

EEC GLOBAL OPERATION LLC

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EEC HS BIO FOR RESTAURANTS

FEATURES

**Self-Cleaning
non-clogging
media with 20
years warranty**

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

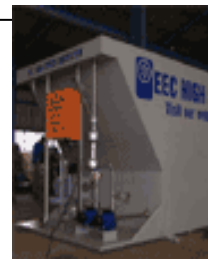
**Easy to
Relocate
And Install**

**Water can be
used for
Irrigation**

**Fully Automatic
And easy to
Operate**

**Global
Production and
Service**

"High-Speed Bio Tec" Biological treatment plants. Advantages for restaurants; Noneed for grease trap, extremely compact and efficient compared to regular systems, clog free, handles shock loading, extremely compact, ready to be operated, fully automatic, skid mounted, and up front central control. Please find "General Description" below, or visit our web site at: www.eecusa.com



SPECIFICATION OF A WASTE WATER TREATMENT UNIT FOR FAST FOOD RESTAURANTS

THE TECHNOLOGY

The proposed Wastewater Treatment System is based on the Moving Bed biodegradation technology, which is unique due to its compactness and performance in respect of volumetric efficiency. These technologies are combined with an airlift flotation system and a sludge re-aeration system in a modular tank that is prefabricated in the workshop and ready to be installed and hooked up to wastewater, power and outlet at the site.

DIMENSIONAL CRITERIA

Any treatment plant must be based on actual measurements of the waste stream with respect to hydraulic and organic load. The critical parameters are daily average flow, peak flow and influent/effluent COD, BOD₅ and TSS.

Additional information on TDS, alkalinity, nitrogen and phosphorous are important for supply of chemicals and operation of the plant.

Wastewater from restaurants and other commercial food service facilities differs significantly from residential wastewater. In addition to higher surge volumes during busy periods and generally higher temperatures, restaurant wastewater is typically higher in strength than residential wastewater. This is due to higher levels of solids, oil and grease, which cause a higher chemical oxygen demand (COD).

Designs for new applications should be based on a full wastewater analysis and followed up by a test program in order to verify the design and guarantee the effluent. Such tests may range from biodegradability testing in lab scale to pilot testing on site

The standard units specified below are based on the following parameters:

| Influent | Effluent |
|-------------------|------------|
| COD 2000 mg/l | 100 mg/l |
| BOD 800 mg/l | 50 mg/l |
| TSS 700 mg/l | 50 mg/l |
| FOG 300 mg/l | 5 mg/l |
| Sludge digestion: | 50% of COD |

Any other effluent and sludge digestion requirements may be obtained, but will affect the capacity of the unit

SYSTEM DESCRIPTION

The treatment system comprise of the following major components.
Wastewater Collection Tank/Coarse Screen

It is assumed that restaurant and toilet wastewater piping ends in a customer provided wastewater collection tank with a coarse screen. The holding capacity should be approx 3 hours to level out extreme peak flow. An overflow exit to drain is to be provided.

A customer provided submerged feed pump should provide 2 m lifting head at the unit inlet flange, against closed valve.

ALF Primary Treatment System

An air lift flotation (ALF) treatment device is integrated in the digester tank. It shall remove most of the oil and grease before wastewater enters into first MBBR.

In ALF system, air bubbles are formed by introducing air directly into the waste water through a disc shaped microbubble diffuser, with air supply from blower. This will lift the floating scum (oil and grease) out of the wastewater and overflow into the digester tank

Biological Treatment System

The biological treatment system is consisting of two reactor tanks:

A first Moving Bed Biofilm Reactor (MBBR) is acting as a roughing reactor to shave peak loads and remove most of the BOD.

A second Moving Bed Biofilm Reactor (MBBR) is acting as a polishing reactor to degrade the remaining BOD, down to the effluent BOD concentration required by the customer.

The MBBRs are filled with a specially designed biofilm carrier elements (BCE) which is free floating and moving around in the reactor with the flow. The medium provides an effective biofilm surface of 500 m² per m³ bulk material. Simultaneously, biomass is trapped inside the carrier elements, providing additional surface for the bioculture.

The BCE filling rate may be varied from 33 % to 67 % to fit a specific BOD design load or accommodate for larger load variations.

Both reactor tanks are aerated through a coarse bubble air distribution system at the bottom of the tanks, with air supply from a side channel air blower.

4. Settling Tanks and Sludge Digesting System.

The biodegraded water is flowing by gravity into the clarification stage where the suspended solids settle by gravity.

The settled sludge, thus being removed from the clarified water, is transferred into the integrated sludge digester tank with four days holding time, by the airlift provided by the ALF device. The digested sludge are to be pumped into a customer provided container for dewatering and final disposal as food waste.

SPECIFICATIONS

| Model (Capacity in GPD) | | M3000 | M4000 | M5000 | M6000 |
|----------------------------------|--------|-------|-------|-------|-------|
| Process tank: | | | | | |
| Length | m | 2,44 | 3,10 | 3,76 | 4,42 |
| Width | m | 1,83 | 1,83 | 1,83 | 1,83 |
| Height | m | 1,83 | 1,83 | 1,83 | 1,83 |
| Wet Volum | m3 | 5,1 | 7,0 | 8,8 | 10,6 |
| Blower, side channel type | | | | | |
| Capacity | Nm3/hr | 130 | 170 | 210 | 250 |
| Lifting Head | mwh | 1,75 | 1,8 | 1,85 | 1,9 |
| Motor rating | kW | 3 | 4 | 5 | 6 |
| Process pump: | | | | | |
| Capacity | m3/hr | 5 | 5 | 5 | 5 |
| Lifting Head | mwh | 10 | 10 | 10 | 10 |
| Motor rating | kW | 0,5 | 0,5 | 0,5 | 0,5 |
| Chemical dosing pump | lph | 8 | 8 | 8 | 8 |
| Shipping weight | kg | 1000 | 1200 | 1400 | 1600 |

Larger 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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Need Fresh Water. EEC Manufactur Quality
RO & UF Drinking Water Plants

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EEC's Research and Development team is continuously updating our technology and specifications