Water Science

Separation Science

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CHD-Ox

Toxic Refactory COD Removal

Engineering Today:Greener Tomorrow

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CHD-Ox

Toxic Refactory COD Removal

Industries face challenges with high COD in wastewater, containing toxic, refractory compounds that are difficult to treat. Systems like Aerobic Ponds and MBBR often fail due to this toxicity, with antibiotics, pesticides, and micro-pollutants further threatening MBBR performance. In some cases the CHD-Ox treatment is enough to get the results.

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CHD-Ox

Toxic Refactory COD Removal

CHD-Ox (Catalytic HyDro-Oxidation) is a proprietary technology developed by Diva Envitec Pvt Ltd that improves wastewater biodegradability before it enters the MBBR system. This advanced treatment leverages Cavitation, Nanoporex technology, proprietary catalysts, and oxidants to boost the generation of hydroxyl (OH) radicals and Reactive Oxygen Species (ROS).

The powerful OH radicals break down toxic, refractory, long-chain COD into more biodegradable compounds, enhancing the stability and efficiency of the MBBR process.

CHD-Ox is compatible with all existing CETP and ETP plants, making it an ideal pre-treatment solution for a wide range of industrial wastewater applications, ensuring more effective biological treatment. We offer retrofit solutions to improve performance in your existing ETP.

Rapid BOD, COD, and Odor Removal:

Efficiently eliminates biological oxygen demand (BOD), chemical oxygen demand (COD), and unpleasant odors from wastewater.

Broad-Spectrum Action:

Effectively targets a wide range of organic compounds present in the water.

Seamless Retrofit

Easily integrates with existing Effluent Treatment Plants (ETP) without significant modifications.

Short Retention Time

Typically requires only 4-6 hours, significantly reducing treatment time compared to conventional biological methods.

Time-Efficient Process

Offers a faster and more efficient solution compared to traditional biological treatment processes.

User-Friendly Operation

Simple to manage and control, ensuring hassle-free operation.

Supports Zero Liquid Discharge (ZLD)

Contributes to achieving industry ZLD targets, promoting sustainable wastewater management.

Dual Action Catalyst

Functions in both reducing and oxidizing environments, enhancing hydroxyl ion generation for more effective treatment

Compact Footprint

Requires minimal space, making it ideal for facilities with limited space.

