

eAQUA

# Packaged STP, MBBR



## Introduction

Small and medium sized sewage treatment plants are very common in industrial and institutional facilities like hospitals, hotels, offices, warehouses and educational institutions. Installing STP in smaller areas with minimal and no civil works is the criteria of the customers.

STP structure is very important which consists of a bioreactor and clarifier which handles the important secondary treatment stage. Good design of this structure is very important to achieve the desired outlet water quality.

Important points to be considered while designing a prefabricated STP structure is;

- Proper retention time to handle BOD load
- Proper retention time for solid-liquid separation
- Construction strength to withstand water load
- Access to tanks for monitoring
- Easy operation and maintenance
- Drainability of the tanks
- Skid mount equipment
- Aesthetic design

eAQUA PSTP structures are designed to help OEM's serve customers quickly and efficiently.

# Design Assumptions

Raw sewage and treated sewage parameters:

Parameter	Inlet	Outlet
pH	6.5-8.0	6.5-8.0
Oil & grease, mg/l	<50	<10
Total suspended solids, mg/l	<250	20-50
BOD, mg/l	<350	10-30
COD, mg/l	<800	100-250

Note: Achieving above outlet parameters depend on balance equipment sizing, operation and maintenance of the plant. Inlet flow meter for consistent feed flow is recommended practise. Fine bubble aeration and suitable bioculture results in good reduction of BOD and COD. Coagulant dosing prior tube settler and periodical withdrawal of sludge is required for clear outlet from tube settler.

Plant operating hours: 16 hr -20 hr

Aeration tank size:

- Surface loading of MBBR media is 10 gm BOD/m<sup>2</sup>-day.
- Effective surface area of media 325-350 m<sup>2</sup>/m<sup>3</sup>

Tube settler size:

- Surface overloading rate is 2.5, m<sup>3</sup>/m<sup>2</sup>-hr
- Media settling area 11.0, m<sup>2</sup>/m<sup>3</sup>
- Height of media 0.75, m
- Settling velocity 0.5, m/hr

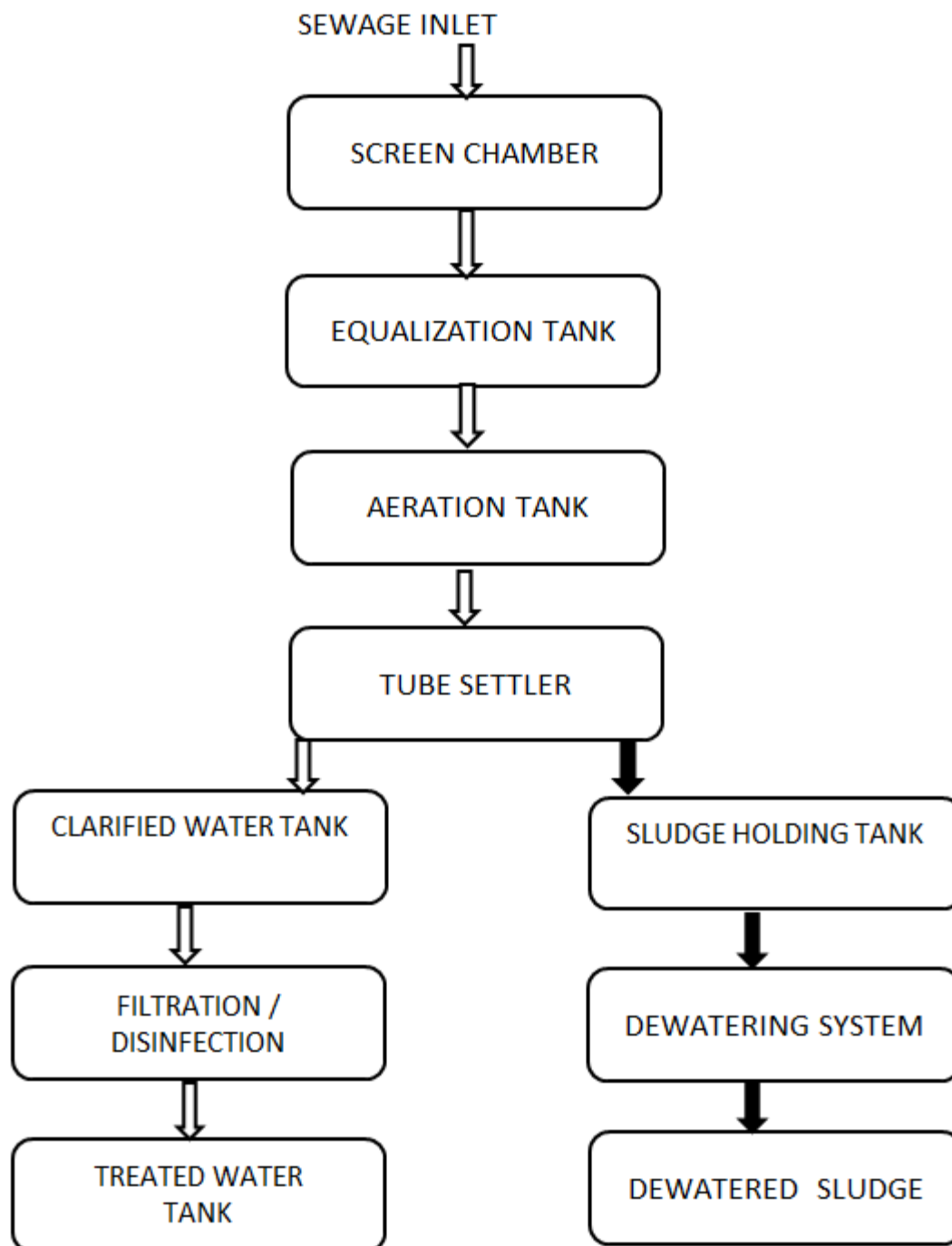
Clarifier water tank volume:

