PUMPS FROM COLFAX FLUID HANDLING

IN ISTANBUL'S LARGEST MODERN SEWAGE PLANT

The metropolitan region of Istanbul currently has 15 sewage treatment plants serving nearly 20 million residents. The largest plant is located in Ambarli and is also one of the most modern and largest sewage treatment plants in Europe. German water and wastewater engineering firm PWT was the project manager for this plant, designing and operating it since its completion in mid-2012, under contract from Istanbul's Water and Wastewater Company (ISKI). Argus Makine, the Istanbul-based representative of the German pump manufacturer Allweiler®, a brand of Colfax Fluid Handling, handles maintenance and optimization of all pumps in the plant. Colfax Fluid Handling is a business of Colfax Corporation (NYSE: CFX).

90 Allweiler® pumps

Thirty-six progressing cavity pumps of the type "ALL-OPTIFLOW®" from Allweiler® form the core of the plant. The pumps are indispensable in virtually every step of the process, from delivery of raw sewage to pumping of sludge.

The plant produces biogas as a byproduct of the treatment and sludge-drying processes, which it uses to power turbines for electrical energy and to generate heat. Six Allweiler® high-temperature pumps of the "ALLHEAT®" series are used in this process. Each pump moves "mobiltherm 605" synthetic heat transfer oil at a rate of approximately 210 m^3/h (925 gpm), at a temperature of up to 300 °C (572 °F), and a pressure of 4 bar (58 psi).

Lower operating costs

High efficiency and low maintenance-induced downtime are important for the plant's operation. ALL-OPTIFLOW® pumps are optimized for this role. Special stator and rotor surfaces and other design details result in extremely low starting torques and frictional losses. Both characteristics reduce power consumption. Allweiler®'s exclusive ALLDUR® stators ultimately extend maintenance intervals by up to 500 percent. These stators are extremely durable for a longer service life. This is less critical for feed and metering pumps, but is very important when pumping wastewater and sludge with abrasive components like sand. These pumps move material at a pressure of 1.5 to 3 bar (21.8 to 43.5 psi) and a flow rate ranging from 0.4 m^3/h to 220 m^3/h (1.76 gpm to 969 gpm). Proportioning pumps that feed materials like polymers are at the lower end of the range, while pumps moving raw and activated sludge account for the higher values. Six progressing cavity transfer pumps achieve flow rates of up to 1,300 m^3/h (5724.35 gpm).

Gökhan Demirel, Operations Director at the Ambarli treatment plant: "We haven't had any problems since bringing the Allweiler pumps into service. The same cannot be said about some pumps from other manufacturers."

Flawless operation

In the view of plant director Gökhan Demirel the choice of Allweiler® pumps was a good one. They show only minor wear and when spare parts are needed, they can be obtained economically. Another factor is the targeted selection of stator material according to the characteristics

COLFAX® Fluid Handling

of the sludge and liquid. Finally, procuring all pumps for a plant from a single manufacturer greatly simplifies maintenance. Due to the large number of common parts used in a variety of pumps, only a small number of spare parts must be kept in stock, minimizing the associated capital commitment. In this case, because nearly all pumps come from a single manufacturer, only one experienced partner (Argus Makine) is needed for service. This has proven advantageous during dimensioning and optimization of the pumps as well. At the same time, the on-site plant representative has been able to ensure rapid delivery of spare parts. Similarly positive experiences from other plants gave Ambarli yet another good reason to buy nearly all of its pumps from German manufacturer Allweiler®: "Like other plants we haven't had any problems since bringing the Allweiler® pumps into service. The same cannot be said about some of the pumps from other manufacturers" according to Gökhan Demirel.

The plant is designed to handle two million resident equivalent units. The daily volume of processed wastewater is currently at 300,000 m^3 (392,385 cubic yards), maximum capacity is 400,000 m^3 (523,180 cubic yards) and an expansion is in the works. The maximum hourly intake volume (during rainstorms, for example) is 46,800 m^3/h (206,076 gpm).

Application:	Sludge transfer
Pump series:	ALL-OPTIFLOW® AEB1F
Pump size:	5503
Flow:	100 m^3/h / 440 gpm
Pressure:	3.5 bar / 50.8 psi

Application:	Sludge transfer
Pump series:	ALL-OPTIFLOW® AEB1F
Pump size:	5503
Flow:	100 m^3/h / 440 gpm
Pressure:	3.5 bar / 50.8 psi

Application:	Proportioning additives
Pump series:	ANBP

Application:	Heat transfer
Pump series:	ALLHEAT®
Temperature:	220 °C / 428 °F
Pressure:	6 bar / 87 psi

Application: Pumping thickened sludge to digesters
Pump series: ALL-OPTIFLOW®

Application: Pumping thickened sludge to storage tank of centrifuges for dewatering up to 20-25%.
Pump series: ALL-OPTIFLOW®

Application: The large pump moves 20-25% sludge from silos to dryers. The small pump proportions are used for polymer injection in the discharge pipe for reducing pressure losses.

Application: Pumping sludge
Pump series: ALL-OPTIFLOW®
Flow: 100-150 m^3/h / 440-661 gpm
Pressure: 3-4 bar / 43.5-58 psi

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