



INTERVIEW with Titan Enterprises

'The expanding role of flow measurement in Healthcare'

February 2021

IEN Europe: What flow applications are Titan bringing to the Healthcare sector?

Titan: The healthcare sector relies on technical advancements and Titan has been involved with some exciting and innovative projects working with medical partners. Combining both off-the-shelf and custom flow technology, Titan develops and supplies flow devices for multiple medical applications including laboratory measurement, cleaning and sterilization systems. Predominantly these applications are for water-based fluids which do not come in to direct contact with the patient.

Titan has also been involved with systems that have a more specialized application such as monitoring dialysis, IV injection and measuring plasma flow for organ blood pumping systems. One particularly interesting application was working with a pioneering medical partner to enhance a scalp cooling system for patient chemotherapy treatment integrating Titan's 800-Series turbine flowmeters.

IEN Europe: What are the main challenges of metering fluid flow in Healthcare applications?

Titan: For non-contact fluids, turbine and ultrasonic flowmeters that allow clean, robust and accurate flow measures tend to be the devices used, conforming to standard industrial requirements. Turbines are effective for the water applications where moving parts are allowable and cost is an important factor for the OEM customer. Monitoring more complex biological fluids, ultrasonic devices are the preferred method. With a clean bore and no moving parts, these devices reduce both biological and physical contamination risks, as well as allow for easy cleaning.

Meters used for measuring fluids in direct contact with a patient, such as an IV, must be a disposable device to prevent cross contamination. We work closely with our medical partners to create specialist designs, including such disposable systems where a low cost component is made as a disposable element, and a high cost system surrounds it to maintain the required accuracy.

IEN Europe: What characteristics of your ultrasonic flowmeters make them particularly suitable for medical applications?

Titan: Our Atrato and Metraflow ultrasonic devices are our most accurate flowmeters, as well as being clean bore with no moving parts. These provide accurate flow measurement whilst reducing any chance of fluid contamination or system blockage. The Atrato devices come with options of materials and piping configurations with 1% accuracy down to 2ml per minute and up to 20l per minute, so offer

great versatility for a variety of medical applications. The Metraflow is more specialized with a single unbroken inert PFA tube being the measurement device. This ensures excellent compatibility with high purity chemicals and no regions to harbor potential biological growth or contamination.

IEN Europe: What healthcare applications could benefit from precise measurement of fluid flows in the future?

Titan: Drug production, administration and control are certainly applications that can benefit from our accurate flow measurement capabilities with the Ultrasonic range. Being able to accurately measure down to 2ml per minute and developing bespoke devices for integration into complex systems enables us to work with medical partners on innovative projects. Applications for ancillary medical device processes, cleaning systems and cooling systems for physical therapy offer realistic development opportunities. We are currently extending our range of the ultralow flow measurement to below 2ml per minute, which could be utilized in micro-flow applications where, for example, flow rate through a pump dispensing system can be accurately monitored, rather than simply assumed.

Another interesting application is for measuring the flow of blood or simulated blood being pumped as it would be in the human body. This raises some challenging issues to overcome, including non-intrusive measurement and coping with the pulsation of flow. We will continue to advance our R&D with our medical partners to help them find solutions to ever evolving healthcare needs.

IEN Europe: What technical developments do you foresee for flowmeters to enable them to fulfil their potential in medical applications?

Titan: With electronics becoming faster and cheaper there is scope to produce more accurate and bespoke systems at an affordable price. This in turn allows for more sophisticated medical devices to be developed that a few years ago would not have been practical or cost-effective. Titan is continuously developing its capabilities with much of our R&D focus on our ultrasonic meters to increase the range we currently offer. Ultimately, we see the mechanical devices being replaced by the ultrasonic meters with their capability to accurately detect lower flow rates. We are currently working on expanding the flow range for industrial applications where very small leak detection is a key priority. This same development work will also have an important application in the medical industry sector.



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With over 40 years' experience in liquid flow meter innovation, Titan Enterprises Ltd are a UK-based manufacturer of high performance solutions such as the Atrato ultrasonic flow meter, Oval Gear flow meters and the low flow Turbine flow meters and instrument range. The company's knowledgeable team of engineers can offer either an off-the-shelf meter or fully bespoke flow system designed for a particular application, whether it is a low cost OEM solution or a specialist flowmeter in exotic materials.