



Centra Rekayasa Enviro

WASTE WATER TREATMENT UTILIZING THE ELECTRO COAGULATION (EC) METHOD



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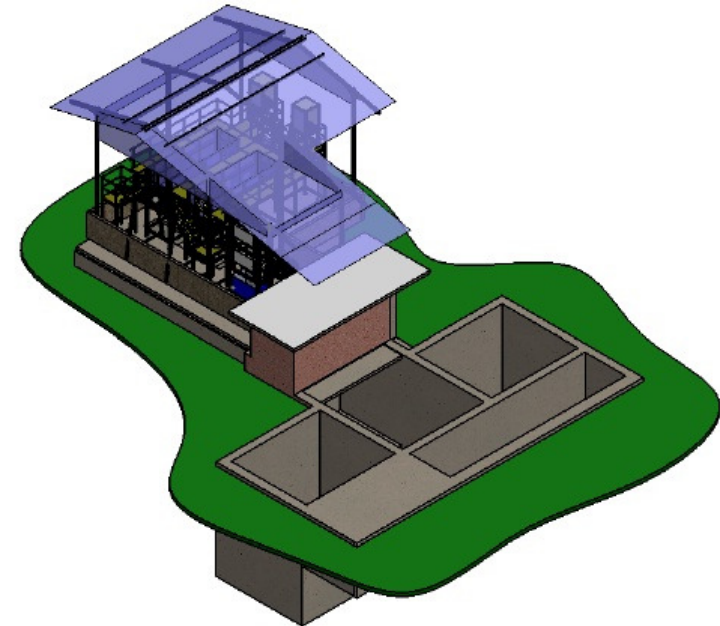
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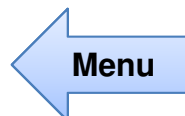




ELECTRO COAGULATION

Electrocoagulation (EC), also known as short wave electrolysis, is a technique used for water treatment, wastewater treatment, industrial process water, and hospital wastewater.

Electricity-based electrocoagulation technology is used to remove contaminants that are less efficient at filtering, microbiology or processing system with chemicals, such as oil emulsion, hydrocarbons from petroleum, suspended solids, and heavy metals without the use of chemicals.



EXISTING WASTE WATER TREATMENT

Chemical systems

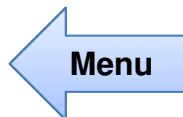
- Dependence on Chemicals
- Generate more dangerous side reactions
- Large risk during execution

Biological Systems / Bacteria

- Requires extensive land
- Requires more time (not effective)
- Media should be in accordance with the characteristics of bacteria.

Physical System

- Specific and Characteristically





HOW DOES EC WORKS?

The working principle of electro coagulation (EC) is the process of destabilizing suspended and emulsified contaminants in solution media using electric current.

EC advantages:

- Less processing fee (monthly cost)
- Land required is relatively small
- The execution / use very simple tools
- There is virtually no need of Chemical materials
- Able to process various types of liquid waste
- Less sludge generated from the process
- Risk of workmanship is very small
- Faster processing time

