BIO-RAN Co
International Bio Technologies

# Company Profile
# & Technology Presentation

# Summary

- Company profile & technology presentation
- Project objectives
- Ydro Microorganisms®
- Specific operations
- Reduction of  sludge for disposal
- Pictures
- Results

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# About us

**The Ydro Process® is now being used in more than 1000 wastewater treatment units and industrial plants, worldwide.**

Our group of companies led by the chemical engineer Dr. George Ganatsios, has forty years of experience in the water treatment industry and represent **Ydro Process®** biotechnology for industrial and domestic wastewater, in the field of environmental protection.

## Areas of Intervention in Wastewater Treatment

### OPTIMIZATION

Optimization of existing Wastewater treatment plant operations.

### PROCESSES IMPROVEMENT

Implementation of the Ydro Process® significant reduction in composting process timeframe.

### SLUDGE DISPOSAL

Implementation of the Ydro Process® for elimination of the excess sludge.

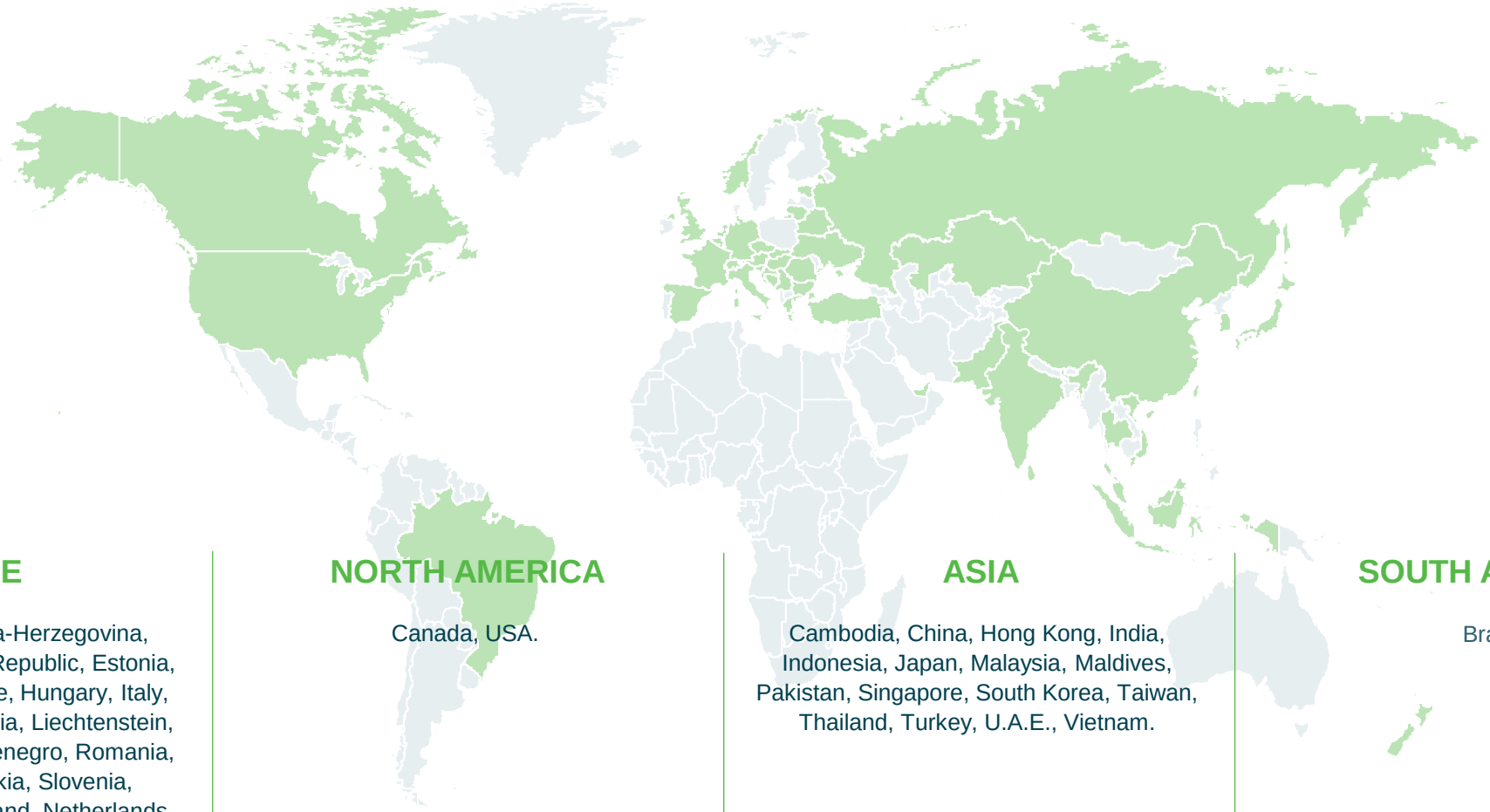
### COST REDUCTION

With Ydro Process®, wastewater treatment costs are reduced up to 30%, with substantial savings on sludge disposal costs.

# Where we are

The **Ydro Process®** is currently being utilised in 3 continents, more than 28 countries.

The **Ydro Process®** global partnership (including the initiation stage applications)



## EUROPE

Austria, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Kazakhstan, Kosovo, Latvia, Liechtenstein, Lithuania, Moldova, Montenegro, Romania, Russia, Serbia, Slovakia, Slovenia, Switzerland, Ukraine, Poland, Netherlands, Belgium.

## NORTH AMERICA

Canada, USA.

## ASIA

Cambodia, China, Hong Kong, India, Indonesia, Japan, Malaysia, Maldives, Pakistan, Singapore, South Korea, Taiwan, Thailand, Turkey, U.A.E., Vietnam.

## SOUTH AMERICA

Brazil.

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# Who we work with

The **Ydro Process®** has been successfully introduced to:

- Municipal wastewater treatment plants
- Sewer grid systems, large hotel groups and septic tanks
- Composting and fertilizer production sites

