



**Advanced Analytical
Instrumentation for
Lab Applications**

Company Overview

PAC is a leading global manufacturer of advanced analytical instruments for laboratory and online process applications in the hydrocarbon processing industry.

PAC offers an extensive product portfolio with cutting-edge solutions for gas chromatography, elemental analysis, physical properties, fuels composition, and laboratory automation.

PAC complies with ISO 9001 and ISO 17025 standards, which guarantees the quality of our products and reaffirms our commitment to quality, precision and customer support.

We're an industry leader in standards development, and we work tirelessly to establish benchmark procedures that scientists and analysts around the world rely on every day to build better products and a cleaner environment.

PAC operates as a unit of Roper Technologies, Inc., a diversified technology company and a component of the S&P 500, Fortune 1000, and Russell 1000 indices.

The most respected and long-established brands of analytical equipment in one single organization



Product Lines

PAC has combined the world's most respected and long-established brands of analytical and testing equipment into a single manufacturing, marketing and service organization. Each of our brands have long histories of developing best-in-class analytical instrumentation for lab and process applications. In fact, the dynamic synergy of the PAC team and its unique technologies has led to the development of unique, cutting-edge instruments.

In close cooperation with various standards organizations throughout the world, PAC introduces innovative instruments & applications which adhere to various standards by ASTM, CEN, DIN, GPA, IP, ISO, and UOP.

Services, Support & Training

Our individualized instrument service programs help our customers ensure maximum quality and repeatability, while complying with standards and regulatory requirements.

In addition to service programs, we also offer individual services for preventative maintenance, calibration, and relocation services. Our Service Repair Centers, located around the world, are ISO-9001 accredited. All work is performed by skilled certified service technicians.

PAC offers a wide selection of training and educational programs to support our customers throughout the range of industries that our instruments serve.

Our training programs may take place in one of our PAC facilities worldwide or right at the customer's facility. We also offer webinars of some of our key technologies online.



Iris Software

Iris is an advanced, laboratory results management and reporting software system, developed by PAC, which provides customers the advantage of connecting their lab instruments, locally or worldwide, and manage them from a single computer. This greatly improves laboratory efficiency, which reduces the amount of training needed when working with multiple software platforms. In addition, IRIS can perform data reprocessing without re-running a sample, which increases laboratory productivity. IRIS is also compliant with security and quality protocols.



Certified Reference Materials

PAC offers a broad range of Certified Reference Materials (CRM), calibration standards and reference samples to support your testing needs. By routinely verifying your instrument's performance, you can ensure consistent quality that meets expected performance demands. This will help you establish good inter-laboratory correlation and generate reliable test data.

Benefits:

- Ensures dependable performance of your equipment
- Isolates testing bias before it impacts product quality
- Certified values determined through International round robin testing by a minimum of 12 labs
- Meets traceability requirements for ISO/NAMAS accreditation

