On Site Fuel Analysis for Gas Turbines and Diesel Engines

Spectroil M/F Fuel and Oil Analysis Spectrometer

"…for rapid on-site trace metal analysis of liquid fuels used in liquid-fired gas turbines and diesel engines"

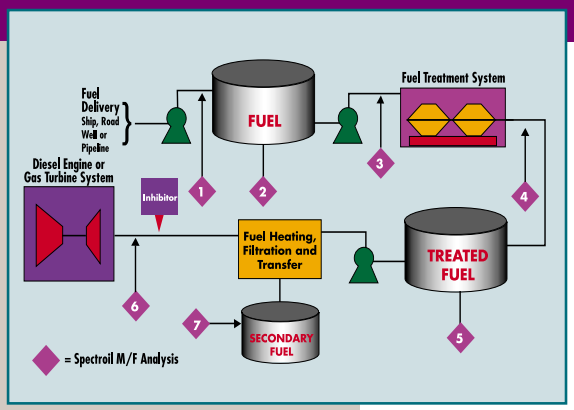
Benefits

- Bench-top mobile instrument.
- Ruggedly built for U.S.military requirements. Doesn't need a laboratory environment.
- Fast simultaneous analysis.
- 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.
- No sample preparation.
- Pour 2 ml of sample into a sample cap.
- Wide viscosity range.
- Handles fuels from distillates to heavy residuals.
- Ease of operation.
- Operators don't need special background or training.
- Requires no special utilities.
- Needs only AC power, no specialty gases, cooling water, etc.
- Environmentally sealed.
- A heat exchanger is used for cooling, preventing ingression of dust, sand, oil or moisture to the sealed electronics and optics.
- Optional turbine cleaning water and injection water analysis.
- Sample preparation kit available for naphtha or other highly volatile samples.

Requirements for Fuel Analysis

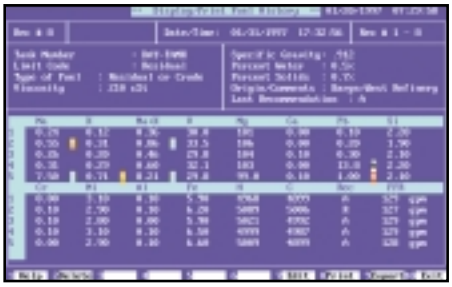
During the last 20 years, gas turbines have been modified so they may be fueled by all types of liquid fuels, including residual and crude oil. Ash-forming contaminants often present in various fuels lead to corrosion and deposit problems. Ash-forming materials may be in a fuel as oil soluble organo-metallic 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.

SPECTRO INC.
Industrial Tribology Systems



Pre-conditioning of the fuel before it reaches the gas turbine is a pre-requisite for installations using heavy petroleum fuel. Spectrometric analysis determines the amount of treatment required and the efficiency of that treatment. In particular, Na and K concentration must be accurately measured to less than 1 ppm, and V concentration must be determined to calculate the amount of Mg treatment compounds to be added to the fuel. 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.

Diesel engines are also detrimentally affected 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.



FuelTrack Screen Display

The Spectroil M/F 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 naphtha or gasoline, can be analyzed after sample preparation.The on-site analysis capability and ease of operation features of the Spectroil M/F make it the ideal instrument for this application.

The Spectroil M/F is equipped with FuelTrack data base software. FuelTrack is an expert data base program designed to provide clear information to interpret the quality and status of untreated and treated gas turbine fuel. It automatically receives and stores data from the Spectroil M/F analysis of the contaminant elements in fuel. Physical property analyses and operating conditions can be entered manually.

FuelTrack:

Expert data base program designed to provide clear information to interpret the quality and status of untreated and treated liquid gas turbine fuel.

- Stores analyses.
- Retrieves analyses for reporting or statistical analysis.
- Stores fuel physical property analysis data and operational parameters.
- Automatic 'flagging' of abnormal samples.
- Interactive graphics display.
- User can set all limits.
- Prints reports.
- Runs on Spectroil M built-in computer.

Spectro Incorporated is the only company dedicated exclusively to providing instrumentation, software and applications support for machine condition monitoring through oil analysis. Contact us for your instrumentation needs and complete turnkey systems for oil analysis.

Your local representative for sales and service is:

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