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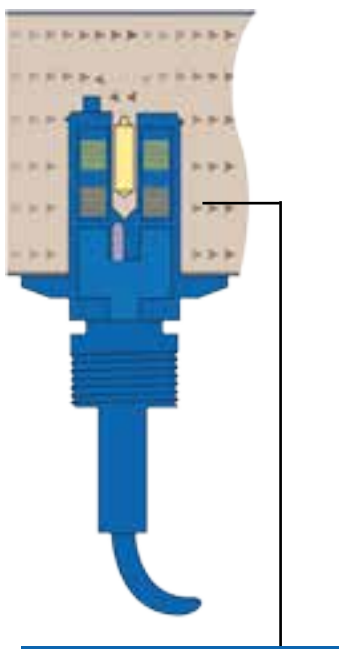


# ViscoSure

Process Viscosity Analyzer for Complex Applications

- 🌐 Tight temperature control without an oil bath reduces maintenance
- 🌐 In-line viscosity measurement at the product specification temperature increases productivity and facilitates control in difficult processes
- 🌐 Proven, advanced oscillating piston technology reduces downtime
- 🌐 Sample conditioning system (SCS) optimizes instrument performance and protects the analyzer from process disruptions

## A VISCOSITY ANALYZER DESIGNED TO MEET TODAY'S NEEDS



The robust Cambridge Viscosity oscillating piston system can measure a wide range of samples, including asphalt, lubrication oils, and heavy fuel oils, as well as handle any process upsets without damage to the system.

## ACCURATE MEASUREMENT, EVEN WITH THE MOST CHALLENGING APPLICATIONS

Performance, reliability, and precision are critical for viscosity measurements in bottom-tower applications. ViscoSure is the only viscosity analyzer designed specifically for these complex applications:



### ASPHALT (135 °C)

With its fast cycle time, ViscoSure replicates lab results in real time, avoiding the process of sending material to the slop tank to be adjusted and retested.



### HEAVY FUEL OIL (50 °C)

The shipping and power industries frequently use boilers requiring fuels with a specific viscosity. ViscoSure helps refiners reduce overblending of costly diesel.



### LUBRICATION OIL (40 °C/100 °C)

ViscoSure makes it possible to fine-tune the process performance to improve output, reducing the bottleneck that can occur on the dewaxing unit of a lubricant line.

## KEY ADVANTAGES

### EXCELLENT SYSTEM PERFORMANCE



- Highly precise analyzer measures viscosity with precision of  $\pm 1.0\%$
- Tight temperature control of  $\pm 0.1^\circ\text{C}$  requires no high-maintenance oil bath
- Sample system performs temperature regulation, filtration, and flow management

### ROBUST & FLEXIBLE INSTRUMENT



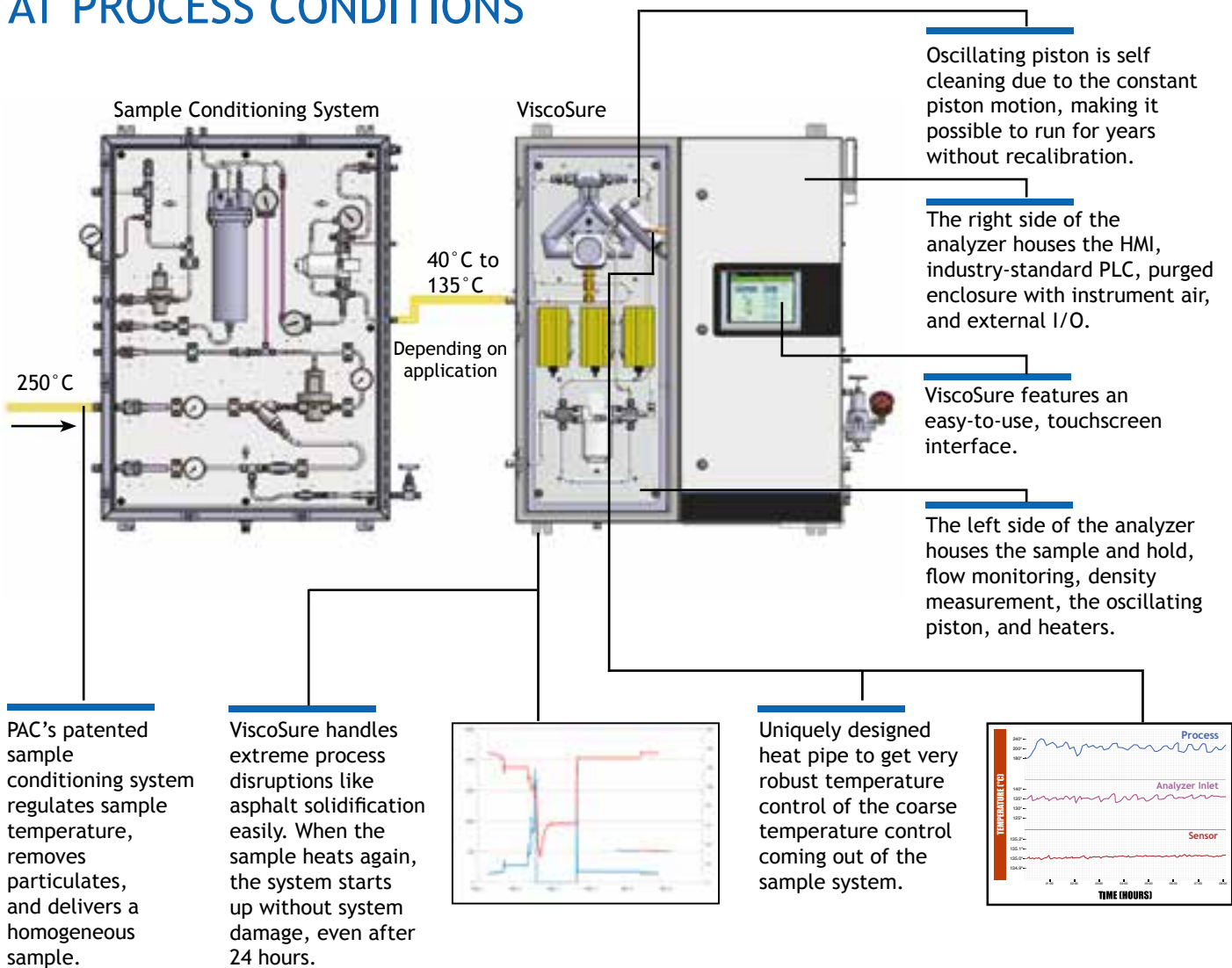
- Sample system delivers sample to the analyzer at the required measurement temperature
- Analyzer withstands process disruptions and is designed to self-recover