Gas Chromatography Instruments Overview



AC Hi-Speed Refinery Gas Analyzer



Reformulyzer M4

Category	Full Composition Analysis								Boiling Point Distribution	
Model	AC NGA	AC HiSpeed RGA	AC DHA Analyzers		AC Reformulyzer [®] M4	AC PIONA Prefrac M3	AC GCxGC PIPNA in Jet and Diesel Analyzer	AC MDA Analyzer (HPLC)	Productivity Center	
		AC FastRGA AC LPG	Regular	AC DHA Front End					AC 8612 [™] Analyzer	AC8634 [™] Analyzer
Standard Method	D1945 ISO 6974 GPA 2261 Extended NGA: ISO 6975, ISO 6976, GPA 2172, GPA 2286, GOST 31371	D1946 , D2163, D2598, D3588, EN ISO 7941, IP 405, EN 15984, UOP 539, GOST 31371, GOST R 54484	AC Fast DHA D6729, D6730, D5134, D6733, GOST R 52714, GOST 54275	D7900, EN 15199-4, IP 601,	ISO 22854, D6839, D5443, IP 566, SH/T 0741, GB/T 28768-2012, GOST R EN ISO 22854	D5443	UOP 990	D6591, EN 12916, IP 391, GOST R EN 12916, D6379, IP548, IP436	D86 equivalent for groups 0, 1 and 2 GOST 2177	D86 equivalent for groups 3 and 4 , D2887, EN ISO 3924, IP 406, GOST 2177
Application	NGA: C1-C6, C6+ hydro carbons, Hydrogen sulfide Extended NGA: C1-C14, C14+ hydrocarbons, Non-condensable gases: nitrogen, carbon dioxide and oxygen, hydrogen sulfide	Non-condensable Gases, C1-C5, C5+ hydro carbons	C1 - nC14 ethanol, Butanol, MTBE/ETBE/TAME, methanol, t-Butanol	Light Hydrocarbons in Crude	Hydrocarbon Group Types and Oxygenates	Hydrocarbon Group Types	Paraffins, Naphtenes, Aromatics, FAMES	Mono-, Di-, and Poly-ring aromatics	Simulated Distillation, Atmospheric Distillation, Gasoline	Simulated Distillation, Atmospheric Distillation
Refinery Gas		•								
Natural Gas	•									
Biogas	•									
LPG		•								
Gas in Petrochemical		•								
Straight Run/ Naphtha			•	•	•				•	
Depentanized Bottom			•	•	•				•	
Reformate			•	•	•				•	
FCC-Light			•	•	•				•	
FCC-Middle					•					
FCC-Heavy					•					
Visbreaker			•	•	•				•	
Alkylate			•	•	•				•	
Isomerate			•	•	•				•	
Gasoline Blend			•	•	•				•	
Gasoline with Oxygenates			•	•	•				•	
Jet Fuel							•	•		•
Diesel							•	•		•
Micro Activity Testing						•				
Lubricant (stock base) with and without Oxygenates										
Thermal Crack Feed										
Crude Oil				•						
Residue										
Biofuels							•	•		



AC SIMDIS Analyzers



AC SeNse SCD



AC ACCURA

AC SIMDIS Analyzers				Trace Analysis				Single Component / Group Analysis			
AC SIMDIS Analyzers			AC CNS SIMDIS	SULFUR	AC Oxytracer™	AC Fame in Aviation Turbine Fuel (AVTUR) Analyzer	AC Impurity Analyzers	AC Fast Total Olefins (FTO) Analyzer	AC Oxygenates Analyzers	AC Aromatics Analyzers	AC All-in-One Biodiesel
Low/Medium Range	High Range	Crude	Medium / High Range								
D7096, D2887, D6417 (Mov), D5442 (wax), IP 406, ISO 3924, DIN 51435, D7213	D6352, D7500, IP 545 (Crude Oils) IP 480, IP 507, DIN 51581-2 (MOV), EN 15199-1, EN 15199-2	D7169, D7900 EN 15199-3 EN 15199-4	Complies to: D7807 Comparable to: D2887, D7096, ISO3924, IP406 D6352, D7500, D7213, D7398 D7169, EN15199-3, IP545	D5504, D5623, D7011, D5303, ISO19739, UOP791	D7423 D7754 AC Oxytracer proprietary Method	IP 599	UOP 603, D2504, D2505, D2712	D6296	D4815, EN 13132, GOST R EN 13132	D3606, D5580 EN 12177, UOP 744	EN 14103, EN 14105, EN 14106 EN 14110, EN 15779 D6584
Simulated Distillation, Atmospheric Distillation, Gasoline, Petrochemical Analysis	Simulated Distillation, Atmospheric Distillation, Gasoline, Petrochemical Analysis	Simulated Distillation, Atmospheric Distillation, Crude	Simultaneous Simulated Distillation for Carbon, Nitrogen and Sulfur for crude and crude products. IBP > 151 °C (304 °F) FBP <700 °C (1292 °F)	Trace sulfur in Naphta, Gasoline, Jet, Diesel and light Hydrocarbon streams	Trace levels for up to 24 Selected oxygenates in Naphta, Gasoline and light Hydrocarbon streams	Aviation Tubine Fuel (AVTUR), Analysis Range C14:0, C16:0, C18:0, C18:1, C18:2, C18:3	Impurities in Monomers	Olefins, Gasoline	Oxygenates and alcohols in gasoline, including: MTBE, ETBE, TAME, DIPE, C1-C4 alcohols % levels	Aromatic content in gasoline by determining: Benzene, Toluene, Ethylbenzene, Xylenes, C9 (and heavier) aromatics % levels	BioDiesel
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Physical Properties Instruments Overview

