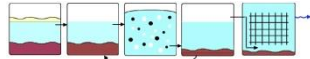


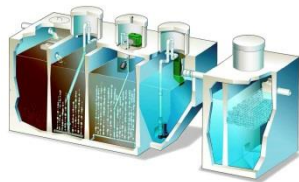
Firm: Norweco
www.norweco.com

System: **Hydro-Kinetic FEU**

Category:



**AERATED
SUSPENDED GROWTH with
ANOXIC FIXED FILM FILTER**



Process: Wastewater first enters a pretreatment chamber for primary treatment of solids. Flow transfers into an anoxic chamber to aid the denitrification process. Flow is directed from the anoxic chamber into the aeration chamber where air supplies oxygen to bacteria and other microbes to support the reduction of BOD and TSS and the conversion of ammonia nitrogen to nitrate nitrogen. Aerated flow then transfers into the clarification chamber where any remaining solids will settle and be returned periodically to the anoxic chamber to stimulate reduction of total nitrogen. Treated effluent is discharged by gravity into a submerged attached growth filter tank that removes remaining BOD and suspended solids. Treated effluent is discharged to the disposal system.

System: Incorporates primary, secondary and tertiary treatment in a five chamber system that is manufactured, installed and serviced by a trained, licensed distributor. Replacement parts are available through the distributor. The unit does not replace the discharge components.

Flow Range: 500-1,500 GPD, domestic strength wastewater

Tests: NSF/ANSI 12 month Standard 40 & Standard 245 testing for CBOD, TSS, nitrogen reduction, and UV disinfection. Canadian BNQ 12 month testing for CBOD, TSS, nitrogen, phosphorus reduction and UV disinfection. Suffolk County Pilot 1

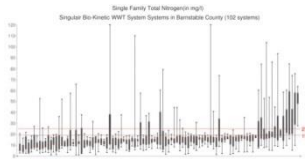
Cost: Under \$11,000 delivered within 25 miles of Bay Shore, NY (includes 2 feet of riser sections for each access hole, pumps and equipment inside of tank and control panel). Cost doesn't include excavation, interconnect plumbing, piping, electrical service, and soil disposal system restoration of lawn and seeding.

Norweco
 220 Republic Street
 Norwalk
 Ohio 44857-1156

Telephone:
 419 668 4471

Local Supplier:
 Roman Stone
 Construction Co.
 85 South 4th St.
 Bay Shore
 NY 11706

631 667 0566



Actual treatment levels.
 Massachusetts

Energy: 2 pumps using a total of 2.5 kWh per day. One pump operates 15 minutes on and 1 hour off, the other pump operates 15 seconds on and 20 minutes off. Estimated energy cost is \$13.50/month.

Tanks: Concrete and high density polyethylene (HDPE) tanks

Venting: Vent on aerator mounting casting lid

Footprint: Varies, ~ 120 SF

Depth: Tank is 6 ft deep, plus 2 ft. for the aerator housing. To maintain a 2-foot clearance to groundwater, allow 10 ft.

Life Cycle: 5-7 years for air pump and submersible pump
 (Cost: \$200-\$500)

Warranty: 2 years

Maintenance: Annual maintenance

Notes: Extended aeration process is simplest to operate and maintain with very little sludge as byproduct. Used frequently for seasonal use, but pumps need to be removed and recovery time at start-up may be significant.

Installations: MA, MD, OH, RI, Canada

Treatment:

	<i>TN</i> <i>/aver</i> <i>50%</i>	<i>cBOD</i> <i>25</i> <i>mg/L</i> <i>aver/mon</i>	<i>TSS 30</i> <i>mg/L</i> <i>aver/mon</i>	<i>DO</i>	<i>pH</i> <i>(6-9)</i>
<i>mg/L</i>	7.95	2.1	1.8	1.3	7.3-7.8
<i>%</i>	80%	99%	99%		

Advantages:

- High treatment < 10 mg/L
- Flow equalization provides resiliency for irregular flows
- During a power outage, the unit can function as a simple septic tank

- Final filtration of effluent
- Disinfection options/wider reuse

Disadvantages:

- Recovery from shut down is slow
- Energy use is significant