in the laboratory which are often based on a completely different measuring principle. This makes it very challenging to compare the results obtained from an online measurement.

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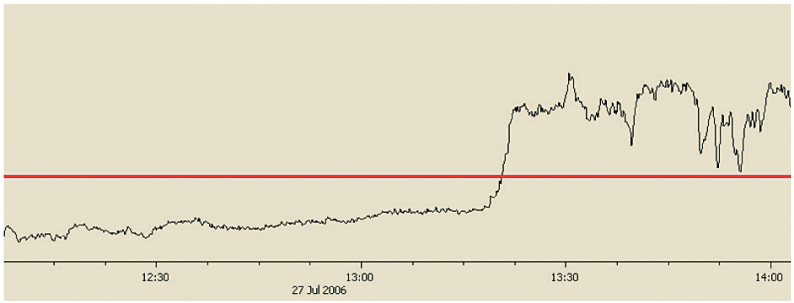
Practical Measurement (Example):



Oil trace monitoring

This diagram above shows the data of online oil trace discharge monitoring at the outlet of a storage tank. The red line illustrates the set limit value to trigger an alarm. The undesired increase of the oil content in the waste water is immediately recognized, an alarm triggered and the discharge valve of the outlet is closed.

Calibration Possibilities

In many cases the raw fluorescence signal is used to recognize an increase of the hydrocarbon content in the waste water. The limit setting has thereby been determined by comparing the readings with the results obtained from occasional lab tests.

However, quite often a display of the hydrocarbon content (HC) in ppm is required for consent purposes. Because the UV-fluorescence intensity is different for various types of oil, and also because different oils present in a mixture may have varying concentrations, it is impossible to perform a calibration. An internationally recognized standard method, as for example ISO 9377-2, provides a solution to this problem. The standard for this method consists of a standardized mixture of n-Alkanes ranging from C10-40 (all even), also referred as «mixture of diesel oil and lubricating oil» and can be bought from different suppliers.

Every existing or newly purchased OilGuard can be programmed by using the linearization function (see details in the Reference Handbook) according to the following procedure, so the display will be in ppm, based on the ISO Standard 9377-2:

1. Determine the basic fluorescence of your clean water. The result is measuring value X
2. Enter the following values into the linearization table:

Tab		[FLU]	
S	0100.	X + 7.0	
S	0.	X	All other values in the table remain at 0/0

Example:

Basic fluorescence of the clean water = 0.12 FLU (measuring value X).

Tab		[FLU]
S	0100.	7.12 (X + 7.0 = 0.12 + 7.0 = 7.12)
S	0.	0.12 (X = 0.12)

The accuracy will be < +/-20 %. Customer can at any time buy the corresponding standard himself and verify the calibration, if doubted (Note: this standard is very expensive!).

Products

SIGRIST Products and Configuration for this Application:

- OilGuard 2 230VAC or OilGuard 2 115VAC (if required also OilGuard 2 Ex)
- Flow cell KPFLJ VA OilGuard
- Filter set NPD
- Optionally: various system modules

Parameter Setting

- Select a measuring range in FLU or perform a calibration according to ISO 9377-2 as described above
- Set the requested alarm/limits

Advantage of the SIGRIST OilGuard

- Non-contact measurement
- No impact from solids
- Measures dissolved and dispersed oil
- Can be correlated to recognized standard ISO 9377-2
- Low maintenance requirements

OilGuard 2 with flow cell KPFLJ VA

SIGRIST PROCESS-PHOTOMETER

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