COLD BEHAVIOR



Description	Cloud & Pour Point	Cold Filter Plugging Point	Cloud & Pour Point (mini method)	Cloud, Pour & Freeze Point	Wax Appearance Temperature	Mini Cloud Point
Model	ISL OptiCPP	ISL OptiFPP	ISL OptiMPP	Phase Technology 70Xi series	Phase Technology WAT 70Xi	Phase Technology CPA-T30
Standard Methods	ASTM D2500, D5771, D5853, D5950, D97, IP 15, IP 219, IP 444, ISO 3015, ISO 3016, JIS K2269	EN 16329, EN 116, D6371, IP 309, JIS K2288, GOST 22254, SH/T 0248	ASTM D7346, D7689 Equivalent to: ASTM D97, D2500, ISO 3015, ISO 3016, JIS K2269	ASTM: D5773, D5949, D5972, DEF STAN 91-091 Equivalent to: ASTM D97, D2500, D2386, IP 15, IP 219, IP 16	ASTM D5773 (IP 446), ASTM D2500 (IP 219 / ISO 3015) equivalent	ASTM D7397

FLASH POINT



Description	Pensky Martens Flash Point	TAG Closed Cup Flash Point	ABEL Closed Cup Flash Point	Small Scale Flash Point	Cleveland Open Cup Flash Point	Atmospheric Pressure Distillation	Atmospheric Micro-distillation	Vacuum Distillation
Model	OptiFlash Pensky Martens	OptiFlash TAG	OptiFlash ABEL	OptiFlash Small Scale	OptiFlash CoC	Herzog OptiDist	ISL OptiPMD	Herzog HDV 632
Standard Methods	ASTM D93, EN ISO 2719, IP 34, ISO 2719, JIS K2265, GB/T 261, GOST R EN ISO 2719	ASTM D56, DEF STAN 91-091	EN ISO 13736, IP 170, DEF STAN 91-091	ASTM: D3828, D3278, D7236 ISO: 3679, 3680 IP: 523, 524, 534	ASTM D92, ISO 2592, GOST 4333	ASTM: D86, D1078, D850, IP 123, IP 195, ISO 3405, EN 3405, GOST 2177, GB/T6536, DEF STAN 91-091	ASTM D7345 and IP 596. Correlation to ASTM D86, ASTM D1160 (B100), ISO 3405, IP 123	ASTM D1160, GOST 11011

VISCOSITY



Description	The Fastest and Most Versatile Viscometer and Density Meter	Jet Fuel & Diesel Viscosity	Temperature Controlled Viscometer	Small Sample Viscometer	High Pressure Viscometer	Multirange Viscometer	Viscometer Houillon	Manual Viscometer Bath
Model	OptiMVD	Phase Technology JFA 70Xi, DFA 70Xi	CVI ViscoLab 3000	CVI ViscoLab 4000	CVI ViscoLab PVT	Herzog HVM 472	ISL VH1, VH2	ISL TVB 445
Standard Methods	ASTM: D7945, D7777	ASTM D7945 Equivalent to: ASTM D445 (IP 71 / ISO 3104)	ASTM: D7483, D445	ASTM: D7483, D445	ASTM: D7483, D445	ASTM: D445, D446, IP 71, ISO 3104, EN ISO 3104, ISO 3105, GOST 33, GB/T 265	ASTM D7279	ASTM: D445, D446, DIN 51562, IP 71, ISO 3104, EN ISO 3104, ISO 3105, GOST 33, GB/T 265

