



## MicroDist<sup>®</sup>

**Boiling Point, Density and Cetane Index  
in a Single Analyzer**

- 🌐 Increase profitability through cut point optimization and minimal product giveaway
- 🌐 Robust process control through real distillation and cycle time in less than 10mn
- 🌐 Ensure full compliance with ASTM D86 & D7345 lab standards
- 🌐 Optional density measurement to report density and boiling points in a single analyzer
- 🌐 Cetane Index Calculation in accordance with ASTM D4737 and D976

## SURPASSING EXPECTATIONS WITH A REAL DISTILLATION

The MicroDist<sup>®</sup> analyzer is designed to determine the boiling range characteristics of various commercially available petroleum products, light and middle distillates on process streams in a fast and reliable way.

The easy-to-use MicroDist<sup>®</sup> allows a complete distillation of the product in less than 10 minutes. The results obtained correlate to the ASTM D86, ASTM D7345, ISO 3405 test methods and their analogs. Thanks to the fast and reliable measurements that match those obtained by quality control laboratories, the MicroDist allows a precise and continuous adjustment of the process streams.

## KEY ADVANTAGES

### EQUIVALENT OR BETTER PRECISION THAN D86



- Direct correlation with ASTM D86 with equivalent or better precision and excellent repeatability (+/- 1.5 °C)
- Validate calibration with reference stream (1+2 multi-stream option)
- Built-in nitrogen generator (optional) - facilitates operation with only instrument air (4-10 bar)

### INNOVATIVE TECHNOLOGY FOR HIGH AVAILABILITY



- High levels of automation and hardware advancements
- Real distillation eliminates the need for models or “simulated” distillation
- Perfect result on first analysis even for “unknown” samples
- Fully automated regeneration of flask minimizes maintenance requirements

### ROBUST AND RELIABLE PROCESS CONTROL



- Fully automated Initial Heat, Distillation Rate and Final Heat Regulation
- Under 10 minute cycle time - with the smallest sample volume
- Robust results for petroleum products including jet fuel, diesel, gasoline and naphtha (Group 1-4 fuel types)

### INCREASE PROFITABILITY



- Maximize production reducing product downgrade due to poor cut point optimization
- Prevent product giveaway by measuring online “real” distillation curve on your final product
- Optimize product blends to improve quality with a fast analytical technique



## ROI STUDY: SIGNIFICANT HIGHER PROFITS

Less variability translates into tighter control capabilities and allows upgrade maximization from low to high value product. Increasing T90% by 1°C may result in 0.5 to 1% additional diesel production:

- Depending on production capacity this can impact up to \$1M on incremental profits
- MicroDist provides the means for this optimization while assuring that diesel specs are met

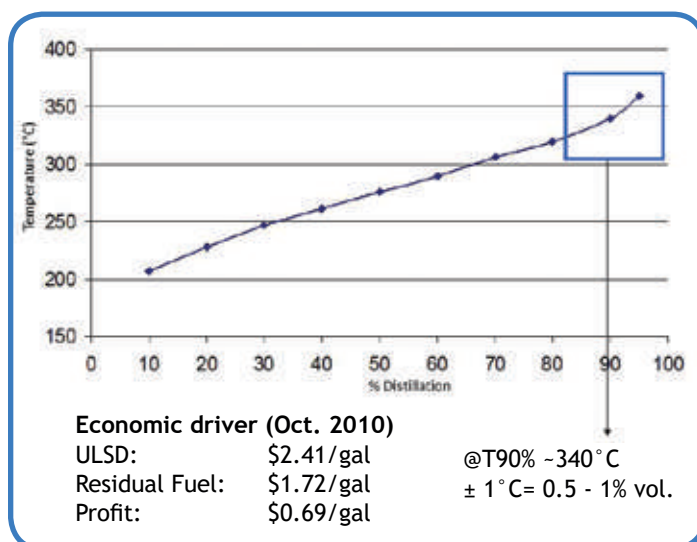
### BASE CASE

- HDT Diesel Capacity: 22,000 bpd
- 1°C Optimization impact
  - 0.5% - 1.0% volume
  - 110 - 220 bpd
- Residual Fuel to ULSD upgrade: \$0.69/gal
- Yearly impact: \$1.1M USD

## LEADING TECHNOLOGY FOR ONLINE DISTILLATION

MicroDist has been adopted around the world as the preferred on-line distillation solution at major firms. This preference is driven by its performance, ease of use and reliable operation that results in short investment payback and high ROI.

