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Case Study

Békés Wastewater Treatment Plant

Q=2,000 m^3/d

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Title: Municipal Wastewater Treatment Plant Optimization

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Layout

Anaerobic-anoxic-aerobic layout without primary clarifier.

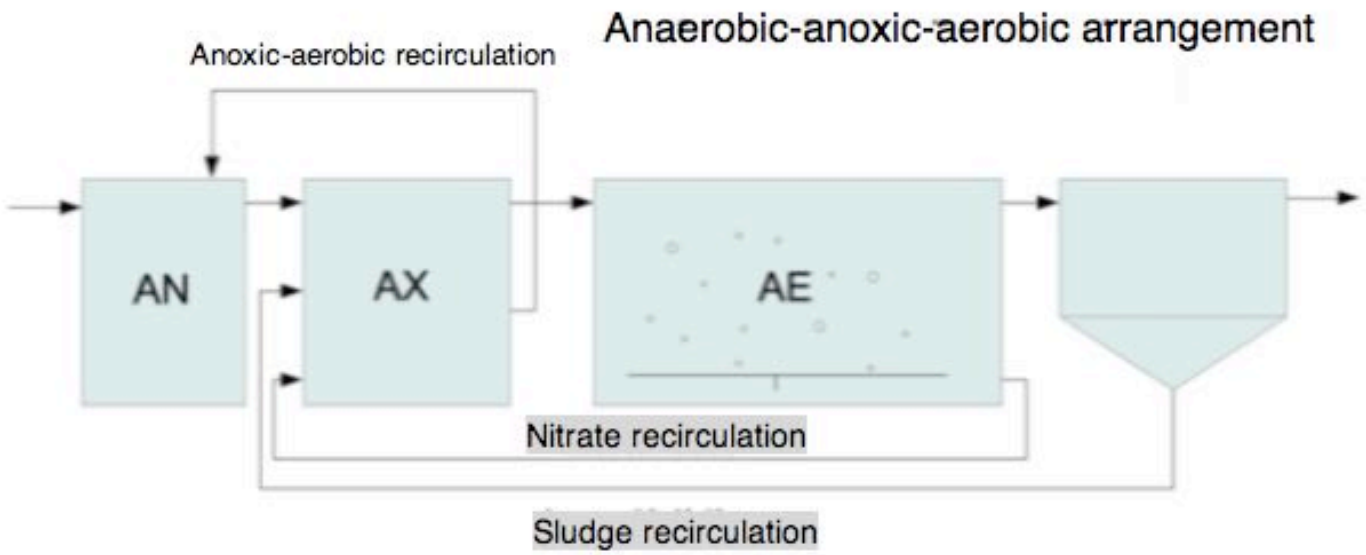

Figure 1 - Schematic diagram

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 1.5 kg/day in 6 weeks which has remained the maintenance dosage.

Main goals:

1) Effluent quality improvement because of continuous discharge limit violations (COD, BOD, NH4+, TN, TP)

2) Reduction of dewatered excess sludge quantity

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Sludge production

The **average quantity of the dewatered sludge was 132 m^3/month before** the biotechnological optimization. This quantity considerably decreased during the treatment, **so after the startup phase, the average amount has been reduced to 64 m^3/month**. The plant has no primary clarifier, and due to this, also the decomposition of the organic particles has further decreased the excess sludge's quantity.

