

% Biodiesel in Diesel Fuel



Introduction:

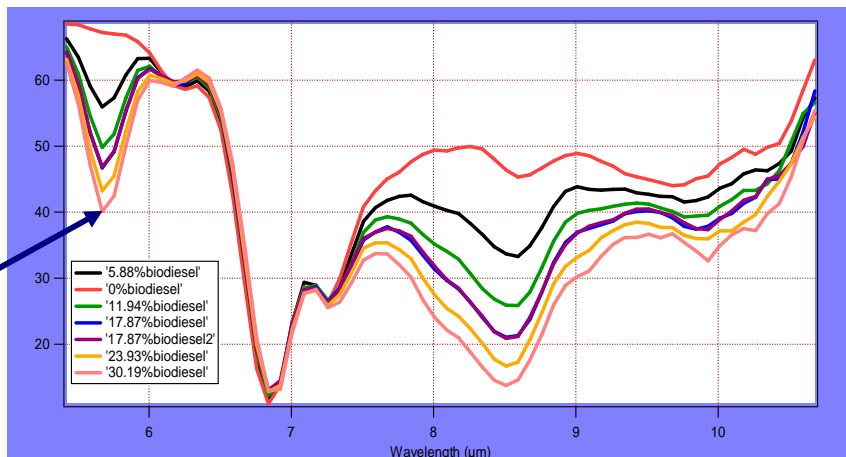
The trend toward alternate fuels is resulting in an increase of biodiesel production. Biodiesel is usually blended with diesel with the most common being 20% biodiesel in diesel fuel. Blend ratios can be determined in about one minute with the InfraSpec VFA-IR Spectrometer. It is compact and portable and has a simplified PC interface for non-technically trained personnel giving the user the capability to measure the blend ratio on-site at a manufacturing facility or wherever the measurement is needed.

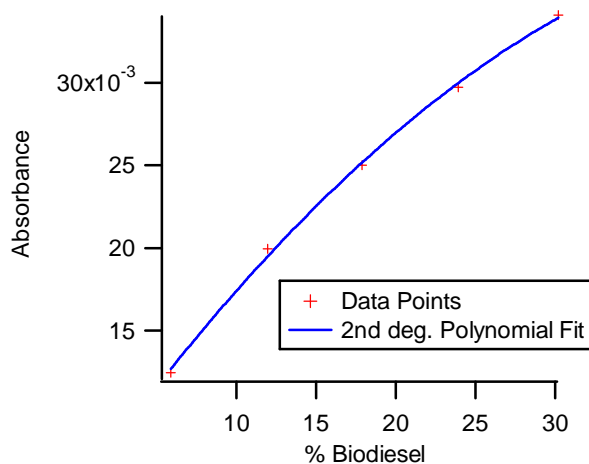
Operating Principal:

The InfraSpec VFA-IR Spectrometer is a new concept in infrared instrumentation. It utilizes a patented design consisting of an ATR sample plate with an elongated, electronically modulated source on one end and a linear variable filter (LVF) and combined with a 64 pixel detector array on the other. The result is a compact spectrometer with no moving parts, no optical path exposed to air that is portable, rugged and unaffected by environmental changes. For diesel analysis a 5.5-11 μm LVF range is suitable.

Analysis:

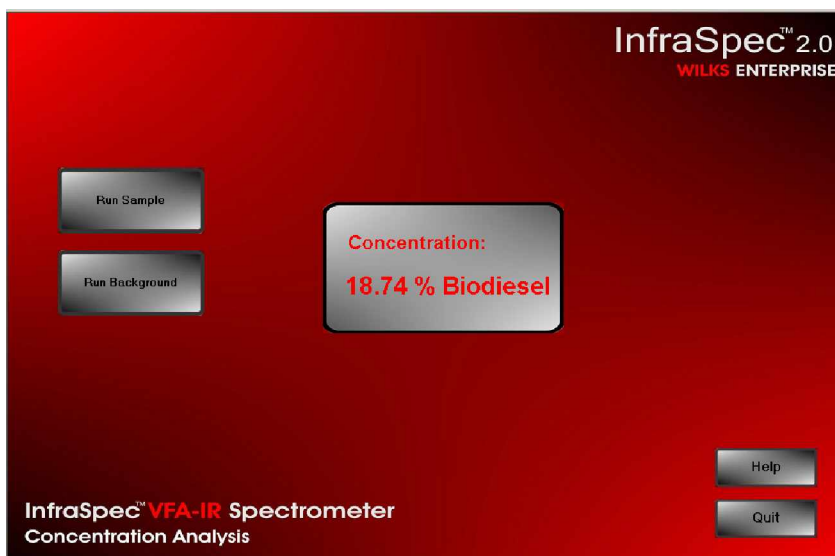
During the process of transesterification the glycerin and methyl esters are separated from the fat or oil. The methyl ester component, biodiesel, can be measured independently from diesel at the carbonyl band at 5.7 μm without interference from fuel additives. This allows for a quick and simple measurement of the biodiesel/diesel blend. The measurement range is 0.2 to 100% with an accuracy of 0.05% for low concentrations and .5% for higher concentrations.





A calibration table as shown on the left can be created and stored in the InfraSpec VFA-IR software.

With an internal calibration table, the interface for the operator in the production area is greatly simplified. A direct readout is given in % Biodiesel. If desired, a barcode scanner can identify the sample and the results can be accessed electronically from a remote laboratory. Spectra are also stored in the program for laboratory personnel to review if necessary.



Specifications:

| | |
|---|---|
| Dimensions | 5" x 5" x 1.5", 12.7 x 12.7 x 3.8 cm ³ |
| Weight | 3.5 lbs., 1.5 kg |
| P.C. Interface | RS 232 |
| Power Requirements | 9V DC, 2.0 amps |
| Power Supply | Universal AC/DC converter type (supplied as standard) |
| Detectivity D* @ 10 Hz | 1.5·10 ⁸ (cm·Hz) ^{0.5} /W |
| Suggested Temperature Operating Range | 15°C - 60°C |
| Humidity | 0 – 98% relative humidity (non-condensing) |
| Detector Array | 64 Pixel linear pyroelectric array |
| Standard Spectral Range | 5.5-11 μm (1818-910cm ⁻¹) |
| For InfraSpec VFA-IR Spectrometer ATR Sample Plate | |
| ATR Crystal Material | Zinc Selenide, or Zinc Sulfide |
| ATR Surface Size | 50 x 16 mm |
| # of Reflections | 12 |
| Resolution | 40 cm ⁻¹ |

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