

THERMOX

Wet Air Oxidation

THERMOX operates on the Wet Air Oxidation (WAO) principle, a technology with a long-standing history of success. It effectively overcomes the limitations associated with CHD-OX (Catalytic Hydro-Oxidation) technology by providing enhanced treatment capabilities for wastewater with extremely high Chemical Oxygen Demand (COD) levels, particularly those exceeding 60,000 ppm. This makes THERMOX especially suitable for managing difficult wastewater conditions. It efficiently addresses the toxic components found in Effluents from API, pesticide manufacturing effluents, as well as sulfides and mercaptans prevalent in refinery wastewater.



THERMOX:

Innovating wastewater treatment and championing resource conservation.

Discover advanced wastewater treatment with our cutting-edge THERMOX reactor, designed for high COD challenges. The system features proprietary catalysts, oxygen, nanobubbles, Rusonic cavitation in a Plug Flow Reactor on a pre-assembled skid, optimised for tough wastewater from Spent Caustic in Ethylene Crackers, refinery waste streams, and API facilities.

Harnessing hydrolysis-oxidation, THERMOX boosts hydroxyl generation to break down toxic long-chain molecules, effectively managing high COD content common in industries like refineries, steel, and ethylene production. It also enhances the biodegradability of wastewater before entering MBBR systems, addressing pollutants such as antibiotics, pesticides, and micro-pollutants.

Super-critical THERMOX is being developed for bio-solids and municipal sludge, not only eliminating organics and PFAS, but also recovering water and valuable minerals like Phosphorus and Potassium, marking a significant leap in resource recovery and sustainability.



Different pressure options are available depending on water quality.



Low chemical cost of operation as compared to conventional processes



Low residence time required



Low CAPEX and reduced OPEX.



Potentials for Salt recovery.



Zero chemical sludge generated during the Oxidation process.

Components	Concentration
NaHS	0.5 - 5 %
Na ₂ CO ₃	1 - 5 %
NaOH	1 - 4 %
NaSR	0 - 0.2 %
Soluble Oil	50 - 200 mg/l
Benzene, Phenoles	20 - 100 mg/l
COD	20 - 35 g/l

Thermox Variants

Low Pressure	Low Pressure
CS/ SS316L	SS316L material
High Pressure	Super Critical Thermox
Alloy Steels	Inconel Alloy 625

Technical Specifications

1. Flow Rate	0.1 m3/Hour to 20 m3/Hour
2. Temperature	Refer Variant details above
3. Pressure	Refer Variant details above
4. MOC	Alloy Reactors or SS
5. NANOPOREX	Nanobubble generator
6. RUSONIC	Cavitation system
7. Oxygen generator	
8. Catalyst Dosing Pumps	
9. Oxidant Dosing Pump	

APPLICATIONS

1. Ethlene Crackers
2. Petroleum Refinery
3. Pesticides
4. Agro-Chemicals
5. Antibiotics
6. API and Pharmaceutical

