

AnoxKaldnes Cella™

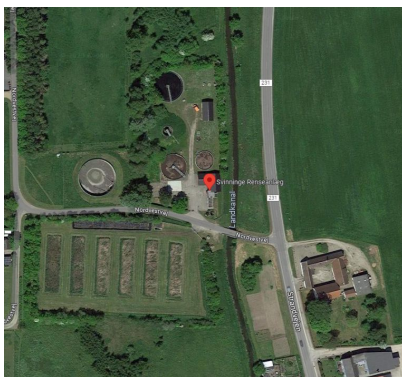
Svinninge Wastewater Treatment Plant, Denmark

Case study | Wastewater | Municipal

ANOXKALDNES

The client

Svinninge municipal wastewater treatment plant is located in Holbæk, Denmark. The plant is owned and operated by the utility Fors A/S. The existing plant uses an activated sludge process to treat wastewater from households and a few industries.



Key Figures

50% increase in capacity in 20% of the existing plant's footprint

TIN outlet target

4 mg/L (Summer) / 6 mg/L (Winter)

4000 PE
plant capacity

6000 PE
New capacity

The clients' needs

Svinninge wastewater treatment plant, established in 1972, is working beyond its permissible capacity while anticipating future load increases at the plant.

To address this issue, Fors A/S will increase the existing plant's volume to ensure that it can effectively meet future loads.

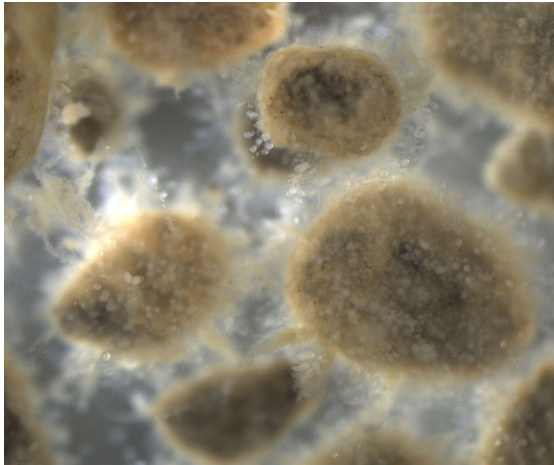
The solution

Veolia Water Technologies - AnoxKaldnes and Kruger A/S proposed Cella™ to the client with the aim of securing Danish national funding through The Environmental Technology Development and Demonstration Program (MUDP), administered by the Danish Environmental Protection Agency.

The MUDP Program supports the development and implementation of innovative and resource-efficient solutions to manage environmental challenges. Fors was successfully awarded funding to construct the first full-scale Cella plant.

The client strives for a sustainable plant with innovative treatment solutions that can help minimize environmental impacts. Therefore, Cella was chosen due to its small ecological footprint and sustainable features, as well as its compactness and treatment efficiency.

This first Cella plant represents an opportunity for the client to evaluate the technology's performance and potential consideration for future upgrades of their larger wastewater treatment plants.



Process description

Cella was integrated as a parallel train to the existing activated sludge to treat part of the incoming total flow after sand and grit removal. A Hydrotech drum filter is used for pre-screening to remove larger particles.

The Cella process consists of 2 tanks in series operated in an alternating-flow-direction mode, in which the inlet flow shifts between the two reactors. This optimizes biodegradation of carbon, nitrogen and phosphorus by a biofilm growing on AnoxK™C biofilm support material. The biofilm bed is kept in suspension with modern and energy efficient AnoxK™ aeration systems and/or mechanical mixers. Patented AnoxK™ separators are used for retaining the support material in the reactors. In this case, the effluent from the Cella process is directed to the inlet of the activated sludge line.

Hubgrade Wastewater Plant Performance, a cloud based system for advanced process control, is used to optimise the performance of Cella to ensure a sustainable solution with optimised carbon utilization, energy balance and overall environmental footprint.

Results and Performance

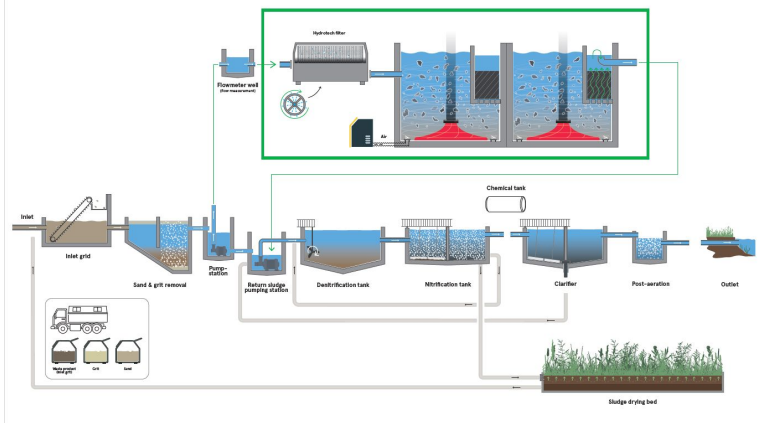
Plant status as of Q3 2024

The plant began operations in the second quarter of 2024. After tuning the equipment as well as the control system, the biological process was started up at the beginning of the third quarter of 2024. The process is approaching the target effluent concentrations (TIN < 4 mg-N/l) while treating 50–70% of the load to the whole treatment plant. Target performance is expected to be achieved at the end of the third quarter of 2024.

The plant's performance is being monitored following a thorough program according to the MUDP project's schedule until mid-2025 with the objective of optimizing the plant's operational efficiency.

| The benefits

- A **compact and robust solution** for the treatment of carbon and nitrogen
- Flexible to implement in the future as an **all-in-one biological treatment** for not only carbon and nitrogen, but also phosphorus.
- **Advanced process control and optimization** via Hubgrade Wastewater Plant Performance
- Optimized carbon utilization, energy balance and environmental footprint, while using a **new AnoxK™C biofilm support material made of renewable, recycled biomass**.



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