titan flowdown
...an informative bulletin from Titan Enterprises - the *low flow experts*

Welcome to the **Summer 2019** issue of fLowdown - a quarterly Newsletter from Titan Enterprises Ltd. written to keep you informed about the latest technological developments, applications advances and breaking news in the field of flow measurement.

If a particular feature interests you do not hesitate to contact us or follow the link for further information. We welcome your feedback.

Trevor Forster *(Managing Director)*

Trevor's Technical Tip

Trevor Forster is our Managing Director, his experience in fluid handling dates back to the mid 1960's when he started working on rotating seals and flowmeter design for third party clients. Trevor draws upon over 40 years of using innovative design and production techniques to produce elegant flow metering solutions for organisations around the globe. In this issue - Trevor offers you useful technical tips on:

Five Things to Consider when Purchasing a Flowmeter for Laboratory use.

What to look for when choosing a liquid flowmeter for your lab experiments, is not perhaps as obvious as you might think.

On a simple level we would recommend that you consider:

- What is the reason for the purchase?
- What is the proposed function for your flowmeter?
- What type of output is required?
- What interface does the flowmeter have to communicate with?
- Will the flowmeter be specific to one measurement or be required to do more?

Looking at the decision-making process a bit more closely, the first question is "What am I buying this flowmeter for?" We do not mean the application as such but rather the reason for the purchase. Is this a one-off experiment after which the device will become redundant and discarded or will the test set-up migrate to a more permanent metering system and perhaps even a production line? A quick test at 5% accuracy to see if the flow rate is somewhere near your desired level is a very different device to one that has to precisely monitor flow continuously at a later date in an industrial process. Performance and price are irrevocably linked. Why buy a 0.5%, £4000 Coriolis meter when a 5% variable area float type flowmeter will suffice at perhaps £40? However why waste money on purchasing equipment capable of a single measurement when perhaps for a slightly greater investment you could purchase a flowmeter that could be re-used for other experiments at a later date.

What information do I need from the flowmeter? Do I want just a flow rate indication, total, or a recording of rate over time or something more sophisticated such as flow control or switch points to protect other equipment? What secondary instrumentation is required and how should the flowmeter communicate with it?

What type of flowmeter output is required? Many older laboratory instruments use analogue inputs whereas a large number of modern flowmeters give out digital pulses, some very high frequency and some very low dependant on the technology employed. Can the secondary instrumentation handle the signal and signal type? Voltage or current level? Digital PNP, NPN or logic level? Is a piece of interface equipment required?

Does your proposed flowmeter have to communicate at a higher level directly with some control or interface software such as LabVIEW or Mathcad? Is a software interface required where individual flow functions can be accessed and/or altered?

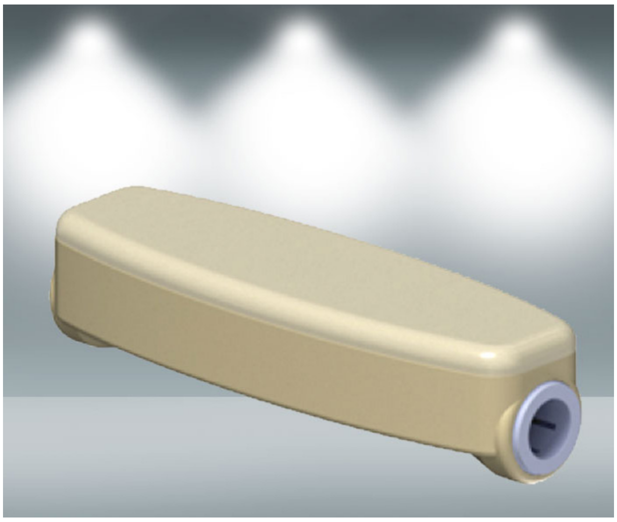
Is the flowmeter to be a permanent ubiquitous device for all flow measurements in your laboratory? If so the demands on the device will be far greater than a specific device for a specific liquid and flow range. Such a flowmeter should preferably be very accurate with excellent repeatability as well as offering good pressure and temperature ratings. Does your flowmeter need to have outstanding chemical resistance so that it can handle the widest possible range of liquids and also have a wide dynamic flow range to cover the greatest number of applications with the same device? To maintain flexible access to the widest possible range of secondary instrumentation options, the flowmeter interface should be universal.

Our customer support staff are very happy to work with you to help you select the best flowmeter for your laboratory use.

