

## HySense® QT600

Multi-viscosity turbine flow meter



**You know the problem: You want to measure the precise volume flow of your machine or system, but the turbine flow meter calibrated to the corresponding viscosity is not available. You want to use the same turbine flow meter for oil types with varying viscosities. You want to save time and start the measurement before the oil has reached its rated operating temperature, or you want to reduce operator and measuring errors. The next-generation HySense® QT 600 turbine flow meter developed by Hydrotechnik GmbH is specially designed to overcome these challenges.**

Traditionally, turbine flow meters are calibrated to a default viscosity, e.g. 30 cSt. Ideally, this matches the viscosity of the corresponding oil type when it reaches the operating temperature, such as 50°C for the HLP46. The specified tolerances are only guaranteed for this single calibration viscosity. Using the turbine flow meter with a different viscosity results in significant deviations, and the readings are basically useless (see Fig. 1). The volume of the turbine flow meter is not confined; instead, it is equipped with a turbine wheel driven by the flow energy of the flowing medium. Therefore, the speed of the wheel depends on the flow rate and viscosity of the fluid.

This viscosity dependency is caused by the speed-determining force component, which in turn depends on the internal friction of the fluid. The following chart shows the measuring characteristics of a commercially available turbine flow meter calibrated to 30 cSt when used with varying viscosities. The tables at the bottom of the chart illustrate the interdependency between viscosity and temperature for typical HLP oils used in hydraulic systems.

### Pointer

**HYSENSE® QT 600 COMPENSATE VISCOSITY DEPENDENCE**

**AFTER INSTALLATION MEASUREMENTS CAN BE STARTED IMMEDIATELY**

**FLOW MEASUREMENT AT DIFFERENT HYDRAULIC MEDIA / TEMPERATURE**

Part.-No. 31VH-71-35.V036



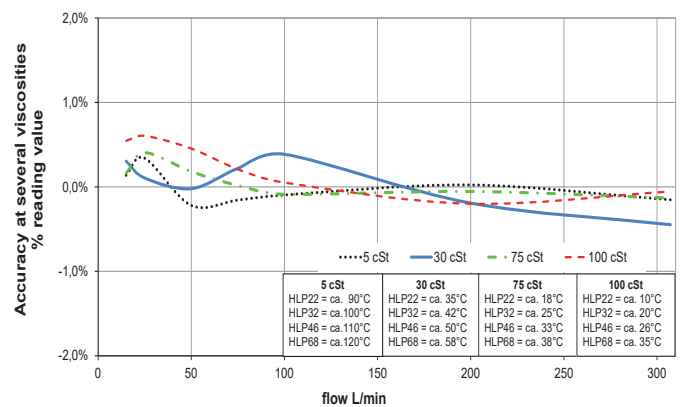
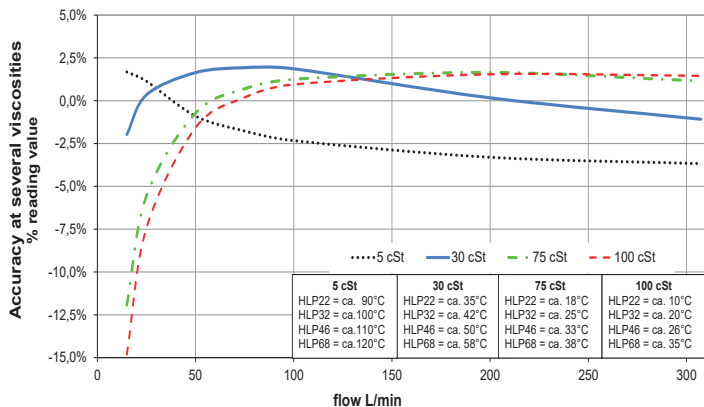
## To measure oil flow independently from viscosity

Hydrotechnik GmbH developed the HySense® QT 600 to compensate for this dependency of the turbine flow meter on the viscosity. This was achieved through the combination of a complex algorithm and a specially calibrated turbine flow meter [1]. Using the HySense® QT 600 turbine flow meter plus a MultiSystem series measuring system allows the user to compensate for this characteristic (see Fig. 2). As a result, the user is freed from paying close attention to the viscosity; instead, the measurements can be started immediately after installing the hardware. In addition, this compensatory feature means that different hydraulics media can be used at varying system temperatures

ensuring consistent and highly accurate readings. The viscosity must be known in advance. The algorithm allows the user to specify the viscosity or calculate it based on a temperature measurement. It uses the oil-specific temperature/viscosity characteristics entered in the system.

## Summary

Used together with MultiSystem series meters, the next-generation HySense® QT 600 turbine flow meter developed by Hydrotechnik GmbH enables precise volume flow measurements for different hydraulics media at varying temperatures. In addition to providing maximum flexibility and significant time savings, this technology is extremely user-friendly and easy to use - just what you can expect from technical solutions made by Hydrotechnik GmbH.



01 Measuring characteristics of commercially available turbine flow meter, calibrated to 30 cSt, when used with varying viscosities.

02 Measuring characteristics of HySense® QT 600 used with varying viscosities.