

High nitrate values during low-load periods?

Optimised aeration control with W.T.O.S.

The initial situation

At the Villau treatment plant, the fixed time control for aeration could not be adapted precisely enough to handle the fluctuating load levels. This led to unnecessarily high nitrate values, particularly during low-load phases. In addition, energy consumption as a whole was too high.

- ▶ High nitrate concentrations during low-load phases
- ▶ High nitrogen load in the outlet

The plant

- ▶ Capacity: approx. 5000 PE
- ▶ Intermittently aerated oxidation ditches
- ▶ Aerobic sludge stabilisation



The solution

To determine the current load situation, ion-selective (ISE) probes were installed to record the ammonium and nitrate concentrations in the oxidation ditch. A W.T.O.S. N/DN module (real-time controller) now controls the appropriate aeration times on the basis of these values. As a result, the target values for both ammonium and nitrate are being achieved, even though the aeration times have been reduced. During low-load phases, the denitrification times are automatically increased. This means that high nitrate effluent values can be avoided, while saving energy at the same time.

- ▶ Continuous ammonium and nitrate measurement
- ▶ Load-dependent aeration control
- ▶ N_{tot} load reduced by more than 50 %

The advantages

- ▶ Energy savings: no over-aeration during low-load phases
 - ▶ Ability to offset costs against waste water charges
- N_{tot} load in the outlet reduced by > 50 %**

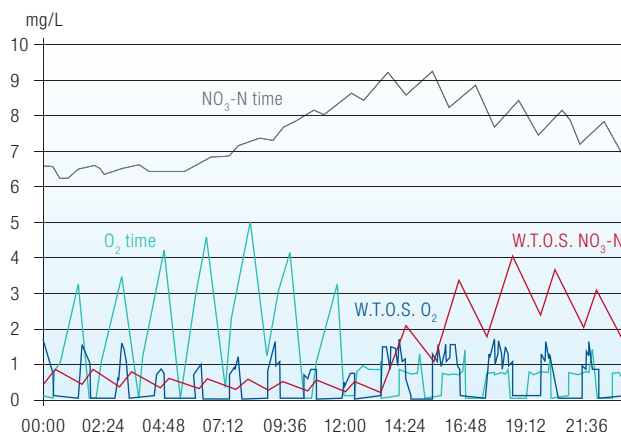


Figure 1: W.T.O.S. prevents high O₂ and nitrate concentrations during low-load phases. This reduces the nitrogen load in the outlet and saves energy.

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More information on this project can be found at www.hach-lange.co.uk

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