CHEMICAL TECHNOLOGIES FOR INDUSTRIAL WASTEWATER - ADVANCE OXIDATION PROCESS

Project Team

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Removal of organic (or inorganic) materials in water and wastewater by oxidation through non-selective attack by radical species.

Advantages
- Effective for a wide range of operating temperatures and pH values
- Excellent bactericidal and sporidical action
- Fast and non-selective
- Produce small amount of no THM or other DBP (affected by pH, alkalinity, and nature of the organic materials)
- Does not produce dissolved and suspended solids
- Control color, taste, and odor
- Clean residual $\rightarrow$ $\text{O}_2$

Particulates Removal

Applications & Advantages

- Pre-treatment of Wastewater Stream
  - Reduction of overall organic content (COD)
  - Increase of biodegradability of recalcitrant organics (BOD)
  - Destruction (mineralization) of specific pollutants
  - Sludge treatment and conditioning
- Post-treatment of Wastewater Stream
  - Wastewater polishing
  - Reduction of color and odor
  - Disinfection
- Point of Application
  - Domestic wastewater treatment plant
  - Industrial wastewater treatment plant
  - Sludge treatment
  - Groundwater remediation

Novelty

2. Catalytic microreactors dispersed within the membrane pores, providing extended degradation of micropollutants that pass through the membrane.
3. Hybrid membrane reactor system with a smaller footprint.

Catalytic Wet Air Oxidation (CWAO)

Advantages
- Oxidizes organic/inorganic matters by oxygen or air
- CWAO produces no NOx, SO2, and HCI
- With noble metal catalyst (Pt, Pd, Ru, etc.), CWAO is able to oxidize refractory acetic acid/ammonia while operating at a lower temperature and pressure
- Pre-oxidation to be followed by biological processes
- Enhances biodegradability
- Effective for highly concentrated wastewater (COD ~ 100,000 mg/L)

IP List


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