



**EEC GLOBAL OPERATION LLC**

THE WORLD LEADER IN WASTEWATER PACKAGE PLANTS - GLOBAL PRODUCTION & SERVICE



EEC STP mini systems lined up for Aramco, Shell, Statoil & Parker Drilling

## EEC MINI PLANTS – 6 – 20 – 30 m<sup>3</sup> PER DAY

COMPLETE WITH BUFFER, FEED, AND SLUDGE TANKS

### **FEATURES**

Self-Cleaning  
non-clogging  
media with 20  
year warranty

10 Times the  
Loading in less  
than 1/5 the  
time

Easy to  
Relocate  
and Install

**Water can be  
used for  
Irrigation**

Fully Automatic  
and easy to  
Operate

**Global  
Production and  
Service**

EEC Europe – EEC USA – EEC Thailand – EEC India – EEC South America –  
EEC Australia –  
EEC Middle East – EEC Global Operation

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## FEATURES AND GENERAL DESCRIPTION OF THE EEC MINI HIGH-SPEED BIO TEC SEWAGE TREATMENT PLANT



EEC MINI PLANT 30 m<sup>3</sup> per day at 10 ppm BOD effluent suitable for irrigation or toilet flush.



EEC MINI PLANTS WITH BUFFER SLUDGE AND LIFT STATION – 30 m<sup>3</sup> per day at 10/10 ppm BOD effluent.



### EEC SYSTEMS FEATURES

We have incorporated a set of world-class instruments, which are time, tested, both at home & abroad. An utmost care has been taken for selection of proper material of construction of each component in our package plant system, as we believe that appropriate selection of materials is vital in such an advanced system.

- VERY COMPACT & OCCUPY LESS SPACE THAN OTHER SEWERAGE TREATMENT PLANTS.
- LESS MAINTENANCE, LOW CAPITAL & OPERATING COST BENEFITS
- SIMPLE ASSEMBLY AND OPERATED BY ON-SITE LABOUR.
- **THE SYSTEM IS PREFABRICATED WITH BUFFER, FEED, AND SLUDGE SYSTEM, ALL IN ONE SYSTEM.**
- EASILY EXPANDABLE AND TRANSPORTABLE TO ANY LOCATION
- THERE IS NO NEED TO ADD MICRO ORGANISM
- THE SYSTEM WILL OPERATE WITHOUT ANY CHEMICAL ADDITION
- EASY START UP, FULLY AUTOMATIC OPERATION, RELIABLE & ROBUST ONCE STARTED
- ONE CENTRAL CONTROL PANEL FOR EASY OPERATION.
- CLOG FREE AIR DISTRIBUTION SYSTEM AND AMB BIO MEDIA THAT COMES WITH 20 YEARS WARRANTY
- AMMONIA AND NUTRIENT REMOVAL SYSTEMS AVAILABLE UPON REQUEST.

The EEC MINI STP system is based on the **EEC High-Speed Bio-Tec** biodegradation and sedimentation technology, which is unique due to its compactness and performance in respect to volumetric efficiency. These technologies are combined in a prefabricated; skid mounted and standardized tank system with variable length, suitable for overseas transportation in ISO freight containers.

**EEC MINI PLANTS offers three standard models from 6, 20 and 30 m<sup>3</sup>/day. These systems include sludge, buffer, and feed tank.**

**EEC CON SERIES from 40 and up to 450 m<sup>3</sup> per day** are built to fit inside standard ISO containers and are suitable for indoor and outdoor locations. All EEC systems are extensively aerated and produce no odour.

Note: If placed indoor, in closed rooms, draft ventilation is recommended.



### DIMENSIONAL CRITERIA

Any treatment plant should be based on actual measurements of the waste stream to be treated in respect of hydraulic load, suspended and dissolved organic material, and the applicable local

effluent requirements. However, sufficient statistical information is available for small community municipal wastewaters, related to the term "Person equivalents" (Pe).

A system specifically designed for condominiums and smaller residential areas, this plant is based on the following data:

Wastewater flow	Qw	: 200 l/ Pe/ day	53 GPD/Pe
Suspended solids	TSS	: 70 g/Pe/ day	.15 #/day/Pe
Organic matter	BOD	: 65 g/Pe/ day	.14 #/day/Pe
Nitrogen	N	: 9 g/Pe/ day	.02 #/day/Pe
Phosphorous	P	: .6 g/Pe/ day	.001#/day/Pe

## CAPACITIES & TECHNICAL SPECIFICATIONS

The EEC MINI STP system is manufactured in various lengths in order to suit any particular need. The basic EEC Mini systems has six chambers; buffer, sludge, feed, bio, bio, settling followed by media filter and UV light for final sterilization and have the following nominal capacities **with an effluent of 10 ppm BOD as daily average:**