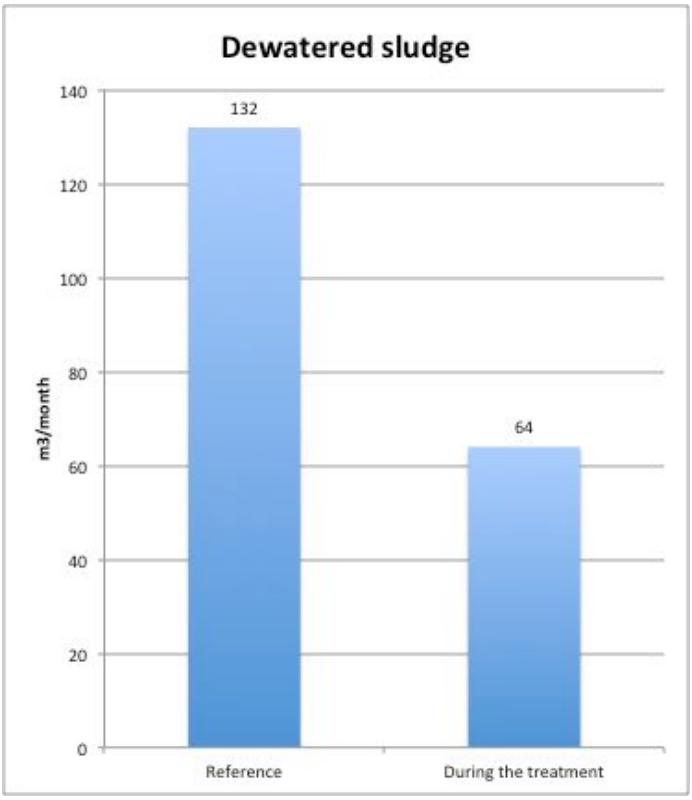

Figure 2 – Monthly quantity of the dewatered sludge

Effluent Parameters

The quality of the effluent water has improved due to the more efficient organic matter removal and the more stable nitrification, the fluctuation of the parameters has been reduced as well. The operation of the secondary clarifiers got stable by the floc structure's improvement, which also reduced the suspended solids content of the effluent water. **The effect of Bioclean^{TM} is the most visible on organic breakdown (COD improvement), and biological Phosphorus removal enhancement (TP improvement).**

Parameter	Average reference level	Average level during the treatment
COD (mg/l)	170,1	64,4
TP (mg/l)	3,3	0,9
TN (mg/l)	53,4	40,0

Table 1- Effluent water parameters

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Polyelectrolyte Consumption

The quantity of the polyelectrolyte used for dewatering the sludge **has been reduced from 297 kg/month to 189 kg/month.**

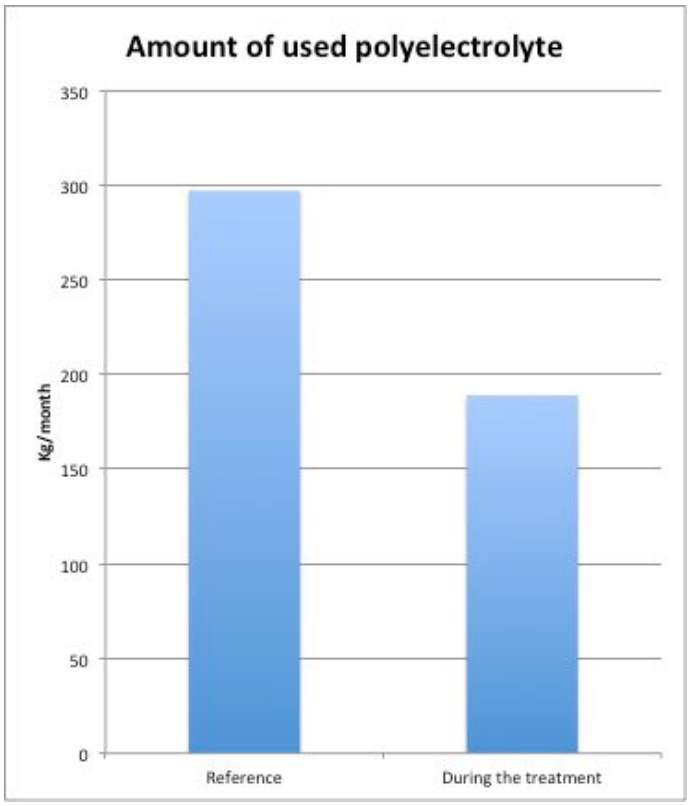

Figure 3 – Quantity of monthly used polyelectrolyte