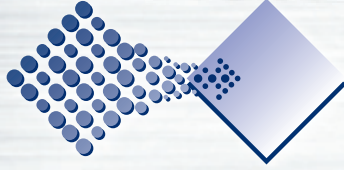


Fluorescence Measurement of Dye Markers in Refined Products



Refined products that are transported in a single pipeline must be segregated into their respective tanks at the terminal station. Physical characteristics of the fuels such as density, API, and color, due to reformulation strategies have made different fuels indistinguishable from one another. Custom Sensors and Technology has developed a unique approach that allows precise fuel interface detection based on fluorescence of a dye that is injected at the refinery prior to transport to the terminal station. Once the dye plug is detected by the fluorometer, appropriate measures can be taken to properly route fuels into their respective storage tanks.



*Ex-Proof Fiber
Optic based UV
Photo-X
Fluorescence
transmitter*

The CST Solution

CS&T offers a uniquely designed fluorescence *probe that is unaffected by the traditional constraints of a transmission or 90° scatter flow cell or probe design. The ability to overcome the inner-filter effect can significantly improve your ability to measure and control the interface between different refined fuel products.

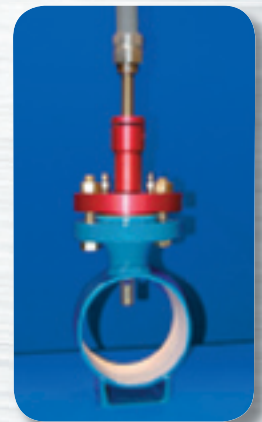


*Front Surface Fluorescence Probe**

Benefits of CST Fuel Dye Interface Detector

- Continuously monitors the fluorescence of the sample
- Unaffected by bubbles, reabsorption, or turbidity in sample
- Fiber optic: source, reference, and fluorescence
- 4-20mA range output from Transmitter
- Photometric transmitter can be remotely mounted
- Analyzer electronics separated from fluidics section
- With insertion probe there is no inner-filter effect
- With Welker retractable device, the probe can be periodically cleaned and/or calibrated automatically
- Significantly reduces the re-refining of product
- Reduces product downgrading due to contamination by other fuels

CST provides customers with the means of automatically or manually inserting the fluorescence probe into a flowing process stream and removing the probe for cleaning without going through an expensive ball valve. The probe can be solvent cleaned or calibrated in the neck of the flange when needed. The probe is isolated from the process when removed which prevents contamination of the stream when cleaning or calibrating.



*In-situ fluorescence probe
in Welker auto-cleaning
and calibrating device*

**Patent Pending*

Custom Sensors & Technology is a manufacturer of process photometric and electrochemical based process transmitters

Typical 53TF Product Specifications

Transmitter

Measured parameter	Fluorescence of dye in fuel
Temperature Range	-10°C to +55°C (packaging options dependent on appl requirements)
Response time	< 1 min. to 90% of FS
Detector Response	210-850nm
Maximum Zero shift	0.020AU (over +40°C) per 24 hours
Repeatability	1% or less of Full Scale range
Measurement Drift	<+/-3% of Full Scale/month

User Display & control

Type of display	LED display
Display numerical format	3-1/2 digits

Electrical

Power requirement	24VDC (9-32VDC).
Power consumption	10 Watts, max
Analog outputs	4-20mA isolated
Analog loop resistance	500 Ohms, nominally @ 24V
Alarms	Optional (this can be offered through our systems integration group)

Mechanical

Transmitter weight	3 lbs.
Enclosure construction	Extruded Aluminum, Optional Nema enclosures or purged enclosures are offered through our systems integration group
Transmitter size	8" x 3-7/8" x 1.5" (HWD")

Lamp

Type	Xenon Flash Lamp
Wavelength range	200-650nm
Lamp Life	Typically 1 year, typically
Size	2" x 4 x 1-1/2" (HWD")

Packaging

Transmitters may be mounted in any required enclosure to meet customer area classification needs. Additionally, CST can provide sample handling systems for samples that need to be extracted from the process line. Please consult factory for your packaging and sample handling needs.

Custom Sensors & Technology is a full service provider. We also supply photometric transmitters, fiber optic probes & flow cells, O₂ transmitters, sample handling systems, and services including: application engineering, commissioning & start-ups, product validation, factory acceptance testing, process stream GAP Analysis, and in-house repair.