Using the smart grid to future-proof the water industry

Smart meters are proving their value in detecting leaks, conserving water, and saving energy costs, according to Bastian Fischer of Oracle Utilities.

Water utilities are beginning to invest in smart meters and smart grids due to the substantial benefits delivered to their business, customers, and the environment. Smart grids are essential in enabling two-way communications and in increasing the value of the provided services of the water suppliers to their customers.

Additionally, smart meters, an essential aspect of the smart grid infrastructure, are able to identify and resolve inefficiencies in water use, analyze water flows in near-real time, bolster customer service, and help conserve water by providing the right tools to monitor usage and detect leaks and network irregularities. Despite the benefits delivered, some European countries are lagging behind in the adoption of smart grid infrastructures because of a number of challenges concerning limited bandwidth for wireless communication, lack of consumer understanding on the benefits of smart meters, data security, and no worldwide technology standard being put in place.

The market analysis company Frost & Sullivan recently stated that in countries such as the United Kingdom, there is a strong emphasis on business case development in relation to water scarcity, which is restricting the faster roll out of smart meters for water. In addition, the company contends that the market will grow quickly once initial pilots reveal the direct benefits of smart water metering.

Furthermore, others have claimed that legislation drives the demand for smart meters in many European countries, therefore these countries need to ensure a smooth transition from legacy meters to smart meters in order to drive effective smart meter implementation.

Despite this, there are good examples of where smart meter uptake has been successful. Most notable of all is the case with Veolia Water, which in early 2011 announced the creation of a new company specializing in remote environmental data and water meter reading services, m2o city. The joint venture with Orange, the mobile telecommunications operator, means Veolia can improve the gathering and management of data related to water usage, which has significant implications for the reduction of waste. Individual customers are invoiced for exact water usage and receive automatic alerts in case of any abnormal consumption. As well, companies and real estate managers can keep a check on year-round usage across a number of properties. The real-time monitoring of the water network also enables the detection of serious or persistent leaks, and the detection of backflows.

The Veolia Water case demonstrates that challenges can be overcome by adopting the right approach. This mainly concerns putting in place an I.I (information, communications technologies) system architecture, which is future proof, open, and scalable in order to be able to adopt innovations and new services. Additionally, concerns of data security can be alleviated by security infrastructures to protect customer information and ensure that smart meters are secure from hackers and other cyber attacks.

Water operators and energy utilities are closely linked because water companies use energy-hungry applications for water desalination, water pumping, and water treatment. Therefore, smart meters can be used by water operators to pump water at night when electricity is at its cheapest. Although theoretically this could be true, it is important to understand the need for smart meters within the water industry. Water can be stored and water systems are often not at full capacity therefore, operators can optimize their own water energy consumption without smart meters. Moreover, the water industry does not require real-time, interval meter reads every 50 minutes of the ability to store water.

Utilities drive smart water metering in Europe

The smart water metering market could be worth US$13.2 billion by 2020 in Europe for meter manufacturers, installers, and network and data management companies, according to Frost & Sullivan’s research. The reasons behind this trend is that utilities are looking to increase network and operational efficiencies and savings that can be made to counter rising energy prices and demand for more water.

Highlight of Frost & Sullivan’s webinar “Smart Water Metering Market – Roadmap to Spending and Carbon Footprint Reduction” are explained below (www.frost.com).

In France, Veolia and Gueze/Lyonnaisse de Eau, two major water distributors have affected the decision to roll out smart metering at a faster rate than smaller utilities. Their dominance has lead to a series of acquisitions of complementary companies in smart water metering industries such as telemetry and communications.

The German market is among the most advanced smart water metering markets in Europe due to multiple factors. Numerous smart meter manufacturers are German companies. Germany also hosts the Open Metering System Group, which seeks to establish universal standards in smart metering for all energy types: electricity, water, gas, and heat.

Smart water metering is considered to be an alternative solution to water scarcity in the Iberian Peninsula, one of the most water-stressed regions in Europe. Instead of investing in desalination plants, smart metering could save money in the long term and adjust consumptive behavior. Smart water metering pilot projects have been deployed in coastal areas to create more equitable charging.

Finally, Italy, Greece, and Malta are the only European countries to carry out full smart water metering. Although Malta is geographically small, its rollout may have implications on the rest of Europe once its experiences are shared. Initial deployment in Italy and Greece may be slow given their diverse utility base, but this may be temporary. This market should develop quickly with the rest of Europe as a few leading utilities emerge.

The Veolia Water case demonstrates that challenges can be overcome by adopting the right approach.

Instead, focus needs to be placed on identifying system inconsistencies for water network operations. The m2o city project is the most mature and advanced real-life example available because through its smart grid infrastructure, Veolia can identify gaps in water consumption in residential areas, streets, and city centers, helping it to fix leaks or monitor for customers who are consuming water without receiving bills.

A Meter Data Management (MDM) solution plays a key role in making this possible because it is able to manage vast amounts of data.
Water operators and energy utilities are closely linked because water companies use energy-hungry applications for water desalination, water pumping, and water treatment. Resulting from smart meters. In the immediate term, m2o city has helped improve customer satisfaction levels; remote meter readings mean that they are not disturbed by house visits and result in fewer complaints and billing enquiries.

Smart meters deliver additional benefits to water operators, such as:
- The ability to measure a large variety of physical characteristics, including temperature, pressure, conductivity, opacity and chemicals. This enables operators to continuously track and optimise the quality of water supplied to customers.
- Help trace-back and identify root causes of any disturbance such as burst pipes.
- Better handling of water scarcity/drought situations by regulating water flows.

It is clear to see the value delivered by smart meters and smart grids and that software technologies are at the heart of making this possible. The capabilities of MDM systems have already been covered but in brief, customer care and billing applications can handle every aspect of the customer lifecycle — from collection and payment processing to sharing precise usage data.

By having a smart grid and a solid application infrastructure in place, water utilities can keep water running at affordable levels and develop loyal customers who share a common interest in water conservation. Furthermore, if utilities address the challenges associated with smart technologies by putting in place the right IT infrastructures, they will not only be able to reap rewards, but will also be able to help curb water use and improve customer satisfaction — a winning situation for all.

Author's Note

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