

LEAN SUMMIT CZECHOSLOVAKIA

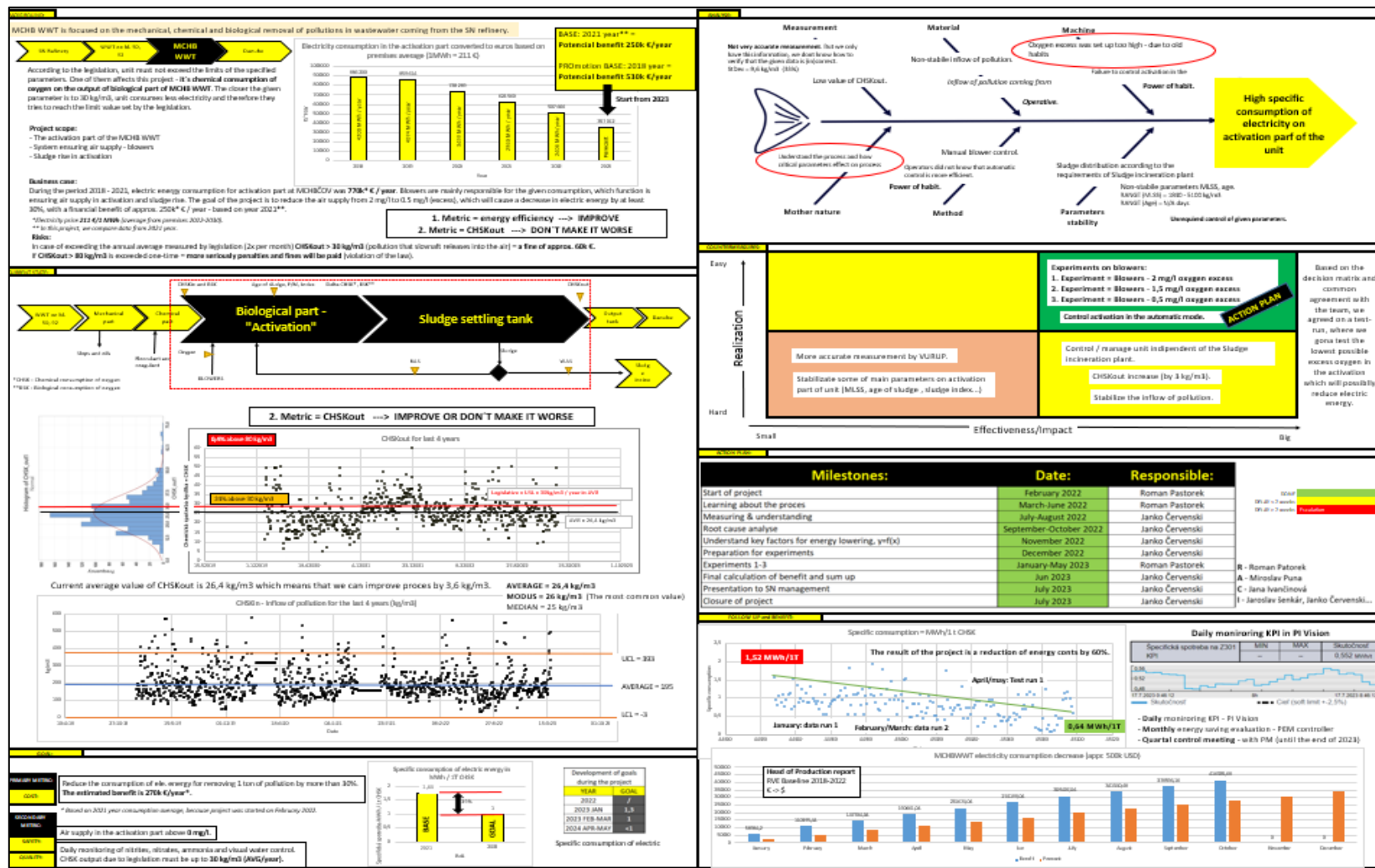
Be**Excellent**

BIOSLUDGE MANAGEMENT SLOVNAFT

Lean Awards 2024

ORGANIZED BY





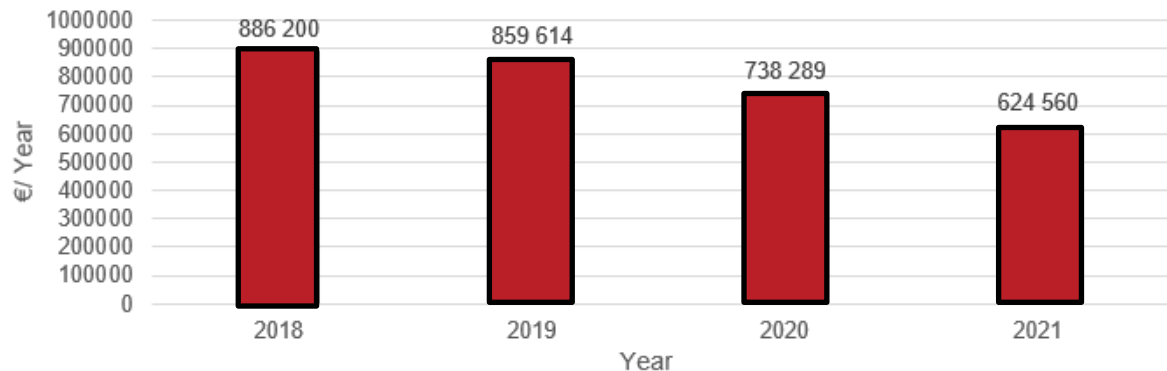
Problem definition

Business case:

