

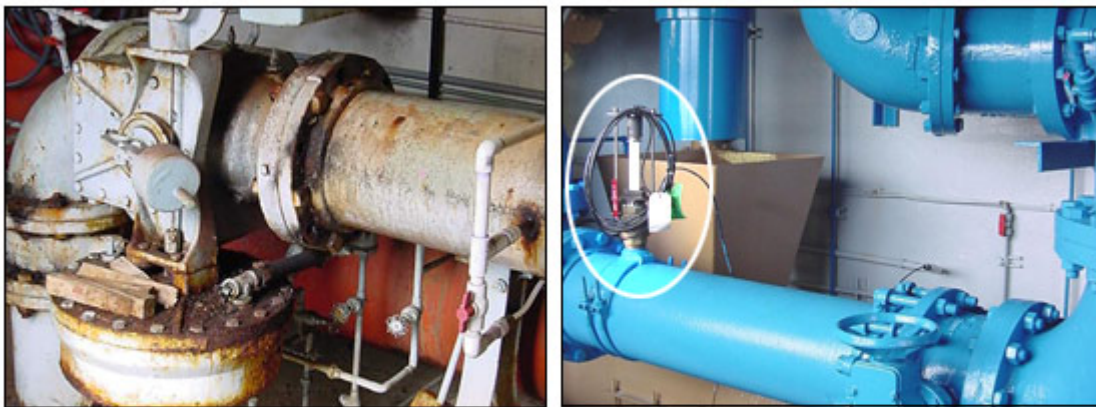
## Ohio American Water

Ohio American Water, a subsidiary of American Water, provides water and wastewater services to more than 50,000 customers in 36 communities across the state.



Their parent company, American Water currently operates utilities throughout 20 states. Each facility is locally managed with cost efficiency and water conservation of utmost importance in their operating plan. American Water relies on each subsidiary to accurately account for our nation's most valuable resource - drinking water. Providing water and wastewater management services to their customers in a manner that prevents pollution, protects resources and promotes sustainability is paramount in American Water's day-to-day operations.

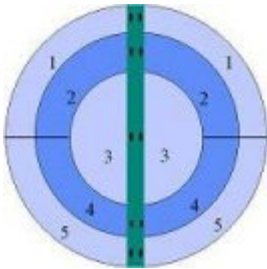
When two Ohio municipal water treatment plants operated by Ohio American Water had a requirement for flowmeters to monitor raw water lines they sought the guidance of local flowmeter resources. Tim Carrig of Carrig & Associates, Marsh-McBirney's local sale representative, met with plant personnel to discuss the flowmeter applications at their Ashtabula and Marion locations. Stacy Hoffman, Project Delivery and Developer Services Manager states, "We were looking for meters for two different applications basically. The Ashtabula application called for five (5) new flowmeters to monitor the discharge lines from newly installed pumps. We also installed some new valves and piping at that time as well. At the Marion site we needed to replace old, problematic Venturi meters. I think the Venturi's were 1958 vintage. The Venturi's had become a real maintenance concern. Flowmeters were needed to monitor the filter effluent lines in the plant. This install was part of a larger filter piping gallery rehab job. We were rehabbing all of the filter controls and valves as well." Both of the plant locations were considered difficult monitoring applications due to short pipe runs and restrictive piping configurations, so not just any flowmeter would be able to accurately monitor the flow with the challenges the applications faced.



**Before and After. Older, less reliable flowmeters like the one pictured at left are being replaced by the more accurate and reliable Multi-Mag (circled in picture at right).**

Hoffman notes, "The raw water installs that we have are considered pretty good raw water quality. It's not muddy lake bottom or anything like that. Up in Ashtabula we are pulling water off of Lake Eric but the water quality up there is pretty good."

After having gathered his facts, Carrig recommended that Hoffman consider the use of Marsh-McBirney's Multi-Mag Insettable Magmeters at both OH American Water locations. Knowing that the meter would provide accurate flow data in less than desirable monitoring conditions such as those found in Ashtabula and Marion, Tim was convinced Multi-Mag was the right meter for the job.



The Multi-Mag Insettable Magmeter utilizes proven electromagnetic velocity measurement technology. The sensor has multiple electrodes that are precisely positioned according to pipe size. The electrodes constantly profile the flow to provide exceptionally high accuracy - even near bends and elbows. Independent laboratory test data from the National Institute of Standards and Technology (NIST) and the Water Research Center (WRC), as well as hundreds of installations worldwide, confirm the accuracy of the Multi-Mag. Accordingly the Multi-Mag has become one of the most popular and effective products ever produced by Marsh-McBirney. Its ability to accurately measure flow in "less than ideal" conditions has earned the Multi-Mag a great deal of respect in the water industry. The sensor is easily installed through a "hot tap" without the need to shut down the flow, which was one of the prerequisites for meter selection in both OH American Water locations.

In short order, (7) 24" Multi-Mag's were procured for the Marion location and (5) Multi-Mag's including (3) 16", (1) 20", and (1) 23" meter were ordered for the Ashtabula plant. Concerning his ordering experience Hoffman adds, "Tim was always very helpful during the ordering and specifying process. If I had any questions I knew I could call. The technical folks at the factory have also been very helpful as well." Meters were installed by contractors during the period of January through August of 2002. Concerning the accuracy Hoffman states, "The meters have performed well. As long as you follow the technical installation instructions regarding orientation and things like that they will work well." Most of the installations had some type of piping constraints and Hoffman felt comfortable with the accuracy the Multi-Mag meter was providing in those situations. He adds, "I am more comfortable with using a Multi-Mag in those applications than any other type of meter." While most flowmeters would require additional upstream and downstream piping for accurate monitoring, a luxury not available at these sites, Multi-Mag did not. "Multi-Mag's sensor design captures the effects of the constrained pipe because it is constantly averaging the velocity across the entire pipe." The meters monitoring the filter effluent in Marion had very limited pipe length to install a meter because of the way the piping gallery is situated. Personnel have to take the piping through some bends and get it down to the clear well pretty quickly after each filter. While Ashtabula was larger piping it also had very limited space before we ran it through some bends as well. Suffice it to say that both locations posed unique flow monitoring challenges.

Also impressed with the configuration of the Multi-Mag Hoffman adds, "It's nice not to have some big massive thing to install. Easy hot-taps are all that were required and we can pull it out and clean it off if needed without having to shut down the pipe. We haven't had to yet but it's nice to know that we can should the need arise." Also pleased with the meters electronic display, Hoffman comments, "We use the local display as well as running the 4-20 signal to our SCADA system."

Over the past several years American Water has been the recipient of 91 awards from state regulators, industry organizations, and communities for superior water quality. Additionally, they have received 66 Directors' Awards from the Partnership for Safe Water program sponsored by six governmental and environmental agencies, including the EPA. In 2004, American Water had a 99.9 percent compliance with drinking water standards.

Through the use of the highly accurate and innovative Multi-Mag meters, two Ohio American Water facilities are proudly representing their company's commitment for diligent practices and in-house expertise to advance the science of water and their stewardship to the environment.

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