

## VLO-M1 viscosity sensor for liquids



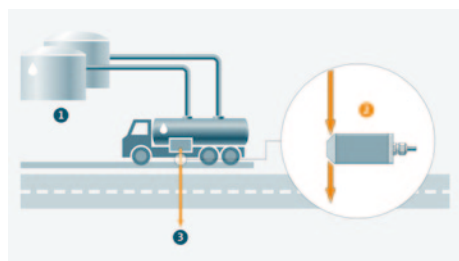
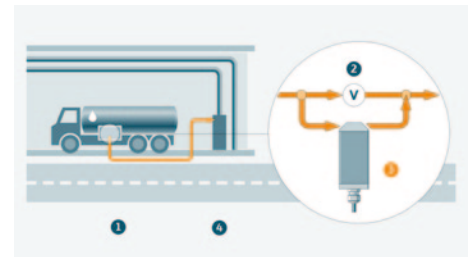
Viscosity data can be used to determine the properties of liquids and monitor their quality. The sensor measures the viscosity in the running process – even in the smallest of spaces. Irrespective of the viscosity, the sensor also measures the density and temperature of the medium being measured.

Application examples:

- Optimization of process reliability in applications where a certain viscosity is required. For example, engine oils on calibration systems.
- To supplement the density values to ensure the quality of lubricants or fuels.

### Monitoring of fuel concentrations

New cars must be put through their paces before they are registered. The engine is tested at its limits and often started “cold”. As a result, the fuel no longer burns completely and it mixes with the engine oil. Too much fuel in the engine oil can destroy the engine. With the viscosity sensor, tests no longer have to be interrupted – you can monitor the viscosity of the oil directly in the process and replace it if necessary.



### Quality monitoring

The density of a liquid depends on its composition. If different liquids are mixed together, the correct mixing ratio can be checked with density measurements. Take heating oil, for example: According to legal requirements, 7 % biodiesel may be added to heating oil. As biodiesel is tax-free, this process is often carried out at the limit of legality. With the DLO-M1 density sensor from TrueDyne, you can monitor the quality of the heating oil during the process.

#### Measured:

Viscosity, Density and several metrics derived from them (e.g. standard density, concentration, etc.)

#### Permitted media:

Particle-free (<30 µm) hydrocarbons such as

- Gasoline E5 / E10 / E85
- Diesel B7 / B10 / XTL
- Jet-A1 (also F-35 or JP-8)
- M100 (methanol)
- Isopropanol

Media that deviate from those listed above may be used after individual clarification if necessary.

#### Accuracy of measurement:

- Viscosity:  $\pm[0.2 \text{ mPa s} + 5\% \text{ of measured value}]$
- Density:  $\pm[0.2 \text{ or } 0.01 \times \text{abs} (T-25^\circ\text{C})] \text{ kg/m}^3$  if the value is  $>0.2$

#### Repeatability:

- Viscosity:  $\pm 0.1 \text{ mPa s}$
- Density:  $\pm 0.1 \text{ kg/m}^3$
- Temperature:  $\pm 0.05^\circ\text{C}$

#### Permitted density measurement range:

600...1000  $\text{kg/m}^3$   
(Option 0...1200  $\text{kg/m}^3$ )

#### Permitted viscosity range

0,3...50  $\text{mPa s}$

#### Permitted process pressure range:

0...20 bar (absolute)  
Bursting pressure 80 bar (absolute)

#### Permitted flow range:

0...10 l/h (water)

#### Permitted medium temperature:

-20...+ 60  $^\circ\text{C}$

#### Permitted ambient temperature:

-20...+ 60  $^\circ\text{C}$

