Viscosity and Temperature Monitoring for Process

VISCOpro 1600

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Cambridge Viscosity®
by PAC

Reliable and Round-The-Clock Monitoring of Viscosity and Temperature:

- Innovative piston design ensures maximum uptime and high return on investment
- High level of safety and robustness with compact, explosion-proof housing
- Factory-tuned, turn-key solution to ensure fast commissioning of the system
- Correlates with ASTM D7483 and ASTM D445

VISCOlab 1600

FAST AND RELIABLE PROCESS VISCOSITY MEASUREMENT

In process environments, ensuring proper viscosity is a key success factor. You need an accurate, reliable, and durable in-line viscometer without requiring a lot of operator involvement or maintenance.

The Cambridge Viscosity VISCOpro1600 viscometer is used alone or in a multi-channel configuration controlled by a touch-screen display, the VISCOpro1600 provides round-the-clock monitoring you can rely on.

APPLICATION RANGE

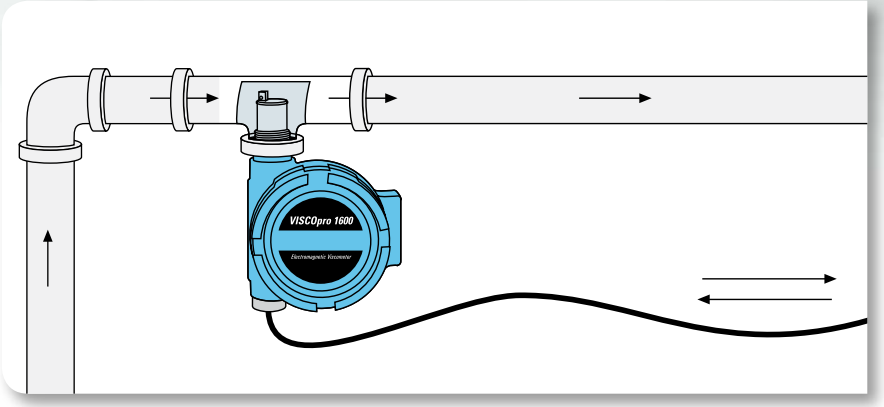
- In-line or In-tank Viscosity Measurement from 0.2 To 20,000 centipoise

STANDARD METHODS

Correlation to:
- ASTM D7483
- ASTM D445

The VISCOpro 1600 viscometer is a compact workhorse instrument for applications where minimal operator involvement is desired. It features an optional LCD display with readout in centipoise or cSt for monitoring of critical fluid conditions. It also can be connected to a PLC controller for seamless integration into a proprietary data management system. The unit's sensor and electronics are encased in an explosion-proof housing for durability and reliability.

With Cambridge Viscosity's patented technology, only a very small amount of fluid (1 ml) is required to ensure an accurate reading. Because of the small sample size and its automatic operation, the VISCOpro 1600 helps to maximize the efficiency of your process line and minimize waste. In addition, it works with any Cambridge Viscosity in-tank or in-line 300 series or 500 series sensor, giving you the flexibility to choose from a range of high-quality, low maintenance options.



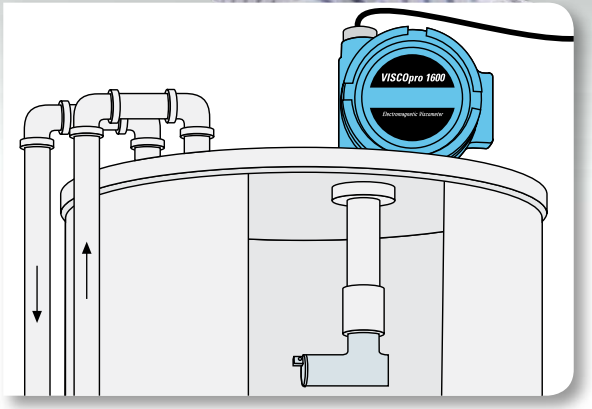


Diagram 1 (above left) depicts an in-line installation of a VISCOpro 1600 with an SPC 311 sensor. Its flexible design allows it to be installed in a variety of positions. Demonstrating the viscometer's flexibility, diagram 2 (above right) depicts an in-tank installation of a VISCOpro 1600 with an SPC 321 sensor.

OPTIONAL DISPLAY

The optional explosion-proof display (right) clearly shows viscosity and temperature readings for each line or tank.

AUTOMATIC SELF-CLEANING

With only one moving part, a piston, the VISCOpro 1600 is almost completely maintenance free. Samples are automatically kept fresh and clean by the constant piston motion that scrubs the sensor chamber. This assures maximum uptime and high return on investment.

STANDARD OUTPUTS FOR DATA CAPTURE

The VISCOpro 1600 includes two 4-20mA outputs for remote recording to data acquisition and control systems. This makes it easy to interface the unit with Cambridge Viscosity or third-party PLC systems.

