
Transforming water
from
source to
resource
Through best-in-class Electro Coagulation
and Ozonation Treatment Systems
OSE
OM SAI ENTERPRISE

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About us

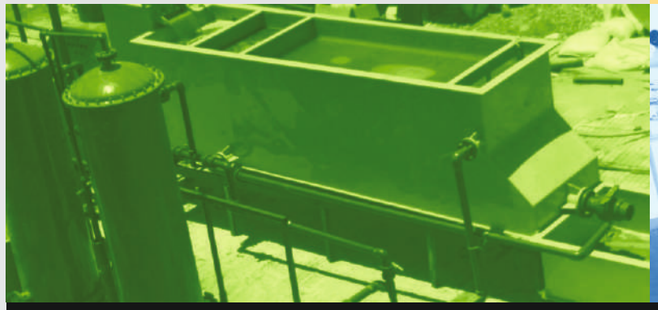
Established in 2007, Om Sai Enterprise OSE, located in Vadodara, was incepted with a vision of transforming water from a mere source to resource that can be utilized across varied industries. In the span of half a decade, the company has risen to a level where it can boast of no competition in its field and has paved a way for itself on the path of progress. The core concept of OSE is Research & Development of new innovative technology, waste treatment and waste destruction, by developing of sustainable & cost effective technology for waste water treatment, recycling & reuse in comparison to conventional technology.OSE excels at clean & green technology. renewable energy projects like waste management, ETP & STP, and consultancy. OSE has developed expertise in designing special purpose renewable energy projects with all kinds of engineering inputs, customizable according to the needs of the client. Backed by efficient companies in varied fields of environment projects execution, development, engineering, commencement and construction, OSE has managed to build an envious list of projects and clientele and is planning to set its foot in the overseas market. The company also provides technology transfer services.The secret of OSE's success is its human resource asset that drives the business. The team at OSE includes one of the best & qualified environment consultant & EPC contractor companies along with the team that is technically sound and efficient, which believes in keeping updated with the latest trends and combines passion and dedication with experience from all walks of life, resulting into extraordinary outcomes.

Current is applied to the electrolytic cell plates causing trace amounts of the plate material to be dissolved into the water. The action is similar to adding separation chemicals (polymers) to a chemical treatment system but much less expensive.

Coagulation – As previously defined, the electrical current and trace dissolved metals from the electrolytic cell plates, causing the suspended matter to come together, forming larger particles. Flotation – During the reaction in the cell housing, oxygen bubbles are formed and attached to the coagulated matter, causing it to rise to the surface in the separation tank where it is removed and transferred to the sludge holding tank. The air bubble separates from the separated contaminant allowing it to sink to the bottom of the sludge holding tank where it stays until it is properly disposed off.

Special Features of the Electro Coagulation Process Plant:

- Chemical Free, Non Biological
- Skid Mountain Modular in Construction
- Start Stop at user own will and user friendly
- Custom Designed based on the Volume of waste water
- Easily Expendable
- Can be Retrofitted in the existing facility
- Small Foot Print
- Very Law Operating Cost
- Less requirement of civil construction
- Simple & Easy to operate and maintain
- Sludge production can be 30-70% LESS voluminous compared to chemical processes
- Non-selective process on a wide variety of contaminants



Function of Electro Coagulation Process Removes:

- Organic
- Suspended Solids
- Turbidity
- Algae
- Odour
- Fat , Oil and Grease
- Heavy Metals
- Colour & Disinfects water

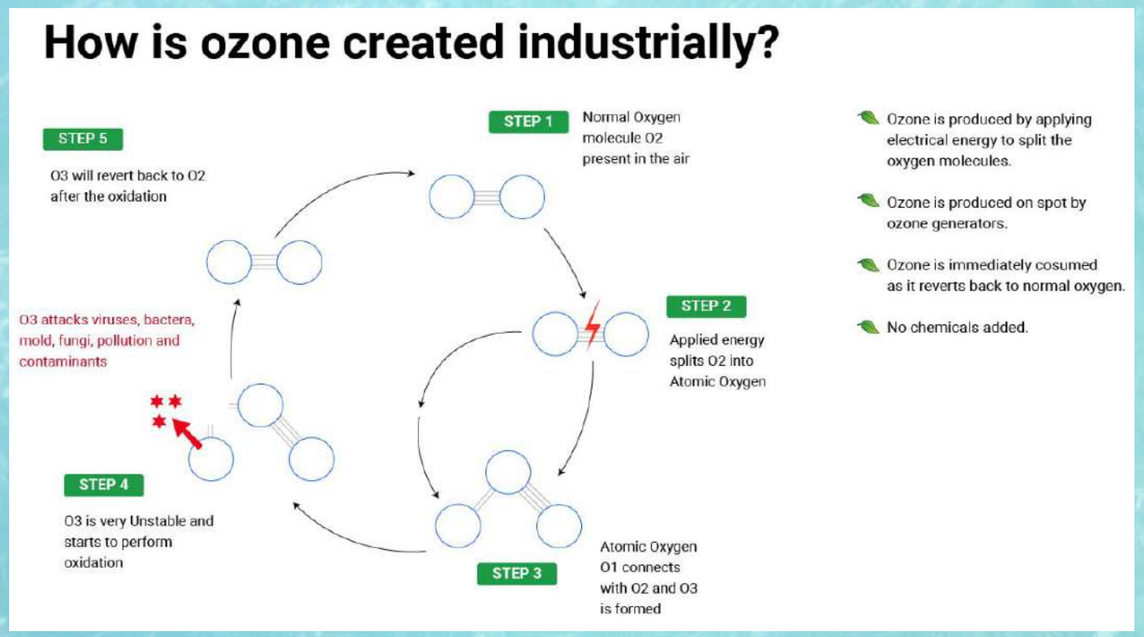
Advantages of Electro Coagulation Process:

