

Dynisco ViscoIndicator Online Rheometer

Simplified Rheology for the Masses



Dynisco

Polymer manufacturers need to create new materials and deliver high quality to meet ever changing end-use requirements.

Precise testing and analysis is mandatory to ensure quality and to stay competitive. Rely on Dynisco's solutions to gain a window into your process and speed up the development, production, quality testing and analysis of polymers.



Material Analysis

Dynisco™ analyzers, including melt flow indexers, and rheometers, are recognized for testing the physical, mechanical, and thermal properties of polymers. Offering worldwide support and innovative instruments that span the complete life cycle of a polymer, Dynisco's material analysis solutions range from the analysis of a polymer in the laboratory, to online quality control in production, to processing small quantities of special polymers or composites.



Scrap Reduction

No matter what stage of the polymer's life cycle, eliminating waste and keeping production levels at peak capacity are crucial to ensuring profitability in today's highly competitive environment. Our goal is to provide objective measurements and high quality testing to improve and speed the development and production of polymers.



Sustainability

Sustainability is more than just protecting the environment. We want to lead the way to the future and empower you with sensors, controls, and analytical instruments that offer maximum control, reduce downtime, minimize scrap, and promote environmental consciousness.

The ability to feed used plastic into the supply chain to manufacture new materials, with less costs and without compromises in material specifications, is the goal and has to be realized through objective measurements and analysis.



Return on Investment (ROI)

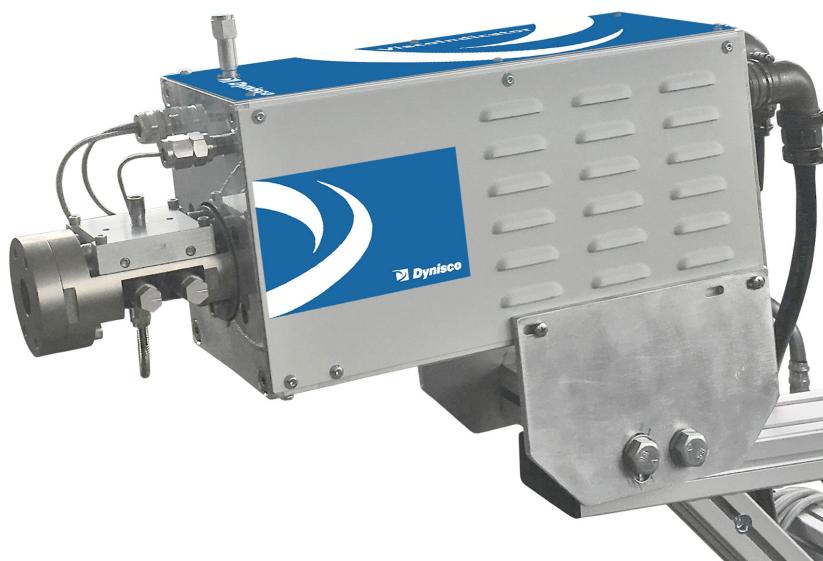
Many polymer production processes go through numerous transitions as product grade changes are required. The ViscoIndicator's rapid response time shows when a process is in transition and when a new grade has achieved stability – meaning the diversion of material can be reduced as process stability can be measured versus predicted. Traditional methods of quality assurance and process control (i.e. obtain melt flow index data by taking pellet samples and having them analyzed in a lab) may have a leadtime of over an hour!

Methodology

A Rheological Sensing Unit (RSU) that connects directly to the process and samples, conditions, and measures the properties of the resin. It can be mounted on extruders, reactors, or molten polymer transfer lines in various orientations. It uses a metering pump to isolate it from the process, to direct the molten polymer across interchangeable capillaries, and discharges a minimal amount of material at a rate of approximately .5lb/hr (0.2kg/hr). A three wire platinum RTD is used to control and measure the

