

Assessing Payback For Online Viscosity Control

Many processes in the Pharmaceutical Industry employ grab sample methods to evaluate the viscosity behavior of the material being manufactured. Even high volume products like medicinal syrups and rubbing ointments may be monitored using this technique. With industry under pressure to improve costs, the question is whether online viscosity measurement is the way to go.



Figure 1: Brookfield TT-200 Process Viscometer for Direct Viscosity Measurement in a Tank



Figure 2: Brookfield VTE250 Viscosel for External Measurement of Viscosity for Liquid in a Tank



Figure 3: Brookfield AST-100 Process Viscometer, Small Package Solution for Online Viscosity Measurement

There are a number of ways to accomplish online viscosity control. Measuring directly in a mix or storage tank (see **Figure 1**) is one possibility, but the issue of penetrating the tank wall must be considered. Circulating the fluid from the tank to an external measurement instrument (see **Figure 2**) is easier to implement, but may require conditioning the fluid so that process operating conditions are similar. Newer devices (see **Figure 3**) require less physical space to implement and may be installed directly in feed lines to fill stations. In all three cases, the online instrument provides a single control point to ensure that the desired viscosity is maintained.

Points for consideration in assessing payback include the following:

1. Current costs for taking grab samples, performing viscosity tests in the QC Lab and reporting the viscosity data should be verified
2. Lost production time due to grab sample viscosity data not being available must be quantified. This includes holding time in tanks, while product quality is determined. This may be a gray area and requires judgment from the QC Manager and/or the Plant Manager.
3. Cost of Q.C or Customer rejected or reworked material due to viscosity specific problems must be identified. Added costs for the past year of operation should be documented

4. Marketing input on customer issues relating to use of product should be considered. Issue is guaranteeing consistent behavior for properties that relate to viscosity of product; E.g. how ointment squeezes out of a tube, how easily ointment rubs onto the skin, how medicinal syrups pour out of a bottle onto a spoon, etc. Customer dissatisfaction with consistency of product is another gray area that requires discussion and quantification of “lost sales”.
5. Complete cost estimates for installation and operation of the process viscometer should be considered.

Financial analysts look for the numbers associated with each of these factors, the assumptions that underlie them and then calculate the time to pay back the investment. Going through this exercise is necessary before making the decision to invest in a process viscometer. Viscometer manufacturers have considerable experience in performing these evaluations and can assist in ensuring that all issues are addressed before reaching a decision to proceed.