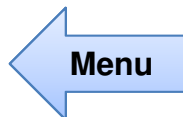
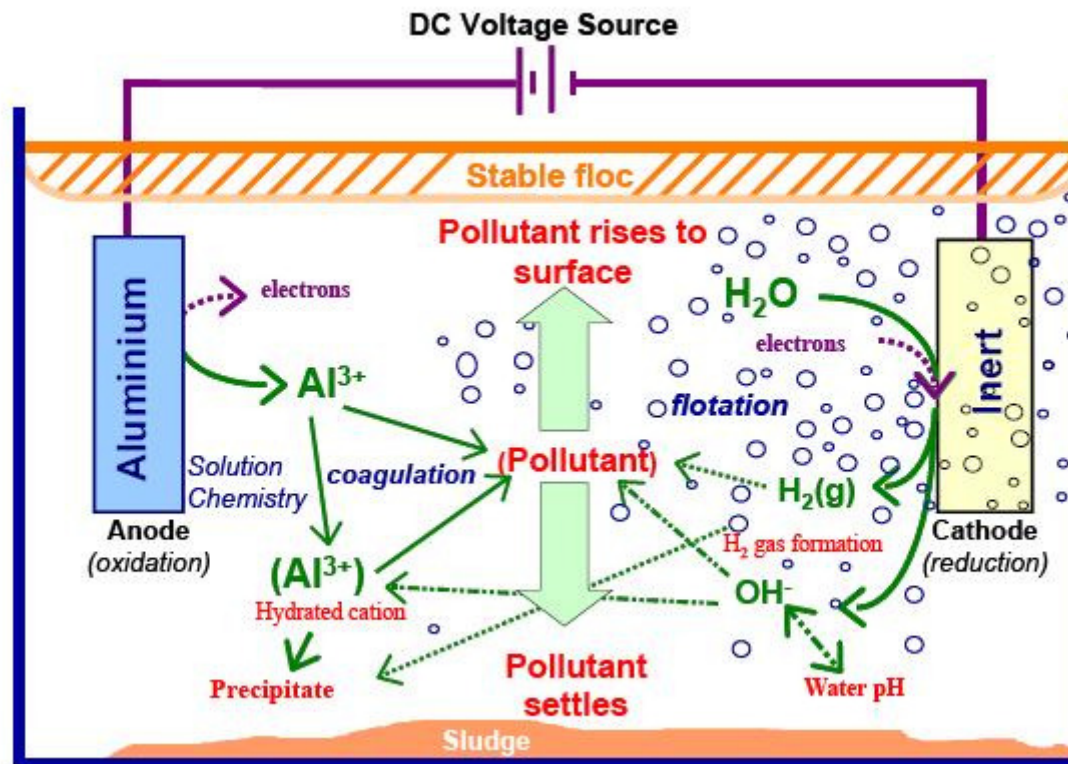
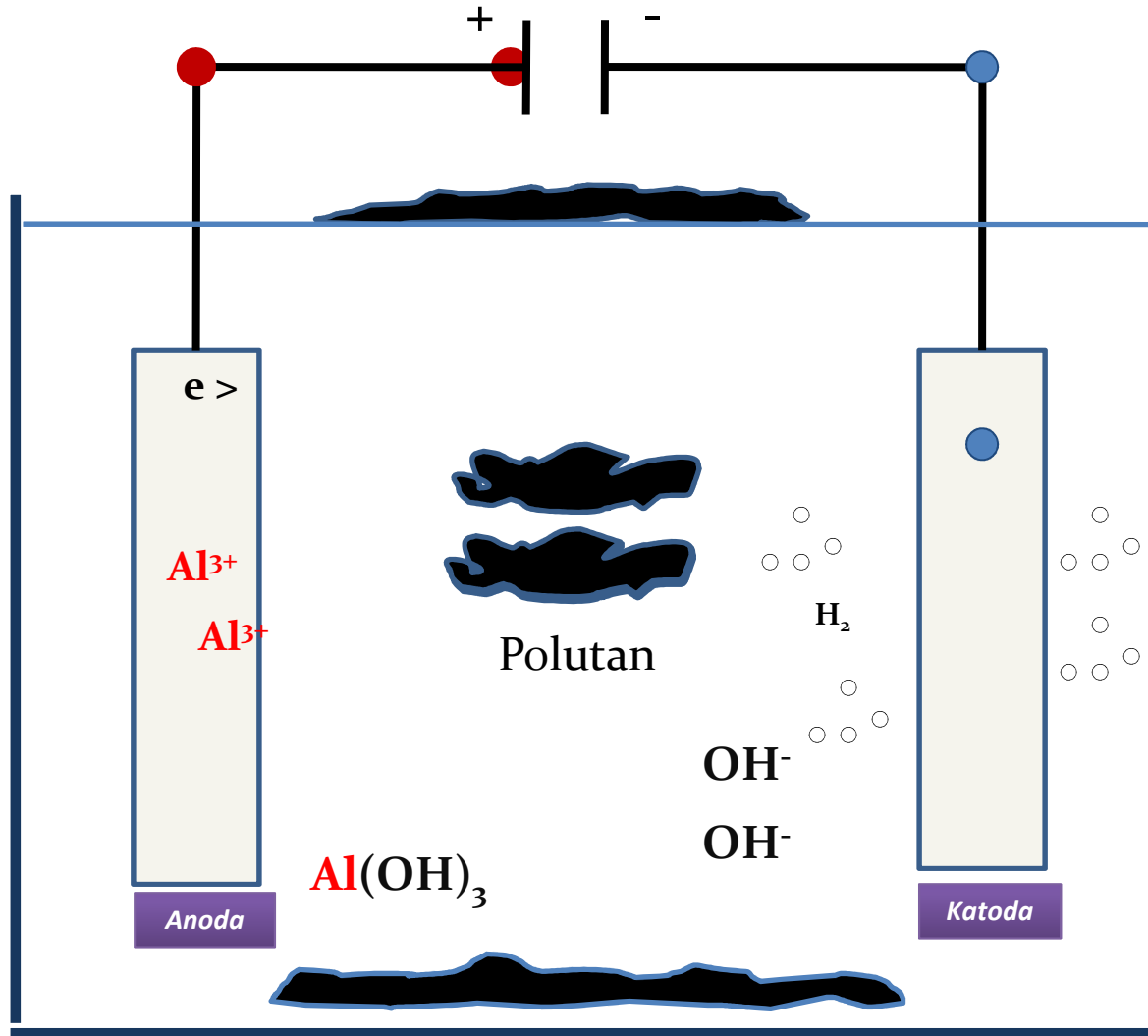


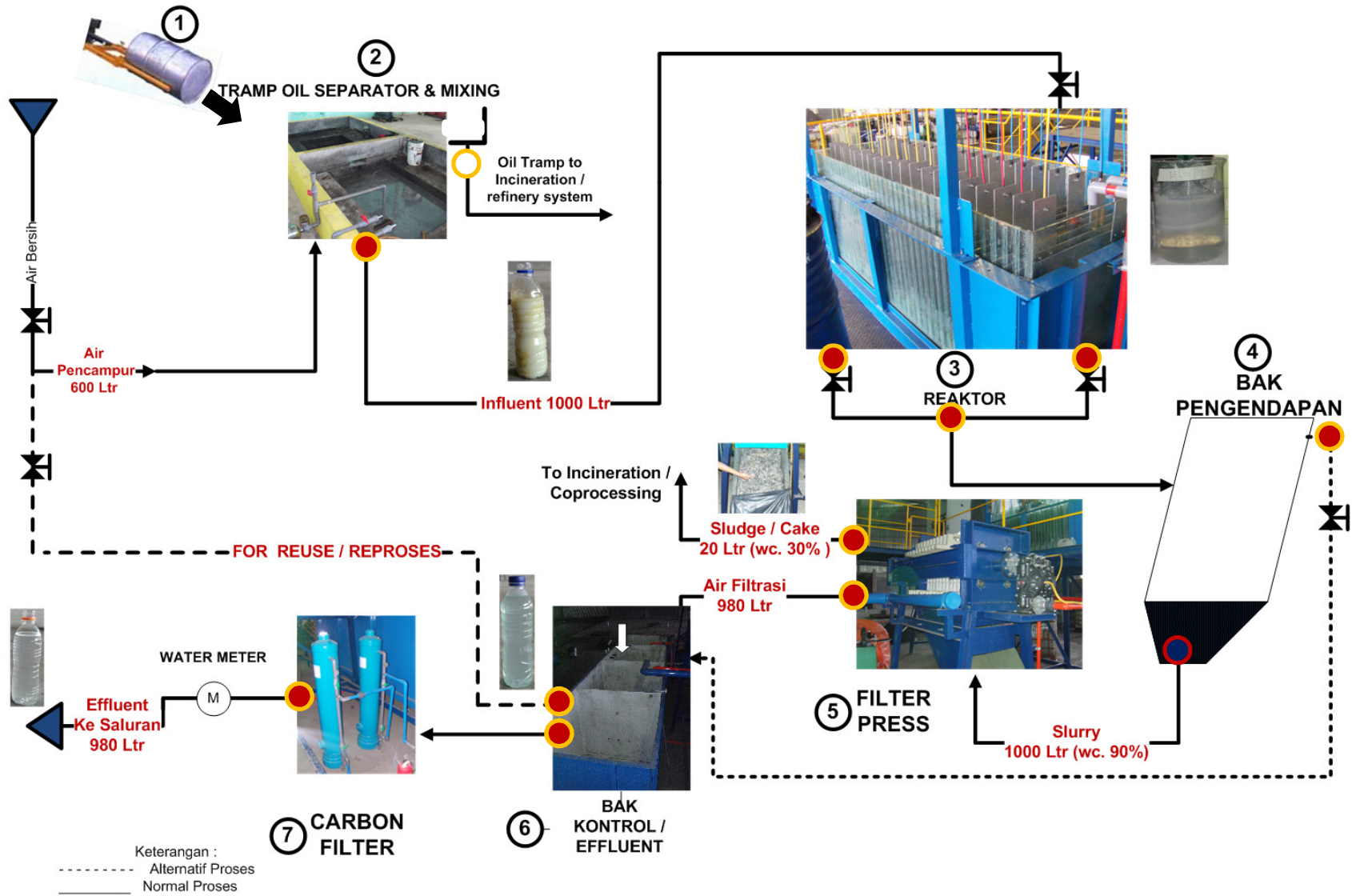
ILLUSTRATION OF EC REACTION



EC PROCESS



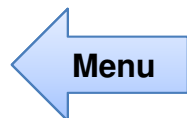
FLOW PROCESS ELECTROCOAGULATION WASTE WATER TREATMENT





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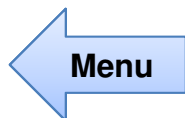
SAMPLE OF PROCESS AT THE REACTOR



