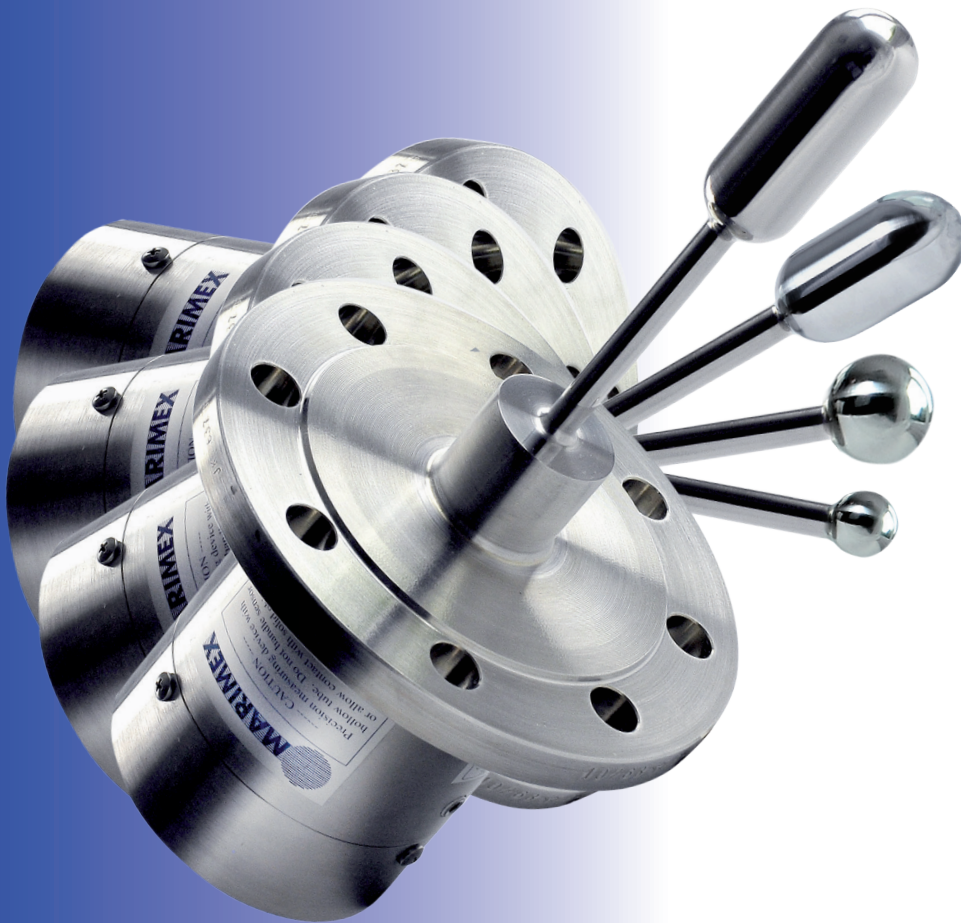
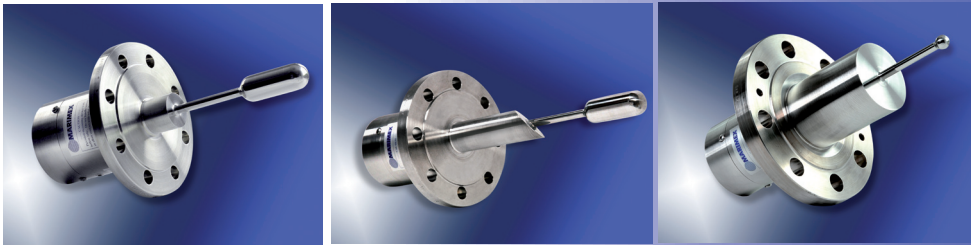


ViscoScope[®] VA - 300
Process Viscometer





The ViscoScope® Sensor VA-300

sensor requires no maintenance and is designed for accurate, reproducible and reliable measurement of the dynamic viscosity of liquids in real-time. A Pt100 integrated into the probe simultaneously measures the process temperature.

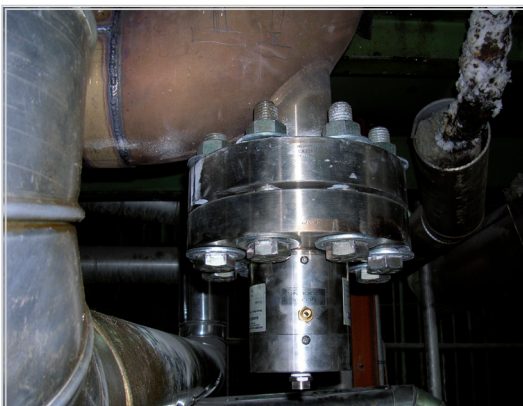
In continuous processes, viscosity is monitored permanently. This permits timely adjustment of the system or optimum dosing. Batch applications are often reactive processes, in which the viscosity curve and achieving a specified target viscosity define the optimum point for stopping the process.

However, the degree of homogenization, concentration, molecular weight distribution, coating thickness, lubrication performance and phase separation can also be inferred from the measurement signal – the potential uses are simply limitless. Marimex® has already implemented apparently impossible applications and successfully put them into operation.

Most liquids are non-Newtonian so relative viscosity is the relevant measurement in processes. The ViscoScope® system is factory-calibrated using certified Newtonian calibration oils. This multipoint calibration allows the user

to obtain reproducible results, e.g. when several systems are used in the same applications, after repair or relocation to a different plant. In order to compare the process viscosity with a known laboratory viscosity, it is necessary to calculate a correlation empirically.

