



solid partners  
proven solutions



# OptiFuel

Precision and portability in a top of the line FTIR Fuel Analyzer

- 🌐 Superior performance and ruggedness
- 🌐 Expert service and support worldwide
- 🌐 Unmatched warranty on critical components

# OptiFuel

## ACCURATE, EASY AND RELIABLE FUEL ANALYSIS

For more than 20 years, PAC has been at the forefront of infrared (IR) fuel analysis with its PetroSpec products. Now we are combining the best of our GS PPA, TD PPA and QuickSpec capabilities into one analyzer and adding the latest FTIR technology into the most robust fuel analyzer in the market.

The user-friendly system allows the operator to measure many properties at once with a simple touch of a button, using free factory calibration models. Users can customize the models with local samples in a few seconds. These custom models can easily be cloned to all your OptiFuels, even remotely, if necessary.

## GLOBAL SUPPORT

- Extensive support network through our offices and over 140 distributors worldwide.
- ISO-9001:2015-satisfactory manufacturing facility and service repair centers
- Skilled certified service technicians



# KEY FEATURES

## EXTENDED WARRANTY

- 2-year standard system warranty
- **10-year optics warranty on the full range, laser-referenced Michelson interferometer**
- **5-year warranty on the IR light source**



## SUPERIOR PERFORMANCE

- Compliance with ASTM, EN, ISO methods
- Calibration lasts for years
- High resolution wide range FTIR - ATR single flow cell
- Measure multiple parameters at once



## RELIABLE DESIGN

- Modern temperature-controlled laser referenced Michelson interferometer
- Humidity and vibration resistant ZnSe mirrors, beam splitters and non-moving sample cell



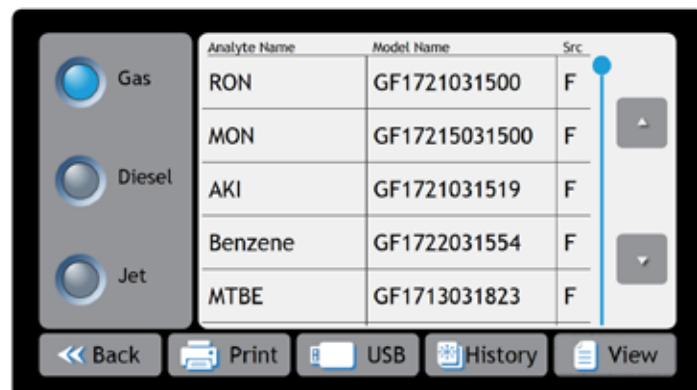
## LOW COST OF OWNERSHIP

- One instrument measures all types of samples without the need for extra hardware
- On-site, fast and minimal maintenance
- Low cost of consumables



# USER-FRIENDLY INTERFACE

- Intuitive interface requires minimal user training
- Large touch-screen allows easy navigation
- On-system, one-button-push model update with regional samples
- One-step, rapid calibration transfer and cloning
- Easy-to-use LIMS connectivity



# INCLUDED PARAMETERS

Every OptiFuel comes with more than 50 different calibration models built using hundreds of real-life samples of gasoline, diesel and jet fuel, from all over the globe, following ASTM E1655. These calibration ranges are based on current factory models, but they all can easily be expanded in the field. Calibrations can easily be cloned and transferred to additional units.

## GASOLINE



Properties <sup>1</sup>	Range <sup>2</sup>
Research Octane Number (RON)	89-103
Motor Octane Number (MON)	80-93
Anti Knock Index (AKI)	85-98
Distillation Points	
IBP	25-50 °C (77-122 °F)
T10	38-67 °C (91-153 °F)
T50	66-117 °C (150-243 °F)
T90	123-178 °C (122-253 °F)
FBP	171-221 °C (340-430 °F)
Evaporation Points	
E70	11-53 v%
E100	32-75 v%
E150	79-97 v%
E180	90-99 v%
E200	29-74 v%
E300	77-100 v%
DVPE	42-108 (kPa)
Driveability Index	860-1300
Vapour Lock Index (VLI)	500-1450

Properties <sup>1</sup>	Range <sup>2</sup>
MTBE	0-20 v%
ETBE	0-20 v%
TAME	0-20 v%
Methanol	0-10 v%
Ethanol	0-100 v%
DIPE	0-20 v%
tert-Butanol	0-15 v%
Total Oxygen	0-50 m%
Olefins	0-28 v%
Total Aromatics	0-50 v%
Aromatics C7	0.8-18 v%
Aromatics C8	0.5-16 v%
Benzene	0-6 v%
MMT	0-20000 mg/L
Manganese	0-5000 mg/L
VOC	1040-2171 mg/mi
VOC Performance	-27.6 to 48.1%
Saturates	0-100 v%
Density (built-in U-tube cell)	0.6 - 1.2 g/cm <sup>3</sup>

