Industrial Wastewater Treatment: Efficient Management and Reuse by means of Batch Recirculation Electrocoagulation

Universidad Tecnológica Nacional
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English II

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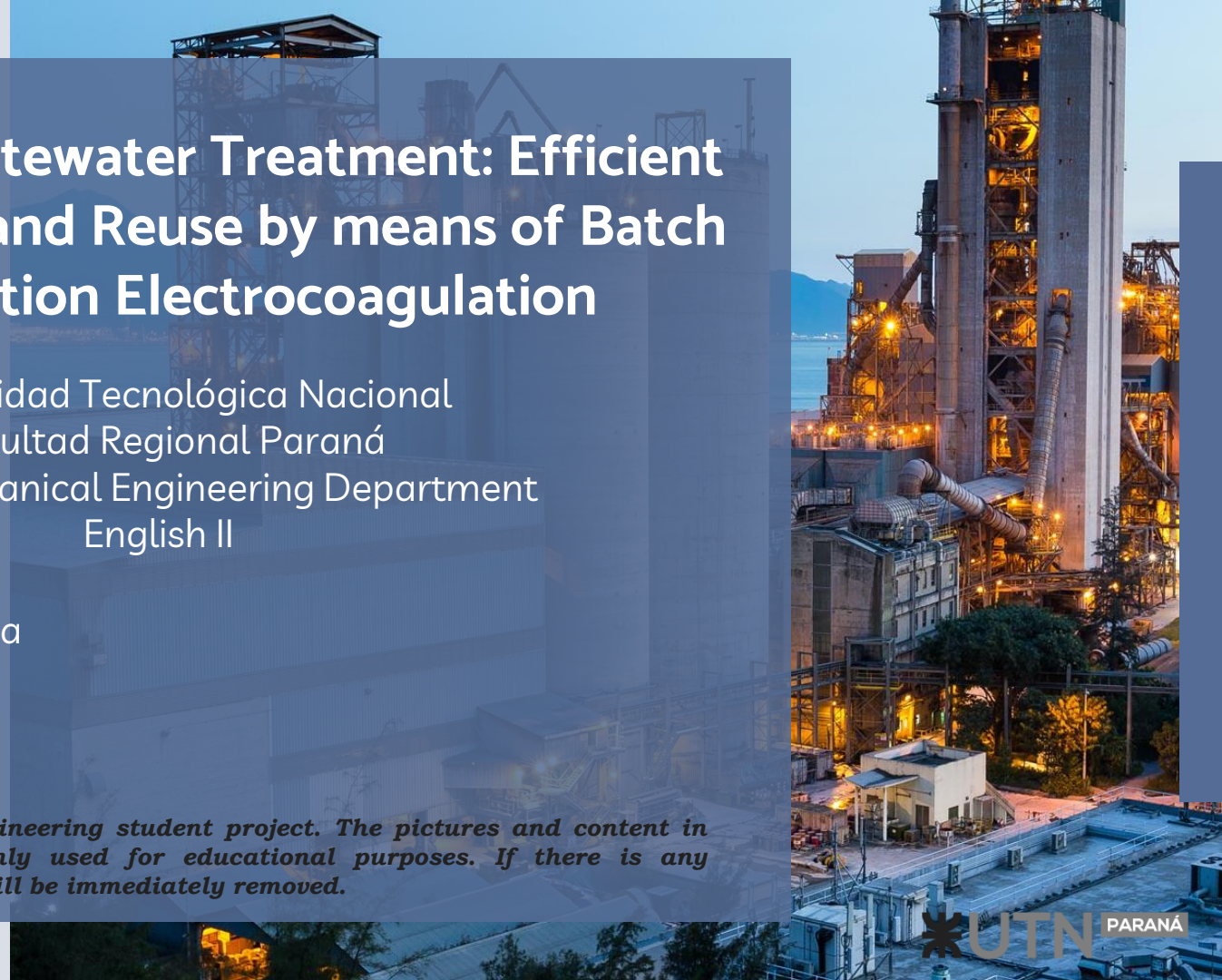
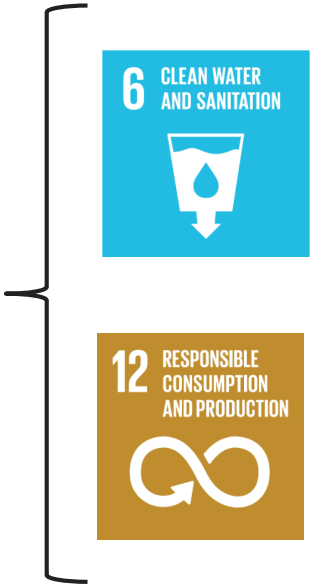


