



BRUSSELS AIMS TO REWRITE THE RULES FOR WATER

AS NEWLY ELECTED REPS ENTER A BREXIT-BATTERED PARLIAMENT FOR THE FIRST TIME, WHAT ARE THE EU'S WATER PRIORITIES?

SAUDI ARABIA'S STORAGE WARS

THE NEED FOR WATER SECURITY IS DRIVING INVESTMENT IN NEW AREAS IN THE KINGDOM

BIOMETHANE - MORE THAN JUST HOT AIR?

SEWAGE TREATMENT PLANT OPERATORS ARE TAKING BIOGAS UP THE VALUE CHAIN. GWI ASKS: WHAT'S NEXT?

FIRST REPORT

Charting start-ups' journeys: volume two

CTO revisits some of the technologies assessed in the First Report section to check on progress. This month: Aqua Robur moves up digital supply chain; Viroment pivots away from the water sector; AquaHD secures equity funding; Pharem seeks operational data in municipal space; EnGibton comes to a stop.

UP THE IOT LADDER OF SUCCESS

Aqua Robur (see *GW* December 2017, p44) has been focused on being able to deliver a turnkey solution for monitoring water distribution networks. By improving the sensor nodes in its Fenix Hub unit, any kind of sensor can now be connected to the node. The in-pipe turbine technology, which harvests energy from the flow of water through the pipe, can now also be managed by the sensor node. The turbine usually operates at velocities of 0.2-0.6m/s, which typically generates a pressure drop of 10-50cm.

Other developments include the introduction of connectivity with NB-IoT – a Fenix Hub previously only operated on the LoRaWAN low power wide area network. After successful completion of pilots in Sweden, the company has extended its operations to Spain, Germany and Italy, where it is operating pilots under commercial terms. While applications are still mainly in municipal water, the monitoring solutions are also being applied in the irrigation & farming sector, mainly for connectivity purposes. After raising around €720,000 in 2018, Aqua Robur is looking to raise another €2m to invest more heavily in its go-to-market plan as well as industrialise the technology to meet market demand. It continues to develop its G50 turbine and saddle clamp for pipes of less than 100mm in diameter.

GW verdict: Aqua Robur has grown its expertise to offer a

turnkey solution to vendors, something which is increasingly welcomed in the context of the digital solutions market. The company now needs to secure extra funding to enable the scaling-up process.

HOGGISH FOR OTHER OPPORTUNITY

Sensing opportunity away from the traditionally slow sales cycle in the water industry, **Viroment** (see *GW* July 2017, p44) has struck a deal to build hog barns in Nebraska, where it will use its dewatering technology on the liquid manure. Viroment will build (with help from local partners) and own the barns and is currently in the permitting stage for building 15 barns, the first phase of construction of a total of 185. The liquid manure from the barns will be dewatered by Viroment's vacuum drum dryer and the solids will be further dried to produce a fertiliser for use on local corn crops. The company has not exited the water industry, however. It has an ongoing valida-

tion study at Houston's wastewater treatment plant, where it provided a sludge pumping project as part of the relief effort in the wake of 2017's Hurricane Harvey. The study will soon be available. A project at a municipal sewage treatment plant in China is also underway where Viroment is working with its government partner.

GW verdict: The Nebraska hog barn project will likely be the first to materialise for Viroment, giving it a chance to prove its technology on a high solids stream without a prolonged piloting cycle. Nonetheless, its experience at Houston's wastewater treatment plant – one of the largest in the USA – will be valuable for gaining traction in the water sector.

HARVESTING NEW DEALS

The first few months of 2019 have been busy for **AquaHD** (see *GW* November 2017, p59), which has managed to com-

mmercialise its centrifugal solids separation technology. As well as securing an equity investment from fellow Israeli company Filtersafe Group (it has declined to disclose the amount), the firm has secured four commercial projects since the turn of the year.

Aqua HD is looking at a number of applications with its technology: in addition to treating surface water for an industrial plant in India (200m³/h), it has also landed two projects in Kenya, one for irrigation water (100m³/h) and one for treating post-harvesting process water (50m³/h). The fourth installation is treating backwash (50m³/h) at a plant in Israel.

A key focus for AquaHD is the agricultural sector, treating post-harvesting process water to reuse the water in fruit and vegetable processing and packaging. Tertiary treatment of municipal wastewater in the US is also a target for the company although progress into that market is at an early stage. Developing the next generation of the technology is also a key focus and it is currently ▶

MIXED FORTUNES

Companies featured this month originate predominantly from Sweden and Israel. GW holds all of them at their original star rating.

Company	Technology	Market addressed	First reviewed	Rating*
Aqua Robur	Fenix Suite	Water network monitoring	Dec 2017	2/3
Viroment	Vacuum Drum Dyer	Sludge management	Jul 2017	2/3
AquaHD	Centrifugal Solids Separation	High solids water treatment	Nov 2017	1/3
Pharem Biotech	Pharem Filtration System	Removing organic micropollutants with enzymes	May 2017	1/3
EnGibton	Micelle-Clay	Removal of dissolved organics	April 2017	1/3

*At time of first review: 0=unrated; 1=interesting; 2=worth a detour; 3=worth a journey

Source: GW