

Salisbury-Rowan Utilities



When the Salisbury-Rowan Utilities Department (Salisbury, NC) put a new skid-mounted water booster station online in their water distribution system, they quickly realized that the station was not meeting its design goal of 700 gallons per minute. Unbeknownst to them at the time, however, was that data from a flowmeter they would soon install at the station would quickly uncover the root cause of the station's performance issue.

The City of Salisbury and four surrounding communities located in Rowan County North Carolina rely on the Salisbury-Rowan Utilities Department for their water and wastewater services. The City of Salisbury, the county seat, has grown from small town to small city status with a population of approximately 25,400 and Rowan County's population is approximately 110,600. In the spring of 2003, the City of Salisbury and Rowan County proudly celebrated their 250th anniversary.

Jeff Jones, Utilities Engineer for Salisbury-Rowan, explains, "At pump start-up, the pumps were cavitating and it was very difficult to determine the cause simply by looking at the pressure gauges. The pressure gauges consistently read 'normal'. We were running both of the 20 horsepower pumps to alleviate the cavitation. When we ran the two pumps in the station together it moved them far enough back on the curve that the cavitation stopped. However, we still could tell by the way our tanks were filling that we were not getting what we were supposed to be getting." Initially, the contractor on the project felt that the station was pumping the correct amount of water it was designed to pump, however it soon became apparent to everyone involved that the new booster station was not meeting its intended design goal.

A decision was made to purchase a flowmeter that could help resolve whether or not the station had a design flaw. The flowmeter readings would be used to determine the actual amount of flow moving through the station since other methods being used were considered unreliable. Jones states, "The small footprint of the skid-mounted booster station included very tight piping configurations and bends. We were looking at ease of flowmeter installation with the ability to put the meter in a tight space without having to excavate outside the station." In an effort to keep flowmeter installation costs to a minimum, the utility immediately ruled out meters that required additional installation costs. Among the list of 'meters to avoid' was the Venturi meter. The Venturi meter would require not only additional costs to cut and modify existing piping within the station but it would also require excavation and additional construction expenditures to install an underground enclosure for the meter.



Jones comments, "The Marsh-McBirney **Multi-Mag** was selected due to its ability to be easily installed directly on the

existing tight piping and bends we had to work with at the station.” The Marsh-McBirney Multi-Mag flowmeter was designed to accurately monitor flow in difficult to instrument locations including restrictive piping, bends, elbows and close proximity to valves. The patented sensor is custom-built by Marsh-McBirney to the exact specifications supplied by the customer. Building sensors to exact inside pipe diameters ensures the highest possible accuracy. Independent laboratory test data from the National Institute of Standards and Technology (NIST) and the Water Research Center (WRC), as well as hundreds of installation worldwide, confirm Multi-Mag’s accuracy. The meter has a published accuracy specification of $\pm 1\%$ and a 5-year sensor warranty.

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Regarding the Multi-Mag’s accuracy and installation, Jones adds, “The meter is doing a very good job. It was real, real easy to install and set up. It took the guys a total of 1½ to 2 hours to install the meter and set up the display. It took me about 20 minutes or so to understand the programming. It was really straightforward.”

The flow data from the newly installed Multi-Mag (pictured at left) was sent to the pump manufacturer who quickly sent a local representative to collect one of the pumps. After examination of the pump, the manufacturer identified that an incorrect part had been used in the housing of the pump during the manufacturing process. Upon the return of the rebuilt pump, the spare parts to rebuild the second pump were sent for on-site modification.

Jones credits the Multi-Mag meter for ultimately solving the booster station dilemma. He adds, “Once the pump manufacturer saw the flow data, it only took them about a week or so to take care of the problem. The station was designed to pump 700 gpm and the flow data showed that the pumps were actually producing about 560 gpm.”

The diligence exhibited by Jones and fellow Salisbury-Rowan Utility personnel to resolve the performance issue at their new booster station is befitting their organizations commitment to provide their customers and communities with a safe and plentiful supply of water both now and in the future!

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