

# AdvanTex® - AX-RT Treatment System

## Carefully Engineered by Orenco

Orenco Systems has been researching, designing, manufacturing, and selling leading-edge products for decentralized wastewater treatment systems since 1981. The company has grown to become an industry leader, with about 250 employees and more than 300 points of distribution in North America, Australasia, Europe, Africa, and Southwest Asia. Our systems have been installed in more than 60 countries around the world.



AdvanTex® Treatment System AXN Models meet the requirements of NSF-ANSI Standard 40 for Class I Systems.



Powered by Franklin Electric



Orenco Systems® Incorporated

Changing the Way the World Does Wastewater®

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ABR-ATX-AXRT-1  
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## Use the AX-RT for Applications Like These ...

### Small Lots

In 2011, Mike Madson, a septic system installer in Oregon, replaced a failing system along the beautiful North Umpqua River with an AX-RT. "That particular situation was really, really confining," says Madson. "There was a high bank to the river about 25 feet away and roots everywhere; we had to get things in there in compact fashion. We even had to add a drainfield to the site; the old one was bootlegged in, cedar trees had grown into it, and the leach line was plugged up." The AX-RT incorporates the recirc and discharge processes right within the RT unit, so its smaller footprint made this installation possible.



### Nitrogen Reduction

Bob Johnson of Atlantic Solutions has sold (and services) more than 150 AX-RTs, mostly in Maryland, for the state's aggressive nutrient-reduction program. Maryland requires Total Nitrogen of less than 20 mg/L to protect the Chesapeake Bay. After a year of testing 12 RTs under Maryland's BAT (Best Available Technologies) Program, Johnson reports that TN averaged just 14.6 mg/L, while BOD<sub>5</sub>/TSS averaged <5 mg/L. Says Johnson, "When you look at life cycle costs and percent of nitrogen reduction, the AX-RT costs less than other technologies for every pound of nitrogen removed."



### Strict Permit Limits, Including Surface Discharge

Kevin Davidson, an engineer with Agri-Waste Technology, designed the first AX-RT in North Carolina to replace a failing system under North Carolina's "Surface Discharge" permit. According to Davidson, the property had poor soil conditions, plus there was no room for a new drainfield. The state allowed the AX-RT for surface discharge because it produces such outstanding effluent that it could meet the required permit limits. And, with UV disinfection, it could meet the limit for fecals, too. Consequently, treated and disinfected effluent could then be discharged to a ditch.



Photo courtesy of Kevin Davidson

Davidson was able to use the existing septic tank, and the RT's configuration eliminated the need for a discharge tank, separate UV basin, and several risers and lids, reducing costs. On the O&M side, he appreciates having the UV sensors integrated into the control panel, especially the one that allows the service provider to know the bulb is working, without having to pull it out. Says Davidson, "I think the RT is the best unit, when you look at aesthetics, installation cost, ability to treat waste, and support from Orenco. Compared to other technologies, I would grade Orenco at the top."

Distributed by:

AdvanTex® Treatment Systems

# AX-RT™

Manufactured by Orenco Systems®, Inc.



A number of vacation homes along beautiful Smith Mountain Lake in Virginia treat their wastewater – and protect the lake – with AdvanTex® AX-RT Treatment Systems.

## Dependable, Affordable Treatment For Residential & Small Commercial Wastewater

### Applications:

- 1-6 bedroom homes
- Small commercial properties
- New construction, repairs
- Tight lots, other site constraints
- Poor soils, shallow bury
- Stringent permit requirements
- Nitrogen reduction, disinfection
- Surface discharge

### Orenco Systems®, Inc.

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## Dependable, Affordable Wastewater Treatment, Anywhere!

The AdvanTex® AX-RT Wastewater Treatment System is the latest residential (and small commercial) treatment system in Orenco's AdvanTex line.

