

Abatement of N₂O gas

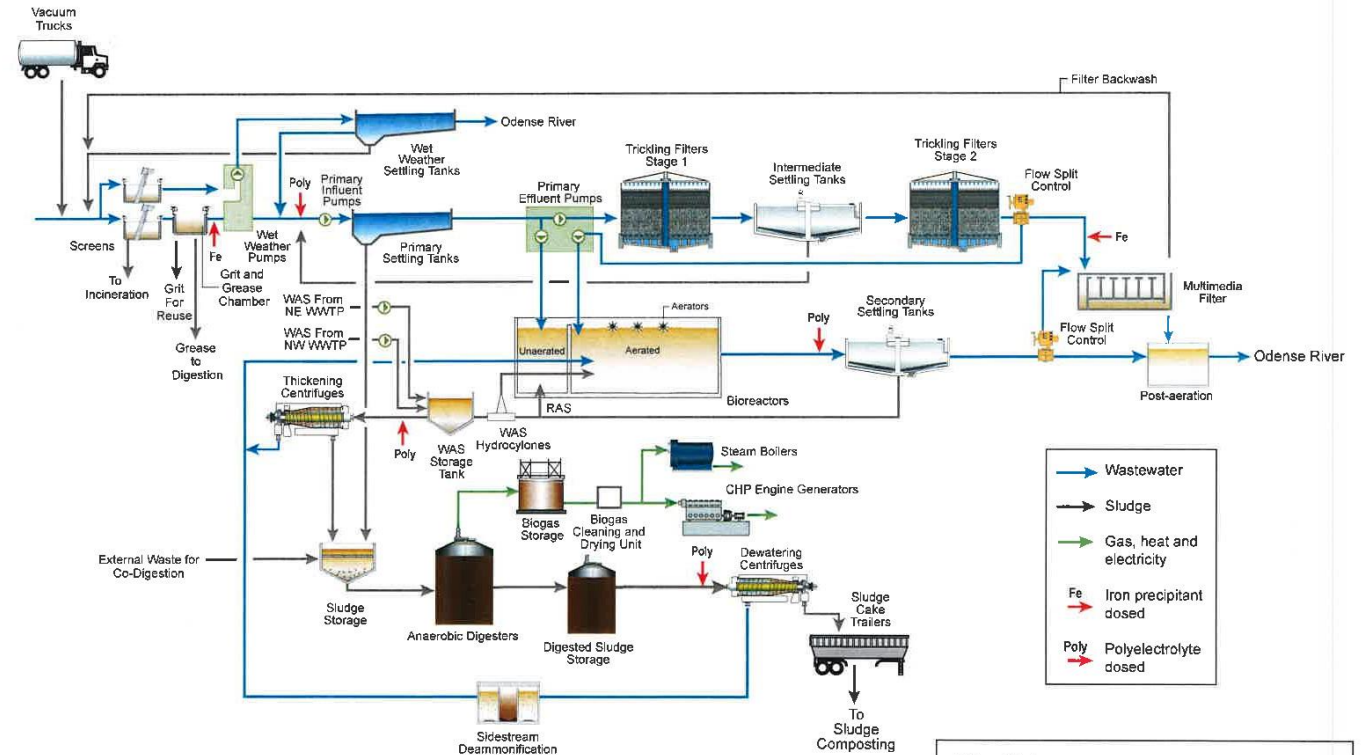
REJECT WATER SEMINAR

NINA ALMIND-JØRGENSEN – VANDCENTER SYD

31. MARTS 2022

Ejby Mølle WRRF

- ▶ Capacity: 385.000 PE
- ▶ Load: 225.000 PE
- ▶ Centralized sludge treatment
- ▶ Sidestream anammox treatment
- ▶ Reason: Innovation, reduce load on CAS, Energy savings, (CO₂ reduction)
- ▶ Process type: Continuous DEMON with VCS' modified control strategy
- ▶ Operation year: 2014
- ▶ Dimension load: 197 kg NH₄-N/day
- ▶ Actual load: Average 80%, up to 140% of design
- ▶ Removal: 80 % TN & 90 % NH₄-N



