MANSCO PRODUCTS

tov viscometer system

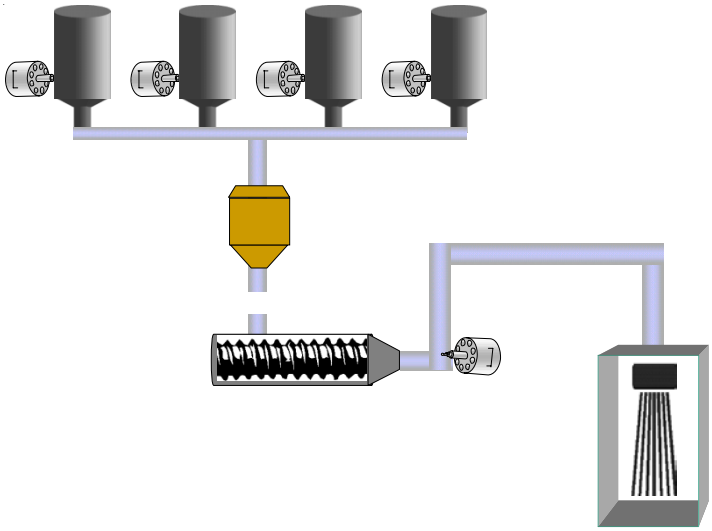
focus

Vessel(Autoclave) Application

CP versus Batch

The TOV Batch Vessel application is quite different from the Continuous Process (CP) and other pipeline applications of the TOV System such as extruder applications. In a polyester or polyamide CP application, the TOV is typically installed downstream from and as close to the Finisher (polymerization vessel) as possible. This location offers the best opportunity to control the viscosity of the process on a real-time basis and with the least amount of lag time for results, meaning a more proactive approach to control as compared to a reactive approach.

In Batch applications, the preferred installation is directly into the vessel itself along its base and as close to the nozzle as possible. This location allows for the plant engineers and process control engineers to follow the product viscosity during the polymerization before its extrusion. This will provide for a real-time analysis of the polymerization as well as providing for the integration of the extruded batch results. When compared to other methods such as relying on residence time or lab results, the TOV allows for more accurate control of the viscosity. What does this mean....quite simply it means less downtime, better process results, and improved quality of the polymerization itself while providing meaningful data in the form of the integration of the extruded results. In other words, the TOV can remove the “guesswork” of the Autoclave polymerization method.



The TOV Autoclave Probe is custom designed to meet the application needs.

Process variables such as solids, degradation, vessel agitators, and process conditions are all factors in the design process.

Location, Location, Location

Location of the Probe in the Autoclave Vessel has an important factor....space. Since the TOV needs to be installed and, in some applications, removed, there must be adequate space in order to accomplish this. In cases where there is not enough “room” for the TOV Probe along the base, it may be possible to locate the unit near the base along a side. In some cases, even this may not be an option. For instance if the vessel is close to the ground or if a wipe-walled agitator make the suggested location impractical, other locations can be utilized. A recirculation line is another possible location where the TOV can be of great benefit. No matter where the location may be, the TOV can be of great use in the Autoclave application in improving the process control and reducing the long lag times of viscosity measurement, which can often be associated with these applications.

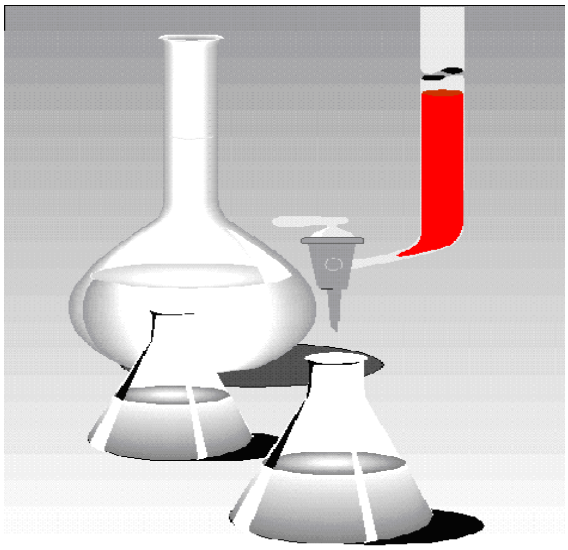
TOV Viscometer System™ by MANSCO PRODUCTS

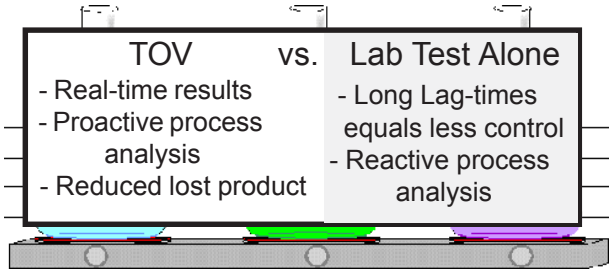
What's Being Produced?

Since the Autoclave applications can vary greatly in the materials being produced, there are many variables which are addressed during the analysis of the process. Characteristics of the material being made must be known in order to accomodate these variables and provide the best instrument possible for your apllication.....Is the material corrosive, are the materials always in a molten state or must solids be taken into account, does the material freeze, what are the nominal operating temperatures and pressures, does the product degrade, and how the vessel is cleaned are all considerations when designing the TOV Probe. In all cases, the proper design of the TOV System will account for these variances and provide for the best results possible.

The Methods Comparison

The most common method of viscosity measurement for autoclaves requires a sample of the extruded material, for example chips, being analyzed in the laboratory. This is usually done using a dilute solution to determine the viscosity. Although this method can determine viscosity, it has a major drawback when using this method as part of a proactive approach to your process. There is a time factor for all laboratory tests which can be anywhere from a half hour to several hours during which production continues without knowing the status of the product. Should this batch be added to other batches in a multi-batch blender and risk contaminating the new material if the product is substandard? Or should it be segregated and used in future blending? Or should the product be discarded altogether? The TOV eliminates these difficulties. By providing real-time information during the polymerization itself, the TOV can provide these answers before valuable time is lost....and time is money. Not to mention the ability to determine a substandard product immediately so that it can be acted on appropriately. The TOV is fast, real-time, reliable, and has a sensitivity that goes beyond that which is even necesssary. The proof is in its 35+ years experience and success.





What's the next step?

Simply complete the Batch Survey completely and let us do the rest. Our engineers will analyze the application, suggest possible mounting locations and design the right Probe for your needs. With our longstanding policy of working with the customer, we will be able to help you in your viscosity needs by providing a customized instrument that will work for you..... not you for it. For more information about the TOV System, please see our literature packet, supplemental handouts or our website.

For more information, please contact:

TOV Viscometer System™

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