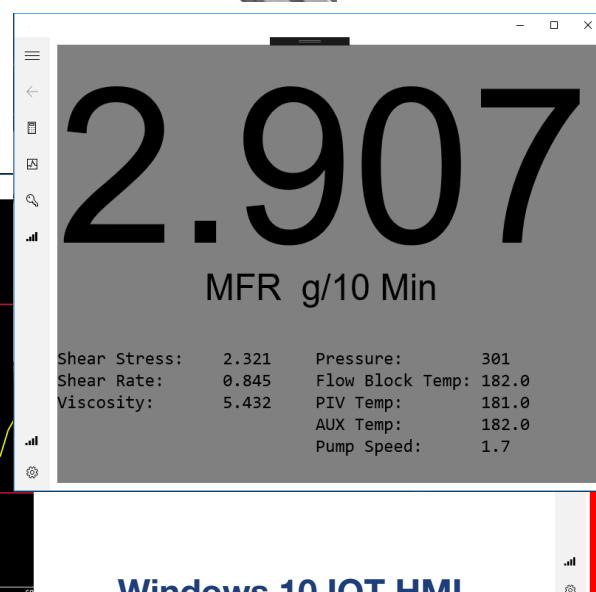


ViscoIndicator RSU



Minimum Detection Level

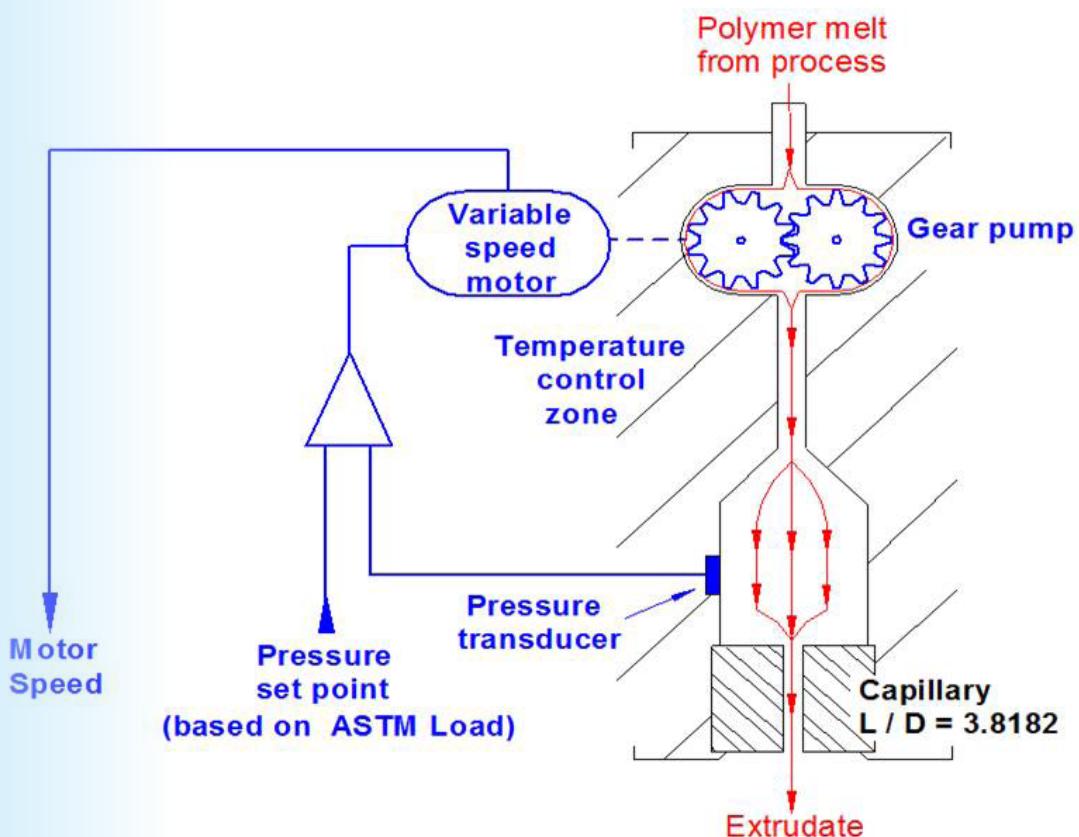
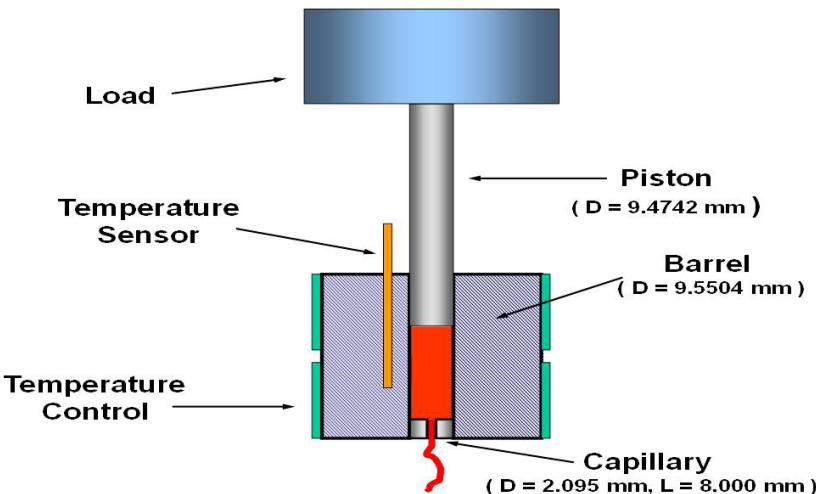
Resolution or minimum detection level of a change in material or contamination is an important criteria. The Viscoindicator will detect very small changes in viscosity or melt flow rate of your material. A change of 1 Pa-s or .02 MFR can be seen in measurement data. These changes in measurement can be used to quickly adapt the parameters of your process.



