General information

File No.: 40 **Technology:** Electrooxidation

Typology: Liquid fraction processing

Goal: Oxidation of organic components, metals, etc., in the anode of an electrochemical reactor through the application of an external electric current

TRL: 4 **Status:** Consolidated **Complexity:** High

Inlets:

Water flow from other processes (separation by pressing -> electrocoagulation -> Electrooxidation

Products:

Treated water

Other outputs:

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Consumption

Energy: High **Water:** Not applicable **Reagents:** High

Efficiency:

Electrooxidation combined with electrocoagulation: Reduction of total nitrogen by 99.9%; Reduction of ammoniacal nitrogen by 99.9%; 99.3% COD reduction

Economics

Investment:

Not available

Operation:

Wastewater from mills: €0.22-1.12/kg DQO Minimal
Wastewater SL: €1.9/m^3(pork porridge)

Strong points:

High removal of COD and conversion of nitrogen to ammoniacal nitrogen;
High reduction of recalcitrant organic compounds (phenols).

Weak points:

Potential risk of ammonia emissions due to conversion to organic nitrogen;
Possible formation of chlorinated organic compounds in those indirect oxidation processes, and contamination by added metals;
Colloidal organic matter can produce interference.

Others: The material used for the anode is important. Mainly, the most typical materials include glassy carbon, Tu/RuO_2, Ti/Pt-Ir, carbon fiber, MnO_2, Pt-carbon black, porous carbon with stainless steel filter and reticulated vitreous carbon

Technology train:

1. Separation by pressing -> Electrocoagulation -> Electrooxidation.