

Case Study

Szarvas Wastewater Treatment Plant

Q=2,000 m³/d



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Title: Municipal Wastewater Treatment Plant Optimization

Layout

Plant with 6 oxidation ditches in parallel, without primary clarifier.

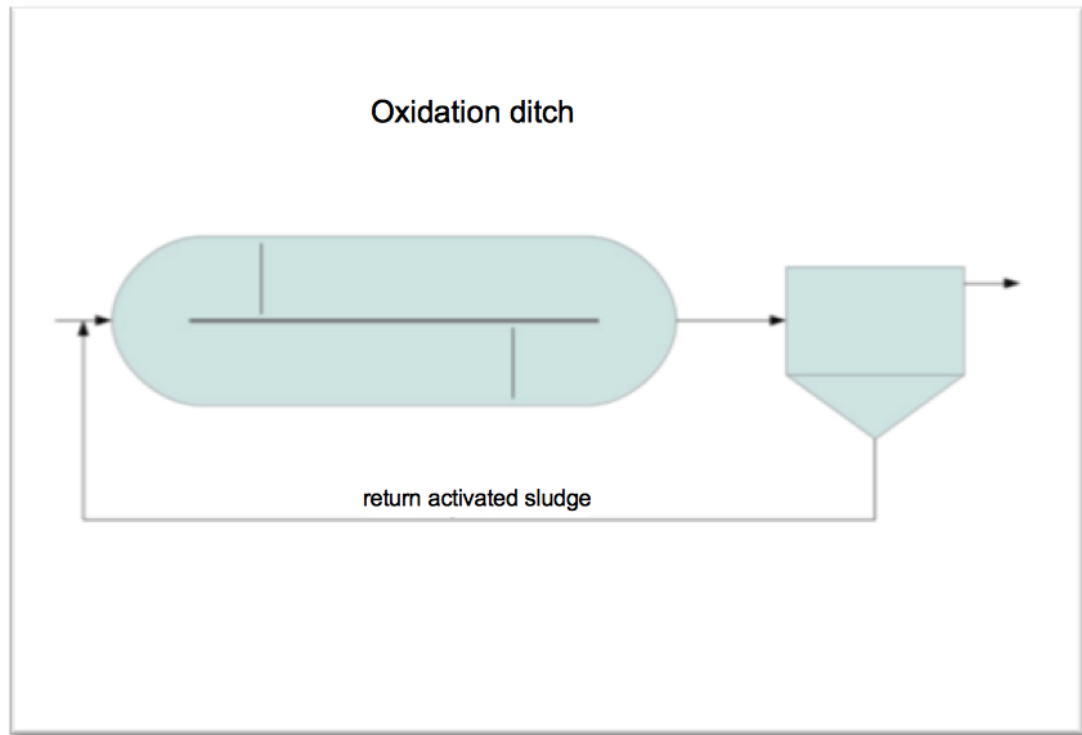


Figure 1 - Schematic diagram

Application used:

In order to improve the treatment efficiency **Bioclean**TM has been applied in a shock dose of 11 kg/day in the first week subsequently reduced to 1.5 kg/day in 5 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 the excess sludge quantity
- 3) Increase the treatment capacity of the activated sludge for being able to shut down 3 smaller ditches and reduce the overall energy consumption of the WWTP.

Sludge production

The average quantity of waste activated sludge (WAS) before the biotechnological optimization was **120 m³/day**. During the optimization process this amount has been significantly decreased, the average value of WAS after the starting phase has been reduced to **50 m³/day** without a significant increase in the WAS MLSS concentration. The plant does not have a primary clarifier, therefore the degradation of the particulate organic matter contributed to the decrease of the produced sludge's quantity.

