Process NMR Analyzer
Model MOD-8000

The MOD-8000 is a new generation of NMR (Nuclei Magnetic Resonance) online process analyzer. MOD-8000 is designed to analyze composition of process fluids, using magnetic resonance spectroscopic techniques. It can detect the presence and the concentration of the chemical constituents in a process stream. By utilizing exclusive software, it provides closed loop supervisory control of a process unit. It has an extensive range of applications from light Naphtha streams to heavy Crude oil.

The user benefits include:

- Increased throughput
- Better process control
- Timely detection of off-spec product
- Lower operating costs

**NMR ANALYZER ADVANTAGES**

- Increase of the productivity of valuable products
- Process control improvement
- Sub-standard products time-to-identify and an improvement of the quality of petroleum products
- Dramatically decrease of the operational costs of the production
NMR ANALYZER MOD-8000

SYSTEM KEY ADVANTAGES

- **Real time**, continuous **flow-through stream** analysis
  - Reduction in response time allows tighter control
- Provides analysis in **dense** and **opaque** materials
- **Direct Molecular Measurement**
  - No indirect predictions on critical measurements
- **Linear Spectral Response** across broad range
  - Models can be extrapolated accurately
- **Direct** and **Multi-property** analysis
  - Replaces conventional analyzers
  - Provides high accuracy data for precise control
  - High repeatability and reproducibility
- **Simple Sample Conditioning** required
  - No water removal, limited filtering
- **Minimal maintenance** required

IMPLEMENTATION EXAMPLES

- Crude Switching/Blending
- Gasoline Blending
- Diesel Fuel Blending
- Fuel Oil Blending
- Naphtha Cracking
- Raw materials for catalytic cracking
- FCCU Distillates
- FCCU Feed
- CDU Distillate
- Catalytic Reforming
## TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Measurement Method</td>
<td>Nuclei Magnetic Resonance spectroscopy</td>
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<tr>
<td>Calibration Method</td>
<td>Chemometrics</td>
</tr>
<tr>
<td>Multi-channel Ability</td>
<td>Up to eight measurement streams</td>
</tr>
<tr>
<td>Time per Measurement</td>
<td>Approximately 2 minutes (application dependent)</td>
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<tr>
<td>Sample Conditioning</td>
<td>Application dependent</td>
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<tr>
<td>Communication</td>
<td>Modbus over RS485 or over Ethernet, TCP/IP over Ethernet</td>
</tr>
<tr>
<td>Weight &amp; Dimensions</td>
<td>Stainless steel enclosure 140x190x60 (IP56 / NEMA 4X) 400 kg</td>
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<tr>
<td>Power Consumption</td>
<td>3 Ø 380 - 415 VAC 25 A</td>
</tr>
<tr>
<td>Environmental Operating Conditions:</td>
<td>+10°C to +40°C</td>
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<tr>
<td>Operating Temperature</td>
<td>30-90% (non-condensing)</td>
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<tr>
<td>Relative Humidity</td>
<td>0°C to +45°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>48 inches (105 cm) long, 3/8 inches (10mm) diameter</td>
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<tr>
<td>Standard Flow Cell</td>
<td></td>
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<tr>
<td>Process Operating Conditions:</td>
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<tr>
<td>Operating Temperature</td>
<td>4°C to 120°C</td>
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<tr>
<td>Maximum Inlet Pressure</td>
<td>25 bar</td>
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<tr>
<td>Flow rate requirement</td>
<td>1000-3000 ml/min</td>
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<tr>
<td>Relative Humidity</td>
<td>90% (non-condensing)</td>
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<tr>
<td>Instrument Air</td>
<td>Dry, oil-free 3.5 bar minimum</td>
</tr>
<tr>
<td>Initial purge</td>
<td>9.25 scfm (250 L/min) for 20 min</td>
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<tr>
<td>Continuous purge</td>
<td>0.66 scfm (18 L/min)</td>
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<tr>
<td>Reference material</td>
<td>Hexane or Toluene</td>
</tr>
<tr>
<td>Applications</td>
<td></td>
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<tr>
<td>Crude Switching/Blending</td>
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<td>Diesel Fuel Blending</td>
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<td>Naphtha Cracking</td>
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</table>
• Calibration Models Construction
• Installation and start-up
• The support for the gauge models of the process is provided within one year from the validation date
• Real time remote support
• 24x7 remote support
• Technical support for hardware and software
• One year guaranty for all the components
• Complex deployment of analytical Shelters and peripheral equipment

BUSINESS AND SERVICE CENTERS

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