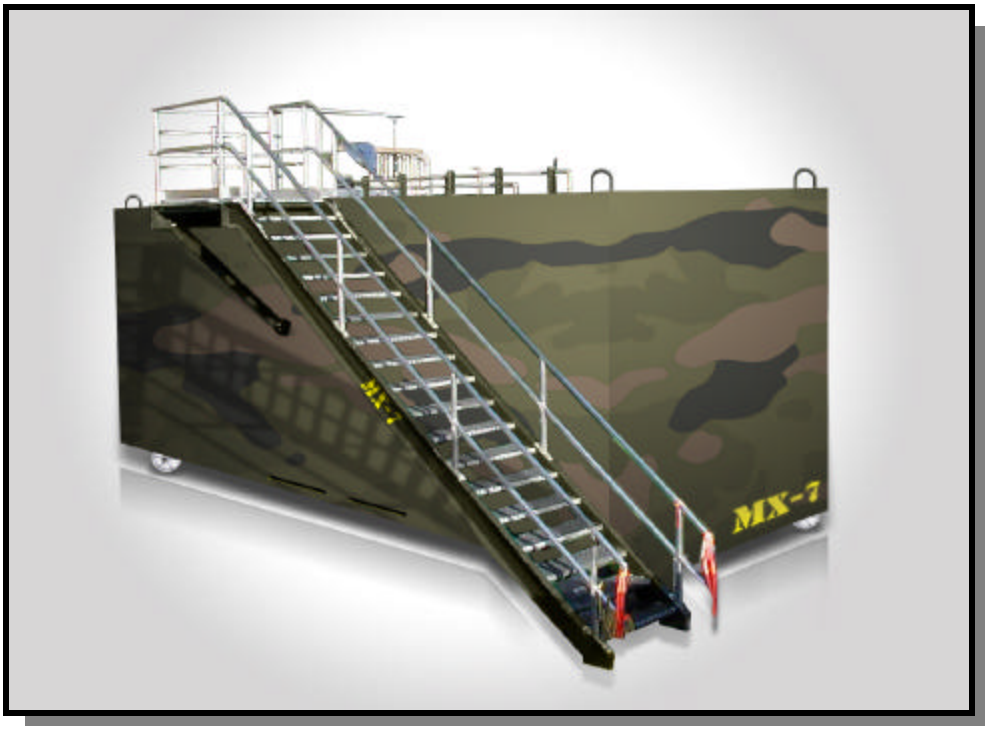
2030
FOP DEVELOPMENT GROUP

MX-7™ WWT PLANT DESCRIPTION



Society of
SAME
American Military Engineers

www.USBF.com

1 INTRODUCTION

The design utilizes award winning USBF™ process technology. In awarding the process the 2006 Technology Leadership Award, Frost & Sullivan included the following in their press release:

"The company's advanced plants based on the USBF™ process address the constant demand to produce high quality effluents. This single-sludge denitrification process incorporates all the processes required for biological treatment in a single reactor and circulation loop, using very little energy and no chemicals. While conventional processes such as SBR and extended aeration rely on the slow and inefficient sedimentation process, the USBF™ technology utilizes a fluidized bed or 'counter current' movement. This is a dynamic method that continually removes pollutants. In this process, the sewage that enters an anoxic compartment is drawn by gravity into an aeration compartment, and then to the bottom of the upflow sludge blanket filtration clarifier, from where it overflows. The remainder is then recycled from the bottom using airlift pumps, which require no power due to the internal loop configuration.

This way, the mixture is exposed to anoxic aeration three or four times a day, resulting in superior biological nutrient removal, even without the use of added chemicals. Phosphorous removal, through a process known as "biological luxury uptake", is another cost-free benefit. "USBF™ does not require primary clarification prior to biological treatment and offers hydraulic flexibility because it easily accommodates high peak flows," says Frost & Sullivan Research Analyst Shilpa Tiku. "In fact, as the flow becomes greater, the sludge blanket rises higher and the filtration area expands simultaneously."

USBF™ technology is, therefore, ideal for use in municipal and domestic wastewater treatment, water reclamation, industrial wastewater, and existing plant retrofits. Industrial wastewater is highly organic by nature, and biological packaged wastewater treatment offers an attractive option for treatment plants that are looking at viable and low-cost options. The USBF™ process is a self regulated system and very little, operator attention is required."

MX-7™ Package Plant is designed to treat up to 7,000 gpd of 'municipal' type wastewater to advanced secondary treatment level of less than 10 mg/l for both BOD and TSS.

2 MX-7™ EQUIPMENT AND COMPONENTS

2.1 Package Plant Tank

The 7' x 7' x 30' tank is fabricated from structural grade ASTM-A36 steel plate with a minimum thickness of one-quarter inch (¼"). All structural shapes used for reinforcing and bracing have a minimum thickness of one-quarter inch (¼"). All metal surfaces are sandblasted to SSPC 10, and painted with two coats of epoxy paint, with a minimum dry film thickness of 12 mils. The tank contains the following:

- Equalization tank compartment which receives raw sewage. The tank is provided with a manually cleaned coarse bar screen and coarse bubble air diffusers.
- Anoxic compartment.
- Aeration compartment provided with air header, aeration valves manifold, diffuser drops and fine bubble aeration diffusers.
- USBF™ filter provided with airlift pump. The prism or conical shaped filter is hydraulically self-regulating, and its function is to separate the sludge floc from the

treated water. Located at the filtered water surface is an adjustable effluent trough provided with v-notches and scum baffle(s). Effluent from the trough flows by gravity to disposal or to further treatment (optional reuse package).

- Automatic sludge pre-thickening and wasting system.
- Sludge holding tank compartment provided with coarse bubble air sparger and a decant system with the supernatant returned by gravity to the anoxic compartment or to the equalization tank.

2.2 Equalization Tank Pumps

2.3 Air Blowers

The unit is provided with 2 blowers, one duty, one standby. The blowers are V-belt driven rotary positive displacement blowers equipped with a filter-silencer, pressure relief valve, discharge silencer, and check valve. The blower/motor assembly is factory mounted on a steel base plate within a weatherproof and sound attenuating enclosure.

2.4 Portable Access Ladder

2.5 Controls and Control Panel

Circuit breakers and all control equipment listed below are mounted within a separate NEMA 4X rated enclosure, fabricated from heavy gauge steel or fiberglass, and provided with a rigid lockable door. Wiring and conduit from power supply to the control panel and from the control panel to the blower(s) and accessory equipment is by others.

Item	Equipment	Control	Function	Alarm
1	Equalization tank	Float switches Timer	Pumps on/off Hi Level Override	Yes Yes
2	Equalization tank pumps	Motor overload		Yes
3	Pre-thickened sludge pump	Timer		Yes
4	Blowers	Pressure switch	Low Pressure	Yes
		Motor overload		Yes
5	Portable Generators			

- Alarm is annunciated by a strobe light located on top of the control panel.
- Additional controls can be incorporated into the panel by request.

Note: MX-7™ can be provided with additional optional components and equipment.

3 SHIPPING AND INSTALLATION

Shipping

All MX-7™ equipment and components are shipped within a 40' ISO container. FOB any US Port.

Installation

Once removed from the container, MX-7™ is set on a concrete pad, or on sand finished, level ground bed. Crane or backhoe capable of lifting 15,000 lbs is required. Using the supplied equipment, components and shop prefabricated piping, the final site assembly is fast and uncomplicated. Empty container is used as control and process rooms, and as field warehouse.

MX-7 Rendering & Dimensional Drawing