

SMART WATER WATCH

BuntPlanet plugs leak in Siemens' digital water expertise

The German industrial giant's latest collaboration in the water sector has added more global appeal to its loss reduction services. It may also bring its partner's software solution into the mainstream.

After 20 years developing leak detection services inhouse, last month saw Siemens agree a partnership with Spanish software firm BuntPlanet in a bid to increase its share of the growing global non-revenue water solutions market.

The German firm's own SIWA leak detection systems require users to operate tightly defined district metered areas (DMA), measuring the water flow between them to highlight and pinpoint physical losses (leaks). Though effective, DMA structures have a limited presence in global water networks, particularly in the USA, and alone do not enable network operators to monitor apparent water losses (revenue

lost due to meter inaccuracies or data handling errors). With BuntPlanet's BuntBrain software, Siemens can offer clients loss reduction services that account for both physical and apparent losses independent of DMA structuring, making the firm's loss reduction offer more attractive to the global market.

"Cooperating with BuntPlanet enhances our water efficiency portfolio and fits our drive to digitise and automate operations," Johannes Koch, Siemens' head of business development for water and wastewater industry, told GWI. "The partnership strengthens our digital services in the water distribution segment and means

we can offer customers access to a globally applicable, state-of-the-art loss reduction solution."

"Most cities simply don't use DMA," explained Ainhoa Lete, BuntPlanet's co-founder and CEO. "BuntBrain is suitable no matter the level of DMA deployment. It is input agnostic, works with any pipe material and diameter, and in any noise and water conditions. Many of the tools we compete with are noise sensors and aren't suitable everywhere."

Acoustic sensors are effective in the right conditions but can struggle if ambient noise levels are high and pipes are made from plastics or a mix of materials. Bunt- ►

BIG DATA'S APPARENT ADVANTAGE

Data management platforms like BuntBrain are not the only solutions to offer live leak reporting. Next to other permanently installed loss monitoring technologies, however, their flexibility and potential to track both physical and apparent losses makes them stand out.

Technology	Description	Strengths	Weaknesses	Example providers
Acoustic Leak Detection	Noise loggers record sounds in pipelines, identifying anomalies. Sensors can be mobile or installed permanently throughout distribution networks, transmitting readings for manual inspection or cloud-based analysis by technology providers.	Data gathering and analytics can be automated to report on network health and track leak development, generally on a day-to-day basis. Some systems can more accurately locate faults by correlating simultaneous readings from multiple sensors.	These solutions are limited by factors that interfere with sound transfer within water networks, particularly PVC, mixed material, or large diameter piping. High ambient noise levels can affect accuracy. Does not account for apparent losses.	Aquarius Spectrum, Gutermann, ABB, Halma Water Management
Flow Meters	Flow meters measure water inflow and outflow in a network. For maximum benefit, they are often structured in district metered areas (DMAs) – discrete portions of water distribution networks, created by installing regular boundary valves.	Metering the water flowing into and out of DMAs is an effective way of measuring physical losses from a network, and of narrowing the location of leaks to specific areas.	Installing flow meters and boundary valves for DMAs is costly and can reduce networks' hydraulic efficiency. Follow-up by leak detection crews needed to pinpoint a suspected leak within DMAs. Does not account for apparent losses.	i2O, Kamstrup, Siemens, ABB
Pressure Sensors	Pressure sensors can be installed permanently throughout distribution networks, transmitting network pressure data to operators in real-time.	Water networks are pressurised to ensure consistent flows and drops in pressure can indicate leaks or bursts. The test is simple to conduct and sensitive, provided fluctuations due to changes in temperature are compensated for.	Pressure variations inherent in most water networks can affect accuracy. This method cannot locate leaks without additional flow metering. Does not account for apparent losses.	i2O, ABB, Kamstrup, Technolog
Data Management Platforms	Remote data platforms can automatically process and combine data from multiple inputs to generate loss reports. These often use artificial intelligence techniques to manage the large quantities of data smart networks generate.	Being data agnostic, software platforms work with operators' extant infrastructure. With web-based data management services ranging from data visualisation to complete network monitoring, some platforms can address both physical and apparent losses. They do not require DMAs.	Being built around big data analysis, this type of leak detection depends on access to large volumes of data. Not all network monitoring solutions generate data with the necessary regularity to achieve optimum results.	BuntPlanet, Visenti, Royal HaskoningDHV, TaKaDu

Source: GWI

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Johannes Koch, Siemens

Planet states BuntBrain suffers none of these drawbacks and by monitoring both conveyance networks and metering infrastructure, unlike most permanent loss detection solutions, the platform simultaneously describes both physical and apparent water losses (*see table, facing page*).