**Balearic Agency for Water and Environmental Quality**

- Lakes, ponds and lagoons
- Agricultural applications: Greenhouse and flower farming
- Closed loop cooling water systems

- Oil and gas industries and refineries
- Landfills
- Papermills and wood processing industries

- Breweries
- Milk and dairy industries
- Organic residue treatment plants and anaerobic digesters

- Fruit, juice and soft drinks industries
- Olive processing industries
- Steel and aluminum industries

- Slaughterhouses and poultry industries
- Fish and aquaculture industries
- Textiles and tanneries

# Scientific studies

**Ydro Process®** has been scientifically validated by:

**University of Stuttgart**
Germany

"The comparative operation of two test plants with different sludge concepts has **clearly shown that the use of Ydro Process technology makes it possible to operate a wastewater treatment plant without significant sludge removal** if the excess sludge can be hydrolysed together with the primary sludge in the primary clarifier."

**FLEMING COLLEGE TORONTO**

"(…) We have found to have **remarkable abilities at optimizing the treatment of wastewater**. Their technology has proven to be **able to drastically reduce energy input** requirements compared to energy intensive conventional wastewater treatments. (…) is **one of the greenest technologies** I have ever seen in the wastewater treatment sector"

1862
RIGA TECHNICAL UNIVERSITY

EUROPEAN UNIVERSITY OF TECHNOLOGY

VILNIUS TECH

# Our case studies

| CASE STUDIES | AROUND THE WORLD |
|---|---|
| Goals | Sludge, odor and FOG elimination, effluent improvement and CO2 reduction |
| Population Equivalent | > 10,000,000 |
| Flow | > 2000,000 $m^3$/day |
| Wastewater Treated | Municipal, industrial |
| Targets Achieved | Sludge reduction by 80%, CO2 by 50% |

## Ydro Process – What is it?

Ydro Process® is a unique biotechnology consisting of a naturally occurring, non-toxic, non-pathogenic Ydro Series® Microorganisms that increases the overall performance of the biological processes.

The application of the Ydro Process® enables the higher rate and efficiency of degradation of organic matter and leads to the overall optimization of the given system or process.

