Ensuring Accurate Biofuels Blend Measurements in Under a Minute with Easy-to-Use Portable Infrared Analyzers

East Norwalk, CT, June 3, 2010 – Globally, governments are putting more emphasis on sustainable energy sources and are creating energy policies that promote the production and use of biofuels. With the Renewable Fuels Standard-2 (RFS-2), the US set biofuels blending volumes to 12.95 billion gallons for 2010 increasing to 36 billion gallons by 2022. With similar mandates or guidelines coming from other countries, the need to easily and accurately measure biofuels blends becomes more important.

Portable mid-infrared analyzers, such as the InfraCal Analyzers from Wilks Enterprise, Inc., offer a quick (under one minute) analytical method to assess the blend ratio of either biodiesel (FAME) in diesel or ethanol in gasoline and can be a valuable asset not only for distributors and terminal managers who blend the fuel, but also for finished product testing by fleet operators and regulatory agencies. These analyzers are easily operated by personnel having little or no knowledge of infrared analytical techniques.

The splash blend method is often used for blending biodiesel. With this method, the diesel fuel and B100 are pumped separately into a delivery truck or storage tank and it is assumed the blend will be adequately mixed in the tank or by the time the truck arrives at the delivery site. A demonstration test was recently conducted with the Wilks InfraCal Biodiesel Blend Analyzer five minutes after filling the truck for B20. A sample taken from the top measured 11.9% biodiesel while another from the bottom was 24.1%. If the first delivery of fuel is only a few miles away on a smooth road, the chance for delivering an accurate blend/mix is slim.

In-line (injection) blending offers better blend consistency than splash blending and is typically used for ethanol blending at pipeline racks and terminals. It is also becoming more common for biodiesel blending. The biofuel is mixed as it is metered into the pipe with the diesel or gasoline. Additional mixing occurs as the fuels enter the receiving tank or truck. For biodiesel, density and viscosity changes require adjustments to the meters for an accurate blend. Although manufacturers of in-line blending systems claim indisputable accuracy, a quick check for the correct blend gives actual data to validate this claimed assumption.

The approved methods for biodiesel measurement, EN 14078 and the ASTM Method D 7371, both specify mid-infrared for the measurement of the biodiesel blend ratio. Infrared analysis works well for FAME because the biodiesel ester has characteristic infrared absorption due to the carbonyl band at 5.7 micrometers or 1745cm^{-1}. As the concentration of biodiesel goes up, the infrared absorbance at that wavelength increases. The infrared absorbance can be directly calibrated to readout in percent biodiesel.

The same is true for ethanol as it has an infrared absorbance band unique to gasoline at 9.6 micrometers (1042 cm^{-1}). The InfraCal Blend Analyzers measure the biofuels by using a filter

with the specific wavelength for biodiesel or ethanol. The InfraSpec VFA-IR Spectrometer is a spectral range infrared analyzer that includes the wavelengths for biodiesel and ethanol, thus allowing both measurements to be done with the same analyzer. The filter-based infrared design of the Wilks instruments results in portable, rugged analyzers that weigh less than 5 pounds and can be battery operated for on-site measurements.

Either analysis is simple, quick and does not require a skilled technician. A fuel sample is placed directly on the exposed sample window of the analyzer and in less than a minute the percent ethanol or biodiesel is displayed. The sample is cleaned with a wipe and the analyzer is ready for the next measurement.

The following comparison table illustrates that biodiesel measurement results obtained with the Wilks analyzers match either ASTM D 7371 or EN 14078 methods. They provide the operator with significant advantages over FT-IR spectrometers in that they are rugged, portable, and easy-to-use. Measurement data is available in less than one minute, making Wilks analyzers ideal for on-site use in laboratories, production facilities or distribution centers.

Sample ID	EN 14078 Nicolet iS10	ASTM D7371 Nicolet iS10	Wilks InfraCal Biodiesel Blend	InfraSpec VFA-IR Spectrometer
105-003	0.2	0	0.2	0.22
1.0 STD	1.1	1.15	1.3	1.4
5.02 STD	5	4.99	5	5.12
30.0 STD	30.2	30.07	30	30.11
50.0 STD	50	50.06	50.4	50.6

For further information on the infrared analyzers for assuring accurate biofuels blend measurements, including a complete copy of comparison data, please contact: Wilks Enterprise, Inc., 25 Van Zant Street, Ste. 8F, E. Norwalk, CT 06855 TEL: 203-855-9136; FAX: 203-838-9868; Email: info@wilksir.com; or the information can be downloaded from the Wilks website: www.WilksIR.com

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About Wilks Enterprise, Inc.
Headquartered in E. Norwalk, Connecticut, Wilks Enterprise specializes in easy-to-use, portable mid-infrared analyzers for specific measurement applications. All Wilks analyzers have been specifically designed for on-site use by non-technical personnel and are used for a wide variety of applications in the biofuels, environmental, petrochemical, quality control, and manufacturing industries. These portable analyzers enable analytical measurements to be made in the field, helping to eliminate the wait for off-site lab results.

For further press information or images, please contact Carol Tunick, VP – Marketing, at 203-855-9136 or email: ctunick@wilksir.com.

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