

A LOW-MAINTENANCE, NON-FOULING, ON-LINE MONITOR FOR HYDROCARBONS IN WATER: THE TD-4100



NON-CONTACT, NON-FOULING FLOW CELL

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The TD-4100 does not have a glass flow cell. Aromatic hydrocarbons are detected in a stream of water which falls through an open chamber; the stream does not contact, dirty or foul the optical windows used for monitoring aromatic hydrocarbons. A proprietary *Air Curtain* system keeps optical windows fog-free in humid environments or hot water applications.

LOW MAINTENANCE

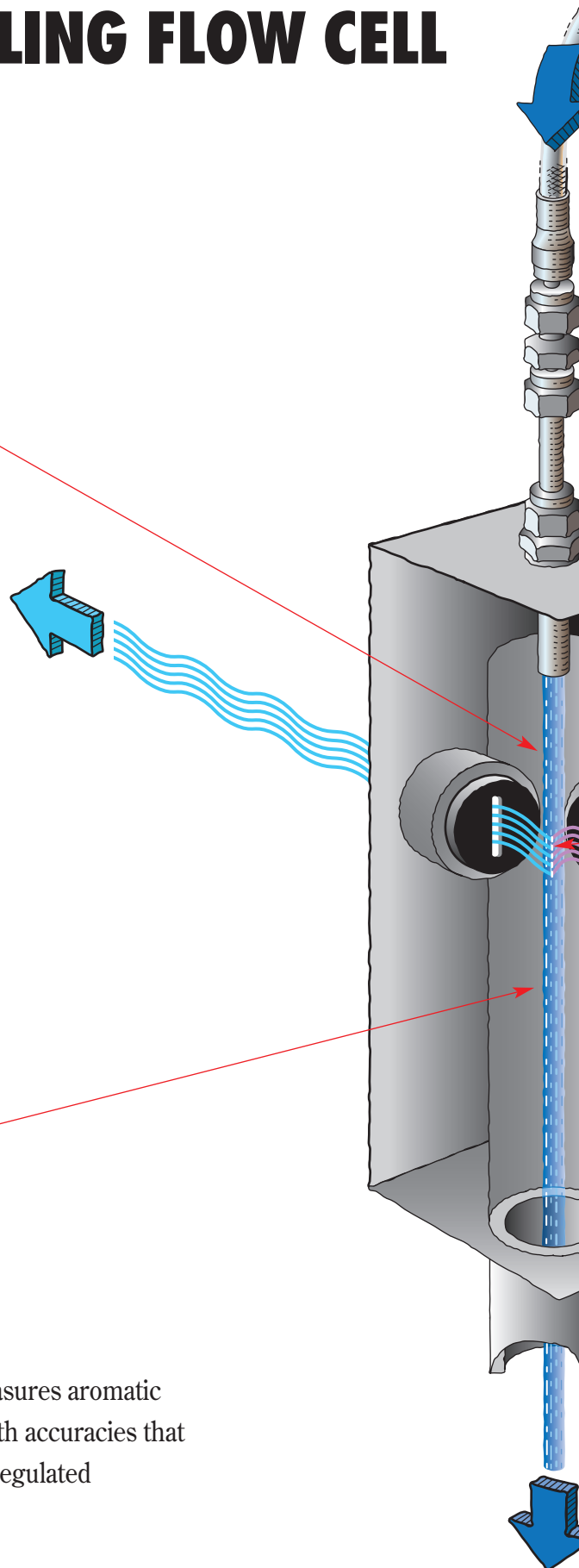
There are no tubes, pumps or valves to replace. The system's one moving part has a life expectancy of greater than 5 years. Routine maintenance involves changing a lamp twice a year and an air filter periodically.

DIRECT, CONTINUOUS MONITORING

The TD-4100 monitors a flowing water stream continuously. No chemicals, no pre-treatment and no manual manipulation of the sample are required to monitor aromatic hydrocarbons.

ACCURATE

The TD-4100 directly measures aromatic hydrocarbons in water with accuracies that consistently correlate to regulated laboratory methods.



HIGH SENSITIVITY AND SELECTIVITY



SENSITIVE

BTEX, gasoline, diesel, jet fuel, crude oil, aromatic solvents and refined petroleum products containing aromatics are detected by the TD-4100 from low ppb ($\mu\text{g/L}$) to high ppm (mg/L). For example, the TD-4100 can detect 1 ppb of gasoline or diesel fuel in water free of interfering compounds.

SELECTIVE

The TD-4100 continuously measures the fluorescence of aromatic hydrocarbon compounds in water. Fluorescence occurs when a molecule absorbs light energy of one specific wavelength and emits light energy of a longer wavelength. Fluorescent compounds each have a unique signature, and these compounds can be displayed as an actual concentration.

EFFECTIVE MONITORING IN DIRTY WATER

Fluorescence technology makes the TD-4100 resistant to interferences by turbid or dirty water which impact on-line UV or IR absorption instruments. Most substances absorb light, but very few fluoresce; if a substance *does not* fluoresce at the specific wavelengths for the monitored aromatic hydrocarbon, it will not interfere.

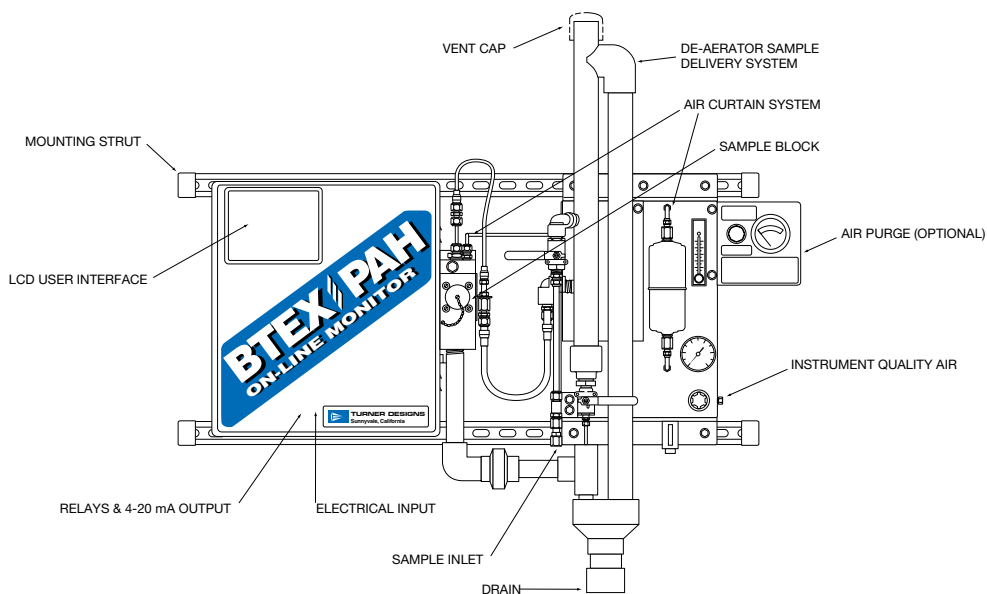
OPERATOR FRIENDLY

The TD-4100 is designed for easy operation. Simple on-board software controls alarms, 4-20 mA output, diagnostics and calibration.

TD-4100 SPECIFICATIONS

Dimensions:	44.0" x 43.1" x 10.8" (111.8 cm x 109.4 cm x 27.5 cm)
Weight:	64 lbs (29 kg)
Power Requirements:	110 - 240 VAC, 50/60 Hz, 2A. Contact Turner Designs for DC applications.
Plumbing Requirements:	Feed: 0.5 - 2 gpm (2 - 8 L/min), 2" (5.01 cm) unrestricted drain
Air Supply:	Dry Air: 10 - 100 psi (68.9 - 689 kPa), 15 SCFH (246 cm ³ H)
Operating Temperature:	32 - 120° F (0 - 49° C). Contact Turner Designs for configurations in extreme environmental conditions.
Sample Temperature:	< 140° F (60° C) (standard); 190° F (88° C) (optional)
Operational Principle:	Fluorescence
Detection Range:	1 ppb - >1000 ppm*
Calibration Stability:	10% or better over 90 days
Response Time:	< 10 sec
Calibration:	Multi-point calibration
Alarms:	Three alarm trigger points (baseline, early warning, and high alarm): Critical components linked to alarms <i>Local Alarm:</i> Local beep tone; LCD alarm message <i>External Alarm/Device Control:</i> 2 user-settable, independently-fused, solid-state relays (standard AC relays or optional DC relays); relays configurable as Normally Open or Normally Closed; user-settable set point and delays
Outputs:	<i>Signal:</i> 4 - 20 mA, isolated
Diagnostics:	Self diagnostics: Internal failure mode linked to relays and LCD display
Security:	Password protected for Master and User ID; padlockable cabinet
Electronics Cabinet:	Fiberglass reinforced polyester designed for highly corrosive environments
Maintenance:	Lamp (twice yearly); routine cleaning of plumbing
Air Purge (optional):	Class I Division I; Class I Division II (explosion-proofing)
Data Logger (optional):	Contact Turner Designs for detailed specifications.

* Limits of detection are dependent on target analyte and matrix



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