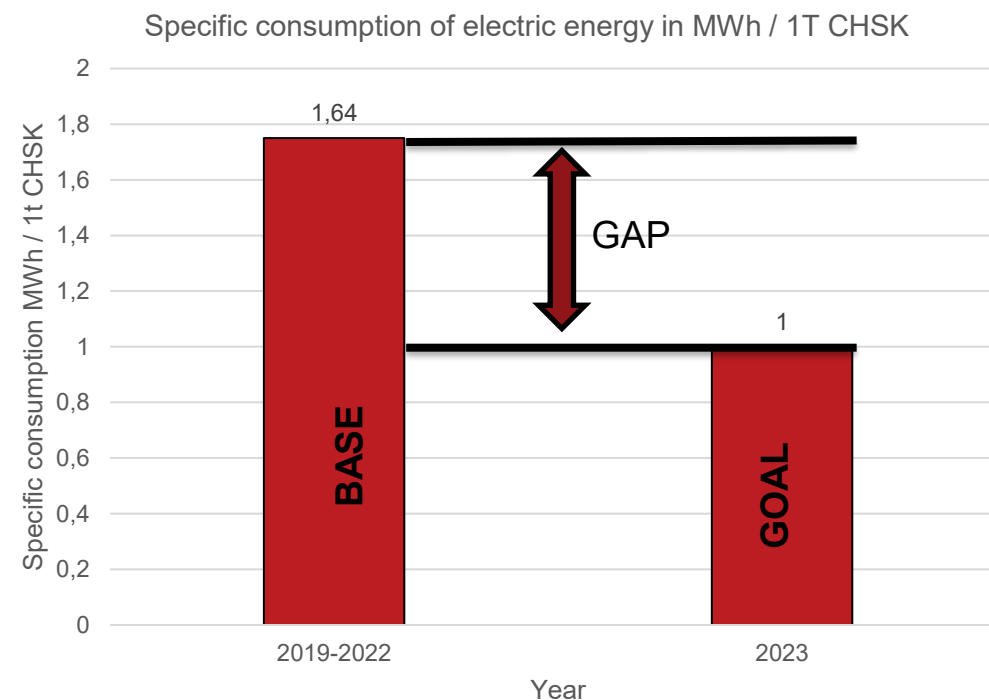
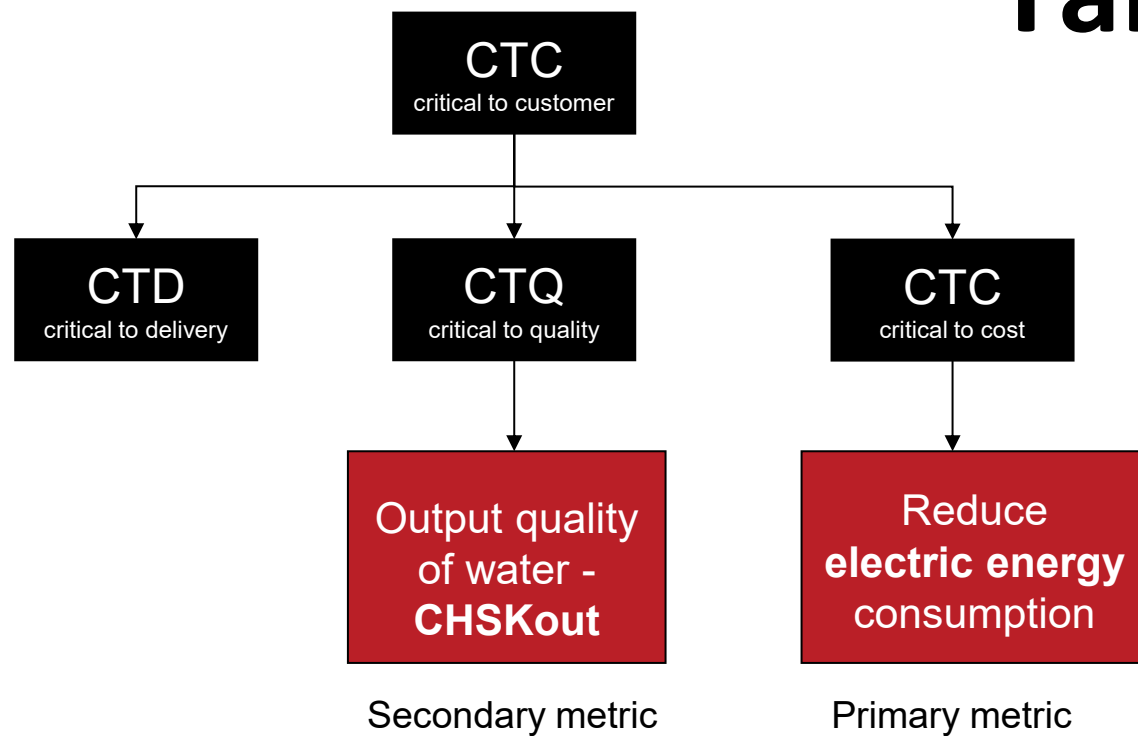
During the period 2018 - 2021, electric energy consumption for activation part at MCHB WWT* was **770k € / year**. Blowers are mainly responsible for the given consumption, which function is ensuring air supply in activation and sludge rise. The goal of the project is to decrease electric energy by at least 30%, with a financial benefit of approx. 250k € / year - based on year 2021.

