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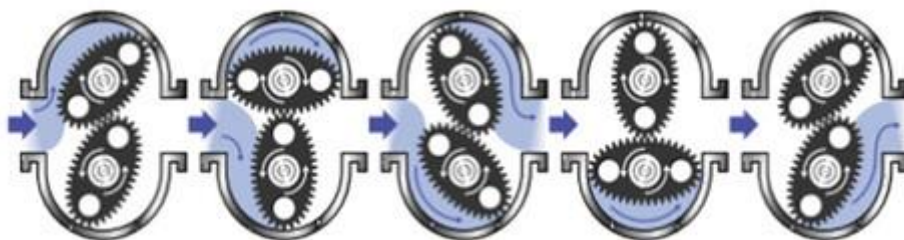
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Flow Measurement of High Viscosity Liquids

There are few industries as demanding as the chemical and petrochemical industry when it comes to liquid flow measurement and control.

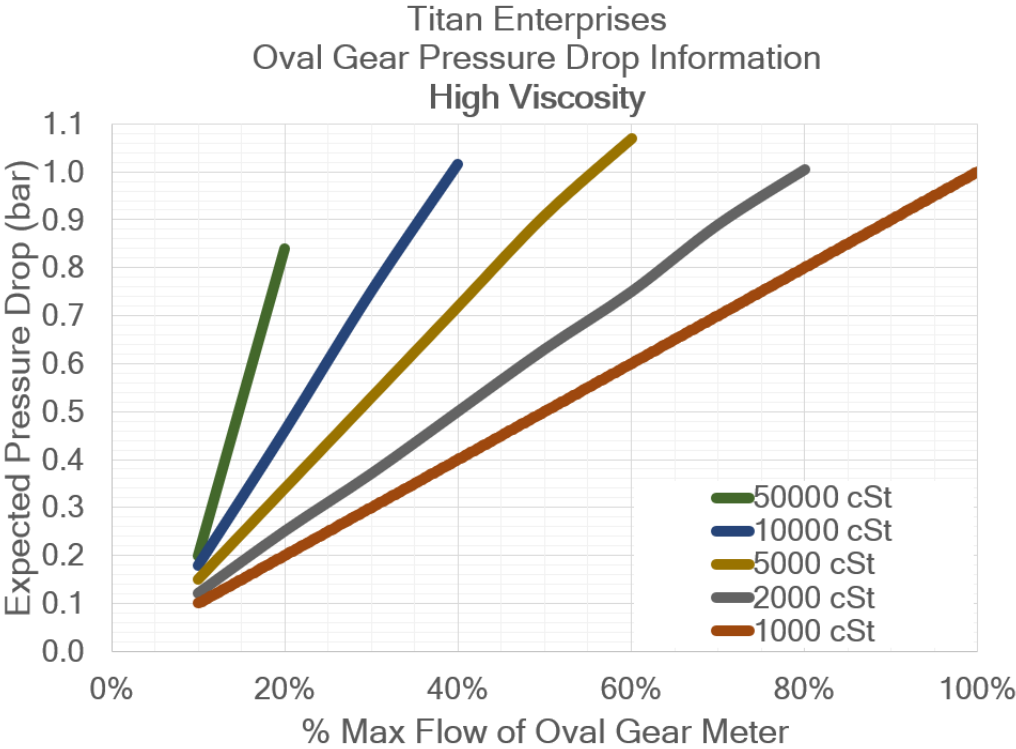
Positive Displacement flow measurement devices, such as Titan Enterprises' [Oval Gear \(OG\) flowmeters](#), are one of the most widely used types of flow meter for measuring the flow of petroleum liquids and petrochemical additive injection fluids. They remain a solid choice for many applications in today's modern process control environment, due to the OG's suitability in harsh environments, high-pressure capability, and long-term reliability with minimum maintenance. They are also ideally suited for viscous fluids.

High viscosity liquids, such as fuels, thick oils, bitumen, resin and tar, require devices that are precision engineered to provide highly accurate flow measurement. The teeth in an oval gear meter are used to drive the gear and seal the central path, with the differential force being developed by the shape of the ovals rather than the gear teeth on the lobe. Oval Gears vary in size and shape depending on the resolution and flow requirement of the process application.



