



Purification cycle optimisation with Zenit pumps and mixers

water solutions

Situation

The Aquarno wastewater treatment plant is located in the municipality of S. Croce sull'Arno (Pisa, Italy) and has been treating wastewater from the local tannery district since 1974.

The presence of many leather-processing businesses in this area and the high polluting potential of their waste made it imperative to adopt more restrictive industrial waste disposal countermeasures, five years in advance of the first national environmental law.

The plant currently processes more than 30,000 m³ of urban wastewater a day, two-thirds of which in form of industrial waste from production plants and one-third domestic wastewater from residential areas, with a treatment capacity in excess of two million population equivalent (PE).

Following an optimisation plan of the purification cycle which, as a result of the inclusion of a new, large-size volume for collecting incoming water in bad weather conditions, the Aquarno Consortium is expanding its infrastructure by constructing a further large tank with a capacity of over 30,000 m³, divided into six sub-sections in which reliable machines provided with modern, high-efficiency motors will be installed.

Solution

To improve system reliability and contain operating costs, Zenit engineers selected over 32 high-efficiency hydraulic Uniqa ZUG OC pumps with channel impeller fitting motors of power up to 37 kW in Premium IE3 efficiency class for high performance and low energy consumption. Twenty-four ZMR series mixers fitted with high-efficiency 5.5 kW motors and 650 mm stainless steel propeller with self-cleaning profile were also installed in the first rain tanks.

The mixer installation structure is made of stainless steel to guarantee maximum durability, while the pumps were installed using DAC V bottom coupling systems allowing the machine to be easily separated from the system even when the tank is full.

Benefits

Since the new Zenit machines were installed, it has never been necessary to shut down the plant for maintenance because of the reliability of the components and the high quality of the materials used. Additionally, the large free passage of the channel hydraulics has avoided problems of clogging and blocking even in severe working conditions. The use of high-efficiency motors made it possible to contain the costs related to energy consumption, maintaining high-performance which is constant over time.

Today, the Aquarno Consortium is able to abate the polluting load of incoming wastewater by up to 98.5%. The entire production of sludge resulting from the purification cycle is recycled, also thanks to the reliability and efficiency of Zenit products.



The headquarters of Consorzio Aquarno S.p.A.



Two tanks of the treatment plant where Zenit machines are installed



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Customer	Consorzio Aquarno S.p.A.			
Company Profile	Integrated Water Service Manager in the Territorial Area			
Location	S. Croce sull'Arno (Pisa)	Country	Italy	Area Europe
Application	Depuration			
Installed Products	32 x Uniqa ZUG OC - 24 x ZMR Mixer			
Date	2019			