

## Envent Model TFS

### Hydrocarbon Composition Analyzer

The TFS offers a multi-component gas analysis at unparalleled speed. The standard Envent TFS measures methane, ethane, propane, iso-butane, iso-pentane and a combined measurement for (n-butane, n-pentane and n-hexane), as well as percent level CO<sub>2</sub> and H<sub>2</sub>S.

The spectrometer utilizes a tunable Fabry-Perot assembly that provides wavelength scanning along with advanced spectral processing that can produce response times as fast as 1 to 10 seconds. Additional measurement options are available depending on the application. This includes component analysis for the Hydrocarbon Processing Industry such as ethylene, propylenes, and butenes.

Sampling is with a flow- through cell, suitable for continuous, online, unattended operation. The analyzer does not require carrier gas, fuel gas or on-site calibration gas. The standard Envent system configuration provides measurements of up to 100% methane, 25% ethane, 25% propane, 10% butanes and 10% pentanes, 100% H<sub>2</sub>S and 100% CO<sub>2</sub>. Diatomic compounds such as nitrogen, oxygen and hydrogen are not measured directly and are combined and reported as one group of unmeasured inert gases.

#### Features

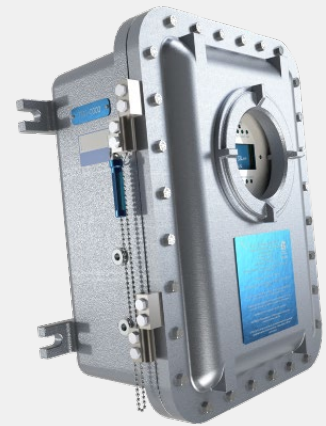
- First principle measurement
- Physical properties such as Heating Value (BTU)
- Linear response throughout the measurement ranges
- Sample cell pressure and temperature compensated
- Remote & completely unattended operation
- Additional measurement recipes available
- Data logging
- Stream Switching

#### Applications

- Natural Gas measurements including processing, transmission, storage and distribution
- Calculation of Heating Value (BTU) and Wobbe Index as per GPA 2172
- Power Generation (turbine, internal combustion engine, fuel cell)
- LNG/LPG/BOG
- Acid Gas
- Gas Plant Inlet
- Truck/Ship/Railcar Unloading Terminals
- Portable/Temporary analysis
- Fuel Gas Monitoring
- Pipeline Blending
- Flare Gas Monitoring

#### Available Packages

TFSP	General Purpose
TFSYP	Class I, Division 2 in a Y-Purged NEMA 4X Enclosure
TFS1	Class I, Division 1 in an XP enclosure
TFS2	Class I, Division 2 NEMA 4X enclosure
TFS-P-SS	General Purpose Portable in NEMA 4X enclosure
TFS-P-TC	General Purpose Portable in Transport case
TFS-EX	ATEX/ICEx Explosion Proof Unit



Envent Model TFS1

- Fast response times from 1 to 10 seconds.
- No carrier gas or instrument air required.
- Multi-component hydrocarbon gas analysis plus percent level H<sub>2</sub>S and CO<sub>2</sub>.
- Wide range of additional components/ recipes to choose from.
- Limited maintenance required.
- Low total cost of ownership.
- Advanced software provides full configurability.



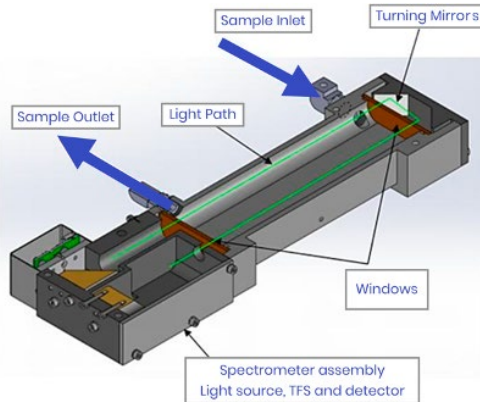
Envent Model TFSP



TFS1 Hydrocarbon Analyzer shown with a Sample Conditioning System for Saturated & Dirty Gas



TFS-Ex Analyzer



## Specifications

Measurement Ranges	Component	Range
	Methane (CH <sub>4</sub> ):	2000ppm – 100%
	Ethane (C <sub>2</sub> H <sub>6</sub> ):	2000ppm – 25%
	Propane (C <sub>3</sub> H <sub>8</sub> ):	2000ppm – 25%
	i-Butane (C <sub>4</sub> H <sub>10</sub> ):	1000ppm – 10%
	n-Butane (C <sub>4</sub> H <sub>10</sub> ) + n-Pentane (C <sub>5</sub> H <sub>12</sub> ):	1000ppm – 10%
	i-Pentane (C <sub>5</sub> H <sub>12</sub> ):	1000ppm – 10%
	Carbon Dioxide (CO <sub>2</sub> ):	1% – 100%
	Hydrogen Sulfide (H <sub>2</sub> S):	1% – 100%

8 components Consult factory for additional components

<b>Accuracy</b>	Methane (0 – 80%): ±0.5%
	Methane (80-100%): ± 0.2%
	Other Hydrocarbons: ± 0.2%
	H <sub>2</sub> S: ± 0.2% or 1% of reading (whichever is greater)
	CO <sub>2</sub> : ± 0.2%
<b>Repeatability</b>	Less than 0.1%
<b>Zero Drift</b>	Less than 0.2% (absolute) per week (zero on air or N <sub>2</sub> )
<b>Calibration</b>	Permanent Factory Span Calibration (note: user component correction factors can be written to system)
	Zero gas recommended upon start-up and every 1-2 months.
<b>Update time</b>	1 second – 10 seconds typical, software configurable (longer averaging time improves precision)
<b>Sampling</b>	Technique: Flow through cell (100 ml internal volume)
	Flow Rate: 0.1 – 2 LPM (typical)
	Pressure: 0 – 2 psig (standard) consult factory for higher pressures.
	Sample Temp: 0 – 50°C note cell is maintained at 60°C. Connections: 1/4" Swagelok
<b>Power</b>	24 VDC (Optional 120/240 VAC, 75 peak 35 watts nominal)
<b>Display</b>	128 x 64 Graphic Display; Menu is scrolled by internal button or external magnet.
<b>Outputs</b>	128 x 64 Back-lit graphical display with scrolling menu
	Dual isolated 4-20 ma loop powered analog outputs
	4 additional 5 amp SPDT alarm relays
	4 solid state solenoid drivers for stream switching
	4 dry contact inputs
	Internal archive storage via Envent HMI "I.C.E." Platform
	Modbus serial RS-232 and RS-485 Modbus TCP/IP via ethernet
<b>Hazardous Area Certification</b>	CSAus Certified for Class I Division 1 and 2, Groups B,C,D
<b>Dimensions</b>	61.0 x 45.7 x 30.5 cm - 65kg (approx) 24" x 16" x 12" - 135 lbs (approx)