### MAXIMUM INSTRUMENT UPTIME



- Superior availability with 95%+ uptime
- Self-cleaning piston allows the analyzer to run for years without recalibration
- No mechanical linkages in measuring cell mean no parts to fail

# VISCOSURE IS READY FOR THE SAMPLE AT PROCESS CONDITIONS



## A FAST RETURN ON INVESTMENT

### CHALLENGE

Periodic lab sampling methods can miss changes in the process, leading to off-spec production. When that happens, 12 hours or more can be added to the product processing time, just to return to on-spec production.

### SOLUTION

The ViscoSure can provide readings every five minutes, instead of an 8- to 12-hour lab sampling method. This continuous monitoring allows refineries to make quick, informed decisions with real-time data, which helps to increase productivity and profitability.

## ECONOMICS

Increased productivity makes it possible to achieve an ROI within two months

- On average, it takes anywhere from 4-12 hours for refineries to realize and correct off-spec production. The impact can be \$150,000 per off-spec occurrence for a low-value material (e.g., asphalt) and up to up to \$500,000 for a high-value material (e.g., lube oils).
- In-line viscometers allow immediate adjustments whenever the viscosity goes outside the control band, improving the quality of the distilled lubricant. Maintaining tighter control on viscosity can result in a 0.5% production improvement, or \$50,000 in profit per line each month.





## SPECIFICATIONS

Performance	
Viscosity Repeatability	+/- 1% Full Scale
Temperature Repeatability	+/- 0.1°C
Densitometer	+/- 0.001 g/ml
Analysis Time	<5 Minutes
T90 Response Time	<3 cycles, <15 minutes
Application	
Measurement Viscosity Range	0.5 - 1000 cP (cSt Available with Densitometer)
Measurement Temperature Range	40-135°C
Inlet SCS Temperature	Up to 250°C
Flow Rate	2-3 GPM (7.6 - 11.4 L/min)
Pressure	150 psi (10.3 Bar) Min, 200 psi (13.8 Bar) Max
Particulates	≤400 µm (Application Dependent)
Pressure Drop	<100 psi (<6.9 Bar) SCS + Analyzer, <25 psi (<1.7 Bar) Analyzer Only
Inputs/Outputs	
4-20 mA Outputs	Viscosity, Temperature, Density
Modbus	Viscosity, Temperature, TCV, Alarms, Quality Factor, Density Output
Alarm Output	Digital Alarm Outputs; Purge Alarm
Utilities	
Input Power	Universal 120/240 VAC, 50/60 Hz
Air	Clean, Dry, Particle Free, 100 psi (6.9 Bar) Min
Steam	45 psi (3.1 Bar) Minimum for High Temp SCS
Cooling Water	±5°C of Measurement Temperature for Low Temp SCS
Standards and Certifications	
Environmental Certification, ATEX	Designed to Meet ATEX EX II 3 G
Environmental Certification, CSA/UL	Designed to Meet Class 1 Division 2 C&D
Technical Standards, ASTM	Correlates with ASTM D7483 and ASTM D445
Dimensions (W x D x H)	34" x 9" x 40" (86.4 cm x 22.9 cm x 101.6 cm)
Weight	250 lbs (113.4 kg)

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.

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