

AC REFORMULYZER[®]

AC Reformulyzer[®] M3

75 Minutes

Full Gasoline Analysis

M3

Saturates

- Compliance with ASTM D 6839 & EN 14517
- Self Explanatory Operation
- Integrated Diagnostics



ac[®]

ANALYTICAL CONTROLS

PAC Company

AC REFORMULYZER[®] M3

AC Analytical Controls pioneered, developed and optimized the AC Reformulyzer[®] application, which is globally used by the vast majority of all refineries. The new generation Reformulyzer[®] Mark 3 (M3) provides a complete identification and quantification of all hydrocarbon types, oxygenates and carbon number distribution with numerous features:

- Full gasoline analysis in 75 minutes in compliance with ASTM D 6839, EN 14517, IP 526 and ISO/AWI work item 22854
- Self explanatory operation providing:
 - intuitive user interface
 - automated validation thru quality control samples with the integrated diagnostic tool
 - analysis simulation program
- Easy parts replacement thru the use of dedicated connectors
- Columns and traps with extended lifetime
- Available on the new Agilent Technologies 7890A
- Large installed base: major oil companies, R&D labs, independent labs and government agencies
- AC User Group enables users to share technical knowledge and optimize performance
- A global network of AC certified support engineers commissions the system on-site in one day
- Instrument is delivered within 3 weeks



75 Minutes Full Gasoline Analysis

The Reformulyzer[®] M3 analysis is based on multi-dimensional column switching technique. After sample introduction, a set of columns and traps separates the sample into different hydrocarbon groups. The multi-dimensional technique determines carbon number distribution of each group: Paraffins, Olefins, Naphthenes, Aromatics or Oxygenates.

Incorporated Standard Test Methods

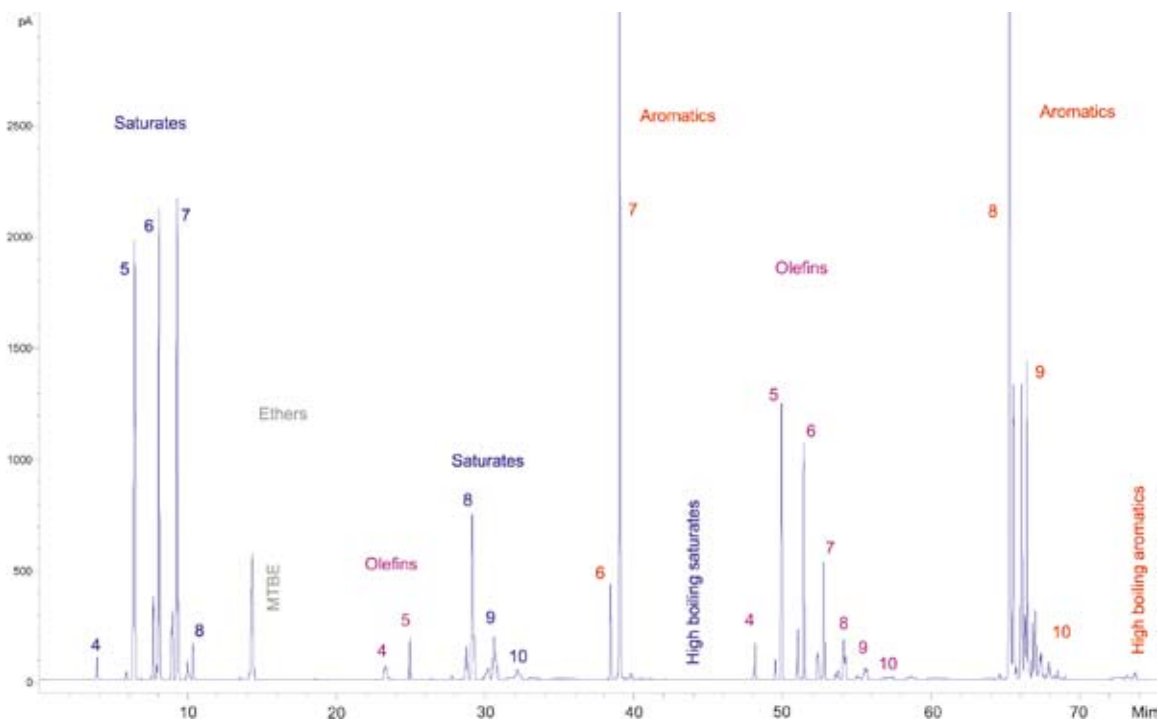
The Reformulyzer[®] M3 complies with all accepted international standard test methods, including:

- ASTM D 5443, D 6839
- DIN 51448-2
- EN 14517
- IP 526
- ISO/AWI work item 22854



Reports Fuel Specifications

The European gasoline specification (EN 228) lists Reformulyzer[®] method EN 14517 as referee method to report Aromatics and Olefins in gasoline. EN 14517 is listed as alternate to EN 12177 for Benzene.