**Mechanical, chemical and biological waste water treatment*

Electricity consumption in the activation part converted to euros
based on premises average (1MWh = 211 €)



Target



S – Air supply in the activation part above **0 mg/l**.

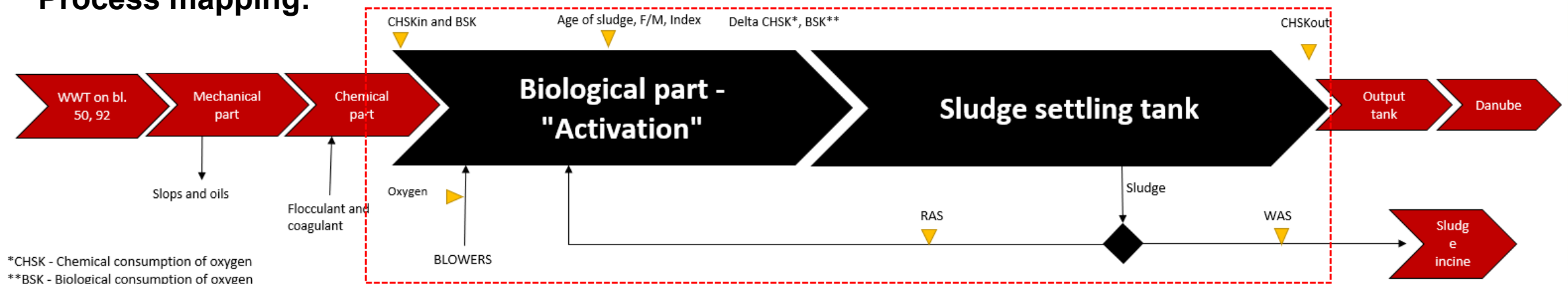
Q – Daily monitoring of nitrites, nitrates, ammonia and visual water control. CHSKout due to legislation must be up to **30 kg/m3 (AVG/year)**.