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# Project Report

## Application of the **YDRO PROCESS®** biotechnology at **Mongstad** wastewater treatment plant, Norway

**Project Customer:** „SAR“

**Project Executor:**

BIO RAN Ltd UK

www.bio-ran.com

**Project Initiation: 18.12.2023**

# Project objectives

| Characteristics | Data |
|---|---|
| Population equivalent | 100.000 |
| Type of treatment plant | Classic |
| Design capacity | 4,000 m3/day |
| Flowrate (average flowrate during 12 months) | 300 m3/day |

## PROJECT OBJECTIVES

The main objective of the proposal is to assess the potential technical and economic benefits of Ydro Process® technology in the selected WWTP:

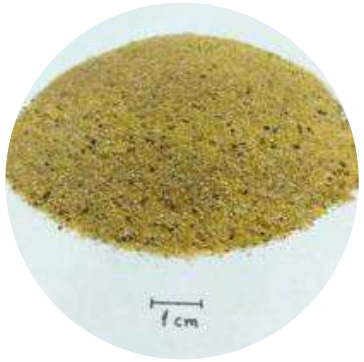
- Evaluation in the potential decrease in production of the total excess sludge (for disposal) by 50% or more of the existing amount;
- Evaluation of the impact on the performance of the WWTP in terms of effluent quality and energy consumption;
- Elimination of odours (H2S);
- Preliminary assessment of economic benefits.

# WWTP Mongstad

# Ydro Microorganisms®

**Our microbial products:**

Are naturally occurring bacteria




Contain no animal derivatives

Are not genetically manipulated

Include additional strains uniquely tailored to treated waste type

Require a maturation time of approx 16 hours

Each gram of bacterial product contains $10^9$ c.f.u.

