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
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
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

<table>
<thead>
<tr>
<th>Properties¹</th>
<th>Range²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Octane Number (RON)</td>
<td>89-103</td>
</tr>
<tr>
<td>Motor Octane Number (MON)</td>
<td>80-93</td>
</tr>
<tr>
<td>Anti Knock Index (AKI)</td>
<td>85-98</td>
</tr>
<tr>
<td>Distillation Points</td>
<td></td>
</tr>
<tr>
<td>IBP</td>
<td>25-50°C (77-122°F)</td>
</tr>
<tr>
<td>T10</td>
<td>38-67°C (91-153°F)</td>
</tr>
<tr>
<td>T50</td>
<td>66-117°C (150-243°F)</td>
</tr>
<tr>
<td>T90</td>
<td>123-178°C (222-353°F)</td>
</tr>
<tr>
<td>FBP</td>
<td>171-221°C (340-430°F)</td>
</tr>
<tr>
<td>Evaporation Points</td>
<td></td>
</tr>
<tr>
<td>E70</td>
<td>11-53 v%</td>
</tr>
<tr>
<td>E100</td>
<td>32-75 v%</td>
</tr>
<tr>
<td>E150</td>
<td>79-97 v%</td>
</tr>
<tr>
<td>E180</td>
<td>90-99 v%</td>
</tr>
<tr>
<td>E200</td>
<td>29-74 v%</td>
</tr>
<tr>
<td>E300</td>
<td>77-100 v%</td>
</tr>
<tr>
<td>DVPE</td>
<td>42-108 (kPa)</td>
</tr>
<tr>
<td>Driveability Index</td>
<td>860-1300</td>
</tr>
<tr>
<td>Vapour Lock Index (VLI)</td>
<td>500-1450</td>
</tr>
</tbody>
</table>

### DIESEL

<table>
<thead>
<tr>
<th>Properties¹</th>
<th>Range²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cetane Number</td>
<td>41-66</td>
</tr>
<tr>
<td>Cetane Index</td>
<td>42-65</td>
</tr>
<tr>
<td>Cetane improver (2-EHN, IPN)</td>
<td>30-12000 mg/L</td>
</tr>
<tr>
<td>FAME (low to high concentration)</td>
<td>0-100 v%</td>
</tr>
<tr>
<td>Distillation Points</td>
<td></td>
</tr>
<tr>
<td>IBP</td>
<td>145-220°C (293-428°F)</td>
</tr>
<tr>
<td>T10</td>
<td>160-260°C (320-500°F)</td>
</tr>
<tr>
<td>T50</td>
<td>170-295°C (338-563°F)</td>
</tr>
<tr>
<td>T90</td>
<td>180-360°C (356-680°F)</td>
</tr>
<tr>
<td>T95</td>
<td>260-390°C (500-734°F)</td>
</tr>
<tr>
<td>FBP</td>
<td>195-365°C (383-689°F)</td>
</tr>
<tr>
<td>Evaporation Point (E250)</td>
<td>5-70 v%</td>
</tr>
<tr>
<td>Density (built-in U-tube cell)</td>
<td>0.6 - 1.2 g/cm³</td>
</tr>
</tbody>
</table>

### JET FUEL

<table>
<thead>
<tr>
<th>Properties¹</th>
<th>Range²</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAME</td>
<td>0 - 100%</td>
</tr>
<tr>
<td>Density (built-in U-tube cell)</td>
<td>0.6 - 1.2 g/cm³</td>
</tr>
</tbody>
</table>

**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).
An ASTM compliant u-tube density module, capable of measuring from 0.5 g/cm³ to 2.0 g/cm³, 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/cm³. 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
- TAAEE
- Anilines
- Aniline
- N-Methylaniline
- α-Methoxyaniline
- α-, m-, p-Toluidine
- N,N-Dimethylaniline
- Aromatics
- Toluene
- α-, m-, p-Xylene
- Ethylbenzene
- Propylbenzene
- 2-Ethyltoluene
- 3-Ethyltoluene
- 4-Ethyltoluene
- Pseudocumene
- Hemellitol
- 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 SGS
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**

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Correlation</th>
<th>Method Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene:</td>
<td>ASTM D6277</td>
<td>Provides correlation result for methods in specifications:</td>
</tr>
<tr>
<td></td>
<td>EN 238</td>
<td>• D1655</td>
</tr>
<tr>
<td>FAME:</td>
<td>ASTM D7371</td>
<td>• D4806</td>
</tr>
<tr>
<td>Oxygenates:</td>
<td>ASTM D5845</td>
<td>• D4814</td>
</tr>
<tr>
<td></td>
<td>EN 116</td>
<td>• D975</td>
</tr>
<tr>
<td>Density:</td>
<td>ASTM D7777</td>
<td>• EN 228</td>
</tr>
<tr>
<td></td>
<td>ISO 15212</td>
<td>• EN 590</td>
</tr>
<tr>
<td></td>
<td>IP 559</td>
<td>• DEFSTAN 91-091</td>
</tr>
</tbody>
</table>

**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**
- Compliance:
  - Benzene: ASTM D6277, EN 238
  - FAME: ASTM D7371
  - Oxygenates (MTBE, ETBE, TAME, DIPE, Methanol, Ethanol, tert-Butanol): ASTM D5845
  - Density: ASTM D7777, IP 559
- Correlation:
- Correlation result for specifications: D1655, D4806, D4814, D975, EN 228, EN 590, DEFSTAN 91-091

**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 cm⁻¹

**Spectral Resolution (max.)**
- 2 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 (≥ 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.

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**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**

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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.

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