BIOTECH SYSTEM INFORMATION

System Description

The SF8 treatment system is a *GRP* (glass reinforced plastic) vessel that has a minimum wall thickness of approx 5.0mm.The vessel is divided internally by bulkheads, which make-up the various chambers used for the treatment process.

These chambers are designated as:

- Primary settlement chamber.
- Treatment chamber (submerged aerated filter)
- Final settlement chamber.

Primary Treatment Chamber

The primary settlement chamber is where the raw sewage is introduced to the system. It is within this chamber that the sewage is separated. All the gross solids settle to the bottom of the vessel, while the fluids pass over into the treatment section of the vessel.

The primary chamber will require periodic de-sludging in accordance with the systems maintenance schedule.

Treatment Chamber

After the initial separation of the influent, the liquid passes over into the treatment chamber. It is within this chamber that the actual treatment of the sewage takes place.

The chamber contains an inert plastic media that is designed to promote the growth of bacteria. This media is in turn fed with a constant stream of air, which accelerates the bacterial growth. It is the bacterial action within the chamber, which digests and reduces the waste material and therefore reducing BOD and Total Suspended Solids. Linear diaphragm compressors that operate constantly, supply the air to the treatment chamber. These compressors operate on a constant cycle and are both economical in use and easy to maintain.

It should be noted that the treatment chamber is the most delicate part of the system, and as such is easily disrupted. This can be caused by a variety of reasons, which should be avoided at all costs.

Examples such as:

- Avoid over-use of strong bleaches and detergents (blue loo and other lavatory cleaning agents)
- The introduction of chemicals and acids to the system. (cleaning paint brushes in the sink, etc)
- The draining of surface water into the system.

Final Settlement Chamber

Like the treatment chambers, the final settlement chamber features a sludge return system. This feature allows any sediment captured in both the treatment chambers and final chamber to be returned back to the primary settlement chamber to be removed

A Submersible pump operates a duty cycle of approximately a ratio of 2:1 by circulating the water and carbon back to the primary chamber where micro-organisms achieve tertiary de-nitrification to less than 10mg/l total nitrogen. Total nitrogen is reduced substantially and cost effectively by re-circulation nitrified water from the treatment chamber back to the primary chamber.

SF 8 System Specification

P.E. (Population equivalent)	8
Max organic load per day	0.48kg/day
Design flow rate	16,00 litres/day
BOD	20mg/l
SS	30mg/l
Ammonia	20mg/l
O/A Length	2400mm
O/A Height	1800mm
O/A Width	1560mm
Inlet pipe-work diameter	150mm
Electrical power supply	220v 1ph
Power consumption	1.1kw approx

Minimum Separation Distances

The system should ideally be located so that there is unrestricted access for the purposes of installation and maintenance. The tank must not be located in an area where there is the possibility of vehicles traversing; risking damage to the tank. See table 2.

Feature	Biotech unit	Irrigation area
Dwelling served	7m See notes (1)	10m
Adjacent dwelling	7m See notes (1)	10m
Roads	4m See notes (1)	4m
Site boundaries	3m	3m
Drinking water sources*	10m (2)	30m
Water course	10m	10m
Lake	50m	50m

Table2

(1) It should be noted that the depth of the excavation to accommodate the tank must be taken into account when determining this distance, as it will be governed by the invert depth of the soil pipe where it enters the treatment tank. Therefore the separation distance should be calculated so that the excavation does not undermine any adjacent buildings or structures. This distance should be not less than one and half times the depth of the excavation.

(2) The irrigation area should be situated down hill of any nearby well. Where this would not be possible a minimum separation distance of 30m from any well must observed.

SF8 Technical Specification

Population Equivalent	8 person
Design Hydraulic Load	1600 litres/day
Max BOD	0.48kg/day
Power consumption*	58watts
Effluent quality *	20:30:20

* This figure is based on the gravity system where a final effluent pump is not required.
* Effluent quality: 20mg/litre Biological Oxygen Demand
30mg/litre Suspended solids
20mg/litre Ammonia

Where reduced loading applies, the system will produce a final effluent discharge superior to the 20:30:20 standard.