Introduction

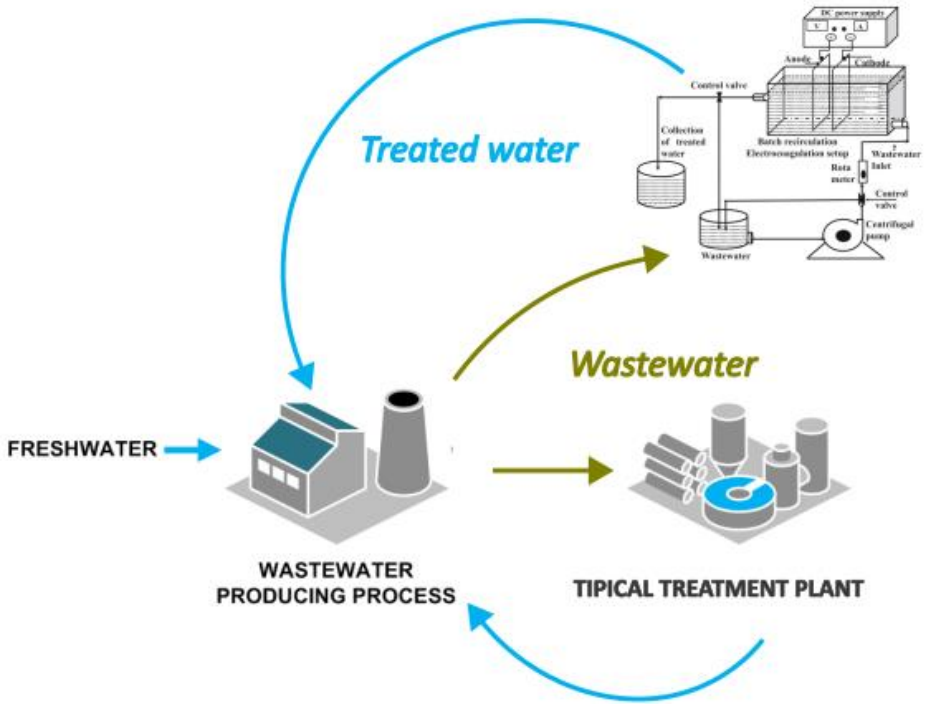
Context description

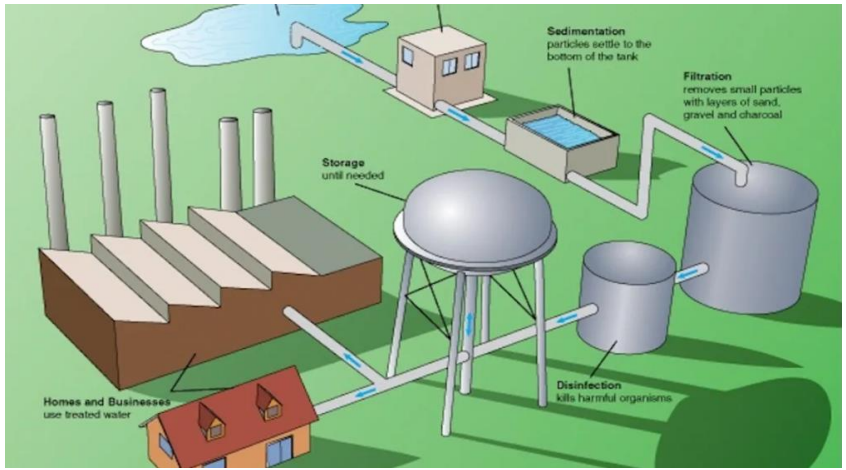


Introduction

Purpose

BRE





Source: https://interestingengineering.com/innovation/dirty-clean-how-water-treatment-plant-works/

