

The Ultimate Flowmeter.... High Precision - Low Cost

By Joe Baumel, President,
Controlotron Corporation



High precision and low cost are usually incompatible concepts. Providing precision is usually the thing that leads to high cost in a flowmeter. However, start with a high cost-high precision clamp-on ultrasonic flowmeter and take out the costly functions and features that are not needed for most applications and you have a non-intrusive high precision-low cost flow meter!

That's how System 1020 originated. We started with the high precision System 1010. This is a flowmeter used for custody transfer and leak detection of valuable hydrocarbon liquids and gases, easily capable of performance in the 0.1% range over a wide range of application conditions. For such applications it has multiple data outputs, communication capabilities, calibration and other approvals and a variety of functional and diagnostic programming routines.

So, how do you get the cost out and leave the performance in?

1. You keep the same basic operating system, i.e., the clamp-on Wide-Beam ultrasonic OpSys that is at the heart of the custody transfer accuracy capability.
2. You take out hardware items, such as advanced communication schemes, plus the unneeded redundant analog and digital outputs and inputs. You leave enough to service everyday flowmeter applications.
3. You redesign the high precision transducers to retain performance but

make for efficient manufacturing and economy of scale.

4. Then, miniaturize the flow computer circuits for low cost manufacture, and design a new rugged, low cost transducer mounting assembly to hold the flow computer as well as the transducers to minimize most of the cabling and installation cost.

5. Offer an optional dual channel flowmeter, so that the cost per flowmeter is essentially divided in two.

The result? A high precision low cost flowmeter that maintains its accuracy over a wide range of applications and application conditions.

Where should it be used? Anywhere that you would consider using a differential pressure device, magmeter, vortex shedder, turbine or propeller meter.

What other savings are provided?

- ? Never cut the pipe or stop operation for clamp-on installation
- ? Never repair or replace the meter because of wear or corrosion
- ? Never replace your meter when your current application is complete; simply reprogram it for another pipe size
- ? Check your application and flowmeter conditions using extensive diagnostics

With the growing popularity of clamp-on transit-time ultrasonic flowmeters, a wide

variety of low cost ultrasonic flowmeters have been developed.

One example is the Doppler flowmeter. Doppler technology is entirely different from transit-time and provides much lower performance. However, the fact that both are ultrasonic has made transit-time suspect among users who do not know the difference between the technologies.

Another example is the shear mode clamp-on ultrasonic system, which has no means of providing high performance, especially under variable liquid chemistry and temperature change conditions. Controlotron's Wide-Beam™ transducers match the pipe's sonic wave guide properties, while the shear mode system is based on the "one transducer fits all pipes" principle. With the Wide-Beam system, the flowmeter automatically optimizes its set-up for the particular application allowing for the best possible installation.

In many applications, the 1020 can be calibrated to better than 0.3%, with 0.5% performance quite readily available. Equally important, Controlotron's Wide-Beam operating system has proved able to provide this type of performance even when application conditions deteriorate, such as when liquids become non-homogenous, highly aerated or operating in the laminar region.

Function	Ordinary Low Cost Flowmeter	System 1020
Flow Rate	Yes	Yes
Flow Total	Some	Yes
Liquid Properties	No	Yes
Calibratable Accuracy	2%	0.25%
Batch Repeatability	1%	0.1%
Zero Drift	1 to 3% of Rate	0.1% of Rate with ZeroMatic™
Datalogger	Some	1 Megabyte with Event Driver



155 Plant Ave., Hauppauge, NY 11788
1-800-275-8479, x227, 1-631-231-3600, x227
Website: www.controlotron.com/1020
E-mail: sgeorge@controlotron.com