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Case Study - Malatech Bioaugmentation

Regional Municipal Wastewater Treatment Plant of a city and nearby villages

Q=7 000 m^3/d

Goals of bioaugmentation: the WWTP is fairly designed to treat its cumulative load. The biology consists of aerobic reactors only since P-removal is completed by chemicals, and TN limit is not harsh since the location is not in a sensitive environment. The operator's goals were to reduce the energy consumption of the plant, and excess sludge production to save additional OPEX on sludge dewatering, transportation, and disposal while enhancing treatment efficiency to lower environmental fees of COD, TN, and TP.

Author: Malatech Water, Ltd.

Title: Municipal Wastewater Treatment Plant Optimization

Layout

Plant with primary clarifier and aerobic biological reactor followed by secondary clarification.

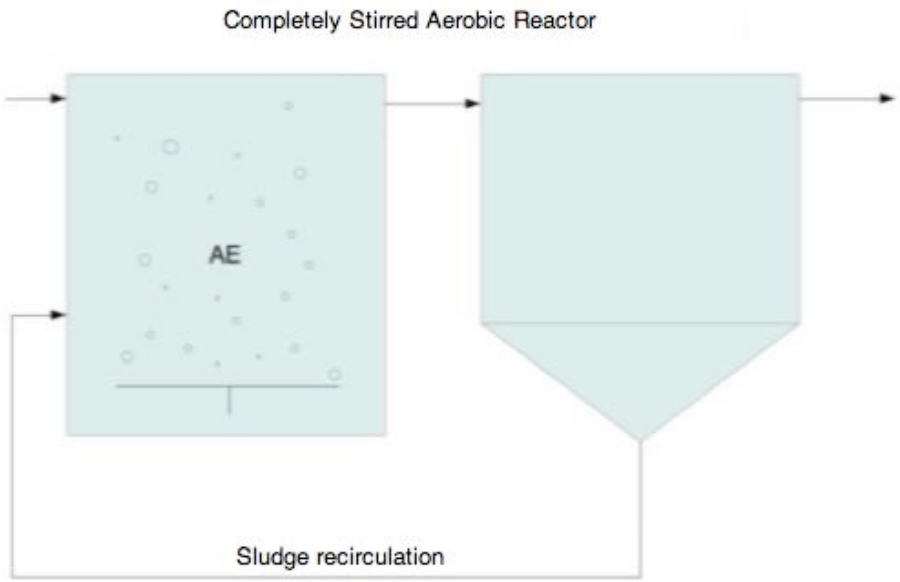

Figure 1 – Schematic flow diagram

Application used:

In order to improve the treatment efficiency **Bioclean TM** has been applied in a shock dose of 18 kg/day in the first week subsequently reduced to 2 kg/day in 5 weeks which has remained the maintenance dosage.

Main goals:

1) Reduction of the blower's power consumption by the biotechnological optimization of the activated sludge

2) Reduction of excess sludge quantity

3) Stabilization of effluent parameters

Sludge production

The average quantity of the dewatered sludge was **258 m^3/month before the biotechnological optimization**. This quantity considerably **decreased during the treatment**, so since the startup phase, the average amount has **been 216 m^3/month**.

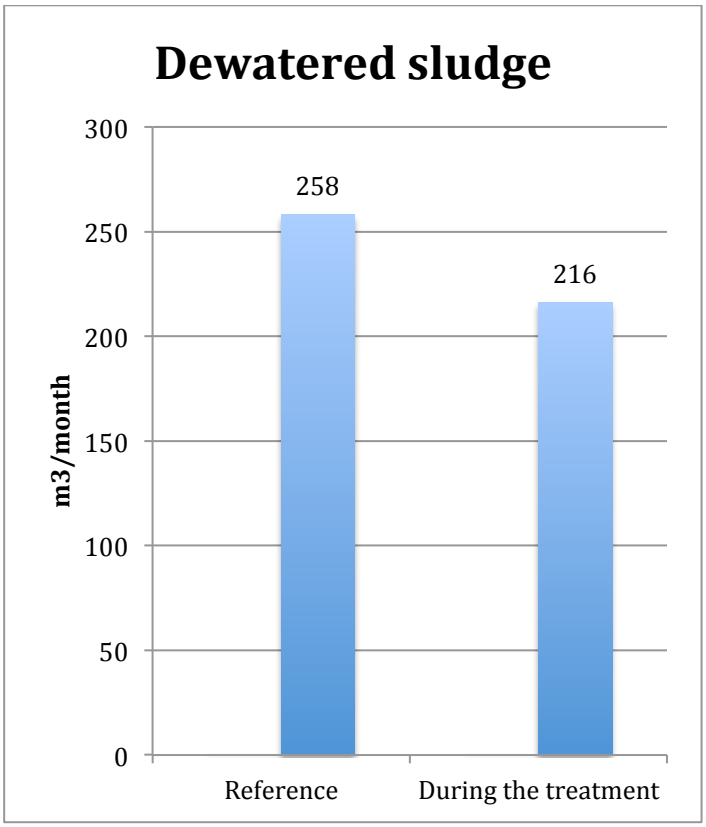

Figure 2 – Monthly quantity of the dewatered sludge

Energy Consumption

In the aerobic reactors, due to the better Oxygen-utilizing ability of the activated sludge by Bioclean TM bioaugmentation, the **dissolved oxygen** could be maintained by the blowers with less average operational frequency, which **reduced the energy consumption of the plant by 11%.** The **specific energy consumption per treated water volume got reduced from 0,436 kWh/m^3 to 0,391 kWh/m^3**.