D – NA

C - Reduce the consumption of ele. energy for removing 1 ton of pollution by more than 30%.

Current State

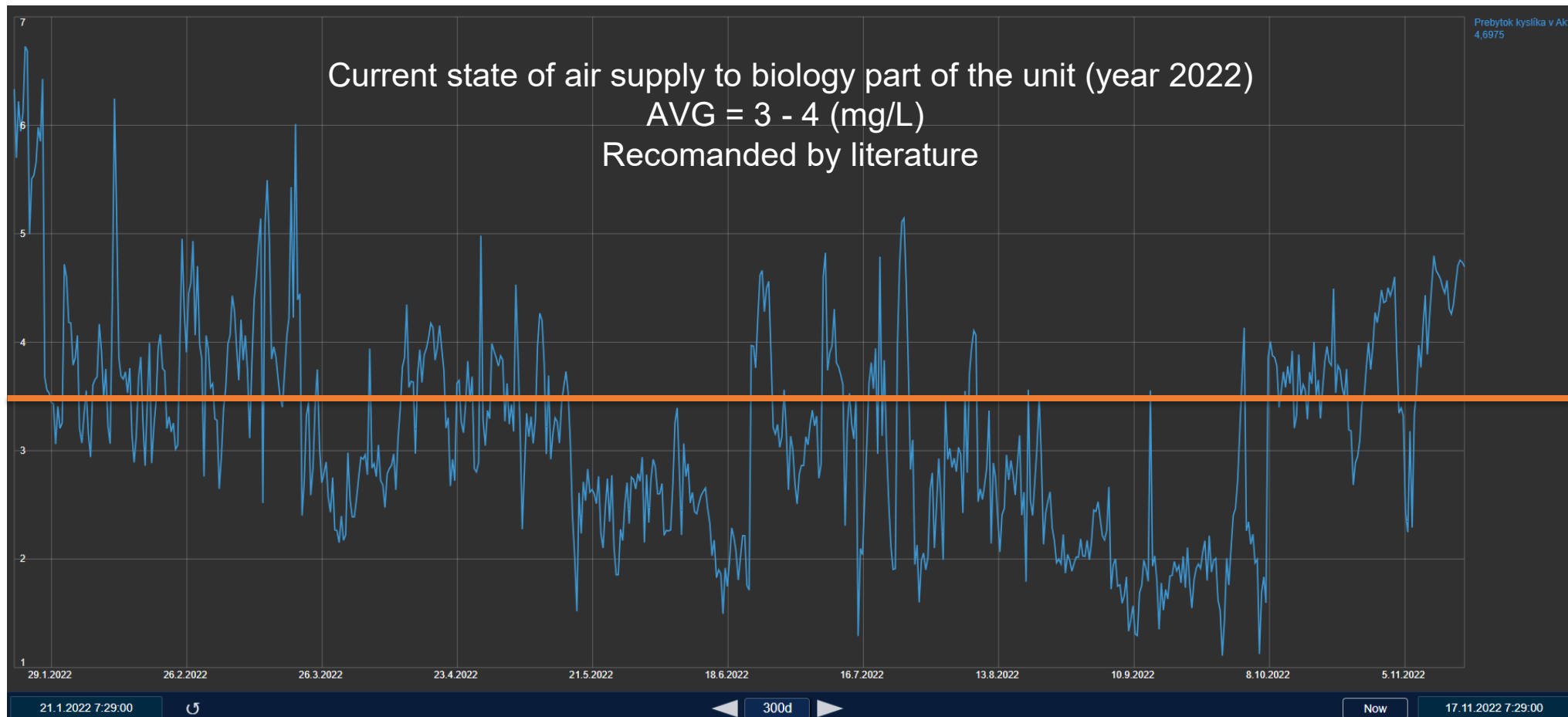
Process mapping:



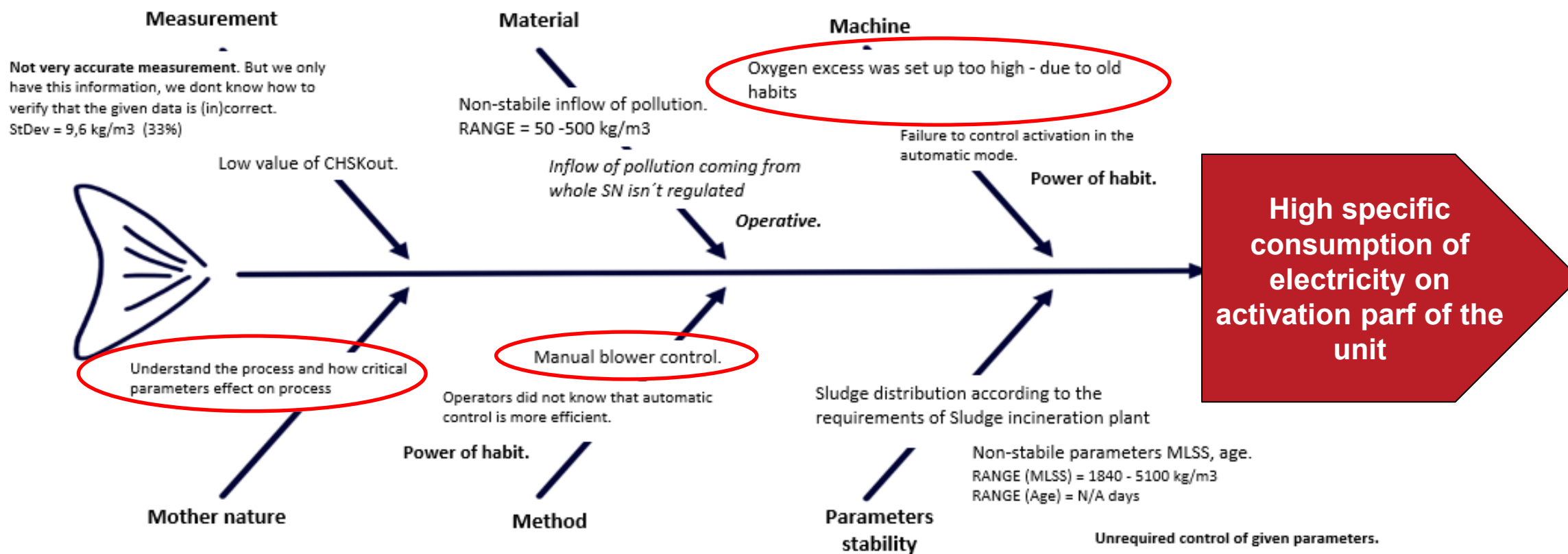
Project scope:

- The activation part of the MCHB WWT
- System ensuring air supply - blowers
- Sludge rise in activation