### Technical Specifications

Equipment	Specification	Unit	6 KLPD	20 KLPD	30 KLPD
<b>Tank Container</b>	Overall Length	m	2.9	4.0	5.6
	Overall Width	m	2.2	2.2	2.2
	Overall Height	m	2.2	2.2	2.2
<b>Bio Medium</b>	Proprietary				
<b>Settling Medium</b>	Tubedek				
<b>Regenerative Blower</b>	Nominal Capacity	M <sup>3</sup> /h	15	26	28
	Motor effect	KW	0.7	2.2	2.2
<b>Sewage Transfer Pump</b>	Nominal Capacity	M <sup>3</sup> /hr	0.5	1.2	1.8
	Motor effect	KW	0.5	0.5	0.5
<b>Sludge Air Pump</b>	Nominal Capacity	M <sup>3</sup> /hr	2	2	2
	Back Pressure	Mt	0.5	0.5	0.5
<b>Effluent Transfer Pump</b>	Nominal Capacity	M <sup>3</sup> /hr	0.5	1.2	1.8
	Motor effect	KW	0.5	0.5	0.5
<b>Pressure Sand Filter</b>	Nominal Capacity	M <sup>3</sup> /hr	0.5	1.2	1.8
<b>Ultraviolet Filter</b>	Nominal Capacity	M <sup>3</sup> /hr	0.7	1.5	1.5
	Wattage	Watts	50	50	50
<b>Electrical System</b>	Installed effect	KW	1490	2071	2561
<b>Shipping weight</b>	Dry weight	KG	4500	5000	5700
<b>Operation weight</b>	Water filled	KG	15000	19000	28000

AMMONIA AND NUTRIENT REMOVAL SYSTEMS AVAILBLE UPON REQUEST.

Systems with additional requirement to effluent removal on, COD, Ammonia, or Nutrient, will normally require longer retention time and will consequently have lesser capacity than above. Such systems will be designed as customized systems based on the customer's influent analysis and effluent removal requirements.

Note: EEC can offer any capacity outside standard models



#### **PRE-SEDIMENTATION SYSTEM**

Included in the system is a three-chamber, combined settling/buffer/pump well tank system separates paper, sanitary binds, and settleable solids.



#### **BIOLOGICAL TREATMENT SYSTEM**

The treatment plant will take suction from the pump well by its own feed pump. The pump is level controlled and has a capacity which is 2-3 times the average daily flow. The plant has therefore an intermittent working mode in terms of hydraulic flow, while the air blower supplying air to the bioreactors is continuously running.

The biodegradation reactor comes in one or two stages depending on required cleaning efficiency. The bioreactors are degrading the dissolved organic matter by oxidation into carbon dioxide, which escapes to the air, and to biomass that acts as activated sludge. A suspended, free floating biofilm carrier medium is providing a large, protected biofilm surface for the bacteria and is simultaneously accumulating the active biosludge inside the reactors.



#### **SLUDGE SEPARATION SYSTEM**

The biodegraded water is flowing into a clarification stage where the suspended solid settles by gravity. The water is directed through a skim well to a plate settler system which provides the final clarification of the effluent.

The sludge pump is activated each time the feed pump stops, with suction from the clarification stage. The pump is discharging through a hydrocyclone with the overflow back to the bioreactor, while the underflow is discharged to the primary sludge storage. When necessary, the sludge is emptied by a vacuum truck and hauled away for external disposal.



#### **EQUIPMENT SPECIFICATION**

### **The basic system comes with the following standard equipment:**

EEC package plants are fully automatic systems with automatic sludge separation. Main components pre-assembled and tested before shipping:

- Main Bio Reactor Tank with six chambers. Epoxy coated.
- AMB Bio Media™ **Proprietary Media 950 m<sup>2</sup>/m<sup>3</sup>**. 20 Years warranty. EEC Design.
- SS Course Air Distribution systems with butterfly valves, coarse air, No clogging. EEC Design

- Non-Return valves (Check valves)
- Necessary Cables & Accessories
- Corrugated Plate Settler. EEC Design
- Air Compressor
- Submersible Feed Pump.
- Displacement Sludge / Recycling Pump.
- Automatic sludge separator. EEC Design
- Necessary PVC Piping & valves
- Motor Control Panel.
- One main control panel with start/stop push-button operation and monitoring lights
- Complete plant EEC High-Speed Bio Tec as per requirements.

## 7. TECHNICAL DATA

*Detailed technical data provided with quotes.*

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Larger or smaller models are available upon request. Visit EEC's Web Site for additional information on different systems and solutions for your specific needs.




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EEC's Research and Development team is continuously updating our technology and specifications [www.eecusa.com](http://www.eecusa.com)

## EEC REVERSE OSMOSIS

CONTACT EEC IF YOU NEED RO PLANTS – EVERYTHING FROM WELL WATER, BRACKISH, OR SEAWATER CONVERSION TO DRINKING WATER.  
EEC PROVIDES ONE STOP SOLUTION TO ALL YOUR WATER / WASTEWATER NEED.

