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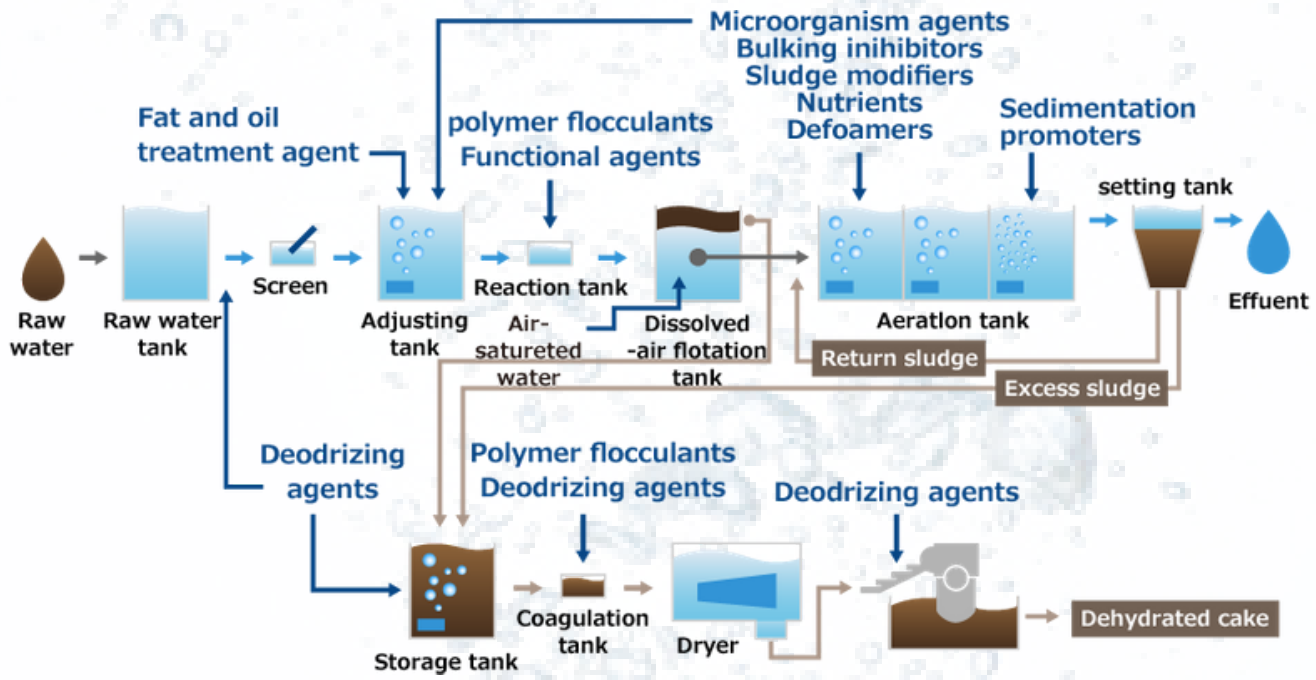
CHD-Ox
REACTOR
Wastewater Treatment Solutions

Engineering today for a Greener Tomorrow

Wastewater treatment faces hindrances from the myriad contaminants that enter the environment through industrial and domestic sources on a daily basis. The biodegradable compounds often get degraded or mineralized by various physical, chemical or biological processes, whereas the recalcitrant organic contaminants either are transformed or get dispersed and persist in the receiving environments, to an extent much greater than was earlier estimated. Conventional treatment plants do not address these problems.



Chemical compounds both organic and inorganic come as pollutants and disturb the biology in aeration systems. The toxic compounds - pesticides, funhicides, API molecules, Antibiotic traces, Steroids etc, find their way into the wastewater treatment plants and create havoc. We hear about STP and ETP and CETP plants malfunctioning or also stopping completely. This becomes a main cause of concern, and also adds to the losses. Meeting environment norms becomes and huge challenge.

