

Case Study

Abony Wastewater Treatment Plant

$Q=2,200 \text{ m}^3/\text{d}$



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Title: Municipal Wastewater Treatment Plant Optimization

Layout

Anaerobic-anoxic-aerobic WWTP without primary clarifier.

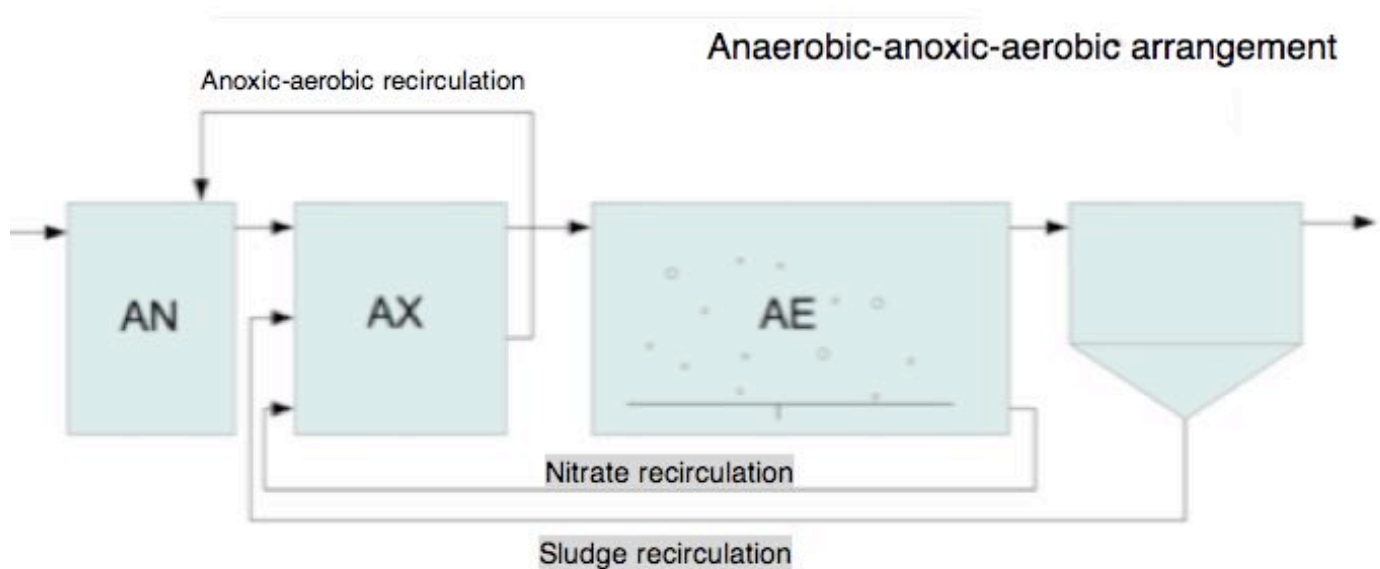


Figure 1 - Schematic flow diagram

Application used:

In order to improve the treatment efficiency **Bioclean**[™] has been applied in a shock dose of 10 kg/day in the first week subsequently reduced to 1 kg/day in 11 weeks which has remained the maintenance dosage.

Main goals:

- 1) Improving the activated sludge's treatment capacity
- 2) Improving the sludge's resistance against shock loads
- 3) Reducing excess sludge formation
- 4) Reducing the oscillation and overall concentration of the effluent parameters (NH₄-N, TN, COD, BOD)

Sludge production

The average quantity of the dewatered sludge was **238 m³/month** before the **biotechnological optimization**. This quantity considerably decreased during the treatment, so **since the startup phase, the average amount has been 149 m³/month**. The plant has no primary clarifier, and due to this also the degradation of the organic particles is added to the decrease of the produced excess sludge's quantity.

