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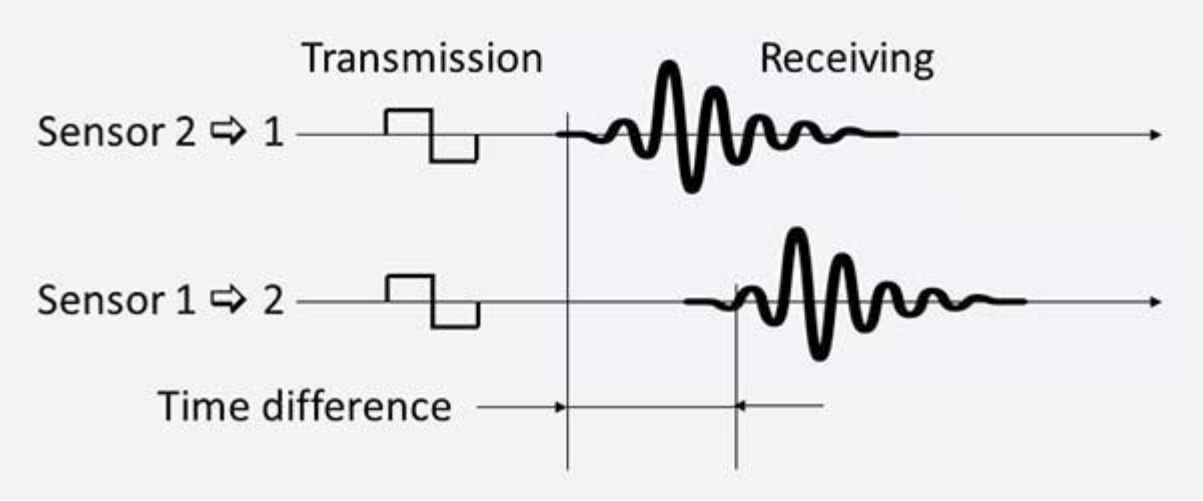
Titan Enterprises Expands Patents for its Ultrasonic Flowmeter Technology

Titan Enterprises has recently been granted additional patents for its ultrasonic flow technology used within their range of Atrato®, MetraFlow® and Process Atrato® flow meters.

As a specialist liquid flow meter manufacturer,
Titan first began developing a viable, accurate ultrasonic non-invasive small bore measuring device in 2001 as part of a long-term strategic plan. The work resulted in patented ultrasonic technology which has since led to an expanding line of ultrasonic flowmeters and patents ranging from signal processing methodology to novel mechanical design.

Titan's ultrasonic flow sensors
use high frequency sound waves to measure flow using the time-of-flight principle within the liquid in a small pipe. The ultrasound is injected with the direction of flow into the liquid by one piezoelectric crystal (the sensor) and is received by a second piezoelectric crystal further down the tube. These crystals then reverse the direction of the ultrasound in the tube and both time-of-flight acoustic signals are measured. As one sound pulse is accelerated by the velocity of the liquid and the second retarded, the difference in the

flight time is twice the fluid velocity, and as the dimensions of the flowmeter tubes are known the volumetric flow can be calculated.



Most ultrasonic flowmeters can

reliably measure fluids that transmit ultrasonic sound waves within a band (e.g. ±30%) around the speed of sound in water at 20°C. But if a fluid has significantly differing acoustic characteristics, for instance viscous organic fluids or if measurement is at elevated temperatures, then the acoustic operational window can be missed by the sensors. Titan's proprietary Interface Software offered on the Atrato® and MetraFlow® overcomes this application challenge. The software functionality allows you to view the Acoustic signal of the measured fluid in real time and if required, move its position in the measurement window to ensure reliable flow measurement in the conditions of operation. This increases the versatility of a single fluid calibrated meter to a much wider range of applications.

Ultrasonic flowmeters

are the ideal solution for measuring low flow rates. Titan has developed several generations of ultrasonic low flow meters based upon their patented time-of-flight design able to measure the velocity of the fluid within the pipe. The very high signal to noise ratio from these devices has been widely proven to enable metering of extremely low flows with great precision. The Atrato® line of patented ultrasonic inline flowmeters consists of four models operating over a flow range of 2ml per minute up to 20 litres per

minute. These low flow ultrasonic flow sensors also offer excellent turndown (> 200:1), repeatability (to ±0.1%), linearity and accuracy of better than ±1.0% of reading.

Titan's ultrasonic flow devices
are independent of Reynolds numbers and can therefore operate from laminar flow through to turbulent flow. This makes them highly commercial being able to accurately measure liquids ranging from water to high viscosity oils. Being through-flow devices, they can also be tolerant to impurities in the system which would cause havoc to meters with moving parts.

The rugged, clean bore construction
of the Atrato® and MetraFlow® ultrasonic flowmeters make these devices ideal for almost any low flow application, from research and development to industrial processes, and even metering of chemically challenging liquids. In addition, the Process Atrato®, durably constructed from 316 stainless steel and PEEK, and incorporating Titan's patented time-of-flight ultrasonic flowmeter technology, is specifically designed for use in demanding process and control environments.

To discuss
an optimised flow measurement device for your OEM application please contact Titan Enterprises on +44 (0)1935 812790 or email sales@flowmeters.co.uk. Or visit our website for further information.

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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 ±0.25%.

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Illustrative images (available on request)

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