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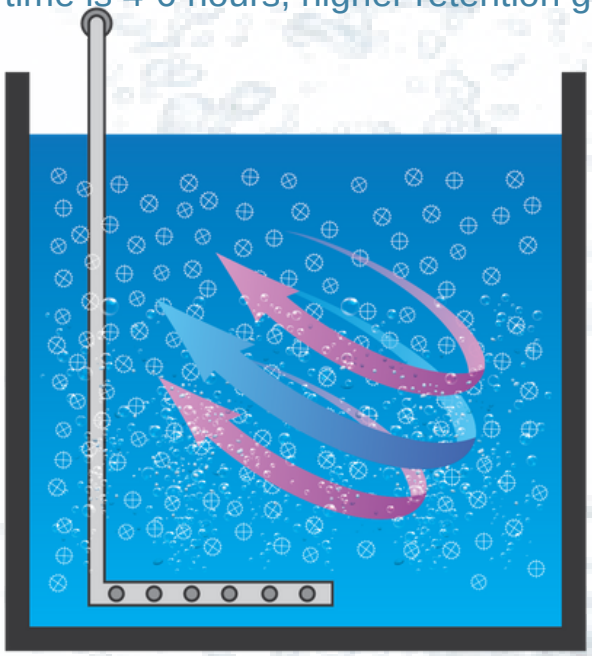
≋CHD-Ox≋ Reactor

CHD-Ox - is a Catalytic Hydro-Oxidation reactor with proprietary Catalyst and micronising system. This process combines phenomenon of intense micro-bubble oxidising, cavitation, enhanced mass transfer. This is introduced as a precursor to any Biological treatment, especially the MBBR tanks having problems of toxic and recalcitrant COD/BOD

Process Description

Advanced Oxidation technology uses Duplex Batch Reactor or Continuous Radial flow reactor for the treatment. Process further combines with downstream MBBR process, Membranes technology, VAPOZEM low OPEX evaporation technology for final waste treatment polishing to achieve water recycling norms and discharge norms

- Volatile acids and other organics present in the condensate can be degraded into simpler, non-toxic molecules
- New catalytic formula enhances the rate of degradation in the process
- Minimum retention time is 4-6 hours, higher retention gives better results



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Process Features

- Fast BOD, COD and Odour removal
- Broad spectrum; acts against many types of organics present in the water
- Time saving process over conventional biological treatment
- Hassle free and easy to control process conditions
- Helps to achieve zero liquid discharge (ZLD) target in the industry
- Catalyst for both Reducing and Oxidising environments. The Hydroxyl Ion generation is triggered by the catalyst

$$H_2O_2 + H_2O \rightleftharpoons HO_2^- + H_3O^+ \qquad (Ka = 2.4 \cdot 10^{-12} \text{ to } 25\ ^\circ C)$$

Acid medium: $H_2O_2 + 2H^+ + 2e^- \rightleftharpoons 2H_2O$ $\quad E^\circ = 1.78\ V$

Base medium: $HO_2^- + H_2O + 2e^- \rightleftharpoons 3OH^-$ $\quad E^\circ = 0.88\ V$

Cavitating Microniser for oxidation.

Vacuum fused cavitating Micronisers create fine micro-bubbles and millions of tiny bubbles are generated. The basic premise is that, if we can increase the surface area in a two phase reaction between a gases and liquid we would have very fast, efficient mass transfer.

Process Intensification

Vacuum fused Porous Micronisers far exceed the performance of drilled pipe and other type of diffusers. These have millions of pores over the surface. Defined morphology specific to the manufacturing process allows large volumes of gas be passed creating very high specific area at the interface.

With equal volume of gas, 1 mm bubbles would have 600 times more gas-liquid contact surface area than 6 mm bubbles, and the magnitude is much higher with micro-bubbles.

FIELDS OF APPLICATION

- Recalcitrant COD
- Toxic COD
- Pesticide
- API ETP
- Tanneries
- Dye Effluents
- Textile Effluent
- Distillery
- Condensate Recovery in Sugar
- Condensate recovery in distillery

For more details :

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