

LET THERE BE WATER

aqualia, the world's third largest private water management company, puts a strong focus on sustainability, ensuring a more efficient use of natural resources. Romana Moares spoke to Frank Rogalla, Director of Innovation and Technology, about aqualia's current projects and its plans for the future.

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AS part of FCC, one of the largest European services groups, aqualia provides water for human, industrial and agricultural uses, mainly managing municipal water services. The company currently controls 36% of the Spanish market for private water operators and services almost 25 million people in more than 1,000 communities in 22 countries in Europe, South America, North Africa and the Middle East.

"One of our competitive advantages is our local presence. We are deeply ingrained in communities in order to leverage our global reach and our technical capabilities," stated Director of Innovation and Technology, Frank Rogalla. "In Spain, we have a 97% contract extension and renewal rate, showing our good customer relationships. This solid position in the domestic market gives us the strength to expand elsewhere."

In 2016, FCC became part of the Carso Group, boosting the international market presence and giving the business a new dimension. The company achieved record-breaking results after obtaining two large contracts for new treatment plants. The first, in Bogotá, Colombia, relates to the building and operating of a wastewater treatment plant worth € 380 million, which will serve three million people. The second, in the Egyptian city of El Alamein, sees FCC developing a desalination plant worth €114.6 million.



In line with nature

Being a modern, progressive, 21st century company, aqualia strategically implements best environmental practices in its daily work, and fully engages its social and corporate responsibility while carrying out its activity - following the most ambitious organisational standards and management processes. Furthermore, across the whole organisation, aqualia is instilling an increased focus on achieving a greater degree of sustainability within the water management process.

aqualia controls all the stages of the comprehensive water management cycle, ranging from the collection of water from the natural resource, to purification and treatment to the distribution, all the way to the billing and the interface with the customer. On the downstream side, Mr Rogalla explained the objective is to move away from the concept of wastewater, to recover resources during the treatment in order to reuse water and energy before its returned to the source from which it was obtained.

"In short, the processes we control range from the supply of drinking water to the reuse of wastewater," said Mr Rogalla who



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affirmed that innovations and research and development have always been factors significantly contributing to the company's prime position.

"We collaborate with more than 20 universities and research centres in both Spain and other countries," he said. "At the moment, our main efforts are aimed at achieving sustainable desalination with low energy input, and the use of wastewater for biofuel and higher value products such as fertilisers and plastics. We accompany these new paradigms with a smart water initiative, an ambitious technological innovation project that is pioneering better ways of communication with customers for more efficient management of the integral water cycle."

The Director of Innovation and Technology also explained that aqualia participates in a dozen large projects within the EU research and development programs, such as LIFE or Horizon 2020. One good example of this international involvement, highlighted Mr Rogalla, is the MIDES project.

"As global shortages of fresh water are a growing challenge for societies, desalination is a key option to significantly increase water resources for drinking, industrial use and irrigation. The MIDES project aims at developing an energy-efficient, revolutionary system of fresh water production using microbial desalination cells."



In addition to the company's MIDES involvement, Mr Rogalla said aqualia promotes a number of EU projects to widen resource recovery, such as SABANA - Sustainable Algae Biorefinery for Agriculture and Aquaculture - and INCOVER - a collaborative project funded by the European Commission under Horizon 2020 that focuses on innovative technologies for producing bioplastics, biofertilizers and reuse water.

Sustainability in focus

A major ongoing project is All-gas, carried out under the EU FP7 programme, which demonstrates, on a large scale, the sustainable production of bio-fuels based on low-cost microalgae cultures using municipal wastewater. The complete process chain is designed for a cultivation area of up to 10 hectares, making wastewater treatment energy self-sufficient, and recycling the nitrogen and phosphorus into microalgae biomass and bioenergy.

"The FP7 All-gas project started in May 2011 and has reached its main objective - at the beginning of December 2017, the first large demo plant was inaugurated, demonstrating for the first time in the world that biofuel can be produced from algae," said Mr Rogalla. "This is a true revolutionary moment, giving the wastewater a wholly new perspective as a biofuel. All-gas is the first to be deployed on large scale, as it takes five to ten years for a new process to reach industrial scale."

In June 2017, together with project partners in north and west Europe, aqualia kicked-off its latest project - H2020 Run4Life (Recovery and Utilisation of Nutrients 4 Low Impact Fertiliser). The main objective of this particular project is to recover nutrients from domestic waste streams for application in agriculture.

"Run4Life proposes an alternative strategy for improving nutrient recovery rates, based on a decentralised treatment of segregated black water (toilet wastewater), grey water (other domestic wastewaters) and organic kitchen waste," explained Mr Rogalla. "Different innovative technologies are combined, such as new ultra-low water flushing vacuum toilets yielding highly concentrated black water,

hyper-thermophilic anaerobic digestion as one-step process for fertilisers production and bio-electrochemical systems for nitrogen recovery." The project will continue until June 2021.

Mr Rogalla further confirmed that the focus within the water treatment plant activities across aqualia will run parallel with its sustainability scheme, defined as 'Reuse Reduce Recycle - Recover Redesign Rethink'.

"The motto is 'minimise impact, maximise return' to get the most from the precious raw material that is water and waste. To support this perspective, aqualia has extended its research and development department in recent years and the amount of investment in this area runs into millions of euros annually."

Global reach

Moving forward, aqualia is seeking to consolidate its international presence in key markets, focusing on the Mediterranean from Portugal to Egypt, as well as the growing markets of the Middle East.

While being a local market leader, promoting international expansion has been an integral part of aqualia's strategy, as demonstrated by the projects won recently. In September 2017, FCC aqualia entered into a joint venture with Orascom Construction and signed an engineering, procurement and construction (EPC) contract to build Abu Rawash Wastewater Treatment Plant in Egypt for approximately \$320 million.

The facility will have a capacity of 1.6 million cubic meters per day, comprised of primary and secondary treatment units, and is

planned to be constructed over phases in 37 months. Once complete, the facility will serve six million people. In addition to the EPC scope, the joint venture will operate and maintain the facility for three years.

"Starting with the New Cairo wastewater treatment plant commissioned in 2014, it is the first PPP project in Egypt and was an important milestone, allowing us to focus on much bigger projects," said Jose Enrique Bofill, Director of MENA. "FCC aqualia was awarded the concession for the desalination plant which serves a population of one million in El-Alamein, as well as the Abu Rawash plant - both good examples of our expansion in this region, demonstrating how the project portfolio can grow with the right synergy of local partners and global know-how."