In the market for a flowmeter? Click here for advice.

Flow Technology Spotlight

R&D Insight: into the future of ultrasonic flowmeter technology



As many of you are aware - Titan is a pioneering innovator in developing flowmeter technology. Looking at our ongoing R&D activity we have listed eight ultrasonic flowmeter technology projects for consideration. Of these eight, three have immediate commercial possibilities, three more are for OEM customers and the other two are basic research to improve our existing technology.

As you might expect many of these projects are confidential or subject to patent applications. However, an R&D Insight we can share with you is the development of our new ultrasonic beer meter.

A few years ago, we trialled an Atrato ultrasonic flowmeter in a bar. It was a great success - outperforming the traditional standard turbine flowmeter by a factor of 2. The Atrato technology as it then stood was however relatively expensive technology and definitely not suitable to put under bars all around the world. The Atrato ultrasonic flowmeter is designed as a precision device with excellent performance over its whole 200:1 flow range. With the latest version software, these flowmeters are returning ±0.5% accuracy over the majority of their flow range and we have a watching brief on our production line calibration with the aim to demonstrate a consistent improvement in this published specification. An ultrasonic beer meter however can have a much simplified specification. For this device a flow range of 15:1 would be acceptable with a starting flow of 0.25 litres per minute and an accuracy of ±2% at near constant temperatures when installed in the cellar. With these relaxed specifications in mind we have produced prototypes that can outperform our minimum specification and be produced for an acceptable price for widespread implementation in bars. We will be continuing this research with the aim of producing a low-cost ultrasonic beverage meter with no moving parts and a plain bore that can pass a beer line cleaning pellet. Sample meters should be available later this year.

Wish to be informed of future developments? Click here.

How do I measure?

In this issue of fLowdown we discuss:

Safe Measurement of Flow in Potentially Explosive Environments

Explosive atmospheres in the workplace can be caused by flammable gases, mists or vapours or by combustible dusts. Explosions can cause loss of life and serious injuries as well as significant damage. Whether the explosion risk be continuous, intermittent or occasional - in all cases measures have to be taken to ensure that no source of ignition is possible in that area.

To minimise explosive risk there can be no high temperatures, voltages or the capability of generating a static or frictional spark. Workers within the area must also comply by wearing suitable clothing and carrying only ATEX approved electrical devices.

Because of the wide variety of scenarios that may produce an environment with an explosive atmosphere there is no universal method of installing a flowmeter in such an area to minimise explosive risk. Here though are some flow metering options to consider in such a scenario.

1. Use a totally mechanical flowmeter: This removes the requirement for any electrical input into the device although there may still be temperature considerations. Flowmeters in this category include variable area flowmeters or gear flow meters with mechanical totalisers.
2. Use a passive device: Simple passive devices such as switches cannot in themselves induce or generate a spark. In addition, any instrumentation connected to these components must be intrinsically safe also. Passive switch devices have carefully designed circuits to ensure that there is insufficient energy to discharge a spark or that any component failure would not cause another component to overheat.
3. Use a device with remote electronics installed in a "safe" area: such devices have the power transmitted through them limited by a barrier at the safe/hazardous environment interface. This limits the amount of energy that can be transferred into the hazardous area. The benefit of this approach is that you can use standard instrumentation as it can be installed in the safe area.
4. Use a flowmeter fitted with an approved active sensor: An active sensor is a detection device that requires input energy from a source other than that which is being sensed. Examples of active sensors include Namur, Hall Effect and Coil devices. In this instance the sensor itself is approved for use in the hazardous area but the power to it must be controlled.
5. Install your flowmeter in an explosion proof box: In this approach the flowmeter is placed in a controlled environment container. This ruggedized box is able to contain any explosive event spreading to the "outside" world. This is far from ideal and a relatively expensive method but on occasions where no other flow measurement solution is possible, it may be the only answer.

To receive advise on an optimised safe flow measurement system for your potentially explosive application / operating environment – click here.

Problem Solved

In this case study we discuss how several of our customers now use Titan beverage meters for "Beer walls". Not the type in the photograph below but establishments which install a quantity of beer taps on a single wall and then allow/charge customers to pour their own drinks.

Self Service Drink Dispensing

In establishments looking to allow / charge customers to pour their own drinks there are weights and measures issues to consider. In some countries there are regulations that require a set minimum volume served at specified accuracies, while others do not mind and you can serve yourself just as a taster. Either way your chosen drink volume used has to be metered.