The cloud-based mathematical modelling platform has two modules. Leak-Finder requires flow data inputs every 15 minutes to provide optimised physical loss reporting. WaterMeter needs water usage measurements from at least 25,000 meters every three months to monitor apparent losses effectively. Once its analytics are layered with hydraulic network models, generated using tools such as the US Environmental Protection Agency's EPANET, the platform can pinpoint potential faults and describe leaks up to 33% smaller than alternative technologies, according to the company. This increased sensitivity allows BuntBrain to identify problems earlier than other methods, minimising water losses and network damage.

BuntPlanet has so far focused operations in Europe and Latin America, with references in nine countries. Having worked previously with Aqualia on several domestic projects, a partnership with Siemens allows the Spanish firm to grow its reach on a global scale. From Siemens' perspective, adding a DMA independent leak detection solution to its technology portfolio strengthens its end-to-end service offer along with its own global presence.

“To date, our primary market has been Europe, followed by the Middle East and North Africa,” Markus Lade, Siemens' head of water and wastewater, explained. “We're increasing activities in India, China, and Australia, but we're comparatively weak in the US. We're expanding our offer to be as strong as possible in the Americas.”

The BuntPlanet partnership is far from the first to augment Siemens' digital water capabilities. In 2004, Siemens began work-

ing with liquid analysts Hach Lange, developing automated wastewater monitoring in its wastewater treatment plants, and in 2016, the firm announced a strategic alliance with 3D modelling and infrastructure software specialists, Bentley Systems.

Maximising its digital solutions portfolio has made collaboration with Siemens an attractive prospect for project developers looking to bolster their digital capabilities. Lade believes Siemens' integration of cutting-edge digital systems was central to their 2018 engineering, procurement, and construction partnership with water treatment specialists Acciona Agua. “They want to go deep with the technology, leveraging

all its advantages,” he explained. “Our integrated digital engineering operations offer fits their operational and business models perfectly. Our work with partners is one of the reasons we can offer such a complete package.”

Collaboration allows Siemens a cost and time effective way to build an end-to-end service offer unrestricted by their inhouse development programmes, one potentially boasting global appeal and responsive to shifts in technological innovation and customer needs. “In all our interests, but especially in digital, collaboration is essential,” Lade concluded. “Going forward, it's how we plan to really get things done.” ■

CONFERENCE TALK

North American utilities look to their digital future

The SWAN Forum arrived in the USA for the first time last month. High attendance by North American utilities suggests a bright future for digital, but it was human factors that dominated the debate, writes Rory Weaver.

There is one term guaranteed to crop up when talking digital: ‘organisational resistance’. Adopting a digital technology affects stakeholders at all levels of a utility in a way that is rarely true of a new treatment technology. This means that digital technology needs buy-in across an organisation, from operators (“if it's wrong once, I'll never trust it again”) to board members (“I can't justify this to ratepayers”), and even customers in the case of smart metering. If the success stories on the stage in Miami had one thing in common, it was a utility leader with a clear vision and an ability to bring people with them. There is plenty that vendors can do to make this process easier. A clear business case is key, but return on investment may appear in unexpected places: utilities with cheap water still need to think about the legal, social and reputational costs of a trunk main burst.

In a crowded marketplace with digital solutions proliferating on all sides, it seems that the challenge for vendors is in finding a client with the right problem. No two water networks are the same, and compatible vendors and clients can struggle to find each other. Add to this the challenge of locating and classifying underground assets in the first place,

and the magnitude of this issue becomes clear. Finding and implementing the right solution requires real knowledge of a utility's problems, which means that technology partners need to take the time to understand their clients on a case-by-case basis. Digital technology is forecast to be big money, and in a fragmented market the role of matchmakers is looking increasingly valuable.

Whatever the obstacles, the sheer number of small and mid-sized American utilities in attendance at SWAN is testament to the optimism and urgency surrounding digital technologies. With 55,000 water sector workers eligible for retirement in the next 5-7 years in the state of Texas alone, a transformation is coming to American utilities whatever happens. Digital water presents an opportunity to make this happen on their own terms, by preserving knowledge accumulated in the past while streamlining operations for the future. With the choice of technology seemingly increasing by the month, the challenge will lie in finding the right fit, making a good business case, and doubling down on implementation. Fitting sensors and installing software is the easy part – it is the human factor that will make or break the move to digital. ■