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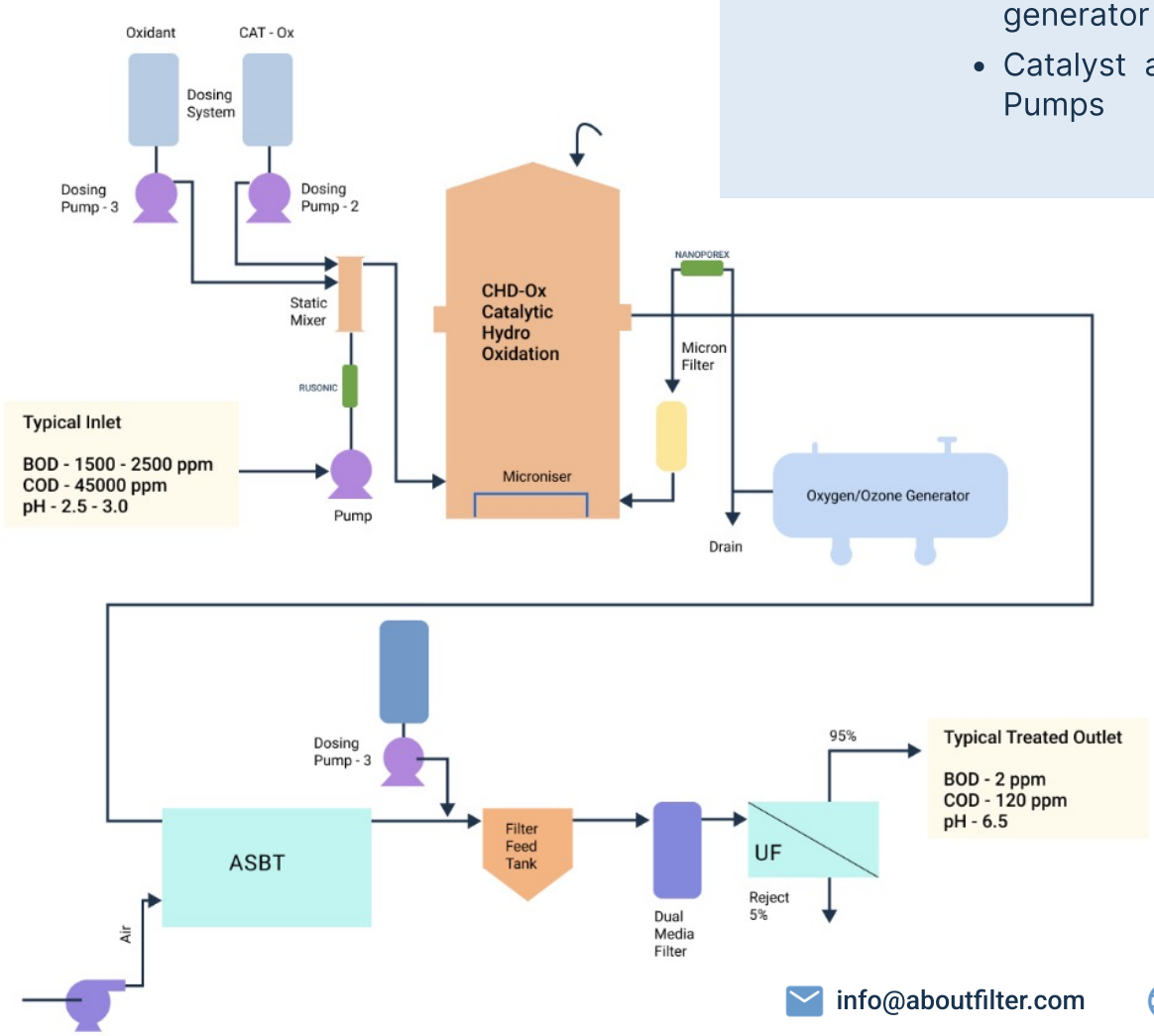
Process Operation

Catalytic Hydro-Oxidation utilises either a Batch Reactor or Continuous Radial Flow Reactor for treatment. The process employs nano-particles of complex metals as catalysts, which generate hydroxyl ions in the presence of oxidants.

NANOPOREX nanobubbles enhance this process aided by cavitation in the main wastewater stream. CHD-Ox Treatment effectively degrades volatile acids and other organic compounds in the condensates, effluents breaking them down into simpler, non-toxic molecules which are easily biodegradable.

At Diva Envitec we are continuously innovating new catalyst formulations to optimise degradation rates, tailored to the specific wastewater chemistry of various industry verticals.



Technical Specifications

Effluent Design Flow: From 0.1 m3/Hour to 100 m3/Hour

pH: 1-14

Temperature: 25-80 Deg C

BOD: Feeds with Low BOD

COD Refactory: < 60,000 ppm Organic Toxic Refractory

Equipment

- Retrofit Component to be installed in the existing ETP
- Reactor of SS / FRP or Epoxy Coated MS
- Nanoporex
- Rusonic Cavitation
- SS or CPVC piping
- Air Compressor or Oxygen generator
- Catalyst and Oxidant Dosing Pumps

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Applications

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1. Pesticide

Degrades persistent organic pollutants (POPs), reducing toxicity.

2. Recalcitrant COD

Breaks down stubborn non-biodegradable organic contaminants

3. Toxic COD

Neutralises hazardous toxic organic compounds.

4. STP

Enhances oxidation of residual organics, improves effluent treatment.

5. API ETP

Breaks down complex pharmaceutical residues.

6. TANNERIES

Reduces heavy metals, lowers organic load.

7. Dye Effluent

Degrades synthetic dyes, reduces color.

8. Textile Effluent

Oxidises synthetic dyes, lowers COD.

9. Distillery

Reduces organic content, breaks residual COD after Biodigestion

10. Condensate Polishing in Sugar/Distillery

Treats condensate, oxidises organics making water for reuse

11. Refinery

Oxidises hydrocarbons, reduces sulfur compounds and recalcitrant organics.

12. Oil & Gas

Degrades petrochemical residues, lowers COD and hazardous contaminants.

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