

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 (subject to local regulations)
- Small commercial properties
- New construction, repairs
- Tight lots, other site constraints
- Poor soils, shallow bury
- Stringent permit requirements
- Nitrogen reduction, disinfection
- Surface discharge



PROTECTING THE WORLD'S WATER

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AdvanTex - AX-RT Treatment System

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, high-quality effluent ... effluent that meets the most stringent permit limits and is ideal for subsurface irrigation and other water-saving uses.¹ 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.

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

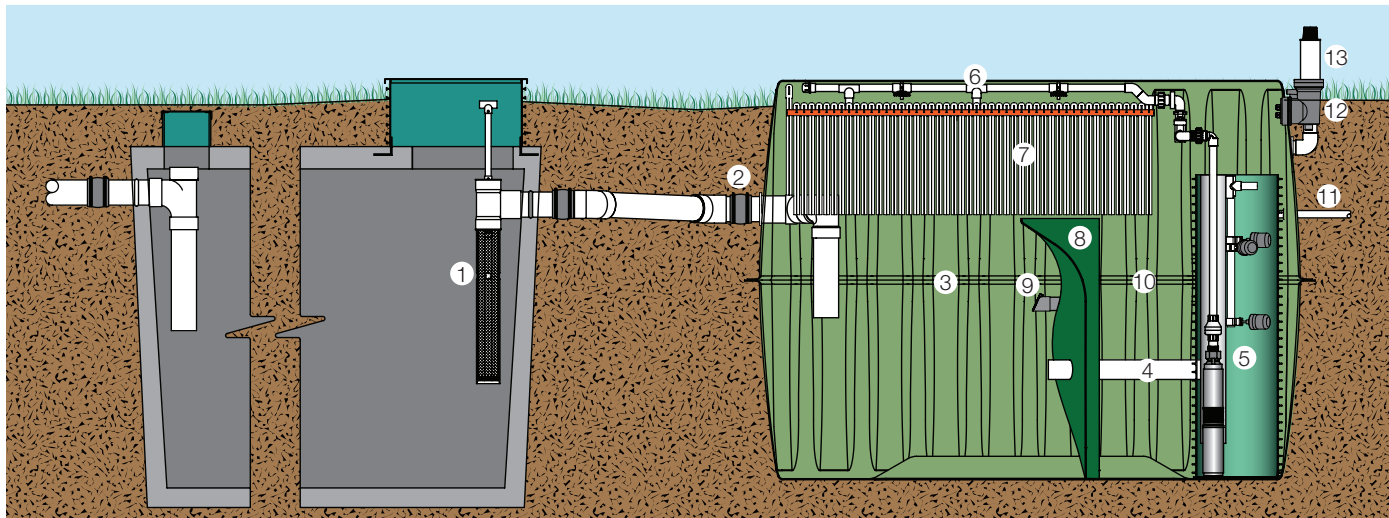
This compact design fits on small lots and reduces costs for excavation and installation. That means property owners can buy AdvanTex quality at a competitive price.



Since 2003, 116 AdvanTex Treatment Systems have been installed in Sunset Bay, a lakefront subdivision in northeast Tennessee, and 23 of these have been AX-RTs. According to **Arthur Helms, Helms Construction**, the RT's are "a lot easier to install. 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) |



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

AdvanTex - AX-RT Treatment System

Low Power Costs, Low Maintenance Costs

No blowers! The AX-RT is passively vented and uses only \$2-\$3 per month in electricity.² Other products can use anywhere from two to five times more!³ And the AX-RT is designed to be easily maintained with an annual service call, thanks to its accessible, cleanable filters and media. Its high-quality, high-head pumps last 20 years or more!⁴

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 \$200 or more.⁵

Consistent, Reliable Performance

Stringent testing programs consistently show that AdvanTex Treatment Systems produce effluent with BOD₅/TSS at or below 10 mg/L and nitrogen reduction of 60-70+%.⁶ In fact, the Maryland Department of the Environment has approved AdvanTex as a Class I, field-verified technology under the state's Best Available Technology program.⁷



¹ NSF® International Standard 40 Evaluation Report, April 2002 (evaluation performed by NovaTec Consultants, Inc.)

² Assumes electricity costs of \$0.10 per kWh and 3-4 occupants

³ Maryland's "Bay Restoration Fund Ranking Documentation," <http://mde.maryland.gov/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Documents/BAT%20Ranking%20Document.pdf>

⁴ As seen in the Elkton, Oregon, sewer system.

⁵ Maryland's "Bay Restoration Fund Ranking Documentation."

⁶ NSF International Standard 40 Evaluation Report, April 2002 (evaluation performed by NovaTec Consultants, Inc.)

⁷ Maryland's "Bay Restoration Fund Ranking Documentation."

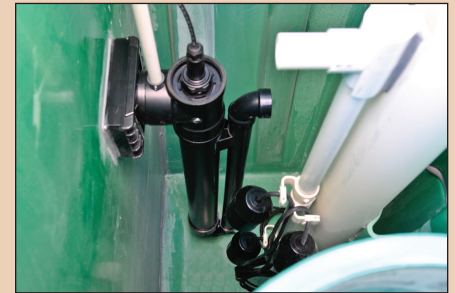
The AdvanTex Advantage:

- Reliable, reputable
- Clear, reusable effluent
- No blower; minimal odor
- Complete "plug & play" package
- Easy to install and maintain
- Energy-efficient
- Competitively priced
- For 1-6 bedroom homes



Textile Treatment Media

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



Ultraviolet Disinfection

Adding our optional UV unit reduces bacteria by 99.999%,⁸ allowing wastewater reuse for irrigation, toilet flushing, etc. (subject to local regulations). 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 yearly.



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.)

⁸ Report prepared by NSF International, March 2015

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Carefully Engineered by Orenco

With a deep respect for the environment and a long tradition of innovative problem-solving, Orenco designs and builds the world's best decentralized wastewater systems with pride in Southern Oregon. Our products help ensure the health and safety of people, neighborhoods, and communities everywhere by protecting the world's water.

We maintain an environmental lab and employ dozens of civil, electrical, mechanical, and manufacturing engineers, as well as wastewater treatment system operators. Orenco's technologies are based on sound scientific principles of chemistry, biology, mechanical structure, and hydraulics.

Founded in 1981, Orenco has become an industry leader, with about 400 employees and some 330 points of distribution around the world. Our systems have been installed in more than 70 countries.



AdvanTex Treatment Systems are listed to NSF-ANSI Standards 40 and 245 for Class I Systems.



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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 325 AX-RTs, mostly for Maryland's aggressive nutrient-reduction program. The state 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 BOD₅/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

A North Carolina homeowner had a conventional septic system with a drainfield that dispersed into poor soils. When the drainfield failed, the lot was too small to put in a new one, and sewer service wasn't available. The concerned homeowner contacted Kevin Davidson, an engineer with Agri-Waste Technology. He suggested the installation of an AdvanTex AX20-RT unit with UV disinfection. This treatment combination was designed to meet permit limits (< 30 mg/L BOD₅ and TSS; < 200 cfu/mL fecal coliform) without requiring a new drainfield.



Photo courtesy of Kevin Davidson

Davidson was able to use the existing septic tank, and the RT's configuration further reduced costs by eliminating the need for a discharge tank, separate UV basin, and several risers and lids. On the O&M side, he appreciated having the UV sensors integrated into the control panel, especially the one that allows service providers to know the bulb is working without having to pull it out. Said 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."

For More Information

For a quick explanation of how AdvanTex Textile Filters work, go to www.orenco.com/corporate/technical_resources/videos.cfm and watch the video called "How the AdvanTex System Works."