## DIESEL



Properties <sup>1</sup>	Range <sup>2</sup>
Cetane Number	41-66
Cetane Index	42-65
Cetane improver (2-EHN, IPN)	30-12000 mg/L
FAME (low to high concentration)	0-100 v%
Distillation Points	
IBP	145-220 °C (293-428 °F)
T10	160-260 °C (320-500 °F)
T50	170-295 °C (338-563 °F)
T90	180-360 °C (356-680 °F)
T95	260-390 °C (500-734 °F)
FBP	195-365 °C (383-689 °F)
Evaporation Point (E250)	5-70 v%
Density (built-in U-tube cell)	0.6 - 1.2 g/cm <sup>3</sup>

## JET FUEL



Properties <sup>1</sup>	Range <sup>2</sup>
FAME	0 - 100%
Density (built-in U-tube cell)	0.6 - 1.2 g/cm <sup>3</sup>

### NOTES:

1. Range and quality of prediction is related to database used.
2. The lowest concentration value is related to the Limit of Detection (LOD).



# DENSITY MODULE

An ASTM compliant u-tube density module, capable of measuring from 0.5 g/cm<sup>3</sup> to 2.0 g/cm<sup>3</sup>, is integrated in each OptiFuel to provide direct density reading. Per ASTM D1250-04 algorithm, densities of hydrocarbon samples can be reported at 15° from 0.6 to 1.2 g/cm<sup>3</sup>. This eliminates the need for an external density meter.



# ADDITIONAL PARAMETERS

Unlimited additional properties can be added or updated quickly per user-defined requests.

## GASOLINE



Sum Parameters
Oxygenates
Esters
Di-Olefins
Oxygenates
Iso-Propanol
2-Butanol
Dimethoxymethane (DMM)
Dimethylcarbonate (DMC)
Methylacetate
Ethylacetate
Isobutylacetate
Sec-Butylacetate
TAAE
Anilines
Aniline
N-Methylaniline
o-Methoxyaniline
o-, m-, p-Toluidine
N,N-Dimethylaniline

Aromatics
Toluene
o-, m-, p-Xylene
Ethylbenzene
Propylbenzene
2-Ethyltoluene
3-Ethyltoluene
4-Ethyltoluene
Pseudocumene
Hemellitrol
Mesitylene
Iso-Durene
Durene
Naphthalene
Other aromatics
Octane Boosters
CMT
Dicyclopentadiene (DCPD)
Nitromethane
Others
RVP

## DIESEL



Distillation/Recovery Points
CFPP
Viscosity
Total Aromatics
Polynuclear Aromatics (PNA)
Benzene
Dimethoxymethane
Biodiesel (FAEE)
Vegetable Oil

## JET FUEL



Distillation/Recovery Points
Freezing Point
Flash Point
Smoke Point
Viscosity
Total Aromatics
Polynuclear Aromatics (PNA)

## ETHANOL



Ethanol
Water
Methanol
Denaturant

## METHANOL



Methanol
Density

Global sample database analyzed by 

## ROAD-TESTED FOR MOBILE APPLICATIONS

OptiFuel comes in a rugged, yet elegant, design with a friendly user interface, which makes it ideal for refineries, pipelines, terminals and mobile labs.

We used only the best materials to ensure it delivers unmatched performance in any application, and tested through intense shock, vibration and drop, per ASTM and MilSpec.

OptiFuel's handle and small foot print provides the perfect mobility for any remote field requirements.



## MOBILE ACCESSORY PACKAGE



Anti-vibration platform



High-performance lithium ion battery with power supply



Vehicle adapter

NOTE: OptiFuel runs for over 5 uninterrupted hours on just the battery pack, untethered from a vehicle or an external power outlet.

## COMPLETE CONNECTIVITY

Easily connect your OptiFuel to your network printer or LIMS system. You can also digitally clone your OptiFuel with a USB drive.



## METHOD-APPROVED

Compliance	Correlation			Method Applications
<ul style="list-style-type: none"> <li>Benzene:                             <ul style="list-style-type: none"> <li>ASTM D6277</li> <li>EN 238</li> </ul> </li> <li>FAME:                             <ul style="list-style-type: none"> <li>ASTM D7371</li> </ul> </li> <li>Oxygenates: (MTBE, ETBE, TAME, DIPE, Methanol, Ethanol, tert-Butanol)                             <ul style="list-style-type: none"> <li>ASTM D5845</li> </ul> </li> <li>Density:                             <ul style="list-style-type: none"> <li>ASTM D7777</li> <li>ISO 15212</li> <li>IP 559</li> </ul> </li> </ul>	<b>ASTM:</b> <ul style="list-style-type: none"> <li>D1319</li> <li>D1322</li> <li>D1840</li> <li>D2386</li> <li>D2699</li> <li>D2700</li> <li>D323</li> <li>D3828</li> <li>D3948</li> <li>D4053</li> <li>D4737A</li> <li>D445</li> </ul>	<ul style="list-style-type: none"> <li>D4815</li> <li>D5191</li> <li>D56</li> <li>D613</li> <li>D6371</li> <li>D6378</li> <li>D6379</li> <li>D6839</li> <li>D7153</li> <li>D7806</li> <li>D86</li> <li>D976</li> </ul>	<ul style="list-style-type: none"> <li>EN 116</li> <li>EN 13016</li> <li>EN 14078</li> <li>ISO 22854</li> <li>ISO 3104</li> <li>ISO 3405</li> <li>ISO 4264</li> <li>ISO 5163</li> <li>ISO 5164</li> <li>ISO 5165</li> <li>SGS M2533</li> </ul>	Provides correlation result for methods in specifications: <ul style="list-style-type: none"> <li>D1655</li> <li>D4806</li> <li>D4814</li> <li>D975</li> <li>EN 228</li> <li>EN 590</li> <li>DEFSTAN 91-091</li> </ul>

