



## COLORADO

Department of Public  
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

March 26, 2015

Joseph Soulia, Government Relations Representative  
Orenco Systems Incorporated  
814 Airway Ave.  
Sutherlin, OR 97479

Subject: Orenco, Advantex Series, Proprietary Treatment Product - Acceptance  
For Use in Colorado On-site Wastewater Treatment Systems

Dear Mr. Soulia:

Pursuant to section 43.13 of the On-site Wastewater Treatment System Regulation 5 CCR 1002-43 (Regulation 43), the Water Quality Control Division (Division) has reviewed drawings and specifications received between October 6, 2014 and January 12, 2015 for the Advantex proprietary treatment technology products listed below.

The Advantex treatment technology is accepted as a higher level treatment system for use as a component of an on-site wastewater treatment system (OWTS) subject to the design criteria in Table 1 below. This acceptance is not intended as an endorsement or third-party certification of the technology.

This acceptance addresses the following product models:

- Orenco, Advantex AX-20 for **treatment level TL3N** with flows up to 500 gpd.
- Orenco, Advantex AX-20RT for **treatment level TL3N** with flows up to 500 gpd.
- Orenco, Advantex AX-25RT for **treatment level TL3N** with flows up to 625 gpd.
- Orenco, Advantex AX-100 for **treatment level TL3N** with flows up to 2,000 gpd.

This acceptance applies only to OWTS with design capacity less than or equal to 2,000 gallons per day (gpd). **Review and approval for the design of any OWTS proposing to use this technology will be reviewed by the local public health agency.** As individual local public health agency regulations may be more stringent than Regulation 43, the Division cannot ensure the acceptance of a treatment technology within any given jurisdiction.

Any modifications to the physical attributes or characteristics of this treatment technology must be submitted to this office for review and acceptance by the Division prior to sale in Colorado. The Division will review modifications, any additional third party verification reports and issue a revised acceptance letter, or denial, as appropriate.



**Table 1. Design Criteria for Orenco Systems Inc., Advantex series models listed above:**

Design Criteria
<ol style="list-style-type: none"><li>1. A septic tank consistent with section 43.9(A) and 43.9(B) and an effluent screen consistent with section 43.3(44) and 43.9(I) must precede the treatment unit. Surge volume may be required for some applications based on manufacturer recommendations. Pretreatment for non-residential kitchens must include adequate separate grease separator tank(s) prior to the primary septic tank(s) as required in section 43.9(J) of Regulation 43.</li><li>2. Mode configuration requirements:<ol style="list-style-type: none"><li>a. In order to attain TL2, TL2N or TL3 effluent, the design of the treatment system may be configured in “Mode-1” or “Mode-3”. This will ensure the required BOD, TSS and TN reductions. Mode 1 is defined as recirculating all of the filtrate to the secondary chamber of the processing tank.</li><li>b. The design of the treatment system for TL3N must be configured in “Mode-3” in order to obtain the required nitrogen reduction for this treatment level. Mode 3 is defined as recirculating all, or a portion, of the filtrate to the primary chamber of the processing tank.</li></ol></li><li>3. Cold weather considerations, general:<ol style="list-style-type: none"><li>a. All units must incorporate 1-inch insulation attached to the bottom of all lids and risers covers integral to the treatment unit. Insulating around the process tanks, risers, and other components will be at the discretion of the design engineer.</li><li>b. For installations in areas where snow accumulates each winter, the air vent must be extended to ensure it terminates above the peak snow level.</li></ol></li><li>4. Cold weather considerations for TL2N, TL3 and TL3N:<ol style="list-style-type: none"><li>a. As per data supplied by Orenco Systems Inc., treatment systems that integrate “passive” ventilation do not require a warm air source for the treatment pod. This configuration would be typical of a single family residential treatment system.</li><li>b. Systems that integrate “active” air ventilation will require a temperature controlled air source to ensure that the temperature of the filtrate remains above 50° F. This configuration would be typical of a commercial treatment system with an AX-100 treatment unit.</li></ol></li><li>5. Timer settings for dosing the treatment unit:<ol style="list-style-type: none"><li>a. Timed-dosing to the treatment unit is required. The initial timer settings should be established based on the expected average daily flow and a 4:1 filter recirculation ratio.</li><li>b. A residual pressure of 3 to 6 feet (5 feet desired) within the treatment unit is used to determine the initial timed-dose settings.</li><li>c. AX-20 and AX-20RT: The “on” time should remain constant at 45 seconds per dose. The “off” time should be adjusted depending on the average daily flows. See the Orenco Systems design manual for further specifications.</li><li>d. AX-25RT: The “on” time should remain constant at 60 seconds per dose. The “off” time should be adjusted depending on the average daily flows. See the Orenco Systems design manual for further specifications.</li></ol></li><li>6. Design flow shall be for maximum occupancy. Design flow for single-family residential designs may vary based on the regulations adopted by the local board of health for each specific location. Design flow values and strengths for multi-family and commercial systems shall be consistent with section 43.6(A)(4). Therefore, all design criteria in this acceptance are based on total gallons per day and the assumption of residential strength wastewater.</li></ol>

7. The design must include pressure dosed distribution of effluent. Reductions in soil treatment area size or separation distances shall be as described in section 43.10(C)(4) of Regulation 43.
8. The designated higher level treatment rating is identified for each model on page 1. Use in higher level treatment applications requires system be designed by a Colorado Licensed Professional Engineer. The accepted treatment product may also be used for applications requiring less than the approved treatment level of the product. Reductions in soil treatment area size or separation distances based on higher level treatment may not be applied unless the local public health agency has a maintenance oversight program in place as described in section 43.14.D of Regulation 43. In locations where the local public health agency has not adopted a maintenance oversight program, the treatment system may be used but only with soil treatment area size and separation distances consistent with treatment level TL1 requirements.
9. In addition to these design criteria, other provisions of Regulation 43 and local regulations also apply to a specific design as well as good OWTS design practice. The Division does not approve manufacturer design manuals. Manufacturer provisions shall not be applicable if those provisions are not consistent with Regulation 43, these design criteria, and the regulations adopted by the local board of health for the design location. Local public health agencies will review proposed designs to confirm consistency with Regulation 43, these design criteria, the local board of health regulations adopted pursuant to Regulation 43, and good OWTS design practice.
10. Monitoring of the system may be required by the regulations adopted by the local board of health for the design location.
11. The treatment technology is not intended for industrial sources of wastewater. The treatment technology is intended to receive domestic wastewater with TL1 concentrations (see Table 6-3 in Regulation 43) exiting the septic tank. Wastewater with higher concentrations will require verification of the products ability to treat the wastewater and appropriate modifications or pretreatment.
12. Design shall provide access for maintenance and repair. As per the requirements of Regulation 43, septic tanks and all treatment components, other than the soil treatment area, shall be equipped with access manholes and risers that extend to or above final grade. All risers and lids shall be watertight and secure.

#### **Additional Operation and Maintenance Criteria**

1. Design shall include an Operation and Maintenance (O&M) Manual to be provided for all installations. Individual operation plans shall include scheduled inspections, assessments, and maintenance of the treatment. This plan for scheduled inspections and assessments should include a routine inspection as described in section 43.14(D)(4)(b) unless the local regulations require more frequent inspections.

The owner of the OWTS is responsible for arranging proper design, operation, and maintenance of the facility to achieve the desired treatment level.

If you have any questions regarding the Division's review or findings, please contact me at (303) 692-2366 or [chuck.cousino@state.co.us](mailto:chuck.cousino@state.co.us).

Sincerely,

Charles J. Cousino, REHS  
On-site Wastewater Treatment System Coordinator  
Engineering Section  
Water Quality Control Division  
Colorado Department of Public Health and Environment

cc: SCG Enterprises, Roger Shafer P.E. (local representative)  
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