The ViscoScope® VA-300 sensor is manufactured to order and therefore available in a wide range of versions that optimize installation in new or existing plants. This variety of sensor designs often allows them to be installed with little or no modification to the potential installation site. The sensor can be installed in any position but it should be selected carefully in order to ensure



Your benefits

- *easy handling*
- *no maintenance*
- *long-life instrument*
- *process documentation*
- *better quality*
- *optimizing of production*



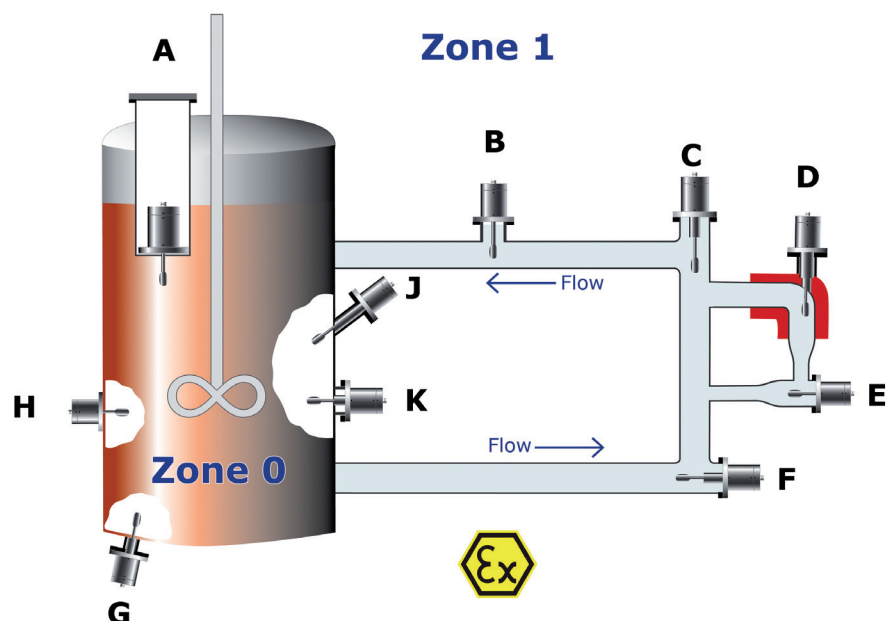
cost-efficient measurements. The ViscoScope® VA-300 sensor is a versatile instrument for many industrial applications: vacuum or high pressure, very low or high temperatures, in secure areas or areas with potentially explosive atmospheres, CIP / SIP compliant or with no dead spaces.

Mechanism






The probe of the ViscoScope® sensor is fully welded to ensure that no moving parts come into contact with the fluid being measured. Electric coils drive the probe at its resonance frequency and stimulate it to an oscillating torsion at a small amplitude. A fast closed-loop PID controller keeps the amplitude constant. Thus the higher the viscosity, the higher the voltage required. This can be used to measure the dynamic viscosity in $\text{mPa}\cdot\text{s} \times \text{g}/\text{cm}^3$ ($\eta \times \rho$).

The low amplitude at the resonance frequency prevents material fatigue, which could otherwise cause components to move or wear. It is also ideal for ensuring that the instrument has a long, reliable and maintenance-free service life.

The sensor can be installed in any position in (pressure-)reactors, vessels, tanks, (jacket-) pipes or flow chambers in practically any installation



Overview of the various sensors

				
Sensor type	VA-300L large cylinder	VA-300M small cylinder	VA-300H sphere	VA-300X mini sphere
Viscosity range in mPa·s x g/cm ³	0.1 – 2,500	1 – 25,000	10 – 250,000	100 – 2,500,000
	under process conditions			
Probe size	ø 32 x 190 mm ø 1.25 x 7.5"	ø 32 x 165 mm ø 1.25 x 6.5"	ø 32 x 130 mm ø 1.25 x 5.1"	ø 19 x 115 mm ø 0.75 x 4.5"
Material	316Ti / 316L (1.4571 / 1.4404) (option: Hastelloy C22, Duplex 2205, teflon coating, others on request)			
Protection	IP65			
Process temperature (integrated RTD in viscosity probe)	LT from -40°C to 130°C / -40°F to 270°F ST from -40°C to 300°C / -40°F to 570°F HT from -40°C to 450°C / -40°F to 840°F ST and HT with inert gas cooling, dependent on installation			
Process connection (from DN25 / 1" - dependent on sensor type)	Flange	ANSI, DIN, JIS, special flanges		
	Fitting	Varivent®, Tri-Clamp		
	Thread	NPT, metric		
Pressure	Vacuum up to 450 bar / 6,500 psi			
Installation	Installation in any orientation in reactor, vessel, pipe, flow-through cell			
Cable length Sensor - Transmitter	maximum 1,000 meters / 3,330 feet short cable length recommended for very low viscosities			
Flow velocity	up to 10 m / sec. or 33 feet / sec., dependent on installation			
Reproducibility of reading	± 0.3% or ± 1 Digit	± 0.3% or ± 1 Digit	± 0.5% or ± 1 Digit	± 0.5% or ± 1 Digit
Accuracy of reading	± 2% or ± 1 Digit	± 2% or ± 1 Digit	± 2% or ± 1 Digit	± 2% or ± 1 Digit
option: hazardous area		II 1/2G Ex ia IIC T6...T3 Ga/Gb		
option: non-active- extension (NAE)	Eliminates no-flow areas in a reactor nozzle, T-piece or flow-through cell. Can also be used to bridge gaps in low level applications. Sizes on request.			

Subject to change without notice.

Sometimes process technology, applications or local conditions demand the design of a special probe. The VA-300S (special) sensor is intended for precisely these applications.