ENGINEERING
TOMORROW

Case study | VLT® AQUA Drive FC 202

Rock-solid reliability underpins sustainable aquaculture at **Nordlaks**

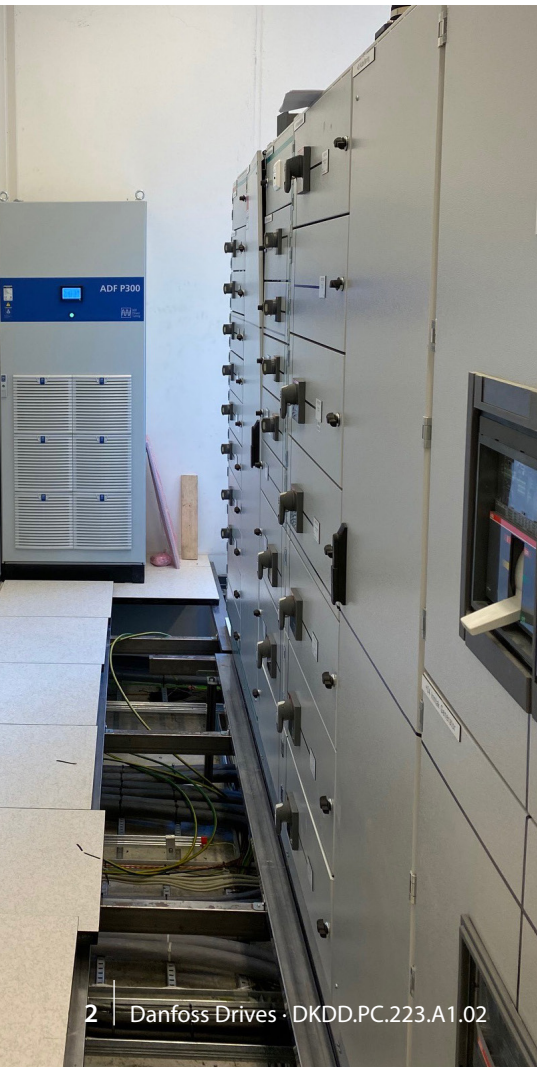
Reliable uptime thanks to
<5%
THDv

Nordlaks AS is one of Norway's leading aquaculture companies, with activities spanning 12 municipalities in northen Norway. Nordlaks Smolt AS is the subsidiary responsible for producing the smolt (young salmon). Due to increased demand, Nordlaks invested 800 million NOK in a major expansion at the smolt production facility at Innhavet, in the municipality of Hamarøy.

The new plant, operational from 2019, is now one of the largest recirculating aquaculture systems (RAS) in Norway. It will enable Nordlaks to more than double the size of the smolt before it is moved to ocean pens and this is an important part of Nordlaks' strategy for sustainable aquaculture growth.

"For me, as head of electro, no news means good news. The filters are online and doing their job and the voltage harmonic level is kept below 5% THDv at all times. So far we have not encountered any problems with harmonics. Danfoss and Comsys provide a simple, straightforward, well-proven and economic solution. At the same time, they follow up on their customers' needs with high standards"

- Bram De Roy,
Head of Electro Department
at Nordlaks Smolt AS



Ensuring uptime when it's critical

Since this is an energy-intensive industry, Nordlaks has prioritized its own sustainable electricity supply from a local hydroelectric power plant, even recovering excess heat to convert to energy. This means Nordlaks' main focus is not on energy efficiency, as might be expected.

Instead, reliability is the most critical aspect of the operations, since even brief downtime can have serious consequences for the production. For this reason, three emergency backup generators are installed, ready to assume power production should there be an interruption in supply from the public grid.

Problem-free harmonic mitigation

The installation is fed from the distribution network through three dedicated transformers. Based on harmonic calculations made during the planning phase, it was possible to see that harmonic levels would be too high, particularly when running on the backup generators.

Therefore, based on harmonic calculations, one active harmonic filter of the type ADF P300-360/480 was selected for each of the three feeders. Once installed, these active filters have ensured voltage harmonics are kept well within acceptable limits at all times.

"We found it extremely rewarding to work with Danfoss and Nordlaks on this project. Danfoss drives are extremely versatile with broad compatibility with all typical technologies, regardless of make. So together we were able to use our active filters to achieve the most superior technical performance optimization possible, for this application.

What's more, we know Danfoss is as willing as we are to invest time with the customer in explaining the technology and providing on-site training. For this project, Danfoss and Comsys worked together to deliver truly in-depth knowledge sharing to Nordlaks. Now that is a solid team!"

explains Henrik Sjökvist of Comsys.

VLT®AQUA Drive delivers superior load control

The Nordlaks facility in Innhavet is a complex plant with a large number of loads consisting mainly of pumps, fans and compressors. During the selection process for variable speed control, Nordlaks chose VLT® 6-pulse drives since they offered superior performance in terms of both reliability and high-frequency noise, compared to the next best alternative

Over two years, a total of 200 new VLT® AQUA Drive FC 202 drives from Danfoss were installed to ensure variable speed load control and secure energy savings. The FC 202 drives are rated from 1.5 kW to 55 kW, primarily supporting the pumping operations.

"Having solved problems together over the last ten years, Bram De Roy and I have developed a good long-term working relationship. We are generous in our knowledge sharing and pleased to go the extra mile to make site visits. There is no short cut to establishing a strong foundation of trust and respect"

- Svein Robert Haldar, Danfoss Drives

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In-depth support makes all the difference

Since reliability was the main selection criteria, trust and proven performance played a significant part in specifying the project.

During the planning phase, Svein Robert Haldar of Danfoss Drives and Henrik Sjökvist of Comsys were constantly in touch with Bram De Roy of Nordlaks, to ensure he could make well-informed decisions, and to ensure successful commisioning of the plant. Despite the distance to Innhavet in remote northern Norway, the team met on multiple occasions, to ensure optimal solutions and successful start-up:

- Henrik Sjökvist from Comsys visited Nordlaks on site at Innhavet in northern Norway to provide on-site training in Active Filters and the VLT® AQAU Drive FC 202.
- In late 2018 as the first equipment was installed, Danfoss Drives and Comsys assisted with on-site commissioning, and vistied agian as Nordlaks gradually installed more equipment during 2019.
- Danfoss also invited Bram De Roy to a training course at Comsys in Lund to ensure best-practice comissioning of the active filter.

Nordlaks

Nordlaks AS is one of Norway's leading aquaculture companies, with activities spanning 12 municipalities in northen Norway. Nordlaks is a family-owned aquaculture group that creates value of all the resources in the value chain, from roe to table. Total aquaculture production was about 40 000 tonnes of salmon and rainbow trout in 2017, plus almost 30 000 tonnes for other aquaculture companies. 90 percent of Nordlaks' own production is sold as fresh salmon.

Comsys

Comsys AB is a cleantech company operating in multiple sectors and segments with one sole purpose: perfecting power supply. With its roots in power electronics and power quality, it has evolved into a company focusing on everything around power quality and efficient power supply, AC as well as DC. The guiding star has always been to be best in class when it comes to technology and customer satisfaction. The customer satisfaction is reached by offering class-leading products, a unique application know how as well as extraordinary aftermarket service.
https://www.comsys.se/

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