



Actility

Stories

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VEOLIA WATER & WASTEWATER TREATMENT

Veolia uses ThingPark Energy to operate a smart water network

Improve the efficiency and automated control of pumping stations and reservoirs

Veolia Water is a leading global operator of water services. They provide delegated management of fresh water and wastewater services for municipal and industrial clients by handling every step in the water cycle. Energy consumption is involved during the whole process, from the pumping of water to the treatment process and distribution via the network.

Electricity purchase represents an important expenditure for Veolia. More than 80% of it is used for pumping and aeration. Typically, pumping stations pay electricity at fixed rate, with limited price differences between peak and off-peak hours. However, prices on the electricity market show a much larger variation. This creates opportunities for flexible consumers like Veolia to optimize their large storage capacities (water tanks) and a high number of flexible electrical devices with short activation times (pumps, valves, aerators...).

Encouraged by an increase in water

production and environmental challenges, the company chose Actility's platform ThingPark Energy to improve the efficiency of its pumping stations and treatment plants. Actility brings its real-time optimization algorithms to model the complex water processes. Electrical devices are remotely controlled, taking into account fluctuating energy prices. The final operational plan is scheduled to minimize the overall cost of electricity while ensuring that operational limits are never violated. Moreover, Actility drives additional revenues for occasional grid balancing, considering real-time price opportunities and reacting to Demand Response requests from the grid operator (TSO).

Operational assistance and estimated gains

Actility's ThingPark Energy Platform makes use of high performant data analytics tools. The predictive modelling capability allows to respond automatically and in optimal ways to unplanned situations. The operational plan is updated automatically respecting process constraints. This provides significant support to on call operation teams. The same prediction capabilities,

VEOLIA WATER KEY FIGURES



11.34 M€ for revenues in the water sector, and for water supply



100 million people supplied in water



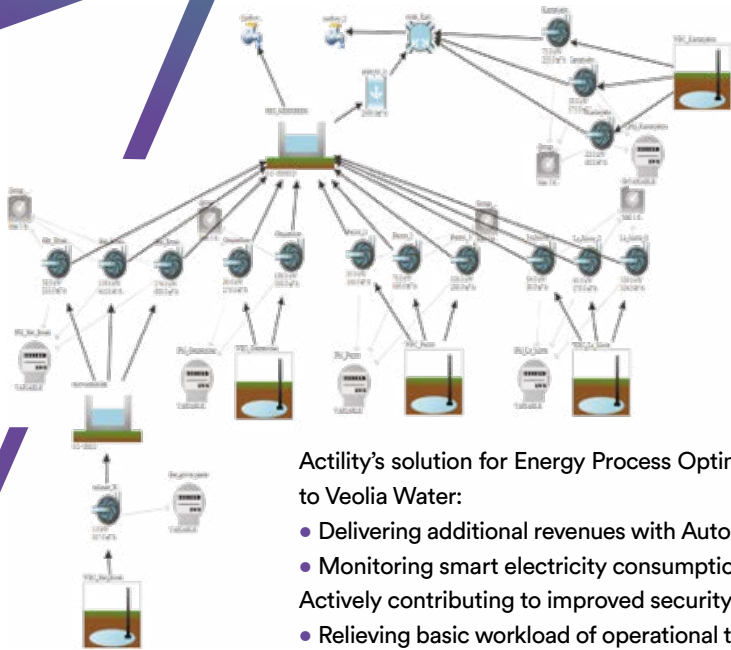
5.5 billions m³ of water supplied annually

combining with the operational monitoring, can detect failures and mobilize human experts as soon as such issues are detected. This enhances process and business KPIs.

Actility brings a strong understanding of information management systems. This allows seamless integration between the ThingPark Energy solutions for energy process optimization and Veolia's existing management system, using specific data collection and communication. Actility rolled out a highly redundant and secure VPN between Veolia's server and ThingPark Energy, ensuring a transparent solution. Finally, Veolia's water management system is turned into a Smart Water Solution.

After validation by Veolia, ThingPark Energy optimizes the operations and benefits from electricity market opportunities and fully integrates Automated Demand-Response to the energy management system so that Demand Response activations neither involve Veolia's on-site operators nor challenge the global production.





Leveraging the flexibility of the plant

Energy Process Modeling is one of the ThingPark Energy's solutions controlling multiple sites using predictive modelling to determine each site's optimal load curve. The whole portfolio of sites is then globally optimized, with the sites responding to the commands sent by ThingPark Energy to their local controllers (e.g. local PLCs). This solution is reliable and highly scalable, allowing Activity to support Veolia in many countries in their transition to Smart Water management with minimum investments in monitoring and control systems.

Activity's solution for Energy Process Optimization and Automated Demand Response offers multiple benefits to Veolia Water:

- Delivering additional revenues with Automated Demand Response
 - Monitoring smart electricity consumption and detecting abnormalities in the process
- Actively contributing to improved security of electricity supply and CO₂ emission reduction
- Relieving basic workload of operational team, allowing to focus on special issues

“Activity is of new value to Veolia and we have negotiated a transparent partnership with them. Thanks to their unrivaled expertise in Energy Management and Demand Response, in relation with the power market prices, Activity helps us extract hidden value from our flexibility of industrial sector by adding smart modelling and predictive algorithms to our existing automation systems.”

Christophe Lepoutre, Vice President Energy & Sub-Contracting Procurement, Veolia

Activity works together with the industrials to collect data and gain insight regarding operational limits. The industrial process is modelled and if necessary, the station is equipped with meters and communication devices, even if this is a source of CAPEX increase for the project.

The implementation steps for Veolia Water's project had followed the scheme hereunder:

