THE LINDE GROUP

The SOLVOX® process. Industrial wastewater treatment.

Customer reference

At the Godford Refinery Centre of Shell Deutschland Oil GmbH, we have supplemented the existing system (water treatment plant, aeration basin and final sedimentation tank) with an oxygen storage tank, an evaporator and the corresponding control cabinets.

The task

Eliminating the nitrogen contamination load and reducing aerosol and noise emissions from the aeration tank without major conversions to the water treatment plant.

The solution

Changing the current treatment process over to intermittent nitrifi cation/de-nitrification by adding pure oxygen during the nitrification phase.

The following advantages were achieved by removing the existing surface ventilation and changing over to aeration with pure oxygen:

- High nitrogen elimination rates by way of a high number of cycles and a very rapid increase in the oxygen concentration to the optimum value at the start of the nitrification phases
- No aerosol formation and greatly reduced noise emission through a reduced gas volume and the addition of fine oxygen bubbles
- Very good sludge settling performance in fi nal sedimentation

Plant description

3 aeration tanks

Total volume:	1.08 MM gpd
Sewage quantity:	1.10 MM gpd
CBS load:	13,200 pounds/day
TKN load:	2,420 pounds/day

Scope of delivery

Oxygen supply
Tank system with evaporator
Remote data transfer of the tank filling level to the Linde production centre, oxygen control station pipelines
Infeed system for industrial oxygen:
Aeration tank 1: 12 ejectors DN200/6-jet
Aeration tank 2: 2 SOLVOX® I units SI30
Aeration tank 3: 2 SOLVOX® I units SI10

Commissioned

2002

Advantages of aeration with pure oxygen

A prerequisite for successful nitrogen elimination is a sufficient tank volume and a low sludge load for nitrifition/ de-nitrification. In many cases, nitrogen elimination can also be realised in existing aeration tanks – simply by changing over the cleaning method to upstream, intermittent or simultaneous de-nitrification with the aid of pure oxygen during the nitrifi cation phase. This significantly reduces investment costs for the necessary conversion measures.

- Despite this, the following advantages are still achieved:
- High nitrogen emission performance
- Reduced aerosol and noise emissions
- Improved sludge settling
- No wild de-nitrification in the final sedimentation
- High fl exibility when there are strong load fluctuations
- Low complexity in measuring and control technology

The savings are significantly greater than the costs for the oxygen supply. A comparison is worthwhile.

Aeration tank 1: ejectors DN200/6

Aeration tank 3: SOLVOX® SI10

Oxygen control cabinet for all three aeration tanks

Why Linde

Linde is a world leading industrial gas organization that offers a variety of gas products and services that improve quality and enhance environmental performance. Linde tailors solutions to meet the unique needs of each customer and their facility

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