

SPECTRO 682T-HP™

On-Line High Pressure Sulfur Analyzer

The SPECTRO 682T-HP is designed for analysis of sulfur in highly viscous hydrocarbons. This system is ideal for processes where sample pressures are high and in situations where fouling of flowcell windows with paraffin or similar substances can occur. The unique flow-through measurement cell of the 682T-HP was developed for crude oil pipeline use, where high sample pressures are normally encountered. This environment dictates the use of special sample handling, which is best solved by x-ray transmission (XRT).

The XRT technique positions the x-ray source and detector directly opposite each other with the sample stream flowing between them. A low power x-ray tube is utilized on the 682T-HP instead of the multiple radioisotope sources used in other systems.

The 682T-HP system utilizes a proprietary, wide bore (2 inch/5 cm diameter) stainless-steel flowcell with high-pressure windows (can exceed pressures of 800 psig / 55 bar) for precise x-ray transmission analysis.

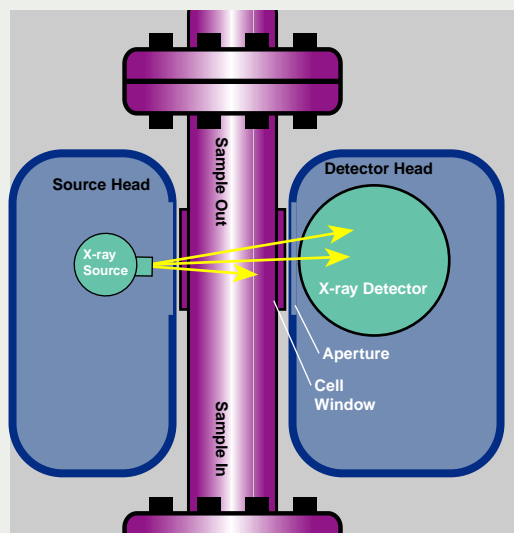
The large flow cell diameter eliminates measurement interference resulting from cell window fouling by paraffin and other substances typically present in heavy hydrocarbons.



Features and Benefits

- Ideal for analysis of crude and other highly viscous hydrocarbons, pipelines, terminals, blending
- Sample stream temperatures up to 392° F / 200° C
- Proprietary window in flowcell can with-stand pressures in excess of 800psig/55 bar
- Certified to industry standards
- Large flowcell diameter (2 inches/5 cm) reduces interferences
- Detection limit for sulfur of 0.5-6.0%





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XRT On-Line High Pressure System

In the cross-section diagram (left), the sample flows through a flowcell. The sample is irradiated with a source of high energy x-rays which are absorbed by the sulfur atoms. A detector on the opposite side measures the x-rays that get through and that signal intensity is inversely proportional to the sulfur concentration.

Specifications

Process Conditions:

Normal Product

Crude oil, heavy hydrocarbons

Sulfur Concentration

0.3 - 6%

Pressure at flowcell

800 psig (Consult SPECTRO for special requirements)

Flow rate at cell

Up to 100 liters/minute

Temperature

392°F/200°C (Consult SPECTRO for special requirements)

Density Gauge:

Required (supplied by SPECTRO or customer)

Ambient Temperatures:

Minimum 15°C, maximum 30°C (For ambient conditions outside this range, consult SPECTRO)

Enclosures:

Typically the two enclosures are matched and close coupled together

Standard

Stainless steel, NEMA 4x (IP-65)

Dimensions

Controller 36x30x12 inch minimum, measurement cell 36x36x12 inch minimum

Purge

Type X for Class I, Division I, Groups D,E,F area classification, (Cenelec Type O or 1) or Type Z for Class I, Division 2, Groups D,E, F area classification, (Cenelec Zone 2)

Optional

Heating and Air Conditioning System

Controller:

Power

120 or 240 VAC ± 10%, 50/60 Hertz, 80 W typical, 300 W max

Standard Outputs

4-20 mA, common alarm dry contact

Optional Outputs

Additional 4-20 mA, up to 10 dry contacts

Standard Inputs

Densitometer input

Optional Inputs

Contact closure for analyzer stop/start initiation of validation system, multi-stream sequencing

Measurement flowcell:

Technique

X-ray Transmission (XRT)

Analysis Time

Nominally 240 seconds

Typical One Sigma Precision

+/- 5% relative @ 5000 ppm sulfur (consult SPECTRO for application)

X-ray Source

X-ray tube

X-ray Detector

High resolution gas filled proportional counter

Leak Detection

Capacitive leak sensor

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These products were originally sold under the ASOMA name. SPECTRO acquired ASOMA in July 1998. 682E-LS patent pending. SPECTRO and 682E-LS are trademarks of SPECTRO Analytical Instruments, Inc.

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