

## Wilks Enterprise - 'Fast, easy' detection of biodiesel

Wilks Enterprise has announced a new InfraSpec VFA-IR Spectrometer, Model EB, with a flow-through sample system and automated syringe pump that accurately measures biodiesel in diesel fuel down to 100 ppm in less than five minutes. This is particularly important for pipeline operators and nuclear power plants as the InfraSpec Spectrometer is claimed to provide an easy, on-site check to ensure little or no biodiesel is in their system.

The ASTM Method D 975 currently allows up to 5 percent biodiesel in diesel without the requirement for biodiesel content labelling and pipeline operators need to know that the product being delivered to the customer is as specified. If a delivery of diesel fuel to be shipped through a pipeline contains unlabelled biodiesel or the pipeline previously carried a diesel/biodiesel blend, it is important to ensure that there is no residual biodiesel present in the delivery to a customer that requires pure diesel fuel, such as jet fuel users or a nuclear power plant.

At nuclear power plants, fuel can be stored for as long as 10 years to power standby diesel generators in case of an electrical power shut down. Emergency diesel generators (EDG) supply electrical power to safely shutdown the nuclear reactor in the event of a loss of normal off-site power and supply power to critical items such as cooling pumps for decay heat removal.

Biodiesel is a natural food source for microbial growth and while biocides should prevent the growth of bacteria, fungi and mould, nuclear power plants cannot risk that microbial growth clog filters and shut down the EDG. In cold weather areas, there is also concern that the cold flow properties of biodiesel blended fuel may cause it to gel in cold temperatures and again clog filters. Therefore, it has become necessary for many standby generator operators to determine whether their fuel delivery contains biodiesel.

The fast, easy analysis capability of the InfraSpec VFA-IR Spectrometer is ideal for on-site biodiesel measurements in less than five minutes by non-technically trained personnel. It eliminates the need to wait for measurement results from an off-site laboratory. The InfraSpec Spectrometer is compact, portable and has a simplified PC interface that gives the user the capability to measure on-site at a pipeline, storage terminal, nuclear power plant, manufacturing facility, or in the laboratory – anywhere fast, easy accurate biodiesel in diesel fuel measurements are required and at a price significantly less than other analytical instruments.

Since May 2010, all diesel fuel sold at retail stations throughout the state of Pennsylvania must contain 2 percent biodiesel as part of an effort by governor Rendell to boost the state's economy and reduce imported fuel. Testing the fuel at the 1,200 retail motor fuel locations throughout the state for 2 percent biodiesel is one of the Pennsylvania Department of Agriculture's (PDA) responsibilities.

The PDA selected the InfraCal Biodiesel Blend Analyzer manufactured by Wilks Enterprise for compliance monitoring as the analyser could be used in the field and had the required accuracy of 0.2 percent. The PDA recently purchased eight InfraCal Analyzers. Mike Rader, the lead person on all renewable and alternative energy efforts for PDA, estimates that it will run approximately 2,000

can be operated from a battery pack or a cigarette lighter adapter cable, it fits the requirements needed for travelling to retail stations to make on-site measurements. The operation simply involves putting a sample on the exposed sample plate, pressing the 'run' button and in less than a minute, the display reads the percent biodiesel in the fuel sample.

When the PDA finds a fuel that is out of compliance, the department checks the required bill of lading tracking system that follows the fuel as it travels from the biodiesel producer to the blender, to the distributor, and finally to the retail location. With this paper trail, the PDA can identify the entity responsible for the out of compliance fuel and a correction can be enacted.



*Pennsylvania has become a leader in biofuels development in the USA*

samples annually for the on-road programme and possibly another 2,000 for their bio-heat and off-road fuel programmes.

The InfraCal Biodiesel Blend Analyzer is a portable mid-infrared analyser. The approved methods for biodiesel measurement are ASTM D 7371 in the US and EN 14078 in Europe both specify mid-infrared for the measurement of the biodiesel or FAME (fatty acid methyl ester) 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<sup>-1</sup>.

Since the InfraCal Biodiesel Blend Analyzer is small (6 ins square), lightweight (less than 5 lbs), rugged (no moving parts) and

Mike Rader finds that Pennsylvania has become the leader throughout the United States with regard to biofuels development. His hope is that its success will encourage other states to propose similar mandates which would help commercialise renewable fuels and make them more economical for everyone. Wilks will display at ILTA on Booth No 947

[www.wilksir.com](http://www.wilksir.com)