Windows 10 IoT HMI
Rheological Control

Principals of Operation

The ViscoIndicator Online Rheometer duplicates the test conditions of a Laboratory Melt Flow Rate Tester (MFR) or Capillary Rheometer. Melt viscosity measurements such as melt flow rate and intrinsic viscosity are primary specifications of thermoplastic resins. MFR and melt viscosity are related to polymer molecular properties so these numbers give some measure of the physical properties of their product as well as polymer processability. the ViscoIndicator has the look and feel that will be familiar to most shop personnel.



Melt flow indexers must be hand loaded with pellets and weights to create shear conditions so the test requires a technician and must be done offline. The ViscoIndicator simulates both the apparatus and test conditions of the MFI test right on an extruder



Comes standard with
our Vertex™ Mercury
Free Pressure Sensor

A side stream is taken from the extruder as indicated by the red text in the top center. Process pressure from the extruder forces polymer melt into a metering gear pump. the pump generates the flow rate and the pressure to extrude the polymer through a capillary. The temperature of the steel around the capillary and pump is controlled. A single Vertex™ Mercury Free pressure transducer is located above the capillary to measure driving pressure



Continuous Monitoring of Material Properties Ensures Consistent Results

What are the benefits of online rheology measurement?

Maximize Extrusion Efficiency

Adjust your parameters to adapt to changing conditions while processing.

Decrease Scrap Rate

Process improvement begins with understanding material characteristics and adjusting accordingly.

Increase Regrind & Wide-Spec

Raw Materials Usage

Use regrind and wide-spec materials with confidence knowing that the finished product is to specification.

Gain a “live” look into your process whether compounding, mixing or producing resin and obtain continuous measurements of melt flow rate or apparent viscosity or intrinsic viscosity directly from the manufacturing process.

Instantly know if material is within specification:

- Continuous “Real-Time” data
- Shear stress and shear rate
- Simple “In The Field” calibration
- Operational temperatures up to 350°C

Applications include:

Successfully monitor the viscosity or melt index of a wide variety of molten polymers including:

LDPE | LLDPE | HDPE | PC | PS | TPE | PET | PA6 | PA66 | PP | EVA | and silicones

Additionally, IV (Intrinsic Viscosity) of PET in a process can be continuously monitored.

Advanced Solutions for Plastic Extrusion and Injection

> SENSORS



> ANALYZERS



> INSTRUMENTATION



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From lab to production, providing a window into the process