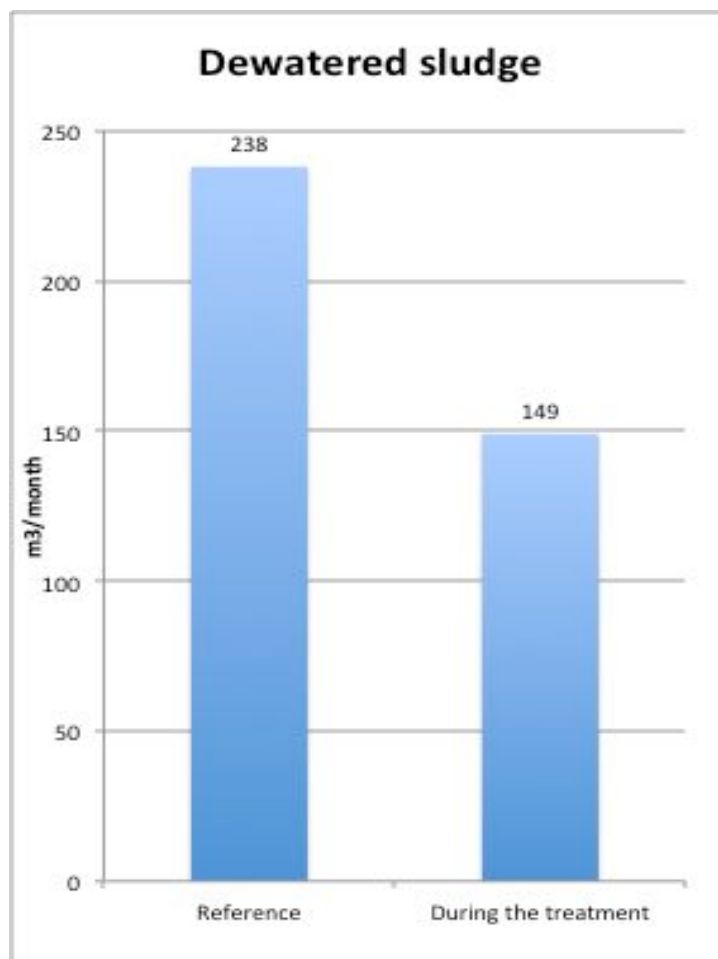


Figure 2 – Monthly quantity of the dewatered sludge

Energy Consumption

In aerobic reactors, because of the better oxygen-utilizing ability of the activated sludge with modified composition, **the dissolved oxygen level could be reduced from 1,8 mg/l to 1,0 mg/l**, and due to this, the power intake of the blowers has decreased, which **reduced the power consumption of the plant by 5%**.

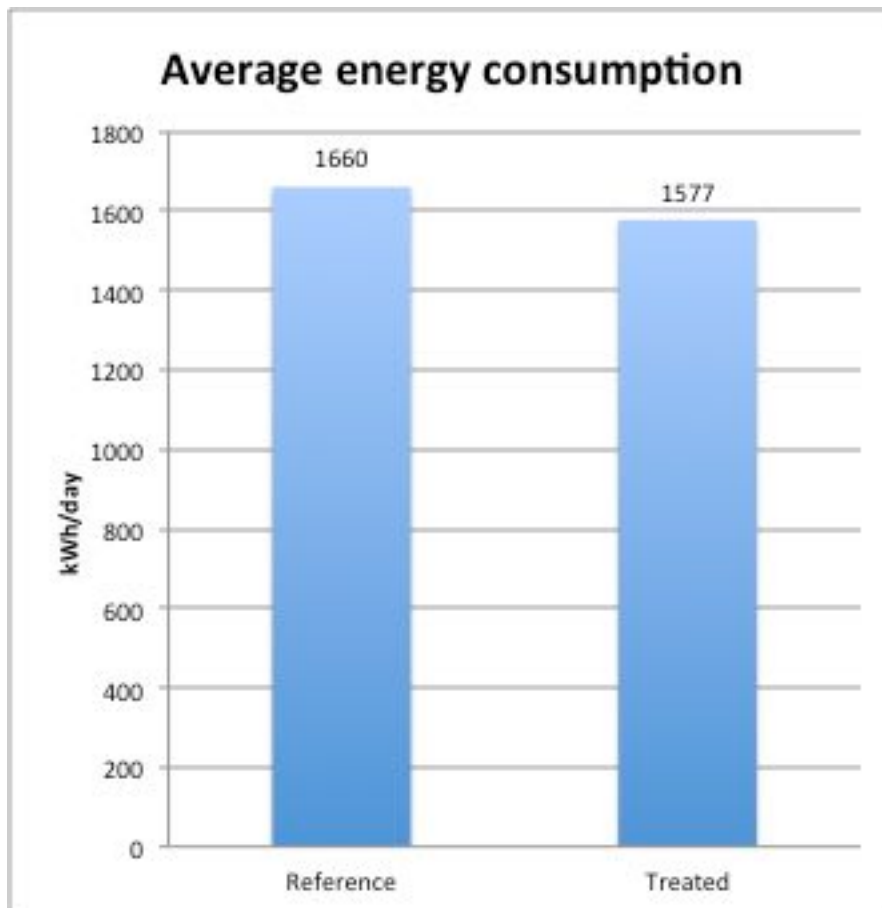


Figure 3 – Average daily energy consumption

Effluent Parameters

The quality of the effluent water has improved due to the **more efficient organic breakdown and the more stable nitrification**, the **fluctuation of the parameters has been moderated**. The operation of the secondary clarifier got stable by the **improvement of the floc structure**, which also reduced the suspended solids content of the effluent water.

Parameter	Average conc. before treatment	Average conc. after treatment
COD (mg/l)	175	79,4
NH ₄ -N (mg/l)	24,2	9,3
TP (mg/l)	4,5	2,9
TN (mg/l)	44	16,1

Table 1 – Effluent water parameters