AC Reformulyzer[®] M3 analysis of gasoline in 75 minutes

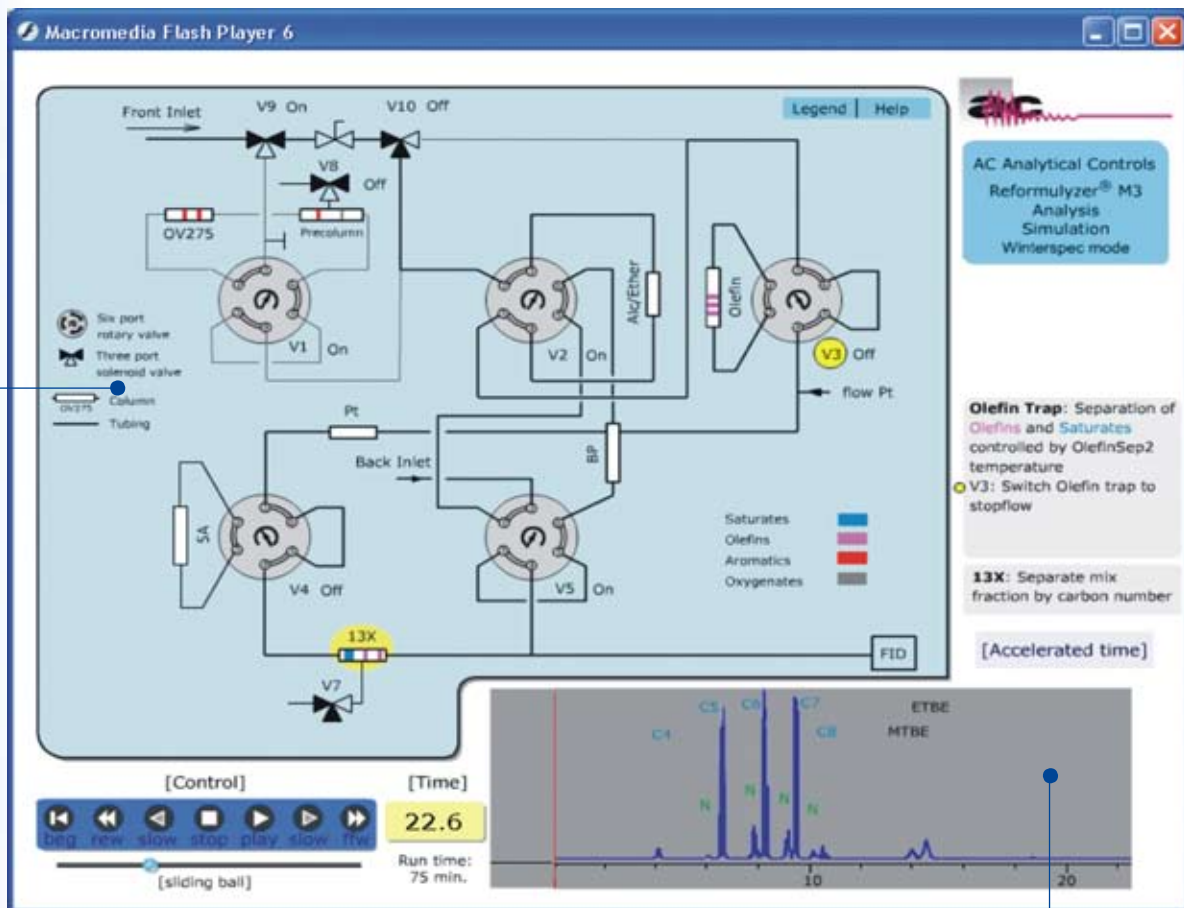
Analysis Simulation Program

Self explanatory operation

Training Tool

To train users on the multi-dimensional technique AC developed the Reformulyzer® M3 Analysis Simulation Program.

