



COX TECHNICAL TIP: Importance of Fluid Properties

When identifying the fluid for your precision turbine flowmeter application, be as specific as possible.

When specifying a flowmeter, one of the most basic considerations is the type of fluid being measured. In the case of a turbine meter, the identity of the fluid may influence the materials of construction, bearing choice, and parameters of the calibration.

One of the reasons turbine flowmeters can provide some of the most accurate flow measurements available is that there are precise algorithms to correct for fluid properties and other factors. The most significant of those properties can be kinematic viscosity, which is typically measured in centiStokes (cSt) and is a function of the fluid temperature. The more precisely the temperature versus viscosity characteristics are known, the more accurately the flow rate can be calculated. As a result, the more specifically one can identify the fluid, the better the results can be.

For example, while it is useful to know that the fluid is “hydraulic fluid,” it is better to know that it is “MIL-PRF-83282” and better yet to know that it is “Royco 782.”

Milspecs may define minimum and/or maximum viscosities at various temperatures. However, the manufacturer’s data sheet will define typical values at two or more temperatures. These typical values can be used to define the temperature versus viscosity curve over the temperature range of the application. For example, MIL-PRF-83282 specifies the viscosity at -40°C as 2600 cSt max, while Royco 782 (an 83282-compliant fluid) has a typical value of 2050 cSt at -40°C. For even more precise results, the viscosity of the fluid (i.e., the actual batch) can be measured. This is generally done only for the smallest meters, lowest flow rates (in a given meter), and most critical measurements.

COX Instruments’ application engineers will assist you in maximizing your flowmeters performance.

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