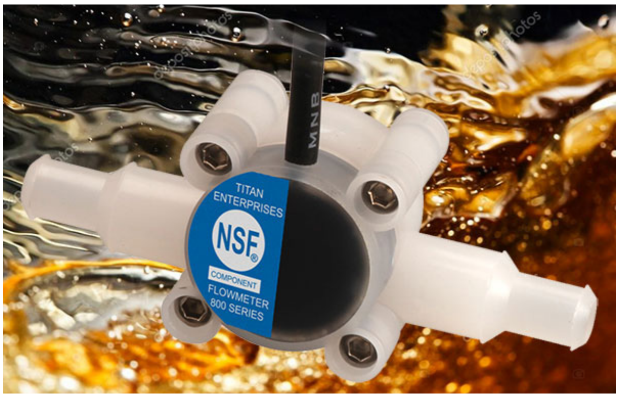
There are also different ways of charging. Some have credit card payment terminals next to the tap with perhaps the drink details and possible volumes that can be dispensed. Others use coded wrist bands which are registered against your credit card and must be scanned before the tap will operate. In every case the user will be charged for the drink they dispense. These beverage flowmeters can also provide accurate stock control as well as informing management of high sales levels on a given product or barrels running out that will soon require changing.

On a wider scale – brewers and publicans can use feedback from these 'intelligent beverage flowmeters' to spot trends in drinking habits and stay on top of the latest trends.

To learn more: click here.

Product Focus

Product Focus – NSF Accredited Flowmeters



Certification under NSF/ANSI 169 as equipment for food products is important for manufacturers of food production and handling machinery who can now use Titan 800 Series or Beverage flowmeter secure in the knowledge that they now met NSF-standards for food production.

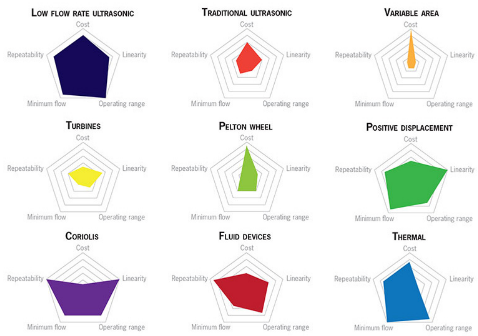
NSF (www.nsf.org) is an independent, accredited organization, that test, audit and certify products to develop public health standards and certifications that help protect food, water, consumer products and the environment.

As part of the NSF-certification process Titan was required to submit samples of the 800 Series and Beverage meter to NSF for analysis. The detailed analysis by NSF included a technical review, a materials review, physical evaluation and a literature/marking evaluation. The supply chain for materials and components used in the 800 Series and Beverage meters was traced and needed certification of each element. In addition, NSF carried out a pre-audit check of Titan Enterprises UK production facility and control systems.

For further information – click here.

News Update:

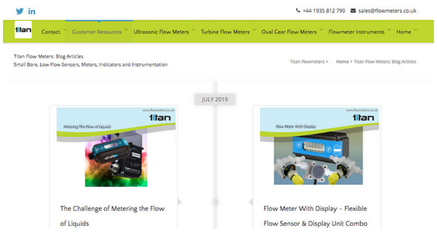
Top 10 Tips – Flowmeter Selection Guide



Selecting, implementing and optimally maintaining a flowmeter need not be complicated. Drawing upon decades of experience we have prepared an informative set of 10 tips to guide you through this potential minefield.

Download guide: click here.

Follow the Titan Web Blog



Did you know that Titan regularly publish interesting content on their web blog. This informative news source is aimed at keeping you informed with new technical innovations, applications advances and topical news related to flow measurement.

To view recent blogs or to join the Titan community please click here.

Humour

In the summer heat, here is some engineer humour to make you smile!

An Engineer, a Statistician, and a Physicist

An engineer, a statistician, and a physicist are out hunting. They spot a buck, and each take turn to try and bag it.

The physicist goes first. He pulls out his lab book and quickly calculates the trajectory of the bullet, assuming it is a perfect sphere in a vacuum. The bullet falls 20m short of the deer.

The engineer goes second. He pulls out his engineer's pad and book of projectile assumptions. After a few minutes he's ready, he takes aim, and he fires. The bullet lands 20m past the deer.

The statistician leaps in the air shouting, "We got it!"

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