

Spectroil M/F-W

FUEL ANALYSIS SPECTROMETER

On Site Fuel Analysis for Gas Turbines and Diesel Engines



Typical Applications

- Fuel quality analysis for liquid fired gas turbines and diesel engines of:
 - Electric power generation stations
 - Fuel treatment systems
 - Shipboard propulsion systems
- Qualification of fuel treatment system effectiveness

For rapid on-site trace metal analysis of liquid fuels used in liquid-fired gas turbines and diesel engines.

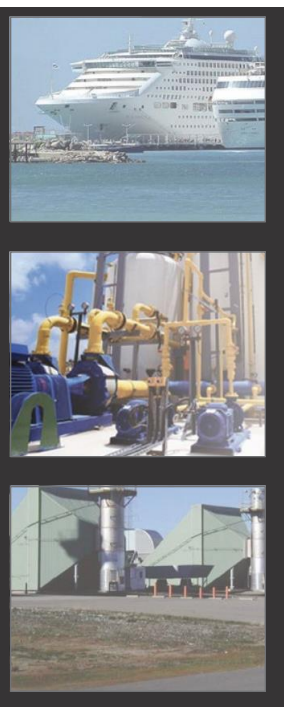
Requirements for Fuel Analysis

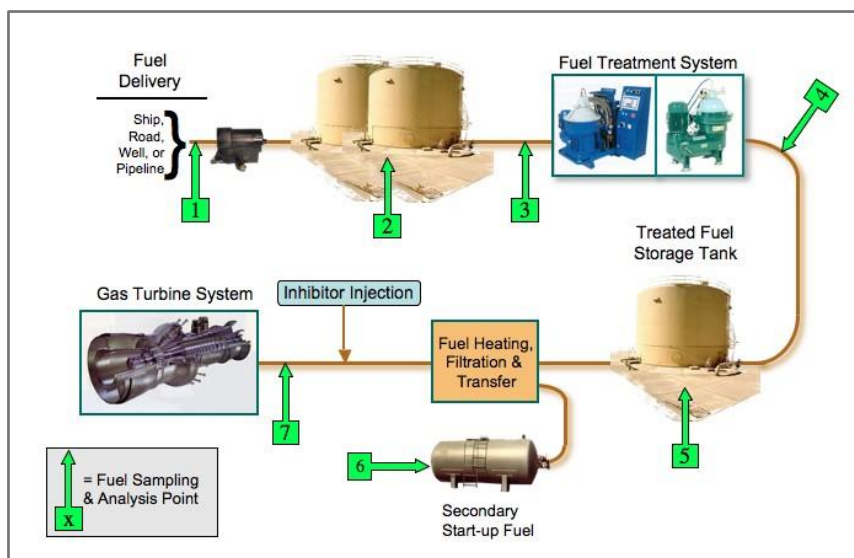
During the last 30 years, gas turbines have been modified so they may be fueled by all types of liquid fuels, from distillates to residual and crude oils. Ash-forming contaminants often present in various fuels lead to corrosion and deposit problems. Ash-forming materials may be in a fuel as oil soluble organo-metallic compounds, as water soluble salts or as solid foreign contamination. Their presence and concentration vary with the geographical source of a crude oil. They are concentrated in the residual fractions during the refining process. Even distillates, which are typically contaminant free when they leave the refinery, may have ash-forming materials introduced later in the form of salt water or by inadvertent mixture with other petroleum products during transportation or storage. If crude oils are fired directly without refining, they usually require desalting, especially if sea transport was used.

The Spectroil M/F-W has become the standard on-site instrument when immediate fuel analysis is a necessity. It fulfills the requirements of ASTM D 6728, Standard Test Method for Determination of Contaminants in Gas Turbine and Diesel Engine Fuel by Rotating Disc Electrode Atomic Emission Spectrometry. The Spectroil M/F-W is a compact, rugged and easy to use spectrometer designed specifically for the analysis of fuel and oil samples. It measures trace quantities of dissolved or suspended contaminant particles in a fuel sample using the time-tested and reliable rotating disc electrode (RDE) technique.

Advantages

- Fast and simultaneous analysis of all key metals in fuel samples.
- One 30 second “burn” measures all the sub-ppm levels of metals such as Na, K, Li, V, Mg, Pb, Ni, Ca, Mn, Cr, Si, Fe, Al, Cu, and Zn.
- Capable of analyzing fuels from distillates to heavy residuals.
- Continuously available for immediate analysis of fuel samples.





Innovation, Quality and Support

When a fuel arrives on site, it has gone through production, storage, transport and again storage. Few fuels are so clean after this cycle that they can be used without treatment. Analysis requirements start with delivery of the fuel, continue throughout fuel handling, and end only as the fuel is injected into the turbine. Above is a typical example of a residual fuel storage, treatment, and handling system.

Preconditioning of the fuel before it reaches the gas turbine is a prerequisite for installations when contamination may be present. Spectrometric analysis determines the amount of treatment required and the efficiency of that treatment.

In particular, sodium and potassium concentrations must be determined to well below 1 part-per-million in most fuels. In heavy fuels, the vanadium concentration is used to calculate the amount of magnesium treatment compound to be added

to the fuel. A typical analysis of a fuel sample consists of a minimum of 13 elements to include other contaminants such as iron, lead, zinc, aluminum, silicon, etc.

Diesel engines are also detrimentally effected by trace contaminants. In several instances, ships at sea have become immobilized by engine failure due to distillate fuel contaminated with catalytic cracking fines. These are extremely abrasive alumina and silica particles readily detected spectrometrically by the presence of Al and Si.

The Spectroil M/F-W is calibrated for accurate analysis of contaminants and additives in gas turbine and diesel fuels, regardless of their origin or characteristics. The fuels can vary from No. 2 distillates to No. 6 residual fuels as well as crude oil. Even highly volatile fuels, such as naphthas or gasoline, can be analyzed after sample preparation. The on-site analysis capability and ease of operation of the Spectroil M/F make it the ideal instrument for this application.

Features

- Conforms to ASTM Standard Test Method D 6728 requirements.
- Bench-top and transportable.
- No sample preparation for typical fuels.
- Simple to operate without special training or background.
- Standard and readily available consumables.
- Requires no special utilities or gases, only AC power.
- A heat exchanger is used for cooling, preventing ingress of dust, sand, oil, or moisture to the sealed electronics and optics.
- Optional turbine cleaning water and injection water analysis.
- Capable of analyzing naphtha or highly volatile fuels with a sample preparation kit.
- Windows Operating System

CONFIGURATIONS AND OPTIONS

Standard Configuration	Standard Fuel calibration, Heavy and Light, 15 Elements Na, K, Li, V, Mg, Pb, Ni, Ca, Mn, Cr, Si, Fe, Al, Cu, Zn
Calibration Option	Calibration with Crude, HFO, Medium Distillate Washdown Water Calibration Program Oil (Lubrication) Programs

DIMENSIONS

Length	77.5 cm (30.5 in.)
Width	63.5 cm (25 in.)
Height	70 cm (27.5 in.)



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