During maturation $10^9$ c.f.u. population duplicates every 20 minutes


Require no further chemical analysis when applied

Application process requires no additional financing

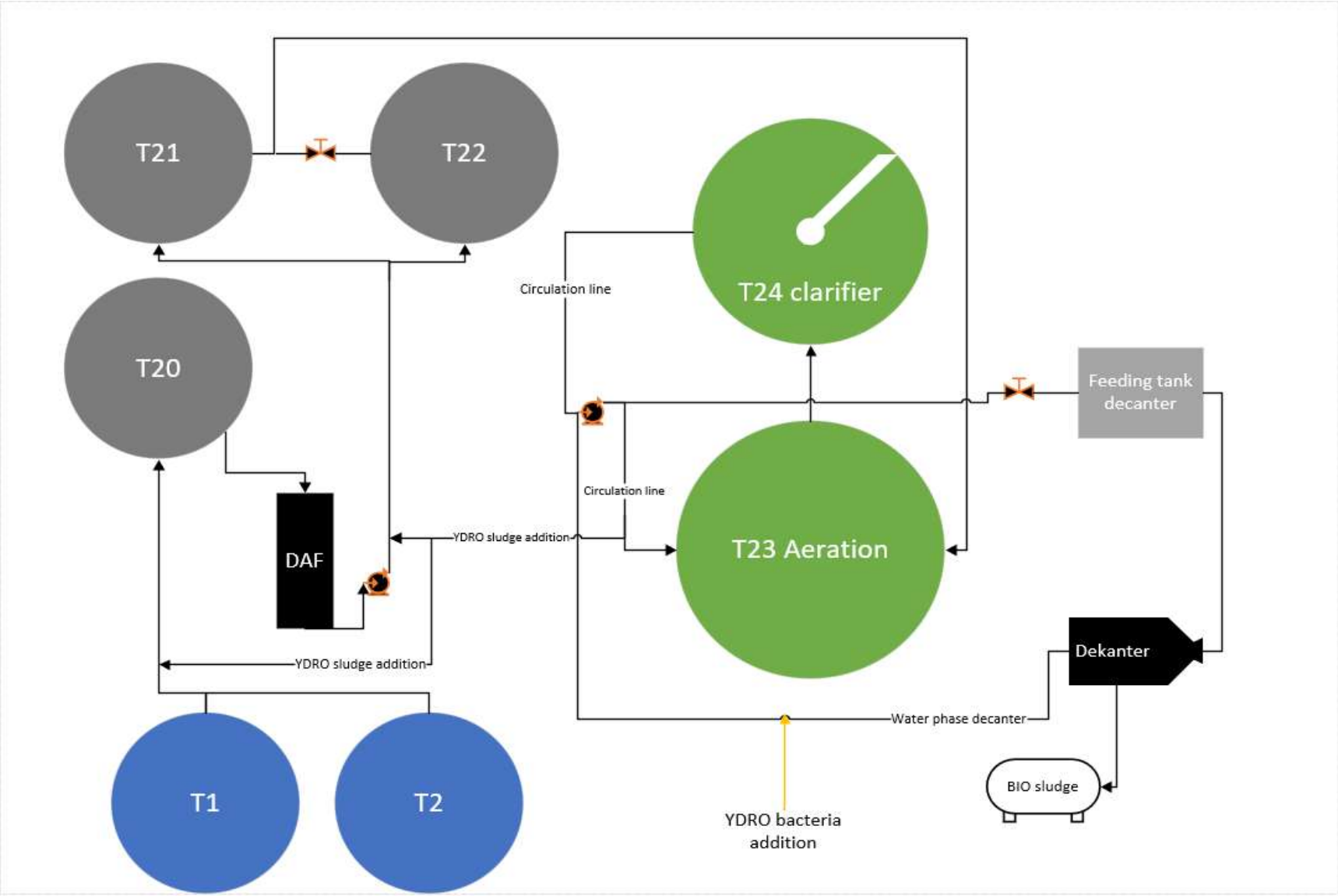
# Project specific operations

Surplus waste activated sludge (WAS) from T24 (clarifier) diverted