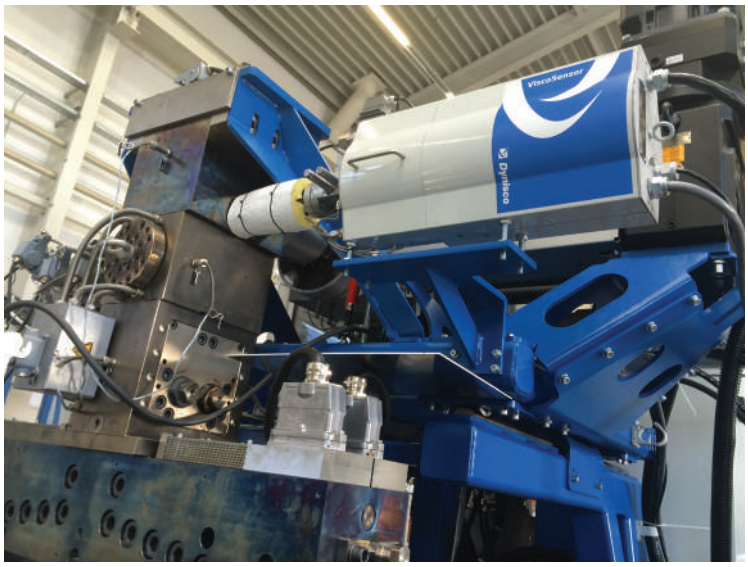
Dynisco

From lab to production,
providing a window into the process

ViscoSensor

Online Rheological Measurement

Experience the Benefits of
Online Rheology Measurement



Specifically designed for the thermoplastics resin industry, the ViscoSensor provides continuous measurements of the melt flow rate or apparent or intrinsic viscosity directly on the manufacturing process. The ViscoSensor system consists of two parts: a Viscosensor RSU (Rheologic Sensing Unit), connected directly to the process, which samples, conditions, and measures the melt flow of the resin, and either an RCU or e-RCU (Rheologic Control Unit) that controls the Viscosensor test parameters (temperature, pressure, rate), provides outputs of computed results, and provides communications to an external distributed control system when required.

Features

- Attaches to process using a single M18 pressure port or flange mounting
- Effective solution for online viscosity or melt index monitoring
- No waste stream, tested sample is returned to process
- Online ASTM D1238 melt flow rate, ISO 1133, or JIS K 7210
- Online apparent and intrinsic viscosities
- Interchangeable capillaries
- Compact measuring head for close extruder connection
- Simple "in the field" calibration
- 2 Vertex Mercury Free Pressure Transducers for high accuracy
- Platinum RTD melt temperature sensor immersed in molten stream for accurate test temperature measurement

THE VISCOSENSOR RSU

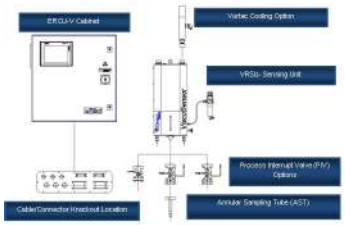
The ViscoSensor employs a stacked pair of metering pumps to isolate it from the process, to direct the molten polymer across interchangeable capillaries, and to pump the molten polymer back into the process. A three wire platinum RTD is used to control and measure the temperature of the molten polymer. Two Dynisco Vertex Mercury Free pressure transducers (now comes standard) mounted directly before and after the die, are used to capture the pressure drop across the capillary.

VISCOSENSOR RCU: ULTIMATE PERFORMANCE

Our high performance RCU combines the rheological properties of a Laboratory Capillary Rheometer with MFI readings delivered by a Melt Flow Indexer. It has been updated with a Siemens S7-1500 PLC with a Siemens 7" (178mm), Comfort Panel Touch Screen HMI. This combination provides increased processing power and hi-end graphics enabling the RCU to provide +/- .5% Full Scale Accuracy. This allows the RCU to better align measurements with those taken from laboratory instruments. Furthermore, it is certified for hazardous environments as needed.

