

## ACCURACY OF THE FLOW METERS/FLOW MONITORING

*Experience and knowledge are crucial elements to success*



It is important to recognize when discussing accuracy of a flow meter it usually means the accuracy of flow monitoring. To consider just the issues of the meter alone does not give you the answers needed to make an informed decision. Our over 25 years of experience in wastewater flow monitoring has identified more problems associated with the user rather than the meter, so we will discuss both issues here.

First, we will present the instrumentation manufacturers' side of the equation. In general, the portable open channel flow monitoring market is dominated by two manufacturers, Hach (American Sigma, Marsh McBirney) and Teledyne Isco. In laboratory situations, both claim accuracies within the acceptable verifiable standards of 2-3%. Although American Sigma has tested their equipment in flow labs in both the United States and abroad, we consider both companies to be equal when considering accuracy. Technical data from the manufacturer can be found at their websites at [www.americansigma.com](http://www.americansigma.com) or [www.isco.com](http://www.isco.com).



Even with that information, we take it one step further, that is, each meter is tested prior to deployment in our "Pipe Flow Simulator" at our facility in Bedford, NH. Both components of open channel monitoring are tested, depths can be simulated to 8 feet in stand pipes and velocities can be varied using slope from as low as 0.1 feet per second to as much as 6.8 feet per second. We have found this "in house" testing to be invaluable as it identifies problems that might not show up until well into the monitoring program.

The second component to consider when evaluating meter accuracy is the deployment and operation. The meter site selected and installation of the equipment easily plays a far greater role in accuracy of flow data than the meter equipment. We call this "operator induced error". To minimize this it is always best to scrutinize each meter site in the field under real world conditions. Issues such as debris, surcharging, pump stations, capacity and poor flow pattern can be overcome, eliminated or managed by proper site selection. Next comes the installation, here even the best equipment will only give you marginal results if not properly installed. Getting the sensors tightly attached to the wall pipe is mandatory to discourage fowling of the probe and data loss.

Finally, we analyze the data with the region's most comprehensive proprietary software package. This allows us to present flow data on a password-protected web site for our clients. Once inside the site, data review and report printing is easy, fast and efficient. No black magic formulas for deriving flow components, just good engineering equations that allow our clients to engineer proper solutions.

Our approach to accuracy is simple:

- Use the best available equipment
- Provide our crews with the finest installation tools
- Provide our clients with the best trained and most experienced operators
- Test and confirm proper operation

**Analyze · Scrutinize · Summarize**