The program demonstrates sample separation through various columns and traps.



The simulation program shows the analysis sequence step-by-step.

Simultaneously the elution pattern can be observed in the chromatogram.



System Maintenance

All traps have dedicated connectors for easy parts replacement.



Integrated Diagnostic Tool Automates validation

To validate the Reformulyzer® M3 performance AC developed a set of quality control (QC) samples and an integrated diagnostic tool.

After analysis of the QC samples, the diagnostic tool reports validation and statistical data for:

- a specific analysis
- a series of analyses over a longer period

The diagnostic tool will automatically mark results outside specification limits. You will find these marked results in the on-screen report.

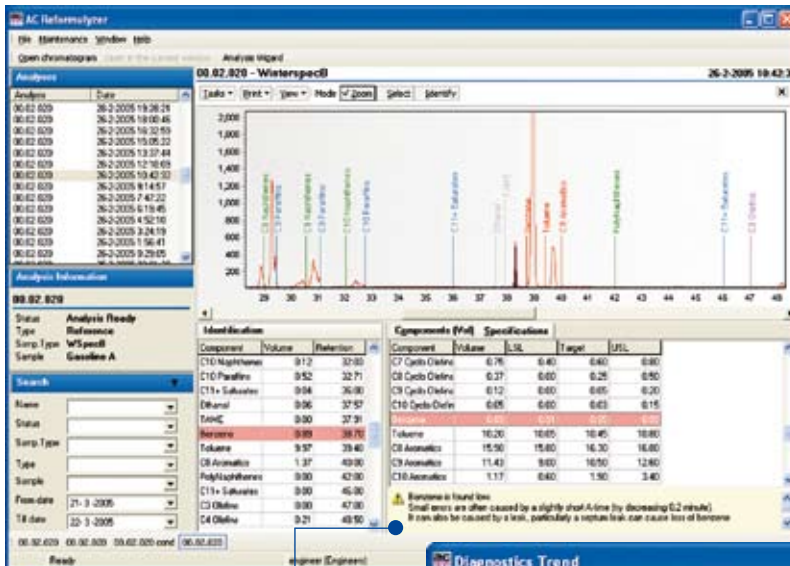
The diagnostic tool also advices on possible causes for components exceeding the limits and reviews data for trend recording.



Quality Control Samples

AC offers a set of quality control samples that covers most light petroleum streams:

- Reformer feed
- Reformate
- FCC naphtha
- Gasoline containing MTBE
- Oxygenates free gasoline
- Gasoline containing Ethanol
- Gasoline containing ETBE & Ethanol



"The diagnostic tool also advices on possible causes for components exceeding the limits."