to Storage tanks T20, T21 and T22 (15-30 m3/day) to retain Ydro Microorganisms® in the system and to achieve impact (hydrolysis) on the primary sludge in the Storage tanks.

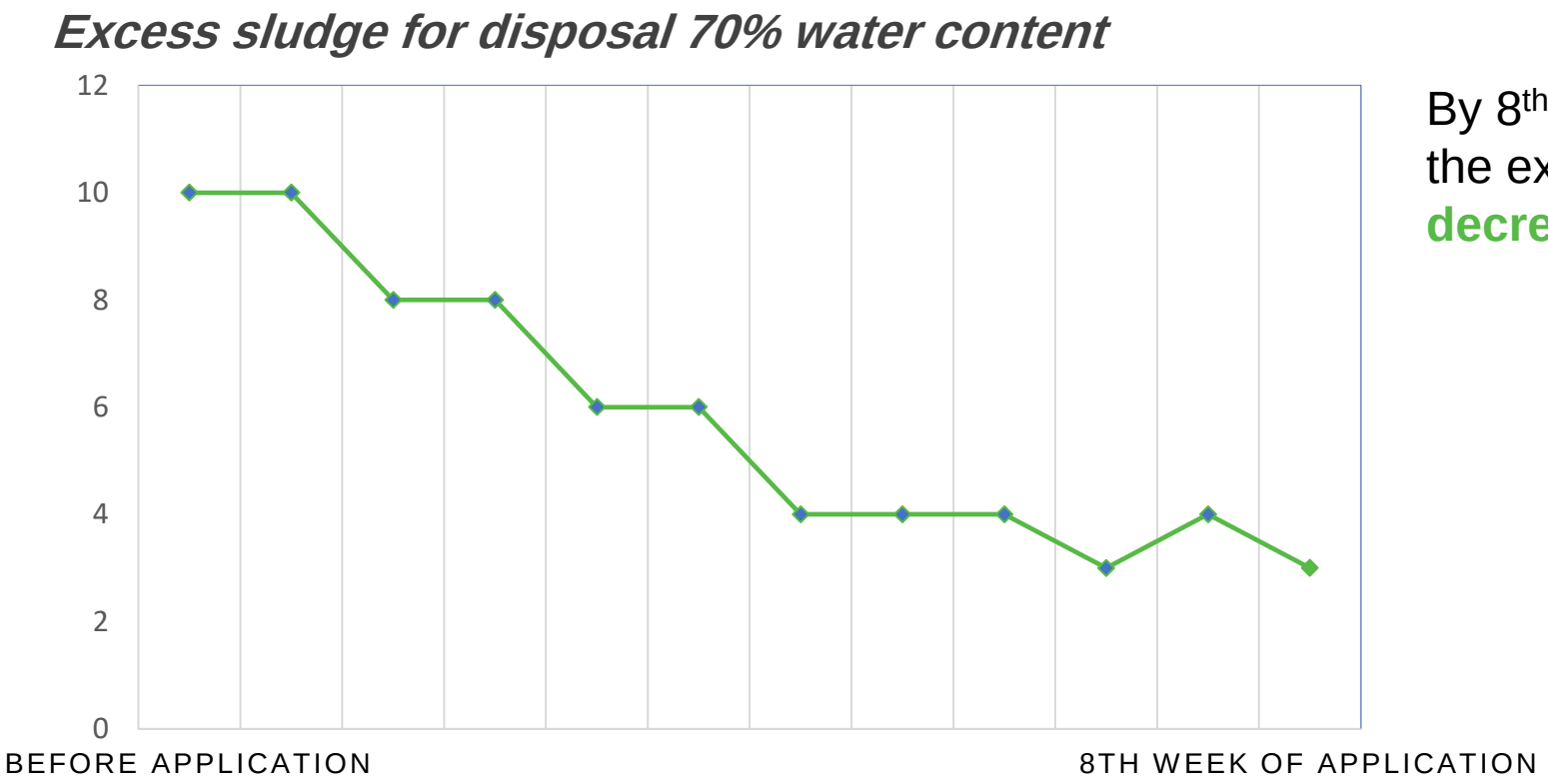
Ydro Microorganisms® dosing point: T23 Aeration 1.44 kg/day (first months q-ty is double 2.88 kg/day).

