



State of Delaware
Department of Natural Resources & Environmental Control
Division of Water Resources
Ground Water Discharges Section

Innovative and Alternative System Approval

ISSUED TO: Norweco Equipment Company
220 Republic Street
Norwalk, OH 44857-1196

Phone (419) 668-4471
Fax (419) 663-5440
www.norweco.com

FROM: Jason Baumgartner
Environmental Scientist
Ground Water Discharges Section

FOR: Hydro-Kinetic Model 600 FEU Advanced Treatment Unit

APPROVAL DATE: 3/14/14

In accordance with the Regulations Governing the Design, Installation, and Operation of On-Site Wastewater Treatment and Disposal Systems (Regulations), an application dated June 25, 2013, has been submitted by Norweco Equipment Company, for approval of the Hydro-Kinetic Model 600 FEU Advanced Treatment Unit as an Innovative & Alternative On-Site Wastewater Treatment Unit.

Based on the review of the application, the Department hereby grants approval of the use of the Hydro-Kinetic Model 600 FEU Advanced Treatment Unit as an Innovative & Alternative On-Site Wastewater Treatment Unit. The following conditions, limitations, and requirements must be adhered to:

1. Product Description

The Hydro-Kinetic Model 600 FEU system is a two or three tank treatment unit available in concrete tankage. The treatment train includes pretreatment, anoxic, aeration, clarification, and effluent filtration chambers. The system makes use of gravity flow with internal time dosed effluent from the clarifications chamber to the anoxic chamber. The effluent recirculation facilitates system denitrification. Air is delivered into the aeration chamber with an air pump, diffuser drop line and diffuser bar. The two tank configuration consists of a four chamber monolithic tank that includes pretreatment, anoxic, aeration, and clarification chambers. This tank is followed by a separate Hydro-Kinetic filter chamber.

The Hydro-Kinetic filter tank is the final step in the treatment process. Its design includes an influent chamber and a proprietary filter medium that helps reduce BOD and TSS to very low levels prior to discharge and insures exceptional treatment performance.

2. Claim

Approval is based on information submitted by the Manufacturer indicating the specified model will routinely provide effluent quality not exceeding 10 mg/l of BOD₅, 10 mg/l of TSS, and <20 mg/L of Total Nitrogen.

This unit has been certified as NSF Standard 40 and 245, Class I, which meets secondary effluent characteristics and nitrogen reduction standards.

3. Use and Design Criteria

- a. The Hydro-Kinetic advanced treatment unit may be installed for new and replacement systems with conventional and innovative and alternative disposal systems.
- b. An on-site wastewater treatment and disposal system permit application incorporating a Hydro-Kinetic advanced treatment unit shall be designed in accordance with the Regulations, and manufacturer's specifications. The design shall be completed by a DNREC Class C Design Engineer unless otherwise approved by the Department. The permit application shall include proper unit specifications.
- c. The designer must assure that the pretreatment chamber, extended aeration chamber, final clarification chamber, and the Hydro-Kinetic filter chamber all have above grade access. The design also must ensure that the control panel and blower are accessible.
- d. The Hydro-Kinetic advanced treatment unit shall not be installed within areas subject to traffic loads unless specially designed on a case by case basis in accordance with the Regulations and in accordance with manufacturer's specifications.

- e. The use of chlorination and dechlorination shall be on a case by case basis.
- f. The manufacturer is responsible for providing the Department a list of all local distributors and their associated contact information. This list must be kept current and shall be submitted to the Department on a yearly basis.
- g. The Department shall approve of the use of ultraviolet disinfection on a case by case basis.

4. Installation Procedures

- a. The Hydro-Kinetic advanced treatment unit shall be installed by a DNREC Class E System Contractor under the supervision of a manufacturer's representative, or by a DNREC Class E System Contractor who has been certified for unit installation. Proof of certification shall be provided in writing to the Department.
- b. Start up of the system and initial operational checks shall be conducted by the Class E System Contractor (trained by the manufacturer), Design Engineer, and a Ground Water Discharges Section (Large System Branch) representative. If the Class E System Contractor is not certified, a manufacturer's representative shall perform the operational checks of the system at start up. If the manufacturer's representative can not be on site at the time of start up, they must provide final start up approval to the Department in writing.

5. Operation and Maintenance

- a. The Hydro-Kinetic advanced treatment unit shall be operated and maintained at 12 month intervals in accordance with the manufacturer's specifications.
- b. The manufacturer shall comply will all Department mandated requirements as specified in permit conditions. This shall include operation and maintenance requirements.

6. Sampling and Approval

The Department reserves the right to sample any unit at any time.

7. General Conditions

- a. Use of the system for wastes other than residential shall be on a case by case basis.
- b. In the event that the product fails to perform as claimed by the applicant, the use of the units for new installations shall cease. Use of the unit shall not resume until such time the applicant and the Department have reached an acceptable agreement for resolving the situations.
- c. Any changes that deviate from the specifications as submitted with this approval shall be approved by the Department prior to use.