- Retention time of 1-2 hr

Filtration velocity:

- 10-15 m/hr

## Typical Flow Sheet



## eAQUA PSTP Models

<b>Model</b>	<b>Capacity</b>	<b>Dimensions, LXWXH, m</b>	<b>Dimensions with Air blower &amp; filter vessels, LXWXH, m</b>	<b>Minimum area required for complete STP, LXW, m</b>
EAX-10	10 KLD	2.0x1.85x3.15	4.0x1.85x3.15	6.0x4.0
EAX-20	20 KLD	2.0x1.85x3.15	4.0x1.85x3.15	6.0x4.0
EAX-30	30 KLD	3.0x1.85x3.15	5.2x1.85x3.15	7.5x4.0
EAX-40	40 KLD	4.0x1.85x3.15	6.2x1.85x3.15	8.5x4.0
EAX-50	50 KLD	5.5x1.85x3.15	8.0x1.85x3.15	10.0x4.0
EAX-60	60 KLD	6.0x1.85x3.15	6.0x3.35x3.15	8.0x5.0
EAX-70	70 KLD	7.5x1.85x3.15	7.5x3.35x3.15	10.0x5.0
EAX-80	80 KLD	8.0x1.85x3.15	8.0x3.35x3.15	10.0x5.0
EAX-100	100 KLD	9.0x1.85x3.15	9.0x3.35x3.15	12.0x6.0
EAX-125	125 KLD	Customized models		
EAX-150	150 KLD			
EAX-175	175 KLD			
EAX-200	200 KLD			

## eAQUA PSTP Benefits for OEM

- Quick plant design
- Faster supply
- Minimal site welding works
- Easy installation
- Quality job
- Reliable design
- No fabrication drawings
- Standard GA drawings
- Fully skid mount \*
- Portable
- Project Similarity
- Increased productivity

\* Available upto model EAX-100

## eAQUA Product Portfolio

- Packaged STP
- Filter Vessels
- Tube Settlers
- Water storage tanks
- Packaged ETP
- Softener Vessels
- Clarifiers
- Mixers

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