Ejby Mølle Wastewater Treatment Plant
VCS Denmark



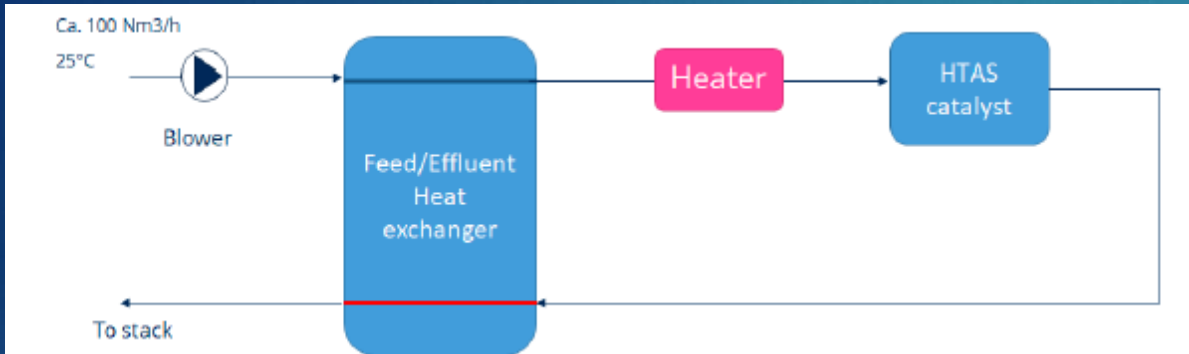
NACAT - N₂O Abatement by CAlytic Treatment



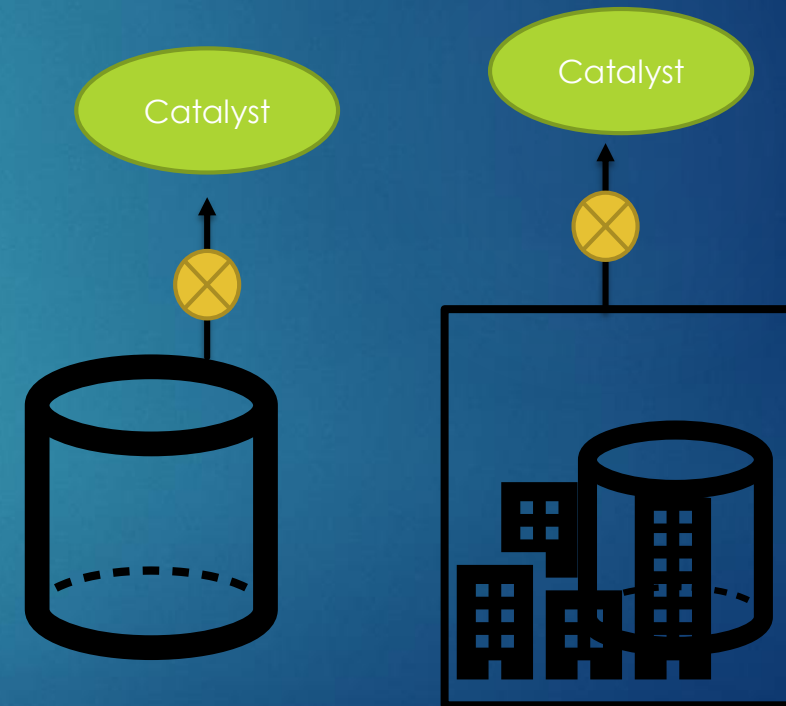
NACAT - N₂O Abatement by Catalytic Treatment

INSTEAD OF REDUCING THE EMISSION, CAN WE THEN ELIMINATE IT?

