PAC | solidpartners provensolutions

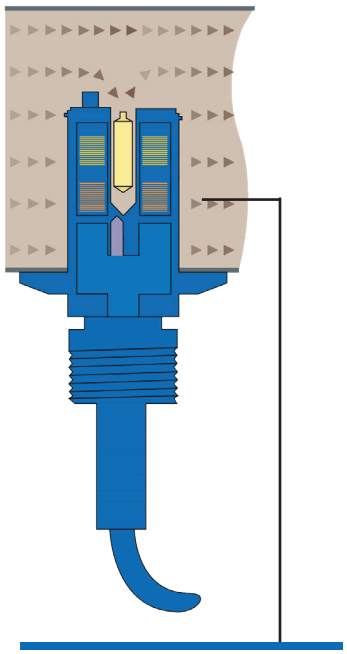
ViscoSure

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

ViscoSure

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 ±1.0%
- Tight temperature control of ±0.1°C requires no high-maintenance oil bath
- Sample system performs temperature regulation, filtration, and flow management

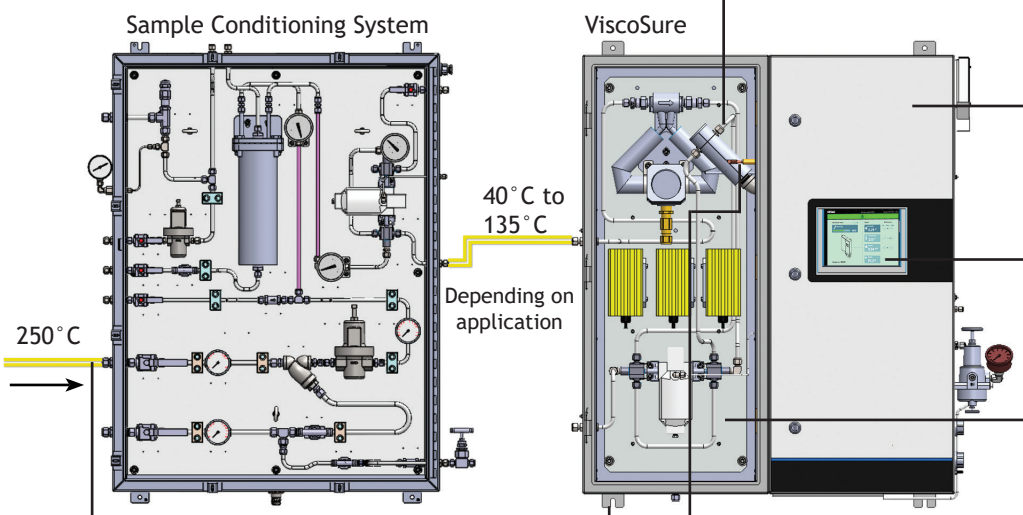
ROBUST & FLEXIBLE INSTRUMENT

- 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



Oscillating piston is self cleaning due to the constant piston motion, making it possible to run for years without recalibration.

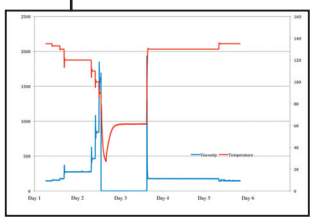
The right side of the analyzer houses the HMI, industry-standard PLC, purged enclosure with instrument air, and external I/O.

ViscoSure features an easy-to-use, touchscreen interface.

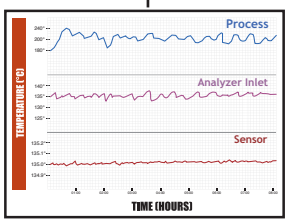
The left side of the analyzer houses the sample and hold, flow monitoring, density measurement, the oscillating piston, and heaters.

PAC's patented sample conditioning system regulates sample temperature, removes particulates, and delivers a homogeneous sample.

ViscoSure handles extreme process disruptions like asphalt solidification easily. When the sample heats again, the system starts up without system damage, even after 24 hours.



Uniquely designed heat pipe to get very robust temperature control of the coarse temperature control coming out of the sample system.



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	≤250 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, Flow
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	ATEX EX pzc IIC T3 Gc
Environmental Certification, CSA/UL	Class 1 Division 2 Groups A, B, C & D
Technical Standards, ASTM	Correlates to 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, Phase Technology, 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.

HEADQUARTERS

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ViscoSure Brochure - Rev. 4 - 10/19