Ydro Microorganisms® maturation time: 12-16 hours.

Ydro Microorganisms® dilution rate: 1:10.



# The reduction of the excess sludge




By 8th week of Ydro® application the excess sludge production **decreased** for more than **60%.**

# T23 Aeration

Before: 12.12.2023 (foam high)

After: 30.01.2024 (MLSS and foam decreasing)

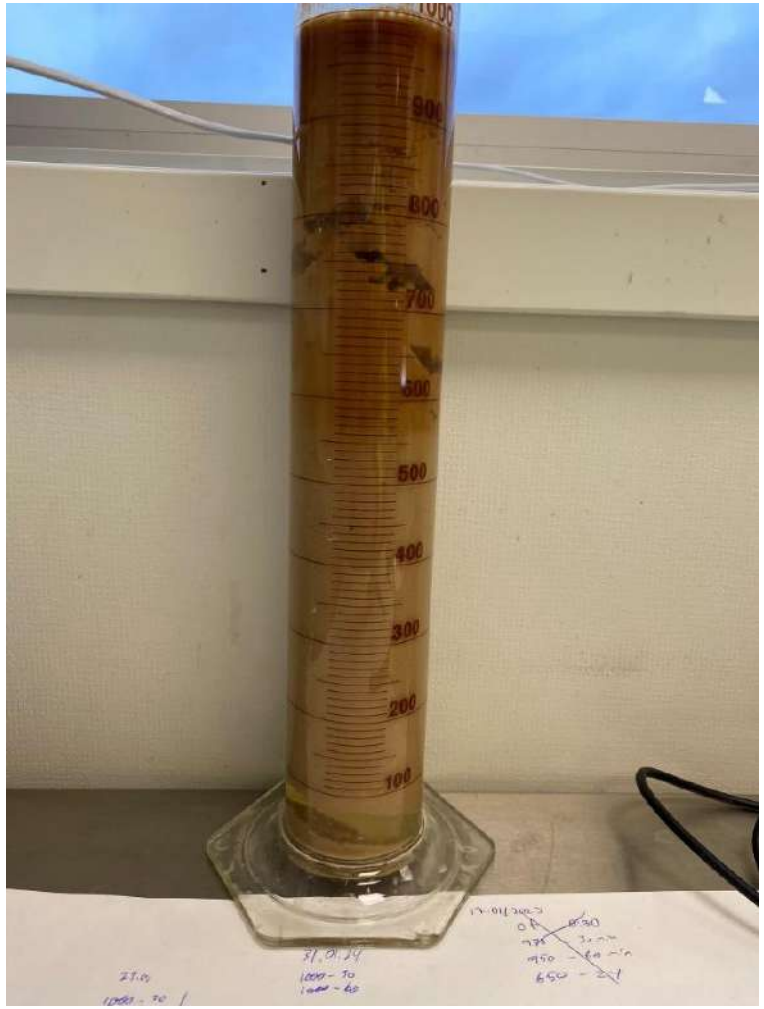
# T24 Clarifier

Before: 12.12.2023 (turbidity high > 250 NTU)

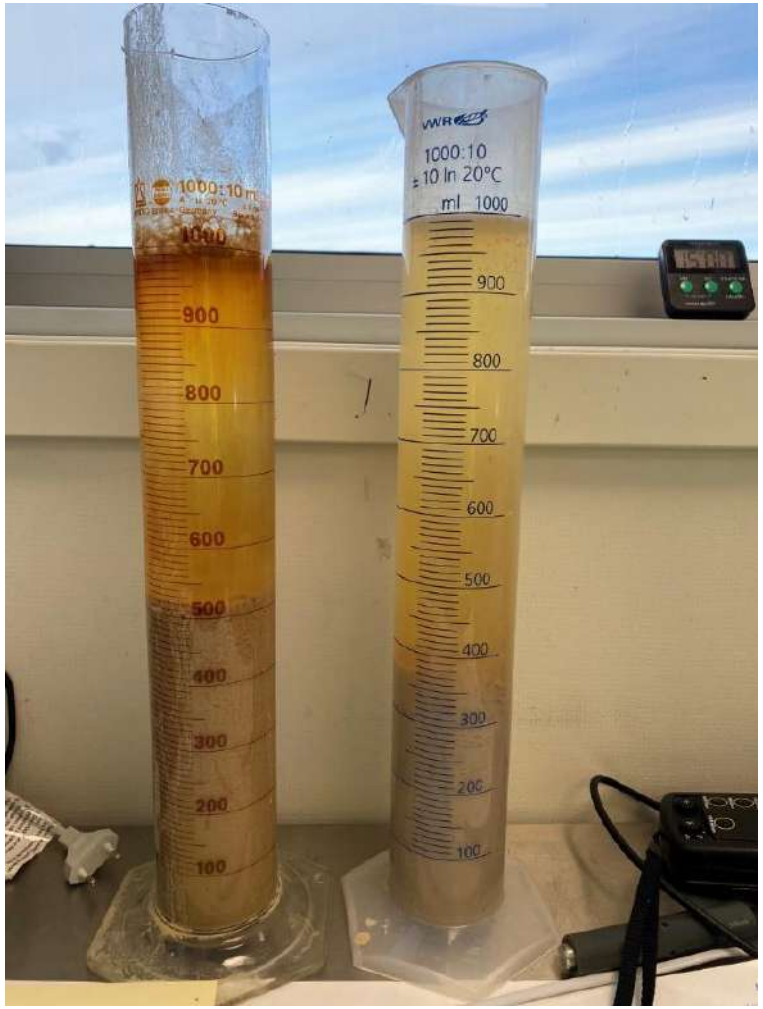
After: 30.01.2024 (turbidity decreasing < 100 NTU)

# Sedimentation

Before



After




As shown in the picture, we see much better sedimentation capability in the system with the use of Ydro® Microorganisms.

# Results

**Effluent parameters**
within allowed limits, turbidity decreasing further and sand filters perform better

**Substantial odor reduction**
H2S eliminated

**Excess sludge reduction**
sludge for disposal reduced by more than 60%

**Ydro Process® application**
Client has increased the inflow from 12.5 m3/h to 19 m3/h what leads to economical benefits.

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