



Dimensional analysis of low Cost Waste water treatment unit

Charudatta Prakash Thosar

Dept of Civil Engineering,SVKM'S IOT DHULE, INDIA

A B S T R A C T

Waste water produced due to human activities in households is called domestic wastewater i.e. wastewater from the kitchen, shower, wash basin, toilet and laundry. The solid material present is a mixture of faeces, food particles, toilet paper, grease, oil, soap, salts, metals, detergents, sand and grit. So they create the water pollution and also result in lots of provisions for disposal of the same which involves cost together.

At present pollution (of any sense) is a big problem in society and causing health issues. All people are at risk and suffering from polluted water. Our solution can solve this issue and make water available for gardening purpose.

Keywords: Electrocoagulation, Waste water treatment

1. Solution

We are proposing the portable and economical water treatment unit for treatment of domestic water for reduce the water scarcity. This treated water can be used for the gardening in economical manner. This solution will lessen the burden of municipalities to dispose of this waste and help in reducing water pollution as well.

This portable unit consist of container with electric supply which help in separating H₂O molecules. Setttable particles will settle down results in clean water which can be used in cleaning and gardening purpose.

1.COST ANALYSIS:

1. Operation cost for 50lit:- RS.2

The estimated daily operating cost saving using Electrocoagulation is RS.1050 per month.

2. Construction cost for 50lit:- RS.48221

Construction cost recovery: - 3 years 9 months

Detention time for 1 batch of Electrocoagulation: - 120sec

Time required filling and discharging of waste water: - 180sec (3min)

Approximately for completion of one batch of Electrocoagulation required: - 5 min In 1 day total volume of treated water – 14,400lit

• *DIMENSION ANALYSIS*

* *Corresponding author.* Tel.: +0-000-000-0000 ; fax: +0-000-000-0000.

E-mail address: author@institute.xxx

1. Storage Tank

Length: 300cm Width: 300cm Depth: 160cm

2. Effluent tank (Treated water)

Length: 200cm Width: 150cm Depth: 167cm

3. Reactor tank (Cylindrical tank)

Diameter of tank: 51.5cm Depth of tank: 48cm

4. Hopper dimension

Inclined length: 26.24cm

5. Pipe dimension

D1 (sludge disposal pipe): 5cm D2 (Inlet pipe and out late pipe): 8cm

6. Plate dimension

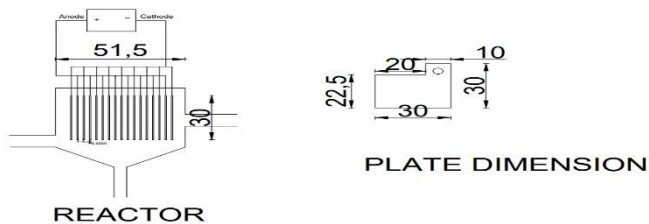
Length: 30cm

Width: 30cm

No of anode: 8no.

No of cathode: 9no.

Material of plate: Aluminum



2. Customer

Customers are housing societies, hotel industry, and others.

Making them aware of product through social media and other platforms.

- ***Differentiation solution different or unique with respect to competitors / substitutes and why should a customer***

No such device is available in market at present. Our device will come with:

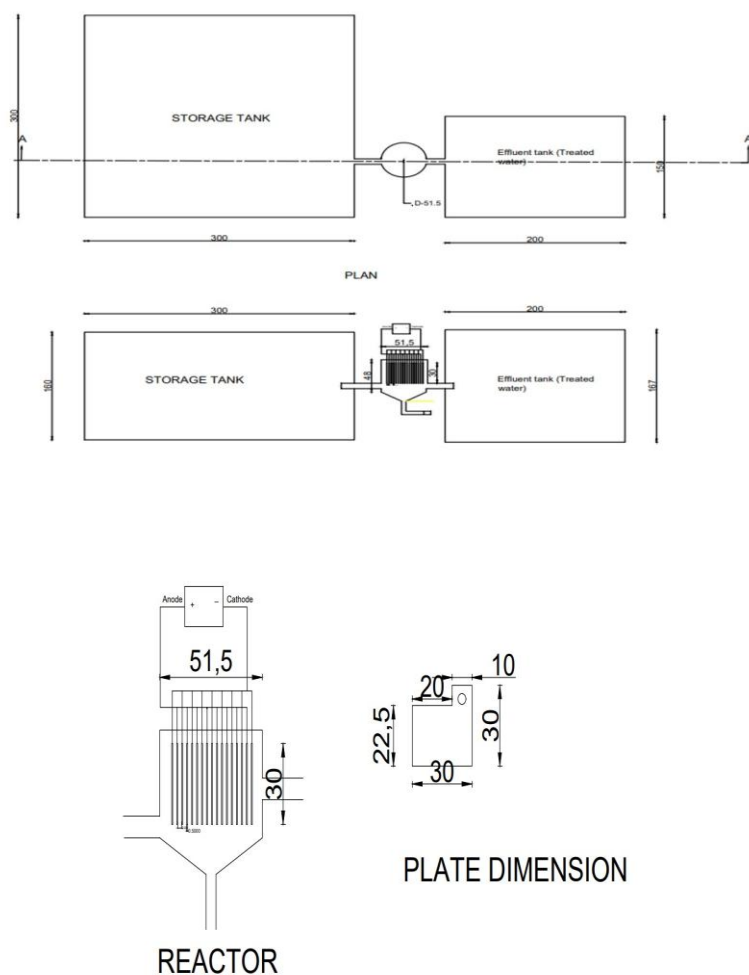
1. Portable and easy to use
2. Environmental friendly
3. Economical

- **Social Impact and business have the potential to create social impact**

This business has the potential to create social impact to reduces the water pollution, and reduce the cost of purchased water for domestic use.

I have provided similar kind of solution to MASSIA in Aurangabad, for Treatment of Waste Water Produced by Electronic Industry by Electrocoagulation Process for the Chandra industry.

3. Dimensional analysis



References:

- [1] Mohammed, B. "Design and performance evaluation of a wastewater treatment unit." *AU JT* 9, no. 3 (2006): 193-198.
- [2] Zhang, Chao, Yonghai Jiang, Yunlin Li, Zhongxin Hu, Lei Zhou, and Minghua Zhou. "Three-dimensional electrochemical process for wastewater treatment: a general review." *Chemical engineering journal* 228 (2013): 455-467.