Flygt pumps help upgrade paper mill treatment plant

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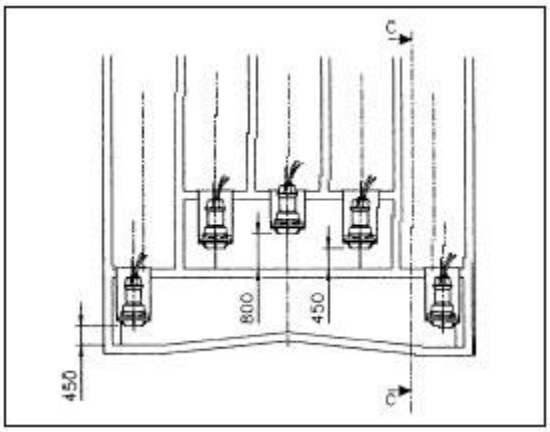
Stora Kvarnsveden AB in Sweden is one of Europe's largest newsprint mills. With a steadily growing capacity as well as growing environmental consciousness, the mill had to expand and modernise its process waste water treatment plant. New pump equipment was installed for several critical operations in the treatment process. The solution with Flygt LL 3300 pumps has proved to be a very reliable and cost effective solution.



The background

Stora Kvarnsveden AB is a paper mill producing news-print and uncoated magazine paper from thermomechanical pulp (TMP) as well as wood-containing special grades. The mill is situated 250 km northwest of Stockholm, close to the river Dalälven. The almost 100 year old mill has increased its annual capacity from 30,000 tons to today's approximately 665,000 tons. The process waste water is treated in three steps, including an activated sludge process, and then discharged into the river. Due to increased load and more demanding environmental regulations, the mill's treatment plant had to be upgraded and its capacity increased. To meet the new requirements, new equipment had to be installed, for instance:

- a clarifier between the trickling filter and the aeration basin
- pumps for cooling of process waste water before the acitvated sludge process.

The expansion of the treatment plant included a number of critical pump installations where the pumps must operate continuously.

The solution

Soil and Water Ltd., the consultant chosen by Stora Kvarnsveden, contacted Flygt. Together with Flygt engineers they designed a pump installation which resulted in a compact, accessible and space saving solution. Five Flygt LL 3300 pumps were installed for different operations.

Three of the units pump process waste water to the aeration basin with a capacity of 660 l/s at a head of 4.5 m. The other two units pump return sludge from the same basin with a capacity of 320 l/s at a head of 4.5 m. A sixth pump is used as a stand-by. All the pumps are frequency controlled in order to achieve a constant flow.

The benefits

The compact, submersible pumps could be installed with limited construction work. This has resulted in a favourable economical pump solution, which also has proved to be very reliable and cost effective.

Stora Kvarnsveden has since then chosen Flygt submersible pumps for a number of other pump operations at the plant:

- 1 × 3170 in a pump sump for emptying aeration basins and 2 × 3201 for emptying clarifier basins
- 1 × 3127 to pump excess sludge (2%) for dewatering
- 2 × 3127 for the pumping of drainage and sewage water
- 1 × 3231 which pumps raw water to the heat exchanger, used to cool the process waste water.
- 1 × 3127 for the pumping of spray water to belt presses at the sludge dewatering.

Technical specifications

LL 3300 LT lift pump	
Impeller and shaft in stainless steel	
Application	pumping of mill wastewater and return sludge
Operation	continuously VFD-controlled 30-50 Hz (500 V)
Temperature	35°C
Flow	320 l/s
Head	4.5 m
Motor rating	37 kW
Weight	755 kg