



To,

Subject: Technical Details of Electro coagulation Process for Sewage Water Treatment.

Dear Sir,

We thank you very much for kind courtesy extended in Connection with your requirement of Sewage Treatment Plant at your Production Facility. Based on the information provided, we are submitting our Technical details for your ready reference.

It is also to be noted that our is a well proven technology of Electro Coagulation process. The process is easy & Cost effective for operation and the sludge production is low. No Aeration Tank, No Chemical dozing, Auto Start Process.

We hope you will find technical details as per your requirement. In case you need any clarifications / additional information on this, we shall be pleased to submit the same.

For your Ready reference we have attached test report of untreated & treated sewage water and photograph of Electro Coagulation base Sewage Treatment Plant.

We look forward to your feedback & views.

Thanks with Regards

For. **PLASTO-FAB**

Mehul Pandya.

**Techno Commercial Proposal for STP Based on Electro coagulation (EC)
Technology for Treatment of Industrial Sewage water.**

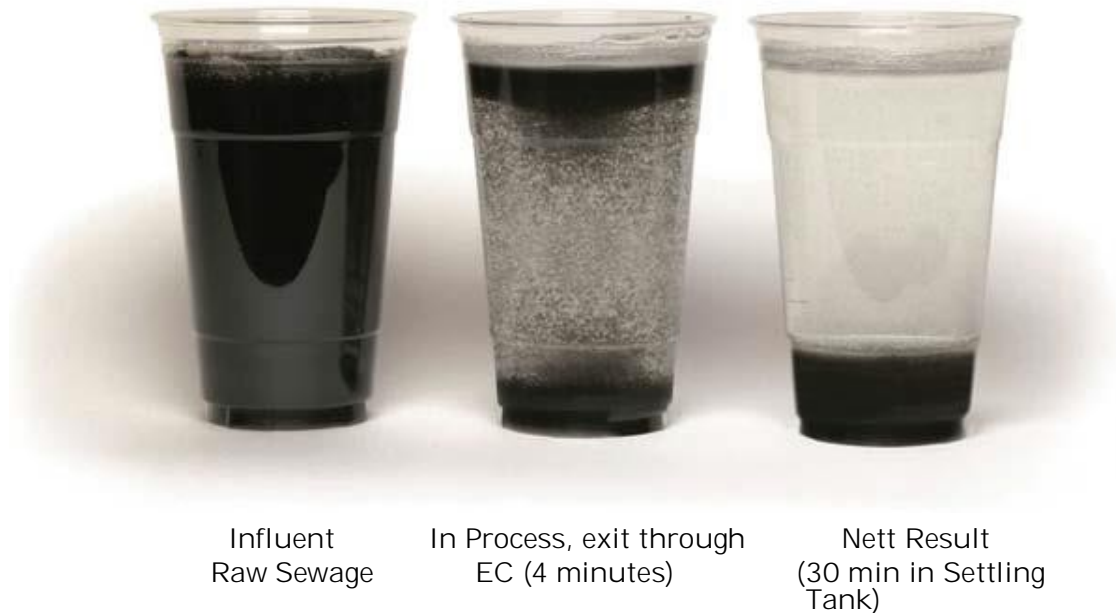
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1. ELECTRO COAGULATION TECHNOLOGY

Electro coagulation (EC) is a water treatment process whereby an electric field is applied across plates to remove various contaminants from water.

An Electro coagulation water treatment system represents a major advancement in wastewater treatment - A revolutionary electrical-based technology for effectively treating complex waste streams economically and on-site



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, because 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 of by the customer.

2. SPECIAL FEATURES OF PROPOSED STP

- Chemical Free, Non Biological
- Skid Mountain Modular in Construction
- Start Stop at user own will , 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

2.1 Function of Electro Coagulation Process Removes

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

2.2 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
- Color Removal up to 95%
- BOD Removal more than 85%
- COD Removal more than 80%
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3. DESIGN BASIS

- Expected Daily Inflow of Sewage water : 20 KLD
- Design In Flow Rate (Feed Rate) of 2KLPH
- Daily Operation of 10 Hours Per Day

Parameters	Inlet	Before Tertiary Treatment	Post Tertiary Treatment
BOD Mg/L	700-800	<50	<20
COD Mg/L	3000-3200	<150	<100
TSS Mg/L	150	<20	<10
Oil & Grease	<20	<3	Nil

Note: Inflow waste water should be Sewage Water only. Any chemical Contamination in Sewage water will not be treated as Sewage water and above design parameters are framed for Pure Sewage Water Only.

4. TREATMENT METHODOLOGY & PROCESS FLOW DESCRPTION

The treatment scheme for 10 KLD STP shall comprise of below indicated treatment units.

- a) Raw Effluent Feed sump
- b) EC Reactor with Aluminum Cell
- c) EC Reactor Power Control System & Pump Control System
- d) Ozone treatment system with Control Panel
- e) Sludge Settling Tank - Tube Settler system for separation of Sludge System
- f) Inter Mediate Tank
- g) Feed Pumps for filter bank
- h) Filter Set
- i) Nutsche Filter Sludge collection & removal system

4.1 Electro coagulation (EC) Base Sewage Treatment Plant Process Flow:

Step 1: Lifting of raw sewage from equalization tank / collection tank through Pump & Send it to Electro Coagulation (EC) reaction chamber.

Step 2: Aluminum Cell base EC reactor applied control electrical field in to the raw sewage water & Current is applied to the electrolytic cell plates causing trace amounts of the plate material to be dissolved into the water. Electrical current and trace dissolved metals from the electrolytic cell plates, because suspended matter to come together, forming larger particles.

Step 3: After EC reactor process, water along with suspended matter will go to ozonation tank where adequate quantity of ozone will be deposing in to the Ozone tank for the purposes of disinfection (primary use) and also decontamination or remediation. Ozone is a very strong oxidant and virucide. Ozone is more effective than chlorine in destroying viruses and bacteria. The ozonation process utilizes a short contact time (approximately 10 to 30 minutes). There are no harmful residuals that need to be removed after ozonation because ozone decomposes rapidly. After ozonation, there is no re-growth of

microorganisms, except for those protected by the particulates in the wastewater stream. Ozonation elevates the dissolved oxygen (DO) concentration of the effluent. The increase in DO can eliminate the need for re-aeration and also raise the level of DO in the receiving stream. Not require any aeration. Remove heavy bacteria load in water. Remove contamination in water.

Step 4: After the ozonation process, water will be transferred to Sludge separation tank / tube settler. 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 of through sludge filter / bag filter.

Step 5: After separation of sludge, treated water send to IMT (Inter Mediate Tank) where treated water will have vey negligible amount TSS, will be lifted through pump & send it to Carbon filter for final polishing of water.

Step 6: After Carbon Filter, treated water will be collected to collection tank for further line of action.

5. SPECIFIC POWER CONSUMPTION & OTHER UTILITIES

List of power consuming items in STP:

Sr.no	Item	KWH
1	1 HP Raw Sewage feed pump	0.780
2	Electrocoagulation system	0.5
3	Ozoning treatment system	0.5
4	0.5 HP Filter feed pump	0.37
	Total	2.15

6. PROCESS FLOW DIAGRAM & LAYOUT

