SULZER

CASE STUDY 5/2021

Sulzer pumps – greening the desert

High efficiency pumps play a central role in Egypt's Al Mahsama agricultural drainage treatment, recycling and reuse plant. Built on the banks of the New Suez Canal in Egypt's Sinai region, the USD 100 million Al Mahsama water treatment facility is the largest of its kind in the world. The plant, which was officially inaugurated by the country's president Abdel Fattah El Sisi in April 2020, will produce enough clean water to irrigate 70'000 acres (283 square kilometers) of agricultural land.

"Each of the plant's 28 disk filter installations, for example, uses a Sulzer vertical multistage (VMS) pump to recirculate backwash water. This design provides a continuous process, even during a backwash. The design of the disk filter offers several advantages over alternative technologies and delivers a very stable water effluent quality. Sulzer pump experts worked closely with the manufacturer of the disk filter system to optimize the pumps for the application."

Gabriele Casella, Export Sales Manager, Sulzer Italy

Water security is a critical social and economic concern especially in arid regions. The Nile has always been Egypt's most important water source but rising pressure on the river's resources has led the country's government to pursue a strategy of diversification. The latest element of that strategy is a state-of-the-art 42'000 square meter (452'000 sq. ft.) water treatment facility, located west of the Suez Canal.

Restoring sustainability

El Temsah Lake, west of the Suez Canal, had become heavily polluted by decades of run-off from the region's farms. The Al Mahsama plant has been designed to reverse the lake's declining ecology, catching and treating up to 1 million cubic meters (35 million cubic feet) of agricultural wastewater per day.

Each of the plant's 28 disk filter installations uses a Sulzer VMS pump

The Al Mahsama facility was developed by a joint venture (JV) including Metito, the globally acclaimed multinational provider of water and alternative energy solutions. The JV was briefed to deliver a reliable and efficient plant, with a minimal footprint, capable of achieving low operating costs as well as high levels of sustainability within a record completion time in twelve months. With pumps being amongst the largest source of energy demand in any water treatment process, picking the right equipment was critical to the project's success.

Finding the best solution

After a rigorous technical evaluation and competitive tender process, the Al Mahsama JV selected Sulzer as the primary pump supplier for the project. Agricultural wastewater recycling is a highly specialized process, sharing some characteristics of both clean water and wastewater treatment. As a leading supplier of pumping solutions to both segments of the market, Sulzer was well positioned to meet the unique technical requirements of the project.

Elsewhere in the plant, ten Sulzer Scaba agitators are used to prepare and mix aluminum sulfide and activated carbon used in the treatment process, while 27 Sulzer XFP submersible pumps are installed across the plant. Ranging in size from 14 kW to 30 kW, these versatile units fulfil a number of tasks, including dealing with water leakage, supernatant drainage from clarifiers and sludge drainage.

Across the portfolio of products supplied to the project, Sulzer specified its high-efficiency motors, which achieve class-leading levels of energy savings. By operating at lower temperatures than less efficient designs, these motors also offer high levels of reliability and an exceptionally long service life.

“In projects such as this, operating efficiency is a very important factor. Together with Sulzer’s expertise in water treatment processes and the quality of our products, we were able to offer the best solution for the project.”

Gabriele Casella, Export Sales Manager, Sulzer Italy

Award-winning design

The Al Mahsama plant has been widely hailed by the engineering community. The project was awarded “Infrastructure Project of the Year” at Dubai’s 2019 Construction Innovation Awards, Best Water / Wastewater project by Engineering News-Record, and CFI Best Recycling and Reuse Water Project, 2020. It has also been shortlisted for the Global Water Awards Project of the Year 2020.

(Image source: Metito)

The construction project delivered a reliable and efficient plant, with a minimal footprint, capable of achieving low operating costs

Sulzer specified high-efficiency motors, which achieve class-leading levels of energy savings

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