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Introduction

Map of presentation

01 Problems caused by wastewater

02 Industrial wastewater characteristics

03 Wastewater treatment methods

04 Innovative wastewater treatment

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Introduction

Impact

Issue

Engineers

Idea

Share

Contamination problems

01

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Contamination problems

Water scarcity

- Wastewater is released in near areas.
- Small amounts of wastewater are still dangerous.

Harmful effects on life

- All living beings suffer consequences.

Harmful chemicals and components released into the air and soil

- Toxicity in the air produces bad smells.
- Toxic compounds are absorbed by the plants.

Source: https://www.onegreenplanet.org/environment/pollution-in-our-waterways-is-harming-people-and-animals/

Industrial wastewater characteristics

02

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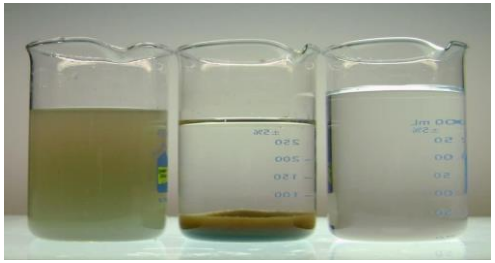
Industrial wastewater characteristics

Characteristics of contaminated water

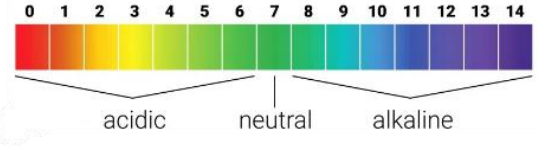
Physical

- **Water temperature**
- **Total Suspended Solids (TSS)**
- **Total Dissolved Solids (TDS)**



Biochemical

- **Biological oxygen demand (BOD)**
- **Chemical oxygen demand (COD)**
- **pH**



Source: https://www.reagent.co.uk/blog/what-is-ph-scale/ - https://www.reagent.co.uk/blog/what-is-ph-scale/

02

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Wastewater treatment methods

03

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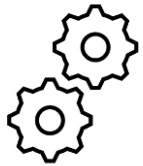
Wastewater treatment methods