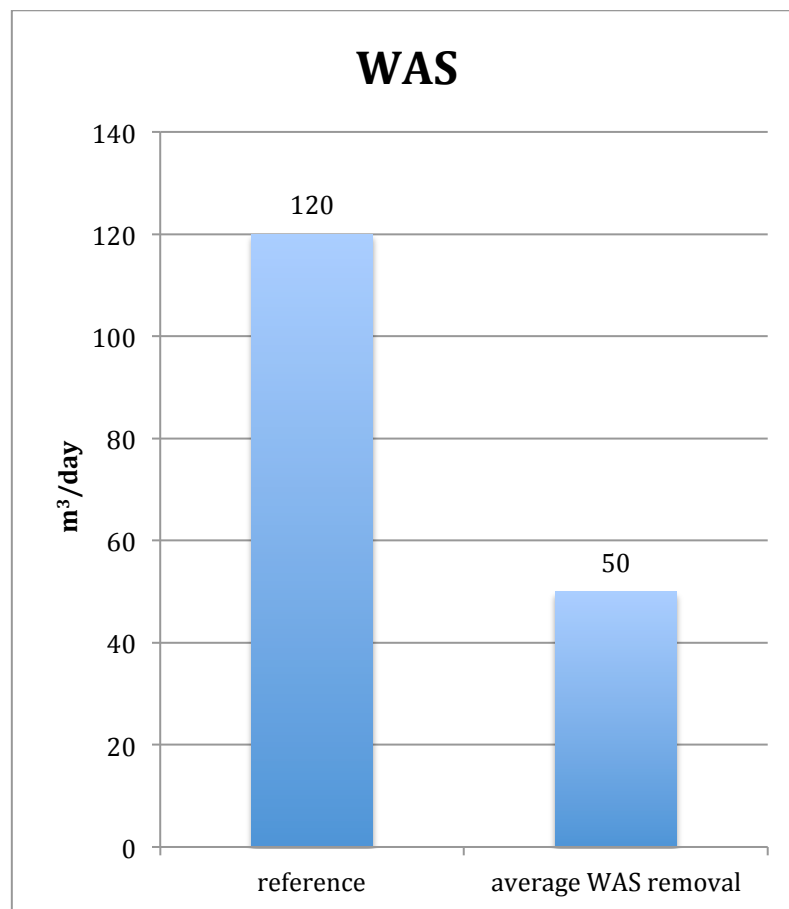


Figure 2 – Daily quantity of the waste activated sludge

Energy consumption

The plant operated with 6 oxidation ditches before the biotechnological optimization, and due to the Bioclean™ treatment 2 ditches have been shut down and one operating temporarily. Therefore, **the average power consumption has been decreased by 12%.**