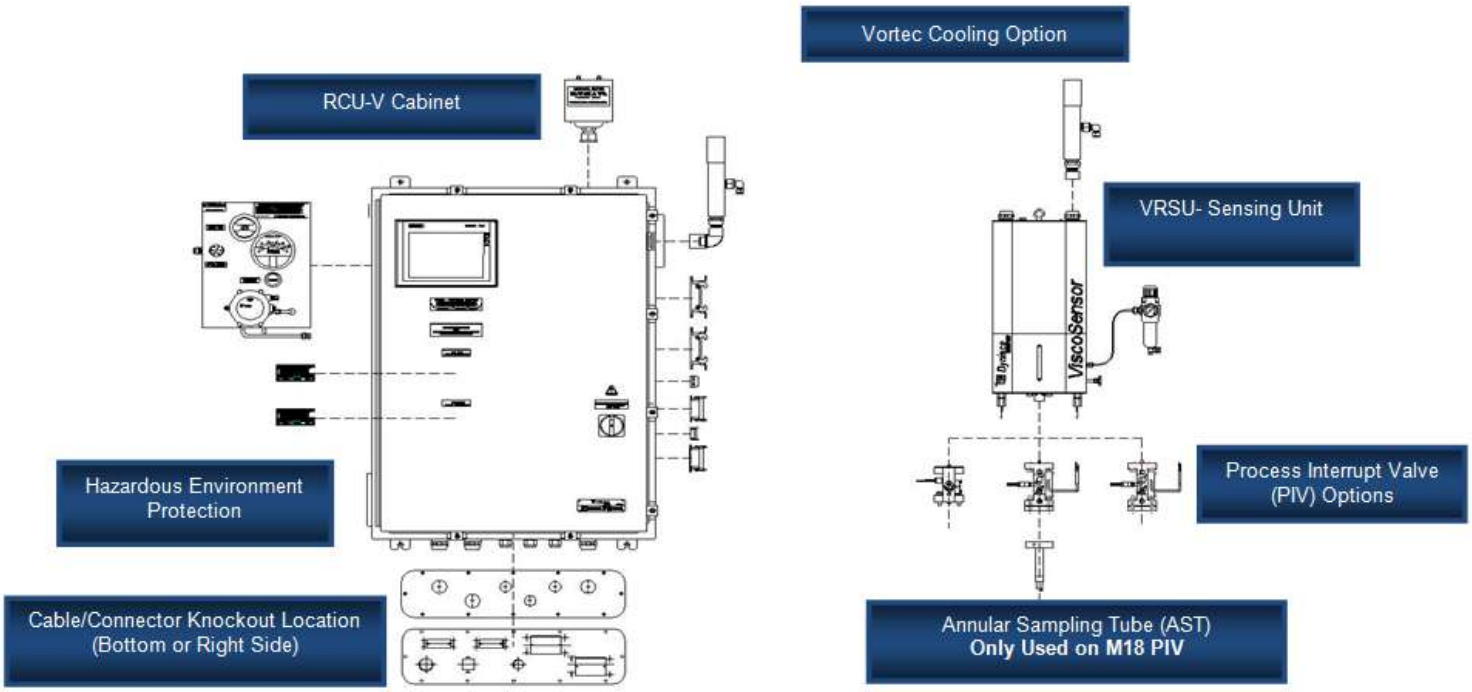
VISCOSENSOR e-RCU: PERFORMANCE SIMPLIFIED