SLUDGE FROM FILTER PRESS



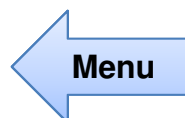
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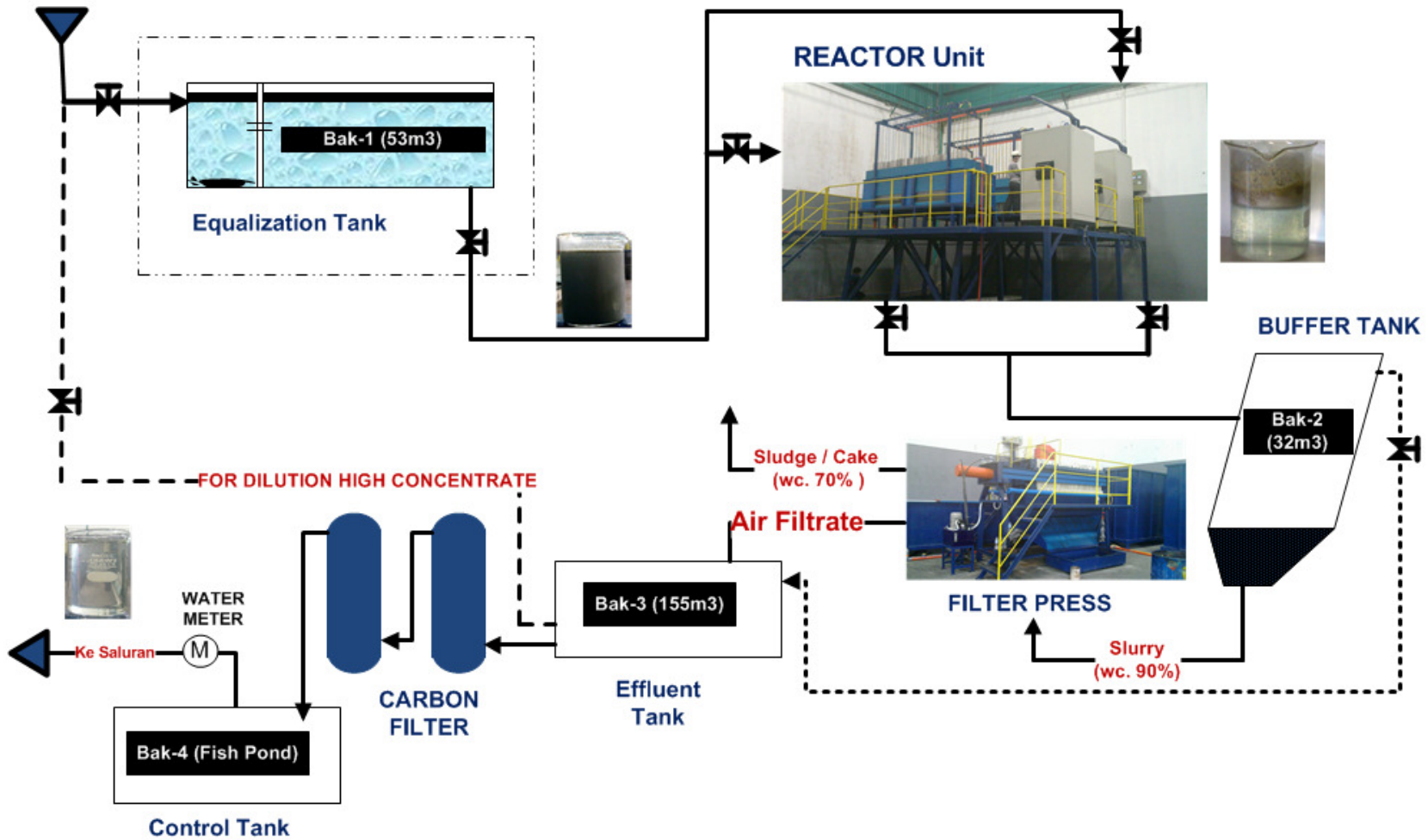
COMPARATION

COMPARATION OF EC WITH CONVENTIONAL TECHNOLOGY

CRITERIA	MECHANICAL FILTRATION	BIOREMEDIATION	CHEMICAL	ELEKTRO COAGULATION
RESULT	NOT EFFECTIVE	NOT EFFECTIVE	MODERATELY EFFECTIVE	VERY EFFECTIVE
INVESTMENT	MODERATELY EFFECTIVE	MODERATELY EFFECTIVE	NOT EFFECTIVE	VERY EFFECTIVE
EASE OF OPERATIONAL	NOT EFFECTIVE	MODERATELY EFFECTIVE	NOT EFFECTIVE	VERY EFFECTIVE
EASE OF MAINTENANCE	NOT EFFECTIVE	MODERATELY EFFECTIVE	NOT EFFECTIVE	VERY EFFECTIVE
OIL REMOVAL	MODERATELY EFFECTIVE	MODERATELY EFFECTIVE	VERY EFFECTIVE	VERY EFFECTIVE
TSS REMOVAL	MODERATELY EFFECTIVE	NOT EFFECTIVE	VERY EFFECTIVE	VERY EFFECTIVE
METAL REMOVAL	NOT EFFECTIVE	NOT EFFECTIVE	MODERATELY EFFECTIVE	VERY EFFECTIVE



FLOW PROCESS ELECTROCOAGULATION WASTE WATER TREATMENT



PROPOSE WASTE WATER TREATMENT WITH ELECTROCOAGULATION PROCESS CAP. 200M³/DAY
PT. FUTAMI FOOD



DRAWN BY : Dadan

CHECKED :

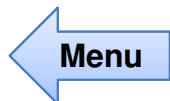
APPROVED :

FLOW PROCESS EC WWTP

REV : 0

DATE : Juli 2013

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SAMPLE OF EC JAR TEST RESULTS