Current State



Root Cause

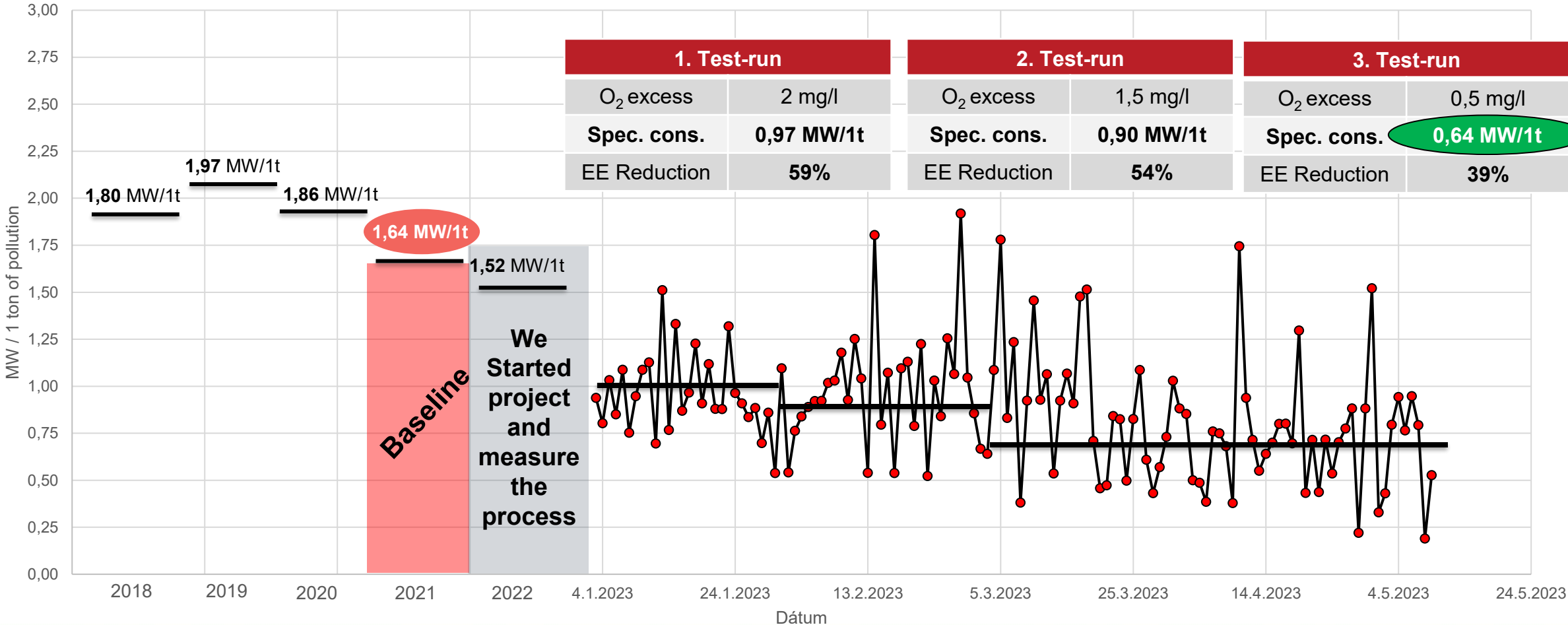


Countermeasures

Root causes	Optimal solution	Costs (€)	Benefit (€)
O2 set too high - the power of habit	Simultaneous nitrification and denitrification - a new technological regime	0 €	250 000 € / Year
Manual blower control - communication failed	Start automat regime	0 €	0 €
CHSK = f(MLSS, Sludge age kalu)	DOE for CHSKout	25 000 €	0 €

