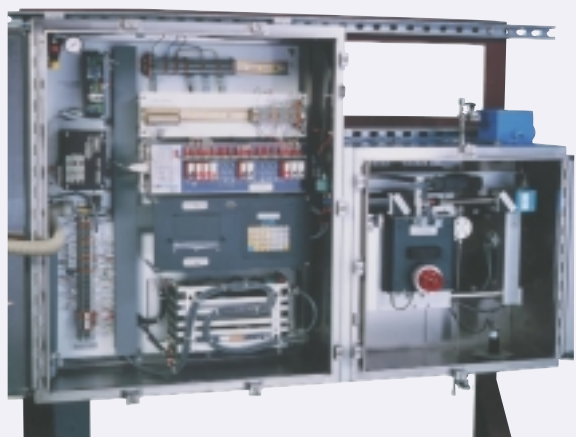


# SPECTRO 600T-LP™ Series

## On-Line Petroleum Analyzer



The 600T-LP series of on-line elemental analyzers are designed to meet the specialized needs within the petroleum industry. They can simultaneously measure the concentration of elements Al through U, and /or their associated compounds, from ppm to % levels. Employing state-of-the-art energy dispersive x-ray fluorescence (EDXRF) technology. The SPECTRO 600T-LP series delivers better than 1% relative precision, with typical analysis time ranging from 60-600 seconds.

### Model 682T-LP™

The 682T-LP system (low pressure) is designed for the analysis of sulfur, at low ppm concentrations, in hydrocarbons like diesel fuel. This unit can easily be upgraded to meet new demands such as changing I/O protocol, and flowcells (up to 7 separate streams), and calibrate on different elements or concentration levels.

The analyzer is divided into two independent close-coupled, stainless steel, waterproof NEMA 4X (IP-66) horizontal enclosures; the controller and the measuring assembly. The process stream flows through a sample line made of stainless steel tubing to a flowcell. The flowcell contains a proprietary window that is transmissive to x-rays. The x-ray measuring head is positioned in front of the flowcell window during analysis. The x-ray sources and detector are mounted in a single measuring head. The signal from the detector is sent to the multi-channel analyzer in the controller where the concentration is calculated and reported to the user's control system.

### Features and Benefits

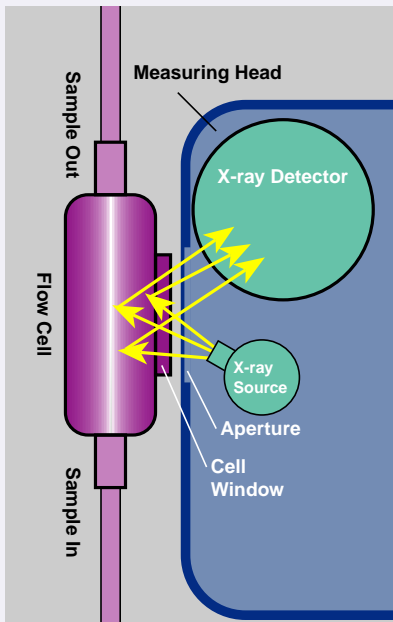
- Applications includes crude terminals, a variety of refinery operations including blending, reformulated gasoline, and finished product QC
- Can detect S, Ni, V, Fe, Cl, Pb among other elements
- Single or multi-stream applications (up to 7 streams)
- 4-20 mA and digital communication,
- Certified to industry standards



# SPECTRO 600T-LP™ Series

## XRF On-Line Low Pressure System

In a low pressure, on-line process application, the method is sensitive to elements from Al to U. In the cross section of the diagram, to the left, the sample flows through a measurement chamber (flowcell). The sample is irradiated with a source of x-rays which are absorbed and excite the inner shell electrons of the samples atoms. The excited atoms emit or fluoresce element - specific x-rays (like sulfur) which are then determined by the analyzer's measuring head.



## Specifications *(Sulfur in light hydrocarbons and low pressure)*

### Process Conditions:

#### Normal Product

Heating oil, diesel fuel, kerosene, gas oil, reformulated gasoline reformat, naphtha

#### Sulfur Concentration

50-10,000 ppm (0.005% - 1%)

#### Particulate Contamination

less than 250 ppm solids by weight

#### Water Contamination

less than 250 ppm by weight

#### Pressure at flowcell

10-25 psig +/- 5 psig normal  
30 psig (2 bar) max

#### Flow Rate at Cell

1.0 liters/min. normal 3.0 liters/min. max

#### Ambient Temperatures

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

### 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 24x24x12 inch minimum

#### Optional

Heating and Air Conditioning System

#### Purge

Type X for Class I, Division I, Groups D,E,F area classification, (Cenelec Zone 0 or 1) or Type Z for Class I, Division 2. Groups D,E, Farea classification, (Cenelec Zone 2)

### 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

#### Optional Inputs

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

### Measurement flowcell:

#### Technique

X-ray Fluorescence (XRF)

#### Analysis Time

Nominally 240 seconds

#### Typical One Sigma Precision

± 5 ppm sulfur @ 500 ppm sulfur and 1% relative above 500 ppm sulfur (consult SPECTRO for application)

#### X-ray Source

X-ray tube

#### X-ray Detector

High resolution gas filled proportional counter

#### Available flowcell

Up to 6 streams

#### Transversing Mechanism

Stepper motor with encoder

#### Leak Detection

Capacitive leak sensor with optional combustible gas analyzer

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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.

SPECTRO Analytical Instruments, Inc.

1515 North Hwy 281

Marble Falls, TX 78654 USA

Toll Free: 800-580-6608 Tel: 830-798-8786

Fax: 830-798-8467 [www.SPECTRO-ai.com](http://www.SPECTRO-ai.com)