



TECHNICAL INFORMATION TECHNIQUE

CFDA CONTINUOUS FUEL DILUTION ANALYZER



Thermal-Lube's CFDA (Continuous Fuel Dilution Analyzer) is designed for on-line monitoring and analysis of fuel dilution, using FTIR spectroscopy. It can also be used with on-line additive trending of lubricant oil or other components in a liquid media, such as in research of organic reactions.

The CFDA can collect the mid-IR transmission spectra of samples in a specified period of time and monitor the change of the spectrum in process. The sample rate for process monitoring can be as fast as 2 sampling per minute. The transmission cell in the CFDA system is temperature controlled and is able to achieve an accurate measurement with a high repeatability. The CFDA can precisely monitor the spectral changes of engine oil and distinguish as low as 0.1% fuel dilution with an SD of ± 0.05 .



The CFDA has also been applied on the biodiesel synthesis process from vegetable oil or tallow (trans-esterification reaction) in our lab. With the on-line measurement of the reactant or product in the reaction, the biodiesel process can be clearly monitored and demonstrated.

The software used on CFDA system is **U.M.P.I.R.E.[®]-IA** developed by Thermal-Lube Inc. The software is easy to use and has many features, including easy method setup for a specific measurement, convenient calibration, spectrum viewer, graphic output of results, and reprocess existing spectra. It also allows the operator to monitor the analysis in real time.



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