



Technology shift pays off

Modernisation of the Vejen Wastewater Treatment Plant, Denmark

Case Story



The Danish municipal water utility company Vejen Forsyning A/S now sees a 20% reduction in the volume of dewatered sludge for disposal after modernisation of their wastewater treatment plant in Vejen and installation of an Alfa Laval ALDEC G3 decanter – a clear win both economically and environmentally. The fully automatic decanter dewateres biological wastewater sludge to a dry solids content approaching 24%, representing an improvement of 6-8% over the old belt press.

Vejen's wastewater treatment plant has a maximum capacity to process wastewater from a population equivalent (PE) of 24,000 and is currently processing for a PE to 21,000. In 2014 it became clear that the facility's old belt press was in a state of such disrepair that it would either have to be replaced or undergo major renovation. Vejen Forsyning therefore decided

to invest in new dewatering equipment. In the project's tender documents Vejen Forsyning were open to consider a range of technologies, as their other treatment plants had already seen benefits from using other equipment, such as decanters, for dewatering of sludge.

Tough demands for improved dewatering to reduce disposal costs

Vejen Forsyning pays considerable costs in the post-processing and removal of the 2,400 tonnes of excess sludge (at only 16% dry solids) accumulated annually after biological wastewater treatment. 60-70% of the excess sludge is dewatered using a belt press, after which the dry solids suitable for agricultural use is taken to farming sites. The remaining 30-40% of non-dewatered sludge is pumped out to the treatment plant's drying beds for mineralisation. After some years, the residual product is spread on agricultural farm land.

The desire to reduce residual sludge volumes (and hence also disposal costs) was therefore a considerable driving factor behind the decision to invest in new dewatering equipment that would be able to achieve a considerably higher degree of dry solids than the 16-18% that the old belt press was able to deliver. The tender documents therefore set significant performance demands on the new dewatering equipment: a high level of dry solids in the dewatered sludge with low polymer consumption and, above all, a fully-automated process with minimal need for manual operation and maintenance. A new machine was specified to dewater 35 m³/hour with 353 kg dry solids/hour and produce sludge with a dry solids level of 23%, using 8 kg of polymer per 1 tonne of dry solids and with a filtrate quality level below 1,000 mg/l.

A winner on all supplier requirements

Stjernholm A/S, one of Alfa Laval's business partners in the marketing of decanters on the Danish market, was already enjoying a good working relationship with Vejen Forsyning and was one of several suppliers invited to propose a new dewatering solution.

Stjernholm offered Alfa Laval's newest and most effective decanter centrifuge, the ALDEC G3, which, given its unique technical capacity, can guarantee a very high level of dry solids compared to similar equipment on the market.

The tendering round revealed that the Alfa Laval ALDEC G3 decanter was not only a good solution, but also the most

economically advantageous. It also won on other critical selection criteria such as operating cost and functionality in addition to the quality of dry solids and filtrate. Vejen Forsyning therefore decided on the proposed ALDEC G3-75 decanter, which was installed in March 2015.

Actual performance exceeds expectations

The initial tests and first month's operational results with the new ALDEC G3 decanter confirmed that all requirements regarding dewatering performance, polymer consumption and filtrate quality were met. A dry solids content of nearly 24% exceeds the required 23% originally specified by the client. In comparison with the 16-18% that could previously be achieved, Vejen Forsyning now saves 20% on costs compared to the volume of residual sludge that previously had to be disposed of. This also means savings in operating expenditure.

"The process of replacing our old belt press with the new ALDEC G3 decanter went smoothly in cooperation with Alfa Laval and Stjernholm, who carried out the installation," says Operational Manager Steen Juul Rasmussen, Vejen Forsyning. "Challenges with adaptations and commissioning will always come up in any process where parts of existing equipment, such as the polymer pump system, sludge feed pump and conveyor are going to be reused, but everything went just fine. At Vejen Forsyning we are entirely satisfied with Alfa Laval's assistance. They have been patient, diligent and professional in their approach to getting our modernised plant up and running 100%."



The new fully automatic Alfa Laval ALDEC G3-75 decanter at the Vejen Wastewater Treatment Facility dewateres biological wastewater sludge up to a dry solids content of nearly 24%, a clear improvement over the 16-18% that was possible with the old belt press.



Should the need for servicing of the decanter arise, it is an advantage to know that Alfa Laval's service department is not very far away.

Alfa Laval reserves the right to change specifications without prior notification.

How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com