The pressure drop is essentially the limiting factor when it comes to [metering high viscosity liquids](#) within an application. The Oval Gears within these flow measurement devices provide a larger surface area generating a much greater driving pressure across the gears. This results in a wider flow range capability and lower pressure drop (see graph below) compared to other positive displacement meter types.

Neil Hannay, Titan Enterprises' Senior Development Engineer, says: "The higher the viscosity of a liquid, the more pressure will be required to 'force' the liquid into the flowmeter and around the oval gears. It's important to bear this in mind when selecting the correct size of oval gear flowmeter for your application. For example, more pressure will be required to push through resin than diesel."

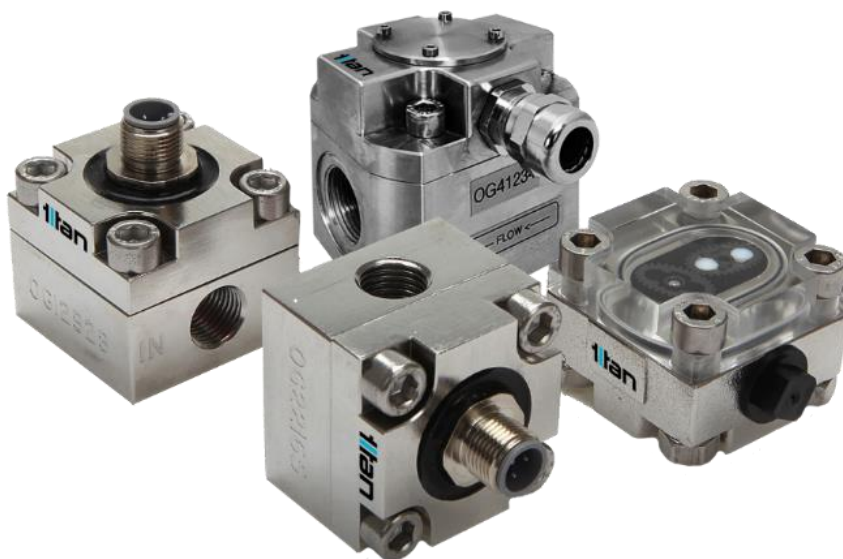


Almost immune from the effects of varying liquid viscosity, density and temperature, the measurement accuracy of [Titans' Oval Gear \(OG\) flowmeters](#) improves as liquid viscosity increases, from a nominal 1% to around 0.1% of flow rate at higher viscosities. Titan's standard OG models provide high accuracy up to 1000 cSt; for [viscosities above 1000 cSt](#) Titan's specially profiled gears are supplied to facilitate additional flow of the liquid.

Titan Enterprises offer special options and adaptive designs of its Oval Gear meters to meet specific [high-pressure requirements](#), aid chemical compatibility, and ensure [safe operation in potentially explosive atmospheres](#). Titan's Oval Gear range of meters include ATEX compliant

IP65/NEMA 4 protection models, and devices that offer intrinsically safe options for processes that operate within harsh environmental conditions, such as explosive or corrosive atmospheres, where flowmeters are required to withstand tough environments whilst maintaining accurate and reliable measurement.

Titan's [Oval Gear meters can be pressure tested in-house](#) up to 950 bar for custom-designed models and calibrated against diesel upon request. In the chemical industry, oval gear flowmeters are often used in conjunction with a batch controller to allow for the automatic dispensing of pre-set volumes of chemicals.



Titan Enterprises' High Pressure / High Viscosity Oval Gear Flow Meters

For further information on the full range of [Oval Gear flowmeters](#) or to discuss your specific OEM application, please contact [Titan Enterprises](#) on +44 (0)1935 812790, email sales@flowmeters.co.uk or visit our [website](#).

Drawing upon over 40-years of flowmeter innovation - Titan Enterprises Ltd is a leading manufacturer of high-performance flow measurement solutions, including the Atrato® ultrasonic flowmeter, Oval Gear flowmeters, low flow Turbine flow meters and a flow instrument range. Titan's company philosophy of "pushing the envelope by trying to do things a little different and better" has resulted in sales of over 2 million flowmeters and components into 50 countries worldwide and a repeat purchase percentage of 95%. All flow meters produced by Titan Enterprises are designed and manufactured to ISO9001 and calibrated to an uncertainty of $\pm 0.25\%$.

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Illustrative images (available on request)



*Titan Enterprises' Oval Gear Flow Meters for Metering High Pressure /
High Viscosity Liquids*