How to save 40% of energy in WTP management

WWTPs are responsible for 1% of the total electricity consumption in European countries;

Energy consumption of European WWTPs was 27 TWh $year^{-1}$;

N2O emission from wastewater plants is **3% of global emission** (CH4 is 9%);

Electricity price continues to score record values;

WWTPs show room for plant optimization and **reduction in energy consumption**

It becomes essential to contain costs to remain competitive in the market. Creation of **KPIs is essential to monitor the performances** and have automatic feedback.

With a focus on process optimization, it is possible to reduce chemical dosage, energy consumption, and carbon footprint.

Case study/2: Urban WWT Plant

The Turin plant is the largest Italian WWTP (3 800 000 PE) and shall never turn off its aeration system. **An intelligent rotation** between the tanks makes it possible to alternate nitrification and denitrification, gaining a huge energy consumption reduction.

52% energy savings for the entire biological treatment

Area	Savings (yearly)	Economic Savings (yearly)
Blowers energy consumption	3 416 637 kWh	512 495 €
Mixed liquor pumps	1 971 000 kWh	295 650 €
TOTAL	**5 387 637 kWh**	**808 145 €**

Case study/1: Urban&Industrial WWT Plant

The plant treats different industrial effluents, the management has a clear target:

Energy Savings via **Process Control Optimization.** After implementatione the results are:

Pumping station specific consumption: from 0.086 a 0.058 kWh/mc **(-48.3%)**

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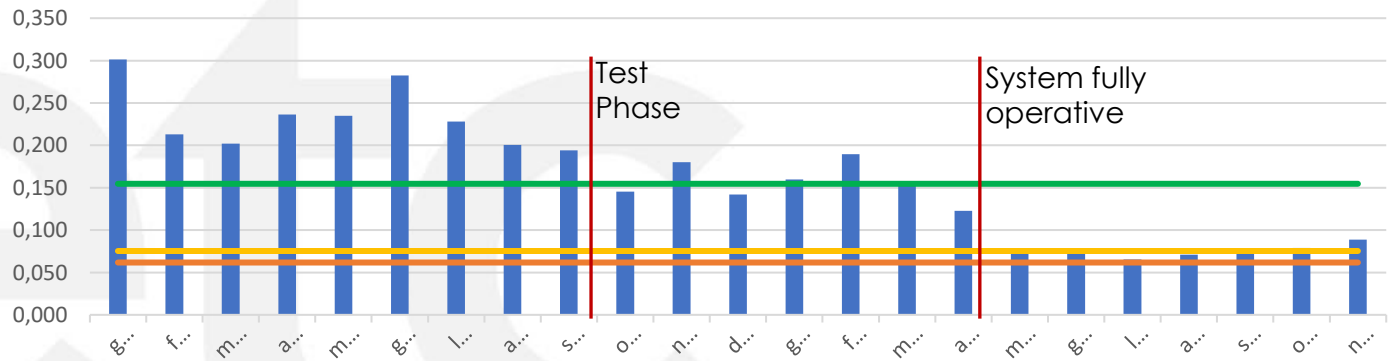
40% cumulative energy savings for the entire biological treatment



Case study/3: Industrial WWT Plant

The company is active in the treatment of **industrial wastewater**. The management needs a tool that could automatically adapt to different operating conditions. After the installation of the new control system and 2 months of monitoring activities the goals have been achieved

55% energy savings for the entire biological treatment

Area	Pre Oscar NO2-N (mg/l)	Post Oscar NO2-N (mg/l)	Effluent Limit NO2-N (mg/l)
Train 1	10,10	0,70	1,00
Train 2	3,00	0,40	1,00