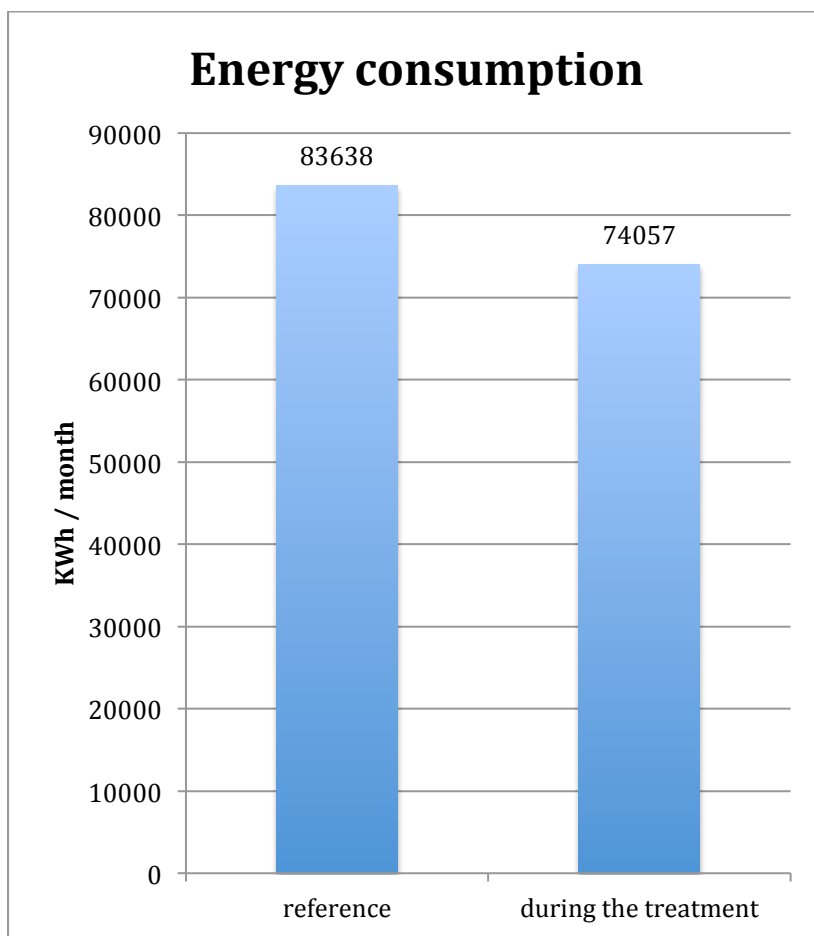


Figure 3 – Average monthly energy consumption

Polyelectrolyte Consumption

The quantity of the polyelectrolyte used for dewatering the sludge **has been reduced from 50 kg/month to 13 kg/month.**

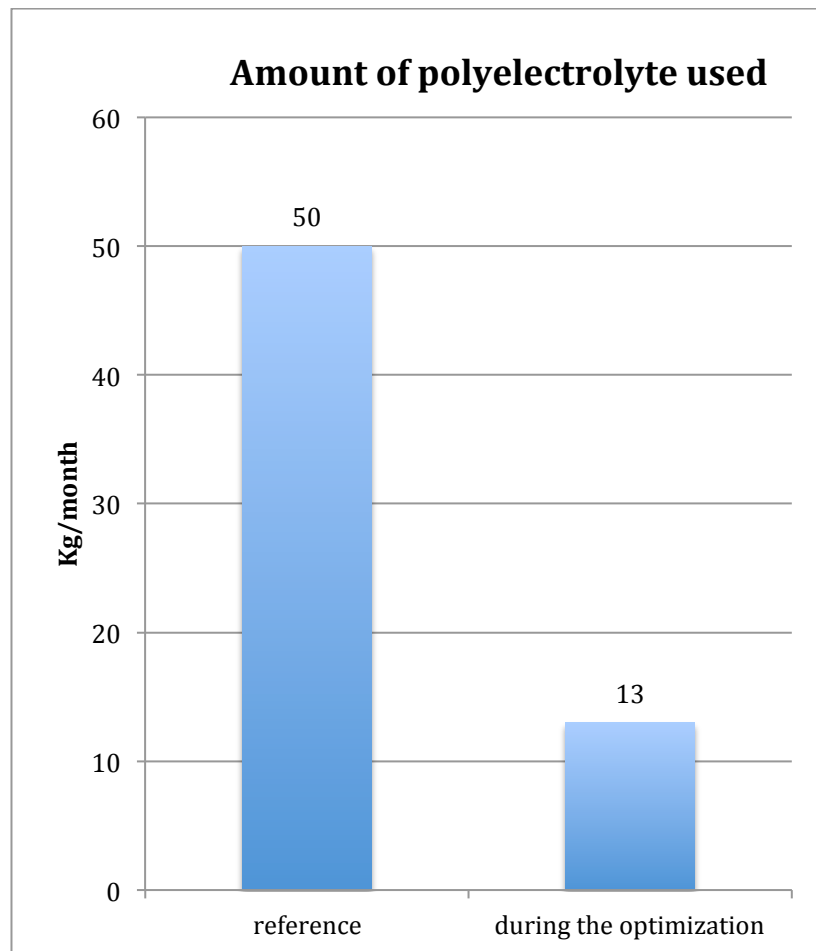


Figure 4 – Quantity of monthly used polyelectrolyte

Effluent parameters

The quality of the treated water has improved due to the enhanced removal of organic matter and to the stable nitrification; the fluctuation of the parameters have become moderated. The operation of the secondary clarifier has been stabilized due to the improvement of the floc structure, which has decreased the suspended solids in the effluent.