

EEC OFFERS GLOBAL PRODUCTION AND SERVICES

EEC BIO TEC
THE FINEST IN SYSTEM ENGINEERING



EEC MBBR Package Plants for Domestic Wastewater

Based on the Moving Bed Bio Reactor (MBBR) – EEC also offers Membrane Bioreactors (MBR)

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

Effluent suitable
for irrigation

Fully automatic
and easy to
operate

Global
production and
service.

EEC Europe – EEC USA – EEC Thailand – EEC India – EEC Brazil– EEC Australia –
EEC Middle East – EEC Global Operation – EEC Central America LLC

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



OPEN THE DOORS AND START SYSTEMS –
FULLY AUTOMATIC



EASY TO TRANSPORT, EXPAND, AND RELOCATE



EEC SYSTEMS FEATURES

We have made an effective effort to incorporate our past experience in fielding comprehensive offerings. We have implemented multiple world class, renowned equipment components and instruments. These features are time-tested, both at home & abroad. The utmost care has been taken for the selection of proper construction materials for each component in our package plant system. We believe appropriate selection of materials is vital in systems of this sophistication.

- VERY COMPACT AND OCCUPIES MUCH LESS SPACE THAN OTHER TREATMENT PLANTS
- LOW MAINTENANCE AND CAPITAL REQUIREMENTS LEAD TO HIGH OPERATING COST BENEFITS
- SIMPLE ASSEMBLY AND OPERATION BY ON SITE LABOR
- PREFABRICATED AND MOUNTABLE IN STANDARD ISO FREIGHT CONTAINERS
- EASILY TRANSPORTABLE TO ANY LOCATION, UNLIKE OTHER CONVENTIONAL TREATMENT PLANTS
- OPERABLE WITHOUT MICRO ORGANISM ADDITION
- OPERABLE WITHOUT ANY CHEMICAL ADDITION
- EASY START UP, FULLY AUTOMATIC OPERATION, RELIABLE & ROBUST PERFORMANCE
- ONE CENTRAL CONTROL PANEL FOR EASY OPERATION
- CLOG-FREE AIR DISTRIBUTION SYSTEM
- AMB BIO MEDIA WARRANTED FOR 20 YEARS
- AMMONIA AND NUTRIENT REMOVAL SYSTEMS AVAILABLE UPON REQUEST.

The EEC STP system is based on the **EEC High-Speed Bio-Tec** biodegradation and sedimentation technology. The system's compactness and performance is unique within the industry in respect of volumetric efficiency. The technology is packaged in a prefabricated, skid-mounted, tank system in standard lengths. Transportation in ISO freight containers simplifies long distance and overseas delivery.

EEC offers standard models ranging in capacities from 40 to 400 m³/day :

We manufacture smaller plants from 1 m³ per day and up. Contact us for Quotes or Pamphlets.

EEC CONDO (CON) SEWAGE TREATMENT PLANT (STP) SERIES: Built to fit inside standard ISO, the systems are suitable for indoor and outdoor sites. All EEC systems are extensively aerated and produce no odor.

Note: If placed indoors, draft ventilation is required. EEC's team can advise on effective configuration.



DIMENSIONAL CRITERIA

Treatment systems are to be designed 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. When initially identifying system capacity requirements, end-users typically use person equivalents (Pe) as a basic measurement. Consider the following Pe data as rules of thumb for developing initial capacity requirements:

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

The CON STP is manufactured in two foot increments to suit any particular need. Lengths start at 8' and extend to 39' lengths. Three chambers have following nominal capacities at a guaranteed effluent of 30 ppm BOD as daily average:

Feature	Specification	Unit	8CON	10CON	15CON	19CON	23CON	30CON	35CON	39CON								
Flow		m ³ /d	40	60	110	150	180	240	300	400								
Tank Size	Length	mm	2500	3100	4500	5780	7000	9000	10700	12000								
	Overall Width	mm	2192	2192	2192	2192	2192	2192	2192	2192								
	Overall Height	mm	2200	2200	2200	2200	2200	2200	2200	2500								
Bio media	Proprietary	m ³	TECHNICAL DETAILS ARE PROVIDED WITH EEC OFFICIAL QUOTES															
Settling media	Tube-dek	m ³																
Rotary Blower	Capacity	m ³ /h																
	Pressure	mm																
	Motor HP																	
Transfer Pump	Submersible	m ³ /h																
	Head	m																
	Motor HP																	
Sludge Pump	Capacity	m ³ /h																
	Head	m																
	Motor HP	m																
Hydrocyclone	Nominal Capacity	m ³ /h																
	Pressure drop	m																
Shipping Wt.	Without doors	kg									3010	3680	4975	6120	7160	9050	10550	13310
	With Doors										3720	4460	5895	7180	8350	10450	12130	15090
Operating Wt.	Without doors	kg	8350	11000	17765	22800	28170	36980	44470	51070								
	With doors	kg	9060	11780	18085	23860	29360	38380	46050	52850								

AMMONIA AND NUTRIENT REMOVAL SYSTEMS AVAILBLE UPON REQUEST.

Systems with additional influent removal requirements for chemical oxygen demand (COD), ammonia, or nutrients typically require longer retention times. This results in lower capacities

than identified in the standard model table. These customized systems will be designed based on the customer's influent analysis and effluent removal requirements.

Note: EEC possessed the capability to deliver on any capacity in addition to those identified in the standard models. See web site for additional information on "Upgrades and Retrofit New and Old WWTP Plants" at our Web site: www.eecusa.com.



PRE-SEDIMENTATION SYSTEM

EEC's system will connect into a customer provided sewage piping system ending in a three-chamber combined settling/buffer/pump well tank system. This element separates paper, sanitary binds and settleable solids. The buffer capacity must be sufficient to level out daily peak flows. EEC can assist with the preparation of this element.



BIOLOGICAL TREATMENT SYSTEM

The treatment plant's feed pump pulls the influent from the pump well. The pump is level-controlled and has a capacity two to three times the average daily flow. The pump possesses an intermittent working mode to manage hydraulic flow. The system's blower supplies air to the bioreactors on a continuous basis.

The biodegradation reactor will include in one or two stages depending on required cleaning efficiency. Plants with higher cleaning efficiency than 80-85 % will include a two-stage system. The bioreactors oxidize the dissolved organic matter into carbon dioxide and biomass. The biomass acts as activated sludge.

Assisted moving bed (AMB) bio medium is the key to the system. The medium is a suspended, free floating biofilm carrier. It provides a large, protected biofilm surface for the oxidizing bacteria on which to thrive. The medium simultaneously accumulates the active biosludge inside the reactors.



SLUDGE SEPARATION SYSTEM

The biodegraded water flows into a clarification stage where the suspended solids settle by gravity. The water directs past a skim well to a plate settler system, providing the final clarification of the effluent.

The sludge pump is activated each time the feed pump stops. The sludge pump is discharged through a hydrocyclone. The overflow returns to the bioreactor while the underflow is discharged to the primary sludge storage. As necessary, the sludge is emptied by a vacuum truck and hauled away for external disposal. This removal is necessary no more frequently than a bi-monthly basis.



EQUIPMENT SPECIFICATION

EEC package plants are fully automated systems with built-in sludge separation. Main components pre-assembled and tested prior to shipping.

The basic system comes with the following standard equipment:

- Main Bio Reactor Tank with three chambers. Epoxy coated
- AMB Bio Media™ **Proprietary Media 950 m²/m³**. 20 year warranty. EEC Design
- Stainless Steel Coarse Air Distribution system. Self-cleaning, no- clog with butterfly valves. EEC Design
- Non-Return valves (Check valves)
- Necessary cables and accessories
- Corrugated Plate Settler. EEC Design
- Rotary Displacement Blower
- Submersible Feed Pump
- Displacement Sludge / Recycling Pump
- Automatic sludge separator. EEC Design
- Dosing pump as required
- Necessary PVC Piping & valves
- Motor Control Panel
- One main electrical switchboard/control panel with start/stop push buttons and running lights.



TECHNICAL DATA

ADDITIONAL DETAILS PROVIDED WITH QUOTES

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our various systems and solutions for your specific needs.*



EEC GLOBAL OPERATION LLC

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

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