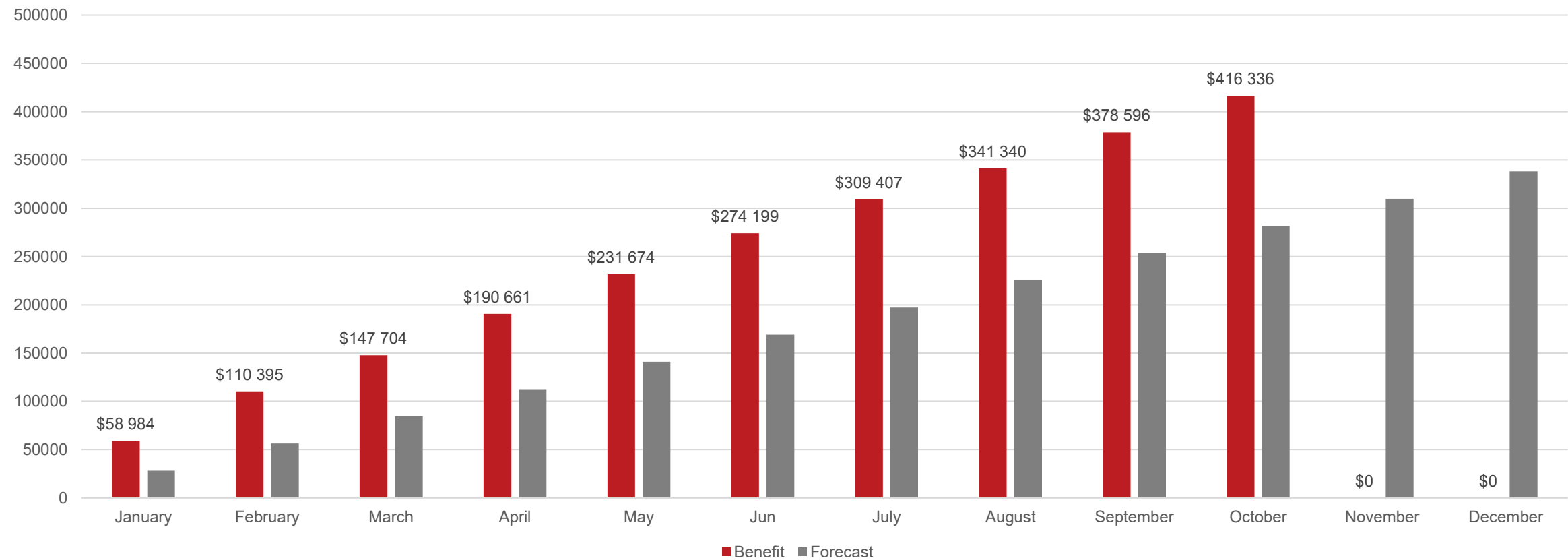
Implementation + Duration

Specific consumption of energy in **MW** for removal 1 ton of pollution in waste water



2023 Result

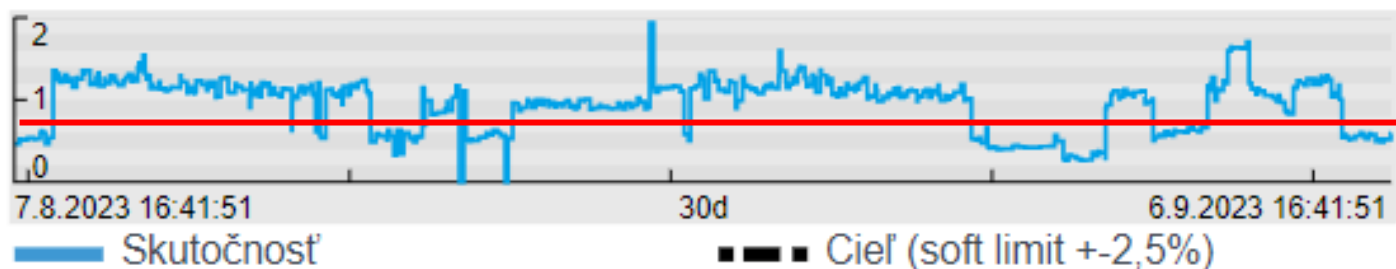
MCHBWWT electricity consumption decrease (appr. 500k USD)



Standardisation

- **Daily** monitoring KPI in our system (every morning reported on 15min performance meeting on unit)
- **Monthly** energy saving evaluation by energy controller
- **Quartal control meeting** with Project Manager (until the end of 2023)

Špecifická spotreba na Z301	MIN	MAX	Skutočnosť
KPI	—	—	0,590 MWh/t



In standard condition **AVG value of specific consumption** should be lower then 0,64 MW/t.

Screenshot from our program (PI Vision) for online data collection.

Knowledge sharing



We can't share our success story among the refinery in SN....

....but we can do it among MOL Group.
This year we started in Danube Rafinery !