FACTORY SETTINGS

No programming is needed – Cambridge Viscosity did it all for you so you can just install it and begin operation quickly. The VISCOpro 1600 can be set to measure viscosity in centipoises, cSt, or SSU.

BUILT-IN PT100 TEMPERATURE DETECTOR

Changes in temperature within the process line can affect the viscosity of the fluid. The VISCOpro 1600 has a built-in temperature detector that senses the actual running temperature of the fluid.

COMPATIBLE IN-LINE SENSORS

301
Ideal where threaded connections are desired, the 301 sensor mates directly to a tee or pipe with standard 1.25" NPT ends. Recommended for line sizes < 2".

311
Appropriate for most applications, the 311 sensor has a quick-disconnect flange for fast, tool-less removal. Recommended for line sizes < 2".

372
The 372 sensor installs directly into small-diameter process lines using 1/4" NPT fittings. Available with removable jacket.

374
The 374 sensor incorporates an integral heater and ½" sanitary process connections making it the ideal choice for a wide range of biopharmaceutical and R&D applications.

392
Designed with a rugged, four-bolt stainless steel flange, the 392 sensor fits easily to any pipe line size over 1.5".

501
The 501 sensor is used extensively in compressor, on-engine & hydraulic applications. Sensor connects via ½" NPT threads and 90° push-pull connector allows for low clearance installations.

571
Small yet reliable, the 571 sensor is used for compressor, used oil analysis, on-engine, and hydraulic fluid applications. Designed to fit into 13/16 UNEF threaded ports.

COMPATIBLE IN-TANK SENSORS

321
The 321 sensor can be fitted to any pipe configuration without welding. The sensor's head is attached to its stem at a 90-degree angle.

322
Typically used in permanent in-tank mounted applications, the 322 sensor's head is attached to its stem at a 45-degree angle.

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SPECIFICATIONS

Power input	12 VDC, 12 W
Outputs	(2) 4-20mA; 1 RS485
Accuracy	+/- 1.0% of full scale (correlates to ASTM D445)
Repeatability	0.8%
Ranges*	0.2-20,000cP (0.2-2cP, 0.25-5cP, 0.5-10cP, 1-20cP, 2.5-50cP, 5-100cP, 10-200cP, 25-500cP, 50-1,000cP, 100-2,000cP, 250-5,000cP, 500-10,000cP, 1,000-20,000cP)
Wetted Components	Standard 316L/430 Stainless Steel, Optional Hastelloy, Silicon Coating, and Sanitary Components
Temperature Range	-40°C to 190°C (375°F)
Maximum Pressure	1000 psi (70.3 bar)
Temperature Sensor	PT100
Certifications	FM, CE, ATEX, NEMA4,IP-66

* ± of 5% of full scale 500-10,000 and 1.000 to 20,000cP Ranges

VISCOpro SYSTEM SPECIFICATION COMPARISON

	ViscoPro1600	ViscoPro2000	ViscoPro8000
Measurement Principle	Electromagnetic	Electromagnetic	Electromagnetic
Repeatability	± .8% Reading	± .8% Reading	± .8% Reading
Viscosity Range	0.2-20,000cP	0.2-20,000cP	0.2-20,000cP
Max Pressure Ratings	1,000 psi	1,000 psi	1,000 psi
Self Clean/Recovery	Automatic	Automatic	Automatic
Continuous Analysis	Yes	Yes w/logging	Yes w/graphing
Viscosity Units	cP; cSt; cup sec; SSU Factory Set	cP; cSt; cup sec; SSU User Selectable	User Selectable
Temp: °C or °F	°C or °F Factory Set	°C or °F Selectable	User Selectable
Sensor Temperature Range	-40°C to 190°C	-40°C to 190°C	-40°C to 190°C
Analog Outputs	4-20mA (2)	4-20mA (4)	4-20mA (1) User Selectable
Digital Communications	RS485	RS485/RS232	RS232, TCP/IP
Input power	12VDC	100-240 VAC/12-36 VDC	100-240 VAC
Temperature Compensated Viscosity (TCV)	No	Available	Available
Profibus, Modbus Compatible	No	Yes, Optional	Yes, Optional
Temp/Viscosity Control	No	PI	PI
Alarm Output	Yes, Factory Set	Yes	Yes
Screen	LCD Optional	Menu Driven LCD PC Optional	Touchscreen-Multichannel
FM, CE, ATEX	Standard	Optional	Optional

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With more than 10,000 installations worldwide, Cambridge Viscosity is the proven leader in viscosity management technology. With over 25 years of experience, Cambridge Viscosity understands and meets the needs of laboratory researchers and process engineers in a wide range of industries whose jobs depend on the quality, accuracy, and reliability of viscosity measurement equipment. With their patented sensor technology, Cambridge Viscosity has become the gold standard in small sample viscosity measurement.