Measuring flow at high velocity

Case Study- Indian Institute of Science (IIS) – Bangalore

Introduction-

Water systems are becoming increasingly complex and instrumented, necessitating a diverse range of capabilities to effectively deal with the complexity. The supply of water would not be adequate to meet demand as the population grows and living standards rise, unless alternative plans are devised. To address this, IIS has released new water management software that focuses on efficient dash boarding, context analytics, exception management, and codifying standard operating procedures.

Instrumentation has progressed from conventional analogue instruments to modern instruments capable of digital data measurement and storage. Ultrasonic or electromagnetic flow meters measure the flow rate and transform the analogue value to a digital value. This digital form is temporarily stored in data loggers near the instrument. GSM technology takes the digital data produced by flow metres and transmits it to a central server over standard cellular networks. The economics of GSM technology make data transmission from source to destination nearly free, allowing for the widespread deployment of instrumentation across the network and the collection of real-time data.

The challenge-

The flow meters that were mounted here were working perfectly up to velocities of 3 to 4 m/s. However, the readings used to fluctuate for higher velocities later. The operating range for higher velocities was between 5 and 8 m/s, at which the meter readings were fluctuating. The flowrate could not be read correctly, and the totalization was also incorrect.

The customer called Manas service team for on-site observation in this situation. The Manas Service engineers went to the site and confirmed that the readings were indeed fluctuating even after proper installation.

The Solution that worked-

After careful inspection, it was found there was leakage in the pipeline on upstream side of the flow meter. Because of this, there was a Venturi effect. When the customer made the changes in the installation as per Manas suggestions, the meter started working satisfactorily even at higher velocities.

As a result, the Manas Microsystems team was able to solve the problem, and the client was extremely pleased.