The optional density meter can be used as a stand-alone measurement, or used to calculate the Cetane Index in accordance with D4737 and D976.



## AVAILABLE OPTIONS

- Density Meter: High performance density meter integrated into in the MicroDist
- Nitrogen generator: Required if no Nitrogen supply
- Sample section heating: required if the cloud point < the ambient temperature - ATEX or UL/CSA certified
- Sample cooling: For low IBP (gasoline applications)
  - ensure correct temperature for sample loading
- Multi-stream: Up to 2 additional streams available
- Flame arresters: IIC for hydrogen/acetylene
- External USB Key: For Data Back Up and Export - ATEX or CSA certified
- Additional 4-20 mA output board: Adds 4 additional 4-20 mA analog outputs, user assignable
- Standing: Stand with Wheels or Wall Stand

## SPECIFICATIONS

General Info		MicroDist™ - Physical distillation analyzers (online)	
Test Methods	Standards: ASTM D86, ISO3405, IP123, Cetane Index in accordance to ASTM D4737 and ASTM D976 (procedure A & B)		
Cetane Index Application	Capability to measure density (API) and Cetane Index		
Operation			
Measurement Cycle Time	Less than 10 minutes	Repeatability	+/-1.5°C (equal or better than ASTM D86)
Measurement/Temperature Range	Full boiling point curve 20 - 425 °C (68 - 797°F)	Accuracy	Distillation accuracy: better than D86, IP-123, ISO 3405 Density accuracy: +/-0.0005g/ml
		Resolution	+/-0.1°C
Sample Requirements			
Sample consumption	<2L/hour (sample should be homogenous, single-phase with no water content)		
Sample return pressure	Atmospheric to < 8 bar or 120 psig (1.4 bar or 20 psig less than supply) Sample flow rate 10-20 L/ hour (application dependent)		
Sample temperature	Min. 15°C below IBP without cooler - Max. 30 °C above IBP, (application dependent) with cooler		
Sample pressure	2 - 10 bars (30-145 psi)		
Enclosure/ Installation and Requirements/Utilities			
Dimensions	Depth: 398 x Height: 925 x Width: 1000 mm (15.7 in. X 37.3 X 39.4 inches)		
Weight	75 kg (165 lb.); 80 kg (176 lb) with optional density meter		
Operating Temperature	Standard: 5°C to 40°C (41 to 104°F) With optional internal heater-10°C to 40°C (14 to 104°F)		
Area Classification	NEC Class 1 Division 2 Groups B, C & D, CSA or ATEX Certified Ex II 2 G Ex db pxb IIC T(*) Gb Ex II 2 (2) G Ex db pxb [ib] IIC T(*) Gb (density meter option) T(*): T4 for the version without additional heater, or with an additional heater with a maximal temperature class T4. T3 for the version with an additional heater with a temperature class T3.		
Power	115 VAC/6A max, 50/60Hz, 700W; 230 VAC/3A max, 50/60Hz, 700W		
Cabinet Purge Gas	Air Flow > 150 l/min (5.3 SCFM), pressure 4-10 bars (72-145psi) Inert Gas Nitrogen, inlet pressure 3-10bars (43-145psi), purity > 95%		
Installation Site	Avoid direct sun light and provide rain-proof shelter for outdoor installation		
Flame Arrestors	(2) IIA standard		
End User Connections			
Analog Output Signal	Isolated (4) 4-20mA outputs for selected distillation cut point values		
Digital Input/Outputs	8 digital inputs, 8 digital outputs, user assignable, optional 4 additional outputs		
Serial Input/Output Signal	Single RS232 or RS485 bi-directional, Modbus for full curve or Ethernet TCP/IP		

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.

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.