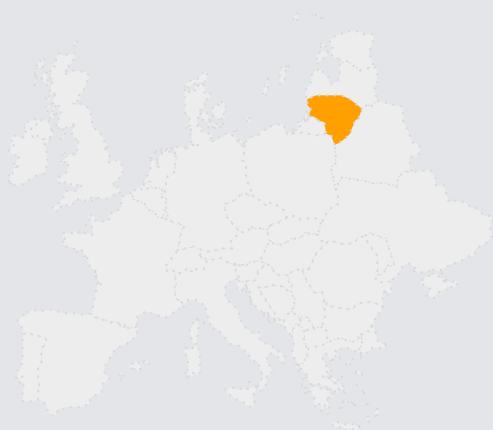


# Hubgrade

## PERFORMANCE

CASE STUDY | Klaipėda WWTP- Klaipėda, Lithuania

350,000 PE

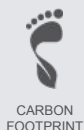


### THE CLIENT

Klaipėda is a 350,000 PE (People Equivalent) WWTP In operation since 1998.

Located on the Baltic Sea and next to the UNESCO World Heritage Site at the Curonian Spit, Klaipėda is the main Lithuanian seaport and the country's third largest city.

With ever-increasing treatment requirements, the plant was nearing its maximum capacity, and over the past two years the effluent quality was extremely close to the permit of 10 mg/l tot-N.



### THE PROBLEM

Klaipėdos Vanduo wanted to Reduce their operational costs (OPEX) while improving effluent performance and increasing the WWTP operations during wet weather situations.

In order to reduce their risks they also wanted to find a company willing to have a **Performance Guarantee Contract** in order to make sure that the expected results will become reality

### THE ACTION

In 2019, a contract for real-time optimization of process performance at the wastewater treatment plant in Klaipėda city was awarded by Klaipėdos vanduo to Krüger A/S.

Krüger is specialised within the fields of drinking water, process water, municipal and industrial wastewater, sludge, sewer systems, soil and groundwater remediation as well as advanced real-time optimization of wastewater treatment plants and sewer networks.

In this case, it has been decided to realise a pre study in order to be able to create a Performance Guarantee Contract and better understand the overall operation. This led to the implementation of Hubgrade Performance Plant with 9 features that will **reduce both chemical and electricity consumption** while improving overall **effluent quality** and **operations** during wet weather.





## KEY FIGURES

The Performance Guarantee analyses led to the following results:

- **CO<sub>2</sub> savings (~ 2 180 T CO<sub>2-eq</sub>/year)**
  - Electricity: 180 T CO<sub>2-eq</sub>/year
  - External Carbon: 1 900 T CO<sub>2-eq</sub>/year
  - Transportation: 50 T CO<sub>2-eq</sub>/year
  - Effluent charge: 50 T CO<sub>2-eq</sub>/year
- **OPEX savings (~ 180 k€/year):**
  - Energy savings: 960 MWh (- 27%)
  - External Carbon Dosing: 400T (- 89%)
- **Effluent quality**
  - 14% reduction of tot-N in effluent - from 9.9mg/l to 8.5mg/l tot-N
- **Load Capacity**
  - 28% increase of BOD/TN load to WWTP

The Hubgrade™ Performance Plant package for Klaipeda WWTP includes the following features:

- DO & Nitrogen Removal
- NO3-recirculation
- Carbon Management
- Mixer
- Air Supply
- Solids Retention Time
- Grit Chamber Aeration
- Return Activated Sludge
- Stormwater

Mode

NB<sub>1</sub>: We did not integrate the potential future carbon tax (which could be over 100€/t of CO<sub>2-eq</sub> in 2030). Which would double the savings (+210k € per year in 2030).

## CLIENT BENEFITS

### Why Hubgrade Performance

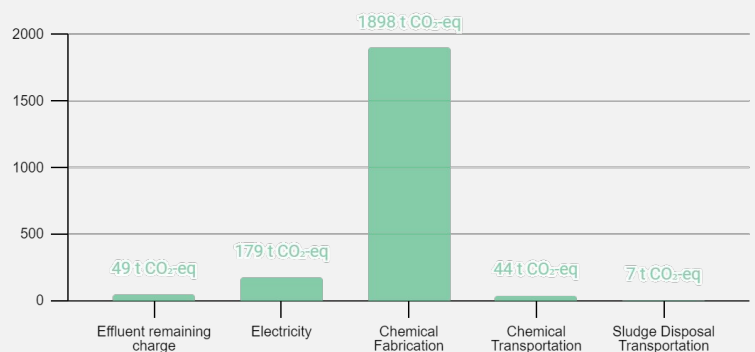
- Ensured compliant effluent despite an increase of the BOD/TN loading of 28% above design capacity
- Reduced the environmental impact by reducing tot-N in the effluent from 9.9 mg/l to 8.5 mg/l
- Significantly reduced operational expenses for energy and chemical consumption
- Significantly reduced Carbon Footprint of the WasteWater Treatment plant.

### Additional client benefits

- Better insights and peace of mind for the operators
- Extra CO<sub>2-eq</sub> emissions due to N<sub>2</sub>O emissions' reduction we did not count as there are still lots of uncertainties regarding the Nitrous oxide in WWTP.

Hubgrade Performance ensures a stable and automated WWTP operation with adaptability to load variations, effluent parameters compliant with EU requirements, and substantial operational expenditure savings.

### Carbon FootPrint Reduction



NB: We took a mix 50-50% of recycled & new carbon dosage to calculate its carbon footprint.

“*Innovative digital solutions like Hubgrade Performance, are a sustainable, cost effective way for us to continuously improve our WWTP operational processes. An intelligent use of real-time data from our entire system reduced our operational expenses and effluent concentrations.*”

Kristina Bereišienė, Head of Wastewater Treatment Service