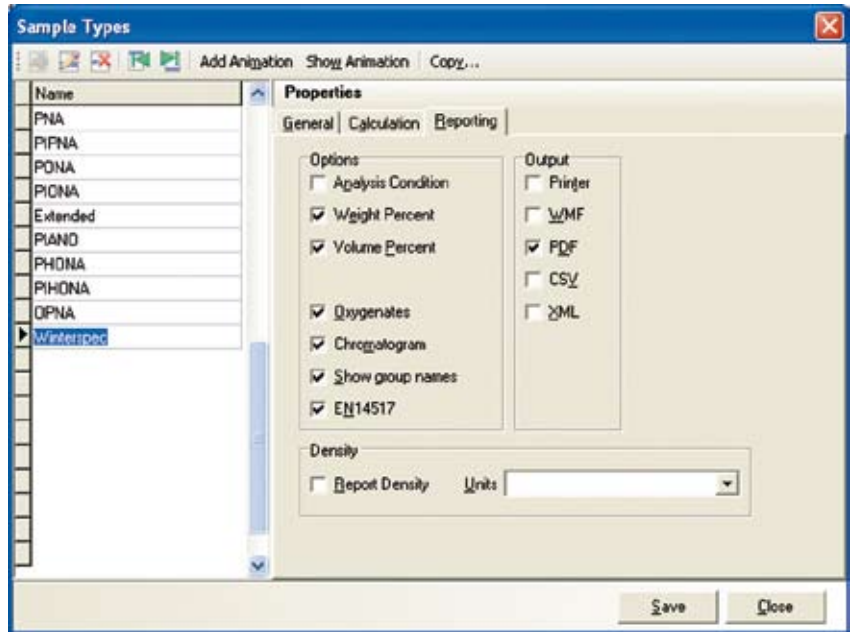


AC Reformulyzer® M3 Diagnostic Tool

Range of Report Options

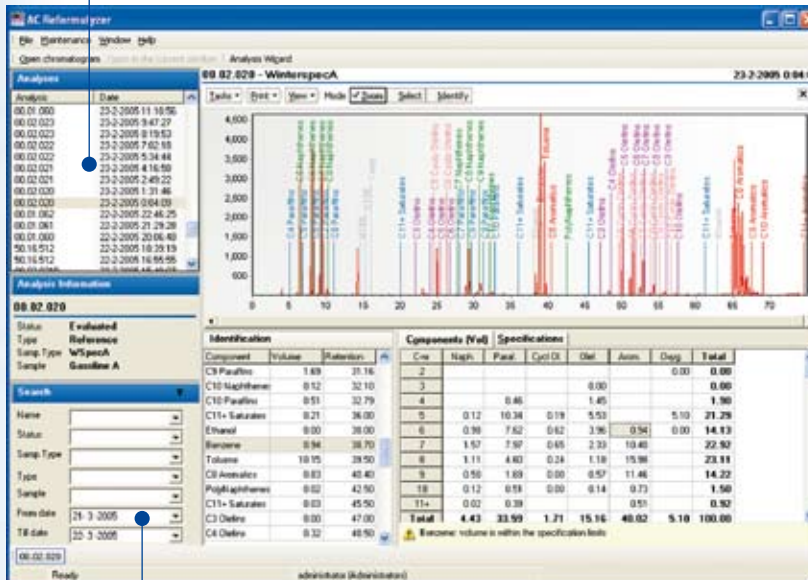
- Hydrocarbon type concentrations by carbon number in weight% and liquid volume%
- Oxygenated component concentrations in weight% and liquid volume% as specified by EN 228
- Benzene, Total Aromatics, Total Olefins and Total Saturates in liquid volume%; Oxygen in weight%, Oxygenates in liquid volume%
- Density in g/ml, kg/m3 and lb/gal
- Average molecular weight
- RON/MON calculation for the PIONA mode
- C:H:O ratio and Calorific Value

The AC Reformulyzer® M3 offers several options to report hydrocarbon types and oxygenates and add special calculations.



AC Reformulyzer® M3 report options

Analysis viewer



AC Reformulyzer® M3 on-screen report

Special filtering options



AC User Group

Optimizes analyzer performance

Reformulyzer® users can join the AC User Group. AC organizes periodically interactive meetings that allow users to share and exchange technical knowledge.

An important element of the user group is the Performance Monitoring Program (PMP): a regular round robin testing on an anonymous base, that assists labs to check their analyzer precision. Results are processed anonymously; AC reports the statistical values and advices on improving analysis precision.

The 2005 PMP test consisted of 11 samples. The samples ranged from feedstock components such as naphtha, reformer feed, reformate and FCC naphtha to 5 gasoline samples containing different levels of Aromatics, Olefins, Benzene and various Oxygenated components. A total of 65 worldwide laboratories participated in the PMP. The Reformulyzer® M3 instrument was already included in this monitoring program.

Reformulyzer® M3 Website Provides Online Assistance

User group participation also includes access to the Reformulyzer® M3 website that provides information on:

- Documents such as brochures, product briefs and application notes
- Guidelines and reports of the performance monitoring program



Features & Benefits of AC Reformulyzer® M3

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- Full gasoline analysis in 75 minutes in compliance with ASTM D 6839, EN 14517, IP 526 and ISO/AWI 22854
- European gasoline specifications (EN 228) list Reformulyzer® EN 14517 data for reporting benzene, aromatics and olefins in gasoline
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- Report options include hydrocarbon type and oxygenate concentrations by carbon number and special calculations
- AC User Group enables users to share technical knowledge and optimize performance
- A global network of AC certified support engineers commissions the system on-site in one day
- Instrument is delivered within 3 weeks
- One year hardware and application warranty includes free helpdesk
- Optional on-line remote support by LAN connection is available