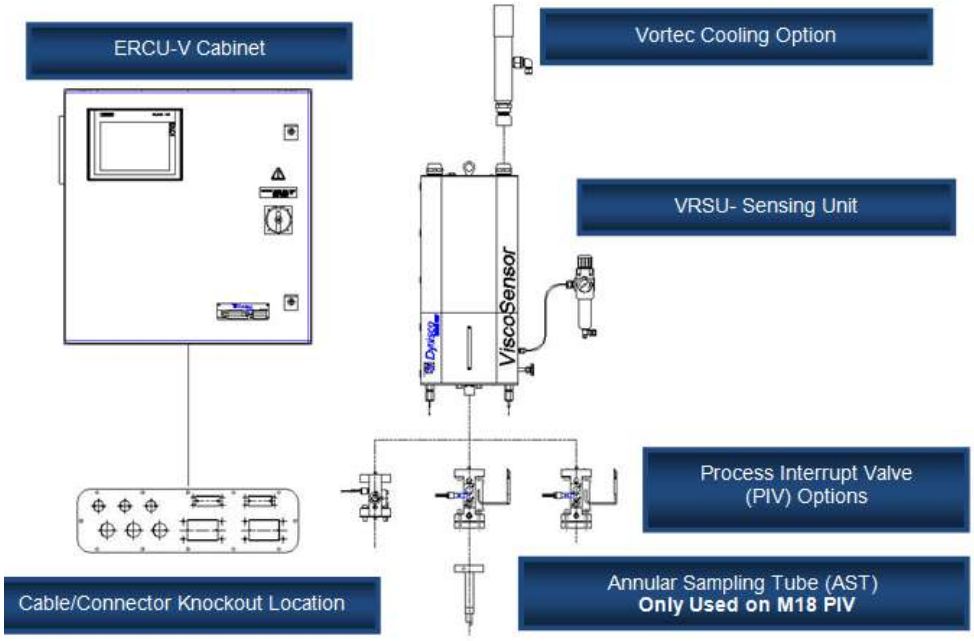
The ViscoSensor e-RCU offers a simplified PLC with the digital and analog I/O that most plants would need for a cost effective approach to measuring online rheology. It has a Siemens S7-1200 PLC with a Siemens 7" (178mm) Comfort Panel Touch Screen HMI. This combination provides the system with processing power and hi-end graphics allowing the e-RCU to provide +/- 2% Full Scale Accuracy. The e-RCU provides the processor the ability to measure Melt Flow Ratio, Relative Viscosity, Intrinsic Viscosity, and Melt Viscosity in typical end-user environments. All of which create a cost-effective system that reduces the risk of failure to an acceptable level. If conditions change and the system is needed in a hazardous and/or classified location, compatibility with the standard RCU allows for an easy upgrade.



PERFORMANCE CHARACTERISTICS		
Melt Flow Index	0.1 - 25000 g/10 min	
Viscosity Range	10 – 10^5 Pas	
Shear Stress	150 - 1.5 x 10^5 Pa	
Shear Rate	0.1 – 7500 s^{-1} (standard die) max 50,000 s^{-1} (special die)	
Dies		
Temp. Range	40 – 350°C	
Temp. Range	40 – 350°C	
Pressure Range	3 x 10^5 – 3.5 x 10^7 Pa	
Metering Pump	0.16 cm^3 / RPM (standard) 0.297 cm^3/ RPM (optional) 0.584 cm^3/ RPM (optional)	
Pump Speed	3 – 75 RPM	
Polymer Flow	225 g/hour (average)	
MEASUREMENT AND CONTROL FUNCTIONS		
Test Modes		
Shear Stress Mode		
Set point	Pressure	
Measurement	Melt Flow Index	
Shear Rate Mode		
Set point	Pump Speed	
Measurement	Apparent Viscosity	
Temperature Control	3 Heating Zones	
ANALOG OUTPUTS: (4 – 20 MA STANDARD)		
Options	• Melt Flow Index • Apparent Viscosity • Melt Temperature • Melt Pressure • Pump Speed • Temp. Pump Zone • Temp. Die Zone	***Select any 2 of the following:*** • Melt Pressure • Delta-Pressure • Melt Flow Index • Apparent/Intrinsic Viscosity
ELECTRICAL SPECIFICATION		
System Voltage	220-240V Single Phase, 50/60 Hz	
Power	2000 W (max	
DIGITAL INPUTS		
Weight	45 lbs.	
Height	25 in. (63.6 cm)	
Width	11.1 in. (28.2 cm)	
Depth	9.9 in. (25.2 cm)	
Mounting Configuration	Vertical (Stand for horizontal- only if using M18 pressure port)	
RHEOLOGIC CONTROL UNIT SPECIFICATIONS		
Electrical Cabinet	NEMA 4, 4x, 12 (IP66)	NEMA 4, (IP61)
CPU	Siemens 1500 Series	Siemens 1200 Series
Operator Interface	HMI, Siemens Comfort Panel	
Weight	275 lbs	80 lbs

System Diagrams





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