AdvanTex systems consistently produce clear, odorless effluent ... effluent that meets the most stringent permit limits and is ideal for subsurface irrigation and other water-saving uses. That's one reason why AdvanTex won the Water Environment Federation's "2011 Innovative Technology Award." It also won for its low power costs and low operating & maintenance costs. Plus AdvanTex is easy to install, too. Here's why:

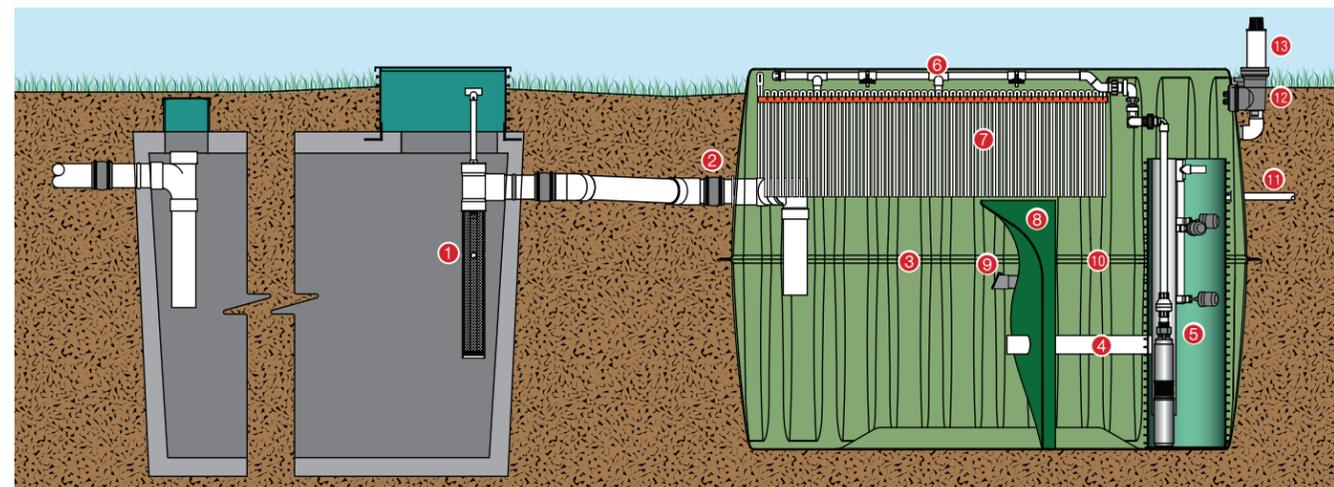
### Pre-Plumbed Treatment System Saves On Excavation, Installation, O&M

The AX-RT is a compact "plug and play" wastewater treatment system. It can be shallowly buried and installed right behind a septic tank, as easily as a septic tank, so contractors can schedule more jobs in a single day.

The AX-RT unit includes the following functional areas of the treatment process:

1. Textile media for advanced treatment
2. Recirculation/blending chamber
3. Gravity or pump discharge to final dispersal
4. Optional Orenco UV unit when disinfection is required

This simple design fits on the smallest lots and reduces costs for excavation, installation, and O&M. That means property owners can buy AdvanTex quality at a competitive price.



The AX-RT is a completely prepackaged "plug & play" wastewater treatment system that can be quickly installed right behind an existing (or new) watertight septic tank.



*Since 2003, more than 100 AdvanTex systems have been installed in Sunset Bay, a lakefront subdivision in northeast Tennessee. The last 8 have been AX-RTs and according to Arthur Helms, Helms Construction, the RT's are "a lot easier to install." Says Helms, "This one only has a few connections, so you can't hardly screw it up." Even better, Helms says that the RT "saves about 8 hours labor and saves on fittings ... I make more money with the RT. I can do it and go on to the next one."*

### Components

- |   |  |
|---|--|
| 1. Biotube® effluent filter                                     | 8. Tank baffle                               |
| 2. Inlet  | 9. Recirc return valve                       |
| 3. Treatment tank – recirc/blend chamber                        | 10. Treatment tank – recirc/filtrate chamber |
| 4. Recirc transfer line   | 11. Outlet                                   |
| 5. Recirc pumping system (discharge pumping system not visible) | 12. Splice box                               |
| 6. Manifold and spin nozzles                                    | 13. Passive air vent                         |
| 7. Textile treatment media                                      | 14. Control panel (not shown)                |

## Low Power Costs, Low Maintenance Costs

No blowers. No odors. The AX-RT is passively vented and uses only \$2-\$3 per month in electricity.<sup>1</sup> Other products can use anywhere from ten to twenty times more! AX-RT customers also have low lifetime costs. The AX-RT is easily maintainable with an annual service call, thanks to its accessible, cleanable filters and media. And the AX-RT's high-quality, high-head pumps last 20 years or more!

*Homeowner Nancy Smith was the first person to receive a \$400 cash incentive from Energy Trust of Oregon for buying an energy-efficient wastewater system: an AX-RT. Smith's drainfield failed the day before Thanksgiving and she immediately started researching replacement systems. "My determining factor was the electric use," said Smith. "Incomes are going down, expenses are going up ... I have to know going forward what things are going to cost." Smith chose the AX-RT because the annual cost for electricity runs less than \$40; other systems can run as high as \$500 or more.*

## Consistent, Reliable Performance

Stringent testing programs consistently show that AdvanTex Treatment Systems produce effluent with BOD<sub>5</sub>/TSS at or below 10 mg/L and nitrogen reduction of 60-70+%. In fact, the Maryland Department of the Environment has rated AdvanTex as tops among all "Best Available Technologies" for nitrogen-reduction.<sup>2</sup>



<sup>1</sup> Assumes national avg. electricity costs of \$0.10 per kWh and 3-4 occupants

<sup>2</sup> [http://www.mde.state.md.us/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/water/cbwrf/osds/brf\\_bat.aspx](http://www.mde.state.md.us/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/water/cbwrf/osds/brf_bat.aspx)

## The AdvanTex Advantage:

- Reliable, reputable
- Clear, re-usable effluent
- No noise or odors
- Complete "plug & play" package
- Easy to install and maintain
- Energy efficient
- Competitively priced



### Textile Treatment Media

Spin nozzles microdose wastewater effluent onto highly absorbent textile filters at regular intervals, optimizing treatment.



### Ultraviolet Disinfection

Our optional UV unit reduces bacteria by 99.999%, allowing wastewater re-use for irrigation, toilet flushing, etc. It uses no chemicals and has no moving parts. The UV unit is protected in its own chamber inside the AX-RT and just needs a lamp replacement every other year.



### Smart Controls

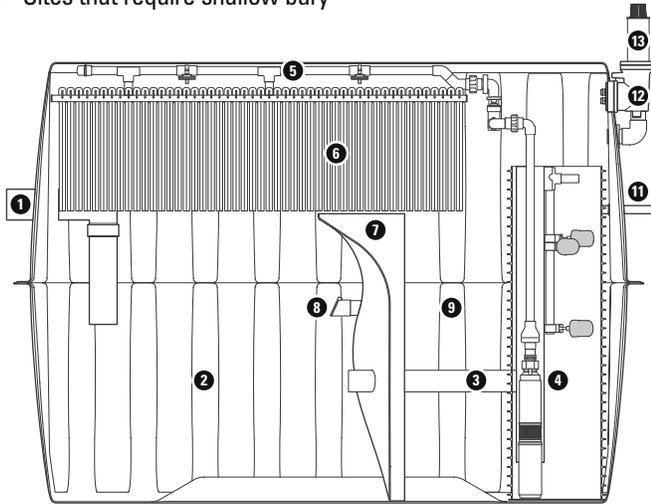
The AX-RT comes standard with Orenco's VeriComm™ remote telemetry control panel and monitoring system. That means service providers can oversee the system, from office or home. (Non-telemetry "smart" controls also available.)

# AdvanTex® AX-RT Treatment Systems

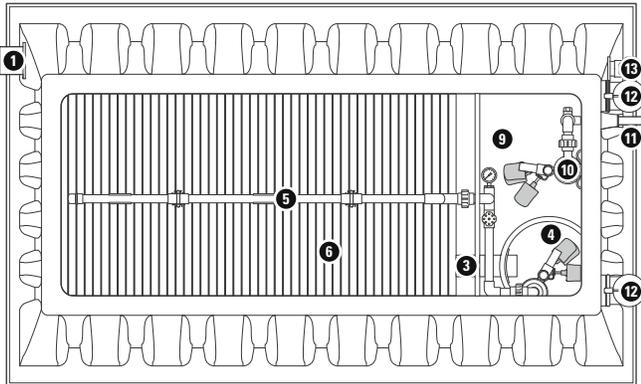
## Applications

Orengo's AdvanTex® AX-RT Treatment System is a single, complete, self-contained module that treats septic tank effluent to better than secondary standards with nitrogen reduction before discharging it by means of pump or gravity. It is ideal for:

- Repairs and retrofits
- Small sites and poor soils
- Sites that require shallow bury



AdvanTex AX-RT side view (AX20-RT pump discharge model shown)



AdvanTex AX-RT top view (AX20-RT pump discharge model shown)

## Components

- |                             |   |
|-----------------------------|---|
| 1 Inlet                     | 9 Recirc/filtrate chamber                               |
| 2 Recirc/blend chamber      | 10 Discharge pumping system (pump discharge only)       |
| 3 Recirc transfer line      | 11 Outlet   |
| 4 Recirc pumping system     | 12 Splice box   |
| 5 Manifold and spin nozzles | 13 Passive air vent                                     |
| 6 Treatment media           | 14 Biotube® effluent filter (in septic tank, not shown) |
| 7 Tank baffle               | 15 Control panel (not shown)                            |
| 8 Recirc return valve       |   |

## General

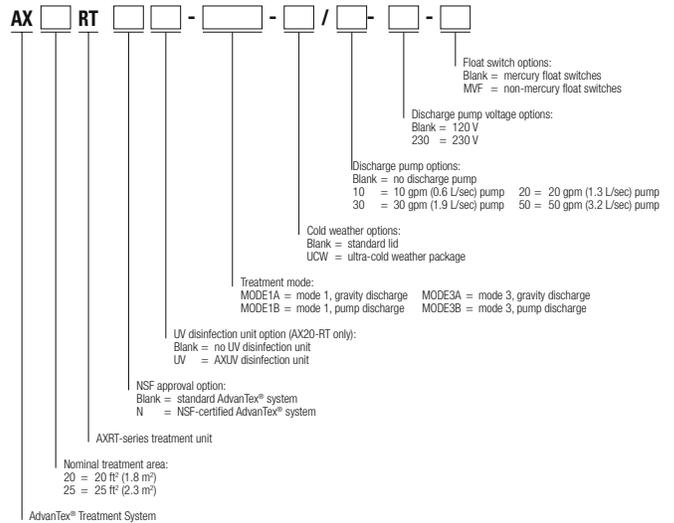
Following a septic tank equipped with a Biotube® effluent filter\*, the AdvanTex AX-RT unit eliminates the need for separate recirc, treatment, and discharge tanks by performing all functions within a single module. It also reduces the number of risers and lids needed in the treatment train. For sites requiring antibuoyancy measures, Orengo offers antifloatation kits with turnbuckles.

The heart of the system is the AdvanTex Recirculating Treatment Tank, a sturdy, watertight, corrosion-proof fiberglass tank that includes the same dependable, textile treatment media found in all AdvanTex products.

## Standard Models

AX20RT-MODE1A, AX20RT-MODE1B/10, AX20RT-MODE1B/30  
 AX25RT-MODE1A, AX25RT-MODE1B/10, AX25RT-MODE1B/30

## Nomenclature



## Physical Specifications

### Nominal Dimensions\*\*

Length, in. (mm)	102 (2591)
Width, in. (mm)	62 (1575)
Height, in. (mm)	72 (1829)
Overall unit footprint, ft² (m²)	44 (4.11)
Visible footprint after installation, ft² (m²)	20 (1.86)
Lid insulation value	R-6 (RSI-1.1)

Dry Weight	AX20-RT	AX25-RT
Gravity discharge model, lb (kg)	883 (400)	908 (412)
Pump discharge model, lb (kg)	923 (419)	948 (430)

\* Not to be sold individually in the state of Georgia.

\*\* Nominal values provided. See AdvanTex® Treatment System drawings for exact dimensions.



AdvanTex® Treatment System AX-RTN Models meet the requirements of NSF/ANSI Standard 40 for Class I Systems.