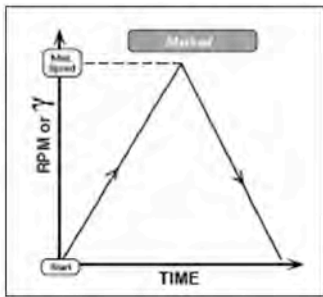




# Getting to the Root of the Viscosity Problem

**F**ood companies know that customers count on predictable consistency. Many of the new formulations for sauces, dressings, and fillings try to provide fat-free or egg-free products that pour and taste the same as the original versions. The only way to test and ensure one-for-one flow behavior is to run a speed ramp with a rotational viscometer. (See Figure 1 and 2)



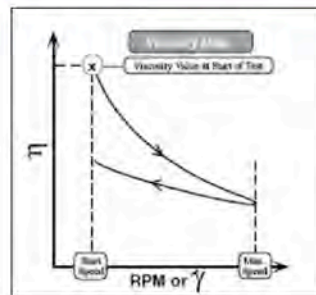
**Figure 1:** Viscosity Test Method Utilizing an Up-Down Speed Ramp



**Figure 2:** DV-II+ Pro Viscometer with Disc Spindle Provides Automated Testing

Traditional methods in Quality Control which employ a single point viscosity test are not adequate to tell the difference between acceptable behavior and a potential reject.

The busy food lab, whether in R&D or QC, has little time to run an extra viscosity test that requires several minutes to execute. The hope is to find a way to run the test automatically so that minimal operator involvement is required. One potential solution is a viscometer that can be programmed to run in standalone mode and send out data to a printer or PC. The type of graph that results from a speed ramp test is shown in Figure 3. This "rheogram" tells at a glance how shear thinning the food product will be and whether there is time sensitivity to the shearing action.



**Figure 3:** Viscosity Flow Curve from Up-Down Speed Ramp Test

For thicker formulations that are somewhat stiff or even pastelike, a different spindle type may be necessary to check for viscosity. The traditional method is the T-bar spindle with Helipath Stand running at a single rotational speed. (See Figure 4) More recent interest has been shown in the Vane spindle (see Figure 5) because it allows rotation at multiple speeds which in turn produces a flow curve as shown in Figure 3.



**Figure 4:** T-bar Spindle Cuts Corkscrew Path into Paste-Like Materials



**Figure 5:** Vane Spindle Offers Alternative to T-bar

Bottom line results in today's tight economy necessitate getting the viscosity right every time. Taking the grunt work out of the lab tech's hands and relying on the automation available with today's viscometers is the way to go. Not only are better results assured, but the payback on the small investment for this type of instrument (see Figure 2) is guaranteed in short order.