## PAC SOLUTIONS FOR PIPELINES, TERMINALS AND MOBILE LABS



OptiFlash Small Scale Flash Point Analyzer



PMD 110 Micro Distillation Analyzer



VIDA Density Meter



## TECHNICAL SPECIFICATIONS

Spectrometer Type	FTIR Michelson Interferometer - Thermally controlled laser referenced	
Standard Test Methods	<ul style="list-style-type: none"> <li>Compliance:               <ul style="list-style-type: none"> <li>Benzene: ASTM D6277, EN 238</li> <li>FAME: ASTM D7371</li> <li>Oxygenates (MTBE, ETBE, TAME, DIPE, Methanol, Ethanol, tert-Butanol): ASTM D5845</li> <li>Density: ASTM D7777, IP 559</li> </ul> </li> <li>Correlation: D1319, D1322, D1840, D2386, D2699, D2700, D323, D3828, D3948, D4053, D4737A, D445, D4815, D5191, D56, D613, D6371, D6378, D6379, D6839, D7153, D7806, D86, D976, EN 116, EN 14078, EN ISO 13016, ISO 15212, ISO 22854, ISO 3104, ISO 3405, ISO 4264, ISO 5163, ISO 5164, ISO 5165, SGS M2533</li> <li>Correlation result for specifications: D1655, D4806, D4814, D975, EN 228, EN 590, DEFSTAN 91-091</li> </ul>	
Mirror Design	Friction-free, vibration resistant, cube corner mirror	
Mirror and Beam Splitter	Humidity resistant ZnSe	
Density Measurement	Oscillating U-tube cell with temperature sensor	
Units of Measurement	%m, %v	
Scan Range	550 - 4000 $\text{cm}^{-1}$	
Spectral Resolution (max.)	2 $\text{cm}^{-1}$	
Measurement Time	30 seconds	Warm up time: < 30 seconds
Sample Introduction	From sample container	
Sample Volume	8 ml	
Calibration	Factory calibrated with matrix of several hundred global fuels (analyzed by SGS)	
Regional Calibration Update	Yes	
Cleaning	Solvent ( $\geq 99.9\%$ Toluene)	
Operating Temperature	5°C to 45°C	Storage Temperature: -40°C to +85°C
Humidity	0% to 90% RH	
Leak Test	Automatic	
Filter Replacement Monitor	Automatic	
Fume Sensor	Yes	
Real-time Safety Monitoring	Yes	
Display	7" color touch screen	
Interface	3x USB - 1x Ethernet	
Instrument Memory	100,000 test results	
Power Requirements	110V to 230V - 50/60 Hz, 60 W. 24V battery pack option available, connectable to 12V.	
Dimensions	8.5" x 14" x 16" (W x H x D)	
Weight	32 lbs (14.5 kg)	
Packaging	24" x 24" x 24" (W x H x D) - 56lbs (25.4 kg)	
Certifications	ISO 9001:2015, CE, ROHS II	

Continuing research and development may result in specifications or appearance changes at any time

### ABOUT PAC

PAC develops advanced instrumentation for lab and process applications based on strong **Analytical Expertise** that ensures **Optimal Performance** for our clients. Our analyzers help our clients meet complex industry challenges by providing a low cost of ownership, safe operation, high performance with fast, accurate, and actionable results, high uptime through reliable instrumentation, and compliance with standard methods.

### HEADQUARTERS

PAC LP | 8824 Fallbrook Drive | Houston, Texas 77064 | USA  
www.paclp.com

Our solutions are from industry-leading brands: AC Analytical Controls, Advanced Sensors, Alcor, Antek, Herzog, ISL, Cambridge Viscosity, PSPI, and PetroSpec. We are committed to delivering superior and local customer service worldwide with 16 office locations and a network of over 50 distributors. PAC operates as a unit of Roper Technologies, Inc., a diversified technology company and a constituent of S&P 500, Fortune 1000, and Russell 1000 indices.



Contact us for more details.  
Visit our website to find the  
PAC representative closest to you.