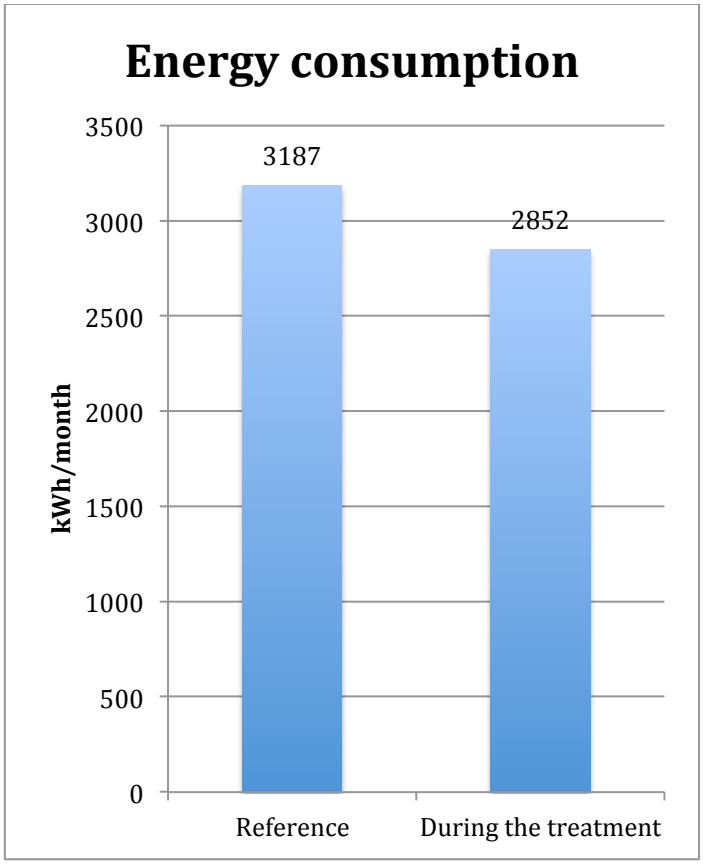

Figure 3 – Energy consumption

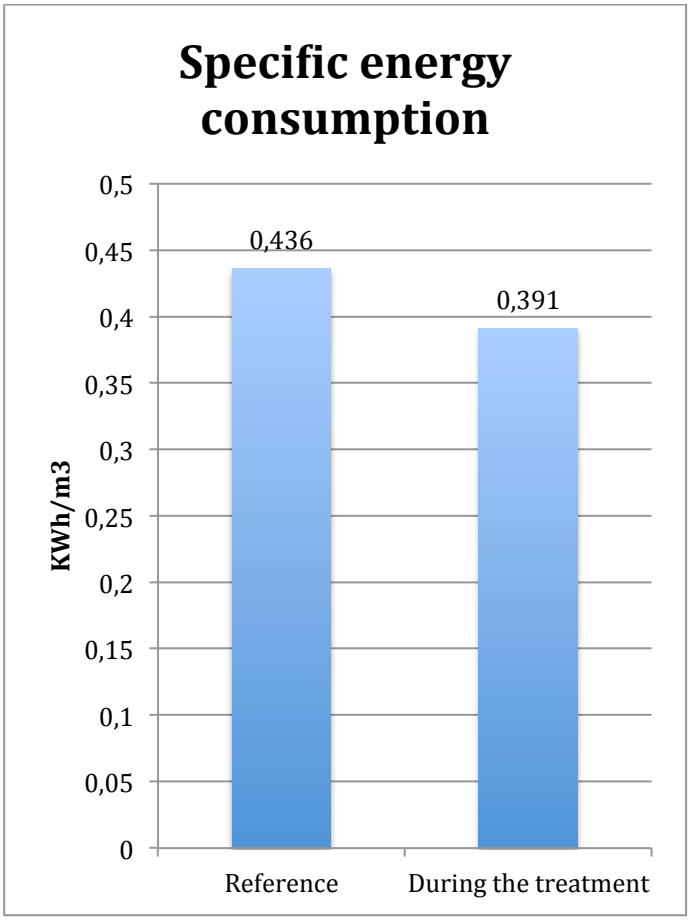

Figure 4 – Average specific energy consumption