

CASE STUDY

Sulzer's Largest Submersible Wastewater Pump for Marine Environment Protection in Saudi Arabia

Mandated to transform Saudi Arabia's water and wastewater infrastructure, National Water Company aims to increase the capacity of wastewater treatment in Jeddah to serve its expanding population and protect the environment.

The Jeddah City Business Unit of The National Water Company appointed Al-Muhaidib Contracting Company, in joint venture with Vinci Construction UK, to build a new sea outfall for the transmission of treated effluent from the Al-Khumra wastewater treatment plant. The treated effluent is recycled for reuse in irrigation and other applications. During emergencies, the effluent will be discharged to a specific sea location that will provide sufficient dilution with minimum impact on the environment.

The transmission system comprises of onshore works that include a pumping station and an approximately 20 kilometers pipeline of 2.8 m diameter, and offshore works that include five pipelines, each with a diameter of 1.2 meters and an approximate length of 700 meters. Sulzer delivered the submersible pumps for the pumping station.

The Sulzer difference

- Sulzer had many references for the same pump size, especially in the Middle East, and was the only manufacturer with a reference for identical pumps (same combination of pump and motor) in Tallinn.
- Sulzer provided extensive technical support to the contractor for the design of the pumping station (piping, inlet chamber, lifting device, cable protection and fixing).
- Premium-efficiency equivalent motor.

“ We have a proven track record of successful achievements in the Gulf Region and we brought a wealth of experience to this project that required joint efforts of all Sulzer employees involved, from design to procurement and sales. ”

Gabriele Casella, Sales Manager at Sulzer Pumps Wastewater Italy – Export



Gabriele Casella at the Al-Khumra pumping station

The challenge

Pumps of the required size are normally designed and built specifically for the project by engineering companies. In order to ensure maximum reliability, the customer, however, wanted a smart solution from a supplier specialized in wastewater products, with many references for the same pump size.

Sulzer was one of the recommended vendors because of positive experiences with large pumping stations in the same city and for the same end user in the past.

The solution

- For the Al-Khumra Effluent Pumping Station, Sulzer supplied nine submersible sewage pumps type ABS AFP rated 800 kW with duty points of 2,000 l/s at 30 m head installed in wet wells.
- Each pump weighs 10.5 tons. They are currently the largest of their kind in the Kingdom of Saudi Arabia. The pumping station is expected to be in operation at the end of 2014.

Customer benefit

- Submersible sewage pumps type ABS AFP 8002 are four meters tall and more than ten tons heavy, and therefore the lifting procedures are critical in deep sumps. Sulzer developed a suitable kit of accessories, including a gripping unit certified according to the ISO design (EN14492-2) and safety norms (EN13155 and EN 60204-32) as well as cable hanging and protecting devices to make lifting operations safe and easy.
- Sulzer designed a new high-efficiency submersible motor for this large pump.
- Lighter motor design due to cooling jacket with forced cooling.
- Advanced and handy pump monitoring unit based on pump controller type ABS PC 441 for collecting the signals of thermal sensors, PT100, accelerometers and DI moisture sensors.

Product data

Submersible sewage pumps type ABS AFP8002-M8000/10	
Impeller	5 vane semi-open in duplex stainless steel, diameter 830 mm
Discharge flange	DN800
Duty point	2,000 l/s at 30.4 m
Hydraulic efficiency	83.5%
Motor efficiency	96.6%
Motor rated power (P2)	800 kW
Motor rated speed (n)	713 r.p.m.
Motor rated current (I)	1,011 A
Voltage	575 V
Frequency (f)	60 Hz
Weight	10.5 tons

Contact

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Applicable markets

Wastewater

Applicable products

Submersible sewage pumps
type ABS AFP