NACAT



Formål - Projektets mål og konkrete bidrag	Succeskriterier	Arbejdsplaner, Aktiviteter, milepæle
Feasibility testing of catalytic N ₂ O abatement in three different study sites	Determination of the reduction rates for gaseous N ₂ O	WP2,3,4
Test the performance of existing installations (odor treatment) for N ₂ O reduction	Determination of the reduction rates for gaseous N ₂ O	WP3,4
Develop mathematical models predicting effluent quality, operational cost, and N ₂ O emissions for the selected case studies	Successful implementation of digital twins at the three sites and scenario testing	WP5
Sustainability assessment of different operational conditions, including effluent quality, cost of treatment and emissions	Successful implementation of environmental impact models, including catalytic processes	WP5
Business scenarios for catalytic N ₂ O abatement in WWTPs	Clear overview of feasibility	WP6



Set up

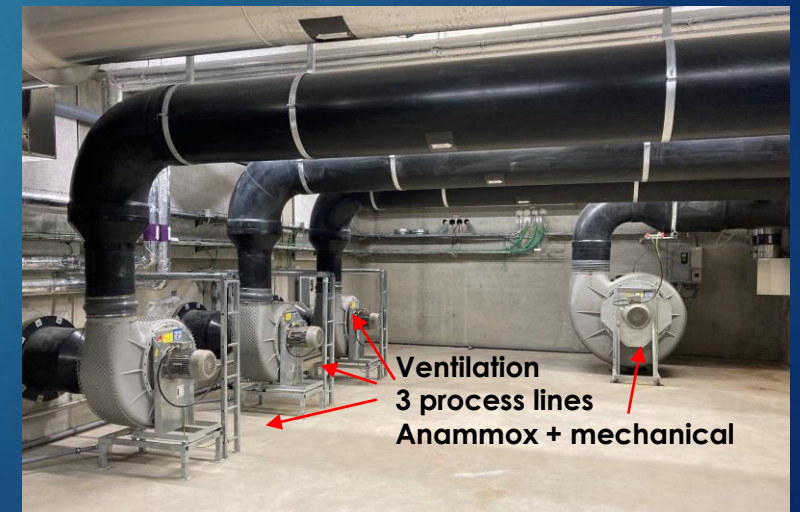
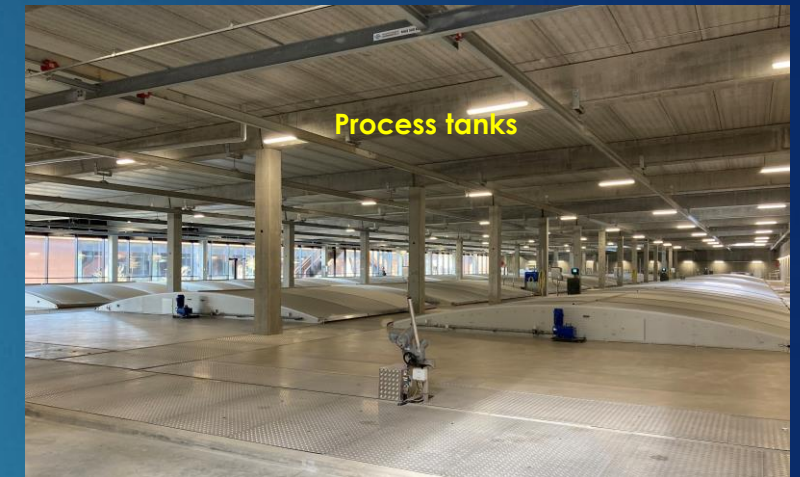
- ▶ Test of ventilation systems on fully covered plants
- ▶ Sidestream ventilation
- ▶ Effect on Abatement of N₂O
- ▶ Which installations is optimal? (Low concentrations, business case)



NACAT at HCR South

Set up – not yet decided

- ▶ Covered and ventilated process tanks
- ▶ Ventilated sidestream anammox + mechanical steps
- ▶ Before and after Azzuro biofilters



Questions?

- ▶ Is your curiosity not satisfied?
- ▶ Project manager – Per Henrik Nielsen
- ▶ Me – Nina Almind-Jørgensen, nal@vandcenter.dk