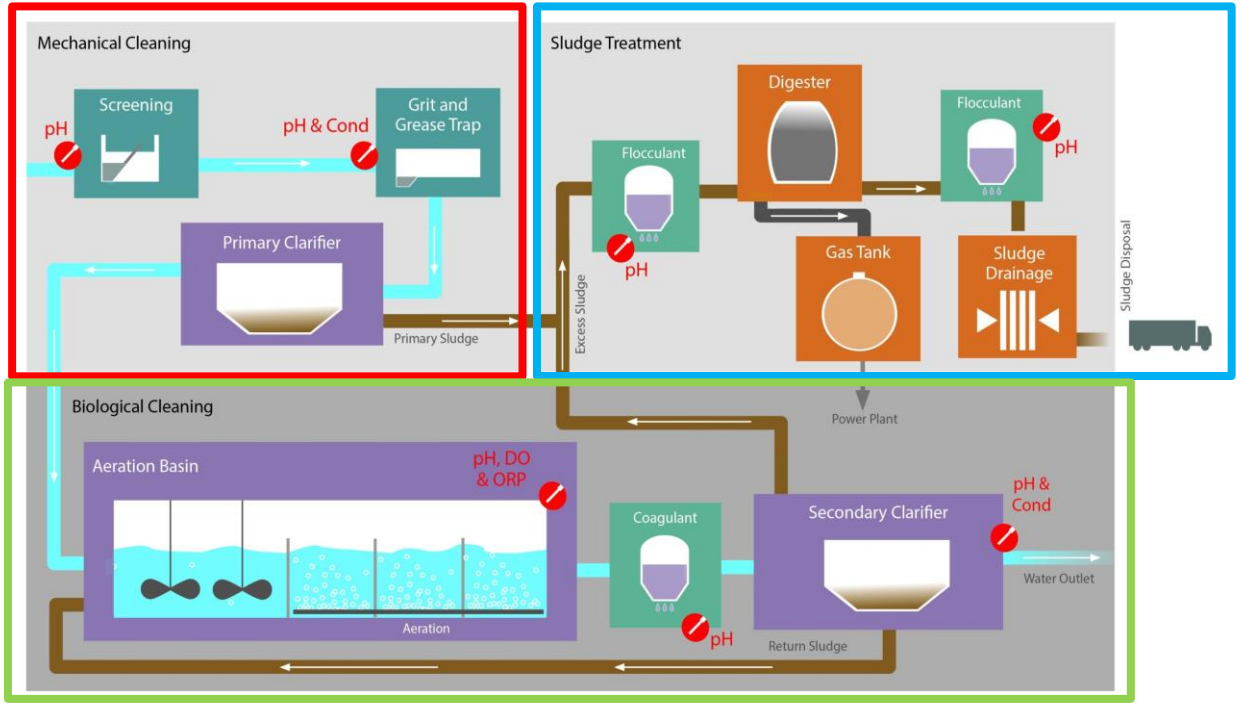
- **Physical method**



- **Chemical method**

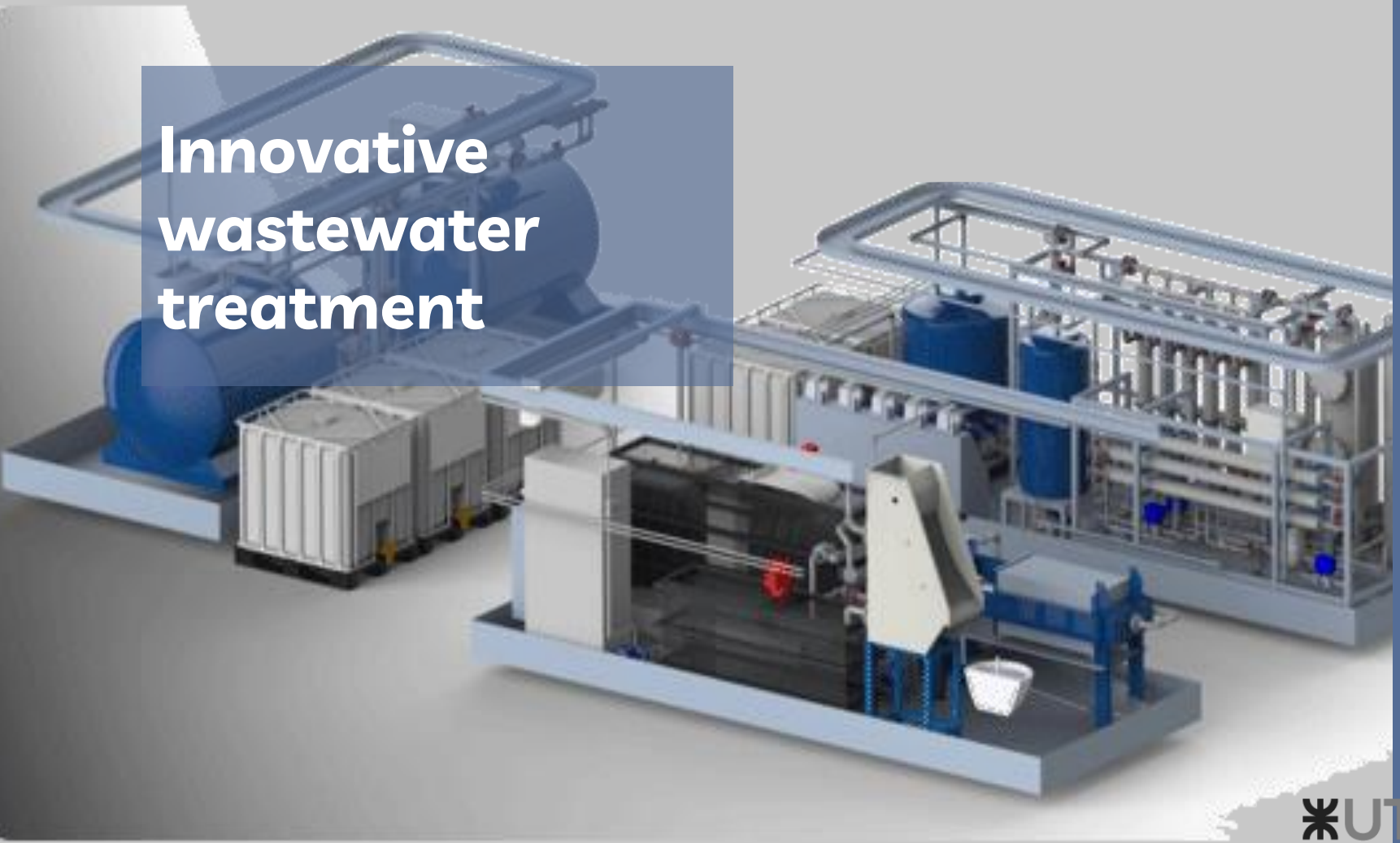
- **Biological method**

Treatment plant example



Source: https://www.knick-international.com/en/blog/2019/wastewater-treatment/

Innovative wastewater treatment



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Electrocoagulation (EC) process

Implementation of EC

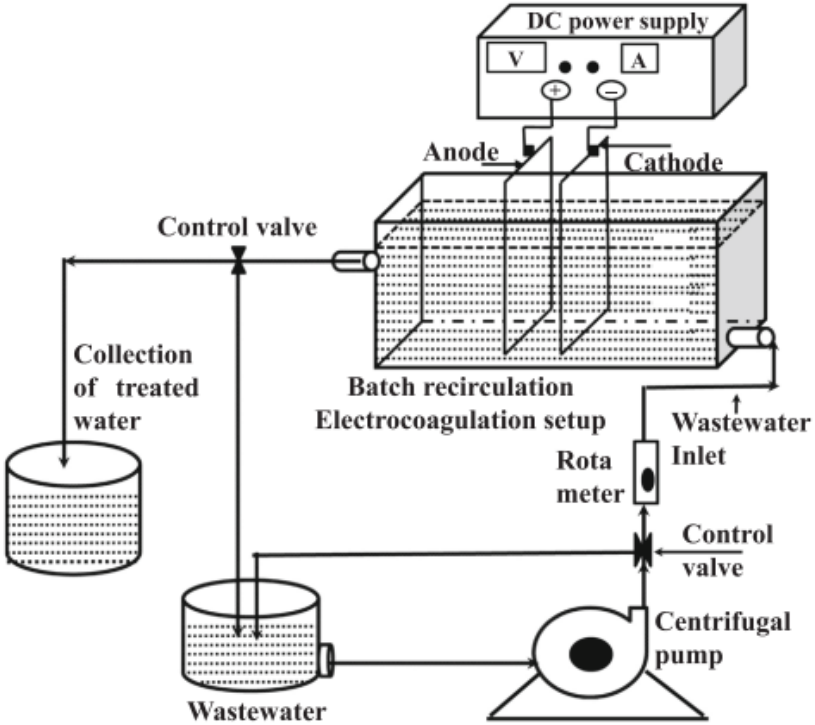
- Microplastics
- Pharmaceutical industry
- Textile effluents

Operating parameters of EC

- Initial pH value
- Treatment time
- Temperature
- Current density and energy consumption
- Electrode's material, shape and spacing

Innovative wastewater treatment

Batch Recirculation Electrocoagulation (BRE)



Batch Recirculation Electrocoagulation [9]

Advantages

-Cost-effectiveness
-Efficiency
-Green technology

Disadvantages

-Long operating time
-Limited applicability
-Developing method

Viability

Conclusion

- **Stability through sustainable and social development**
- **Sustainable Wastewater Treatment**
- **Promising Nature of BRE**
- **2030 SDG's**

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“Scientists investigate that which already is; Engineers create that which has never been.”

Albert Einstein

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