Newly enhanced leak detection software provides Delaware Storage & Pipeline Co. with a simplified, comprehensive and highly customizable view of pipeline operations.

The customer
Delaware Storage & Pipeline Co., located near Dover, Delaware, on the East Coast of the USA, is a for-hire terminal and pipeline company providing bulk storage services to the petroleum industry. For approximately 5 years, Delaware Storage has used the FUS-LDS Leak Detection System from Siemens to monitor three pipelines that carry jet fuel from a loading dock to storage tanks and then to a primary customer.

The FUS-LDS at Delaware Storage consists of 6 site stations, each of which contains a SITRANS FUH1010 clamp-on ultrasonic flowmeter, a clamp-on RTD temperature sensor and a short-haul modem or 900 MHz frequency-hopping radio. A computer terminal known as a master station runs leak detection software to poll each of the site stations once per minute for a wide range of data (e.g. standard volumetric flow rate, liquid temperature, sonic velocity and meter diagnostics). It uses this information to calculate differences in flow rate.
between each pipeline segment, and activates an alarm if an imbalance between the inlet and outlet data is detected during any of four integration periods (1, 5, 15 or 60 minutes). The pipeline operator can then determine the location of the alarm and whether a leakage or product theft is truly occurring.

The challenge
Siemens recently launched a new version of the FUS-LDS featuring enhanced leak detection software integrated with the powerful SIMATIC WinCC process visualization system, which provides the software with a dynamic graphic user interface (GUI). The new GUI offers a major advantage over older, Windows-based leak detection software in that it provides operators with a simple-to-understand graphic representation of pipeline locations and occurrences.

Because Delaware Storage is a longstanding customer, they agreed to participate in an on-site test of the updated system under actual operating conditions. For Siemens, the challenge was twofold. First, it would be necessary to complete the software upgrade by replacing the master station as quickly and efficiently as possible, since the company could not allow their leak detection system to remain down for an extended period of time. Second, the new software needed to make it easier for operators to visually identify pipeline segments and recognize potential trouble spots, thereby reducing response times to any issues that might arise.

The solution
On the first day of their visit to Delaware Storage, the Siemens installation team (consisting of a project manager, a field technician and a software consultant) reviewed the current leak detection system and performed diagnostics on the existing master station. The team then loaded all of the necessary topology files onto the new computer. As a testament to the stability of the new software, the swap progressed flawlessly and the new FUS-LDS was operational in less than one hour. For the remainder of the day, the team trained both the daytime and nighttime operators to work with the GUI. Both operators found the new system easy to understand and adapted to it rapidly. The following day, the team returned and spoke with one of the operators, who offered feedback as to how the GUI could be further customized for this specific application. Although the software was now providing Delaware Storage with an accurate map of their pipeline, the operator wanted to add photographs of actual locations to this map. Because the new FUS-LDS software has been designed to allow for a high level of customization, this request was easily accommodated. The Siemens team simply drove to each of the locations represented on the map and took digital pictures, which were then uploaded to the master station. In mere moments, the GUI was displaying these photos in their proper positions.

Overall, Delaware Storage is very pleased with the enhanced FUS-LDS Leak Detection System for several reasons:

• Switching over to the new system was a straightforward process and did not lead to any operational disruptions (e.g. to the nightly archiving of data by the master station)
• The display screen provides instant visualization of pipeline status, eliminating the need for guesswork
• Operators can be trained on the new system in a very short period of time, which is vital for pipeline transportation companies in today’s heavily regulated environment
• The customizable GUI offers the opportunity to make continual improvements to the software, ensuring that it is optimized for each customer’s unique needs.

“We are quite satisfied with the FUS-LDS and the results of the field test,” said a terminal manager for Delaware Storage. “From installation to operation, we are finding that the system greatly simplifies the complex process of leak detection.”