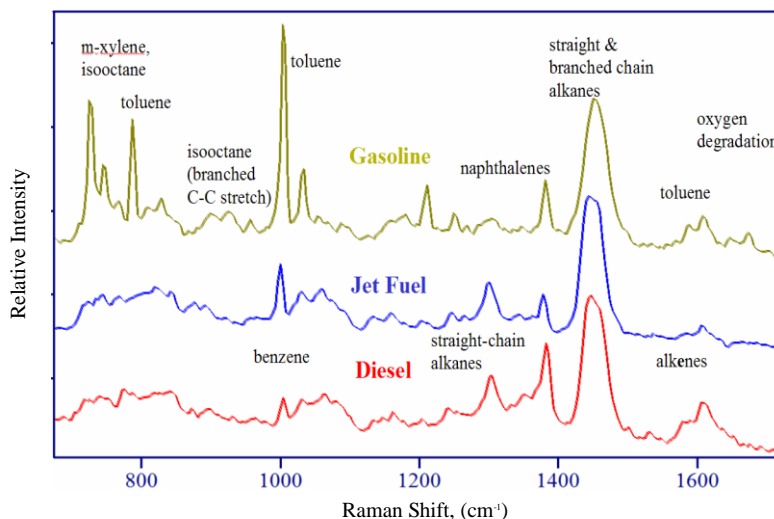


RTA's Military Grade *Portable Fuel Analyzer* has been designed specifically for operation in demanding environments, such as petrochemical refineries, field, port and tarmac operations. It is light weight and contains a 3-hour battery.

Fuel Identification and Characterization

Gasoline, diesel, and jet fuels represent fractions of crude oil distilled at different temperatures. Each fraction consists of aromatic, heterocyclic, saturated and unsaturated, branched- and straight-chained hydrocarbons that boil at similar temperatures. The rich chemical information provided by the *Portable Fuel Analyzer* can be used to identify the different fuel types and chemical components as shown in the figure below. For example, the aromatic hydrocarbons in gasoline, such as toluene, produce several sharp and quantifiable peaks.



However, it is also important to characterize fuels in terms of performance properties. For example the gasoline octane number indicates its antiknock performance during combustion, the diesel cetane number indicates its ignition delay and how well an engine will start in cold weather, while the jet fuel viscosity value indicates its atomization and hence combustion properties. During the past several years, RTA has measured the Raman spectra of some 800 different fuel samples from around the world. RTA has used this large database to develop correlations between the Raman spectra and the fuel properties, such that an unknown fuel can be fully characterized from a 2-minute Raman spectrum.

The Portable Fuel Analyzer provides the following:

Gasoline	Jet Fuel	Diesel
• Density/API Gravity	• Density/API Gravity	• Density/API Gravity
• Octane (RON, MON, Road)	• Heat of Combustion	• Cetane Index
• Distillation Fractions (IBP, 10%, 50%, 90%, FBP)	• Distillation Fractions (IBP, 10%, 50%, 90%, FBP)	• Distillation Fractions (IBP, 10%, 50%, 90%, FBP)
• Total Aromatics, Olefins, Oxygenates, Saturates, Sulfur, Water	• Total Aromatics, Olefins, Oxygenates, Saturates, Sulfur, Water	• Total Aromatics, Olefins, Oxygenates, Saturates, Sulfur, Water
• Reid Vapor Pressure	• Viscosity (-20C)	• Viscosity (+40C)
• Additives (at >0.1%): - MTBE, ETBE, TAME, - Ethanol, methanol	• Flash Point	• Flash Point
• BTEX (at >0.1%): - benzene, ethylbenzene, - toluene, xylenes	• Pour Point	• Cloud Point
	• Freeze Point	• Percent Biodiesel
	• Thermal Stability	

Specification	Portable Fuel Analyzer
Operation	
Warm-up Time	1 minute
Measurement Time	30 seconds
Sampling	Light-tight compartment holds 20 mL glass vials (disposable)
Calibration	Factory set using NIST standard
Fuel Analysis	Validated against ASTM methods
Analyzer	
Measurement Principle	Raman Spectroscopy
Light Source	1064 nm, 300 mW, 0.1 nm linewidth (Class 1 Laser Product)
Detector	256 pixel InGaAs (thermo-electrically cooled)
Spectral Resolution	14 – 20 cm ⁻¹
Spectral Range	250 - 1850 cm ⁻¹
Data System	
Laptop or embedded computer	Amrel – Rocky DB6, 5” screen
Operation System	Windows 7
Software	Fuel ID/Fuel Property/Fuel Quality (1472 Compliant)
Data Export	USB Port
Environment	
Dimensions	22.0 x 13.8 x 9.0” (55.9 x 33 x 22.9 mm) Pelican Case 1510
Weight	30 lbs (13.6kg)
Power	Battery (3 hours- rechargeable) / Electric (120/240 VAC 50/60Hz)
Operating Temperature Range	-4 to 110 °F (-20 to 45 °C)
Dust and Spill Proof	MIL-STD 810G 506.5 & 510.5 (sealed system, CBN decontamination)

Customized User Interfaces are also available:

