SULZER

CASE STUDY

Sulzer's stainless steel XFP pumps for reliable and efficient pumping in tough conditions

The Avebe U.A. cooperative is a Dutch international starch manufacturer located in the north of the Netherlands, close to the German border, in a town called "Ter Apelkanaal". Avebe mainly produces potato starch and proteins to be used in food, animal feed, paper, construction, textiles, and adhesives. About 2'500 farmers are members of the Avebe cooperative, whose starch factories process about three million tons of potatoes annually.

The wastewater treatment plant (WWTP) of the Avebe cooperative consists of several pumping stations equipped with stainless steel pumps type Scanpump, built in 1996. Due to an increased inflow into the pumping stations the flow of the existing pumps had to be upgraded. Avebe pledges to reduce their carbon footprint and thereby their CO_2 emissions by 25% during the coming years and was therefore looking for energy efficient equipment.

“We chose Sulzer, because they offer reliable pumps at a competitive price. We have used Sulzer equipment for decades in the production process and the Avebe WWTP.”

Henk Brouwer, Plant Engineer AMF TAK

The challenge

The challenge was to find a material that would withstand the sometimes aggressive medium (pH 1-12), the wastewater from the production process, as well as an energy efficient pump design. The existing Scanpumps of stainless steel had been in operation for more than 20 years without any major downtime or being much affected by the medium in terms of corrosion. The project requested an equivalent stainless steel material.

The solution

Sulzer’s design department recommended duplex stainless steel as the material. Duplex 1.4470 with outstanding properties both in mechanical strength and corrosion resistance was selected for this demanding application.

Sulzer’s engineering team supported Avebe and the installer in upgrading the pipe work and replacing the old pumps. In the upgrading process the real and exact duty point as well as the entire system curve had to be measured. To check the pump curve, one of the installed pumps was first tested electrically and hydraulically at Sulzer´s test center in Maastricht. In a second step Sulzer carried out several field tests in the pumping station to determine and check the system curve.

Based on the collected data it was decided to replace the existing radial pumps by Sulzer’s submersible sewage pumps type ABS XFP with ContraBlock Plus impellers and Premium Efficiency IE3 motors. They correspond with Avebe’s high energy efficiency requirements and will reduce the environmental footprint of the plant.

Customer benefit

- Sulzer provided engineering and hydraulic knowledge for upgrading the station.
- The Sulzer team carried out tests both in a certified test facility and in the field to select the best possible and energy efficient pump in duplex stainless steel.
- After the delivery of the pumps and new pedestals, Sulzer advised and checked the installation of the new piping in the pumping station.
- The outstanding 1.4470 high grade duplex stainless steel material with a minimum PRE of 33 combines both high strength and excellent corrosion resistance.
- The new XFP SX pump has a 2% higher motor efficiency and a 5% better hydraulic efficiency than the previous pump type.
- The pump operates close to the Best Efficiency Point (BEP) and will run at optimum hydraulic efficiency with low vibration and at a low NPSH level. This way the treatment plant will gain maximum savings in operational costs.

Product data

Three stainless steel submersible sewage pumps type ABS XFP SX

XFP155J-CB2 PE370-4 SX including DN150 SX pedestals	
Motor	Premium Efficiency IE3
Power P2	37 kW, 4 poles
Impeller	ContraBlock Plus
Flow	375 m^3/h
Head	22.7 m
Efficiency	Maximum 76%
Medium	Water with pollutants (pH 1-12)

For any inquiries please contact

pascal.tesser@sulzer.com, oliver.guglielminetti@sulzer.com

sulzer.com