FUEL ANALYSIS



Description	Jet Fuel Thermal Oxidation	Ellipsometric heater tube scanner	Jet Fuel Freeze, Viscosity & Density	Automatic Freezing Point	Gasoline, Diesel & Jet Fuel FTIR	Diesel Cloud, Pour, Viscosity & Density
Model	Alcor JFTOT IV	OptiReader	Phase Technology JFA 70Xi	ISL OptiFZP	OptiFuel	Phase Technology DFA 70Xi
Standard Methods	ASTM D3241, IP 323, ISO 6249, DEF STAN 91-091	ASTM D3241 Annex 4	ASTM D5972 (IP 435), ASTM D7945, DEF STAN 91-091 Equivalent to: ASTM D2386 (IP 16/ISO 3013), ASTM D445 (IP 71/ISO 3104)	ASTM D7153, MIL-DTL-5624V Correlates to: ASTM D2386, IP 16, IP 529, ISO 3013, JIS K2276, DEF STAN 91-091	ASTM: D6277, D7371, D5845, D7777, IP 559, EN 238, DEF STAN 91-091	ASTM D5773 (IP 446), ASTM D2500 (IP 219/ISO 3015, ASTM D5949, D97, (IP 15/ISO 3016), ASTM D7945 Equivalent to: ASTM D4052 (IP 365/ISO 12185) @ 15 °C, ASTM D445 (IP 71/ISO 3104)

OTHERS



Description	Derived Cetane Number	Light to Mid Distillates Density	Micro Carbon Residue	Noack Evaporation Loss	Vapor Pressure	Ring and Ball	Gum Evaporation Residue
Model	Herzog Cetane ID 510	ISL VIDA 40 & Mobile	Alcor MCRT 160	ISL NCK 2 5G	Herzog HVP 972	ISL RB36 5G	Herzog HGT 915, HGT 917
Standard Methods	ASTM D7668, EN 16715, IP 615, GOST R 58440 Equivalent to: ASTM D613, ISO 5165, IP 41, IP 615, EN 16715 Diesel specs: ASTM D975, D6751, D7467, EN 590, GOST R 52368	ASTM D4052, D5002, IP 365, ISO 12185, DIN 51757, SH/0604	ASTM D189, D4530, DIN 51551, GB/T 17144, IP 398, ISO 10370, ISO 6615, JIS K2270; GB/T 17144	ASTM D5800, CEC L 40 A 93, IP 421	ASTM D5191, D6378, EN 13016, IP 394	ASTM D36, E28, EN 1427, IP 58, ISO 4625	ASTM D381, EN 5, IP 131, IP 540, ISO 6246

ELEMENTAL ANALYSIS



Detection	Nitrogen	Sulfur	Nitrogen + Sulfur	Nitrogen	Sulfur	Nitrogen + Sulfur
Model	ElemeNTs (Vertical)	ElemeNTs (Vertical)	ElemeNTs (Vertical)	ElemeNTs (Horizontal)	ElemeNTs (Horizontal)	ElemeNTs (Horizontal)
Measurement Principle	Chemiluminescence	Ultra-Violet Fluorescence	Combination of Chemiluminescence and Ultra-Violet Fluorescence	Chemiluminescence	Ultra-Violet Fluorescence	Combination of Chemiluminescence and Ultra-Violet Fluorescence
Standard Methods	ASTM: D4629, D5176, D7184, DIN 51444, SO/TR 11905, GB/T 17674, UOP 936, UOP 981, UOP 971, EN 12260, SH/T 0657, GB/T 17674, SH/T 0657	ASTM: D5453, D6667, D7183, D7551, EN 17178, EN-ISO 20846, EN 15486, ISO 20729, JIS K 2541, IP 554, IP 490, UOP 989, GOST R 56866, GOST R 56342, UOP 987 Part A, SH/T 0689	See Nitrogen + Sulfur	ASTM: D4629, D5176, D7184, DIN 51444, SO/TR 11905, GB/T 17674, UOP 936, UOP 981, UOP 971, EN 12260, SH/T 0657, GB/T 17674, SH/T 0657, D5762, ASTM D5762	ASTM: D5453, D6667, D7183, D7551, EN 17178, EN-ISO 20846, EN 15486, ISO 20729, JIS K 2541, IP 554, IP 490, UOP 989, GOST R 56866, GOST R 56342, UOP 987 Part A, SH/T 0689	See Nitrogen + Sulfur + ASTM D5762

Our instruments can be customized to your specific needs.
Due to continuing product development, specifications are subject to change at any time without notice.

We are committed to delivering superior service with sales and support offices and a network of over 140 distributors worldwide.

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