- **Removal of High Contaminant in the waste water**
- **Save Energy & Chemicals**
- **Far less Skill require in Operating & Maintenance**
- **Noiseless Operation**
- **Low Capital , Operating & Maintenance Cost**
- **Colour Removal**
- **BOD Removal**
- **COD Removal**

Qualitative Comparision of STP's Commonly used in India with OSE's EC System :

Waste water treatment System		ABR : Anaerobic Baffled Reactor (Multi- Baffled Septic Tanks)	Activated Sludge Aerated Reactor	MBBR : Moving Bed Biofilm Reactor	SBR : Sequential Batch Reactor	MBR : Membrane Bio Reactor	OSE Electro Coagulation base waste water treatment system
State / Flow of Treatment	1	Bar Screen	Bar Screen	Bar Screen	Bar Screen	Bar Screen	Bar Screen
	2	FOG Removal	FOG Removal	FOG Removal	FOG Removal	FOG Removal	FOG Removal
	3	Anaerobic digestion with seperation and settlement in Primary tank. FOG removal at First & Second Baffle	Equilization	Equilization	Equilization, Filling and Mechanical Mixing	Equilization	Equilization
	4	Anaerobic digestion with separation and settlement in Secondary tank.	Reaction with Strong Aeration	Reaction with Aeration + Thousand of plastic rings	Reaction with Strong Aeration for 60-90 min batches	Aerated Digestion with dewatering	Electro Coagulation with primary oxidation
	5	Filteration	settling / Clarifying followed by decantation	settling / Clarifying followed by decantation	settling / Clarifying followed by decantation		Secondary Oxidation
	6	Collection and Tartiary Treatment by ozone / chlorination	Collection and Tartiary Treatment by ozone / chlorination	Collection and Tartiary Treatment by ozone / chlorination	Collection and Tartiary Treatment by ozone / chlorination	Collection and Tartiary Treatment	Filtration / Settling / clarifying followed by decantation
		ABR : Anaerobic Baffled Reactor (Multi- Baffled Septic Tanks)	**Activated Sludge Aerated Reactor**	**MBBR : Moving Bed Biofilm Reactor**	**SBR : Sequential Batch Reactor**	**MBR : Membrane Bio Reactor**	**OSE Electro Coagulation base waste water treatment system**
Advance	1	Resistant to organic and hydraulic shock loads	Resistant to organic and hydraulic shock loads	Compact Design	Greatly Reduce Retention time	No Need for Settling / decantation, filters do the work of settlers	Lowest Hydraulic retention time
	2	No Electrical Energy Require	Greaywater can be managed concurrently	Limited Expension possible with increase in Ring quantities	Main Plant has small foot print	water quality is very good, resulting in reduced Tertiary treatments	Lowest foot print / comparable to MBR
	3	Greaywater can be managed concurrently	Can be built & repaired with locally available material	Single Pass process : No sludge recycling	Greaywater can be managed concurrently	Increased sludge retention time (15 days) allow for better digestions	Resistant to hydrulic shock
	4	Can be built & repaired with locally available material	High Reduction of Organic	No MLSS's required to operate	No Real problem with Flies & odour if used correctly	Smallest foot print of all plants	Easy to Maintain, consumables are locally available materials
	5	Long Service Life		Greaywater can be managed concurrently		Greaywater can be managed concurrently	Easy to Modify & Upgrade
	6	No Real problem with Flies & odour if used correctly		High Reduction of Organic		High Reduction of Organic	High Reduction of Organic
	7	High Reduction of Organic		No Real problem with Flies & odour if used correctly		No Real problem with Flies & odour if used correctly	No Real problem with Flies & odour if used correctly
	8	Moderate Capital cost, Low operating cost, depending on emptying cycles					Moderate Capital cost, Low operating cost, depending on comparable to MBBR
	9	Increased Sludge Retention time (SRT 90 days) allows for better digestion					Treat waste water on demand i.e. No water-system is shutdown & is restarted immediately without lag time
	10	Difficult to destablize once activated					NOT dependent on Biological or Environmental factors
	11						Average 3 HP connected Load for 10000 liters per hours flow rate
	12						Can be Skid Mountain & made portable
Waste water treatment System		**ABR : Anaerobic Baffled Reactor (Multi- Baffled Septic Tanks)**	**Activated Sludge Aerated Reactor**	**MBBR : Moving Bed Biofilm Reactor**	**SBR : Sequential Batch Reactor**	**MBR : Membrane Bio Reactor**	**OSE Electro Coagulation base waste water treatment system**
Disadvantages	1	Required costant source of water . Minimum 10% of operational load is required per day	Requires constant Electricity	Requires constant Electricity	Requires constant Electricity	Requires constant Electricity	Requires constant Electricity
	2	Effluent from reactor must be filterd prior to further tertiary treatment	Large foot print	Large sludge generation due to low SRT's	High Sludge generation rates due to rapid shifts from Aerobic environment to anaerobic / anoxic environment	Most Expensive System	Generates 3-4 % wet sludge of waste water through put
	3	Low reduction of bacteria, thus requires tertiary treatment to remove pathogens e.g. chlorination or ozonation	Low reduction of bacteria, thus requires tertiary treatment to remove pathogens e.g. chlorination or ozonation	Longer sludge settling time, requires higer floculation aids	Require 40 -70 Mg per liter Alkalinity	High Operation Cost	No require any coagulation Aids to speed up the reaction
	4			Difficult to maintain as no bacterial redosing is done to maintain system	Fed-Batch Process: lack of water can damage the processing in aerobic environment	Limited operational life of filters (biomembranes)	Limites operational life of electrode, requires timely replacement of Electrode
	5				Requires a variable aeration system, preferrably with multipal blowers	Large buildup of sludge if bacteria are accidentally killed	
	6				Sludge requires special treatment		
Waste water treatment System		**ABR : Anaerobic Baffled Reactor (Multi- Baffled Septic Tanks)**	**Activated Sludge Aerated Reactor**	**MBBR : Moving Bed Biofilm Reactor**	**SBR : Sequential Batch Reactor**	**MBR : Membrane Bio Reactor**	**OSE Electro Coagulation base waste water treatment system**
Foot Print Required Scale of 1 - 10 1 = small 10 = large		8	9	5	4	3	2
	6	Generally require hydraulic retention time to of 24 hours to process the water	Generally require hydraulic retention time to of 36-48 hours to process the water	Generally require hydraulic retention time to of 16 hours to process the water	Generally require hydraulic retention time to of 16 hours to process the water	Generally require hydraulic retention time to of 6 hours to processthe water. However, concentrated sludge left behind may require upto 7 days to digest	Generally require hydraulic retention time to of 30 Minutes to process the water. Concentrated sludge left behind is fully oxidized and no further composting is possible, only dewatering is require
Capital Cost Scale of 1 -10 1 = Low 10 = High		7	8	6	7	10	6
Operating Cost Scale of 1 -10 1 = Low 10 = High		3	5	7	8	10	5

ABOUT OZONE



The chemical reaction that results in ozone is pretty simple. Ozone is a form of oxygen that is created when electrical energy breaks apart an ordinary oxygen molecule (02) starting a chemical reaction that results in ozone (O3).Electrical energy breaks the ordinary 02 molecule into two 01 atomsThe free oxygen atoms unite with other 02 molecules to produce ozone (01) + (02) = (03)

Ozone is an unstable molecule because the 3rd oxygen atom is connected to the other two atoms with a weak bond (symbolized by the single line in the diagram). The weak bond is why ozone is such a powerful sanitizer

Ozone Applications

- Air Treatment
- Household
- Aqua Culture
- Laundry
- Bottling Plant
- Pharmaceutical
- Cold Storage
- Poultry
- Cooling Tower
- O Sewage Treatment
- Swimming Pool
- Food & Beverage
- Wastewater

THE BENEFITS OF OZONE

- Ozone is 51% more powerful bacterial cell walls than chlorine.
- Ozone kills bacteria 3000 times faster than chlorine.
- Ozone is a most powerful broad spectrum microbiological control agent available.
  Ozone eliminates the use of hot water and conventional sanitizers.
- Ozone virtually eliminates all chemical usage
- Ozone is chemical free, it produces no toxic byproducts.
- Ozone has full FDA approval, for direct food contact application.
- Ozone is clean and environment friendly, its only byproduct is oxygen.
- Ozone is extremely effective as a disinfectant at relatively low concentrations.
- Ozone is very inexpensive to produce and has an unlimited supply
- Ozone extents the shelf life of food products.
- Ozone permits recycling of wastewater.
- Ozone reduces TOC, COD and BOD from the water.

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