The LEED Platinum Audubon Center at Debs Park in Los Angeles uses several compact AdvanTex® AX20 Wastewater Treatment Systems (inside circle drive) to produce re-usable effluent.
Environmental Profile
AdvanTex® Wastewater Treatment Systems - Manufactured by Orenco Systems® Inc.

Background
Many designers, builders, and homeowners want to choose products for residential and commercial construction that reduce their projects’ impact on the environment. Wastewater treatment products are no exception. The need for environmentally sound wastewater treatment products is especially great on environmentally sensitive building sites, small sites, isolated sites, sites with high groundwater, and sites with inadequate infrastructure. Orenco’s AdvanTex® Treatment Systems are an environmentally sustainable wastewater treatment technology for both residential and commercial applications.

Product
Orenco’s AdvanTex Treatment System is a compact, pre-packaged product for onsite treatment of wastewater to very high (“advanced”) treatment levels.

Onsite Treatment & Dispersal
Excellent treatment: AdvanTex Treatment Systems consistently achieve effluent quality equal to or better than that provided by municipal treatment plants. (AdvanTex effluent averages 5 mg/L or less BOD and TSS when loaded at the same hydraulic loading rate used during NSF Standard 40 testing.) The effluent is ideal for further treatment for nonpotable re-use.

Water conservation: Onsite treatment and dispersal allows for subsurface irrigation and reuse applications. It also recharges the local aquifer, replenishing water resources.

Energy Efficiency & Sustainability
Energy efficiency: Pumps that recirculate effluent to AdvanTex AX20 Residential Treatment Systems rarely exceed 1/2 hp and only run about 30 minutes per day. Pumps for AdvanTex AX100 Commercial Treatment Systems rarely exceed 1 hp. Consequently, power usage for treatment is very low, especially compared with power usage for blowers in suspended-growth treatment systems.

Long pump life: The pumps used in AdvanTex Treatment Systems have an expected life of 20-30 years, far longer than other pumps, especially grinder pumps. Orenco’s pumps can be easily disassembled and have a repairable liquid end, making total pump replacement unnecessary in most cases.

Each commercial-sized AdvanTex® AX100 Treatment System can treat 5,000 gpd of domestic strength wastewater to “advanced” standards, using only 3 kWh of electricity per 1,000 gallons.
Background
The Leadership in Energy and Environmental Design (LEED) Green Building Certification (GBC) for new building and major renovation is an important accreditation for today’s environmentally aware engineers, designers and builders. With increasing interest in environmental sustainability and efficiency, more builders and renovators are seeking LEED Certification for their projects. Orenco’s AdvanTex® Treatment Systems can help you gain LEED GBC.

Energy & Atmosphere
**EA Credit 1: Optimized Energy Performance:** Pumps that circulate effluent to AdvanTex Treatment Systems rarely exceed 1/2hp for residential systems and 1hp for commercial systems; run for just minutes per day; and use far less energy than aerobic blowers.

**EA Credit 2:** On-site Renewable Energy: Off-grid solar panels have been used to power Orenco’s low-horsepower (1/2 hp) recirculation pumps, like the ones used at the LEED-Platinum-certified Audubon Education Center at Debs Park, in Los Angeles.

Water Efficiency
**WE Credit 1: Water Efficient Landscaping:** Subsurface irrigation using treated effluent from an AdvanTex Treatment System can reduce the use of potable water for irrigation.

**WE Credit 2: Innovative Wastewater Technologies:** An AdvanTex Treatment System with onsite soil dispersal helps recharge the local aquifer. After tertiary treatment, water from an AdvanTex Treatment System can be reused, saving potable water for other beneficial uses.

Sustainable Sites
**SS Prerequisite 1: Construction Activity Pollution Prevention:** AdvanTex Treatment System pods are smaller than many wastewater filtration systems, so they require smaller equipment to transport and install, which uses less energy. The installation of AdvanTex Treatment System pods also requires minimal digging, so soil disturbance, soil erosion, and dust are reduced.

**SS Credit 5.2: Maximize Open Space:** When combined with a neighborhood collection system, AdvanTex Treatment Systems enable developers to cluster homes more closely together than is possible with typical septic systems. This creates a development footprint that allows for a high ratio of open space to development, which promotes biodiversity.

Innovation & Design
**ID Credit 1: Innovation in Design:** AdvanTex Treatment Systems can be a key feature in designs exceeding performance standards set by the LEED for New Construction Green Building Rating System, and also in areas of innovative performance not specifically addressed by LEED.
Energy Efficient Wastewater Treatment

Environmentally-aware consumers and housing industry professionals seek residential wastewater treatment systems that consume a minimum of electricity yet consistently produce treated water that is available for re-use. Long-term field trials in both the United States and overseas have proven that Orenco’s AdvanTex Treatment System uses significantly less electricity than other wastewater systems, while providing exceptionally high performance.\(^1\)

Because it is a “media filter” instead of an “suspended growth” treatment system, AdvanTex uses very little power—about 173 kWh per year. By way of contrast, some suspended growth systems use more than 5,000 kWh per year. That’s because the pumps that circulate effluent to residential AdvanTex Treatment Systems rarely exceed 1/2 hp and run for just minutes per day, using far less energy than the aerobic blowers required for aeration of suspended growth systems.

The graph below shows how the annual power cost and usage of AdvanTex compares to some of the other types of residential wastewater treatment systems, based on manufacturer’s published information on power consumption (and a U.S. average electrical cost of $0.10/kWh).

**Annual Power Costs of Residential (500 gpd) Wastewater Treatment Systems**

<table>
<thead>
<tr>
<th>Residence Wastewater Treatment System</th>
<th>Annual kWh Consumption</th>
<th>Annual Electrical Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdvanTex®</td>
<td>254(^1)</td>
<td>$254</td>
</tr>
<tr>
<td>Whitewater®</td>
<td>262(^1)</td>
<td>$263</td>
</tr>
<tr>
<td>MicroFAST®</td>
<td></td>
<td>$517</td>
</tr>
<tr>
<td>Jet®</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the above graph shows, consumers can save up to $500/year by investing in an energy efficient wastewater system. The energy savings of an AdvanTex system over even a moderately energy-intensive suspended growth system like MicroFAST is significant, more than 2455 kWh/year ($245).

As shown by the table below, the energy savings of an AdvanTex system over some of the less energy-intensive suspended growth systems are considerably higher than the savings consumers could accrue from replacing older appliances with more energy-efficient household products.\(^3\) Bottom line: designers of residential wastewater systems should always factor annual power costs into their specifications.

<table>
<thead>
<tr>
<th>Household Products</th>
<th>kWh Savings/Year</th>
<th>$ Savings/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>AdvanTex®</td>
<td>~ 2,455 kWh(^4)</td>
<td>~ $245</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>~ 1,500 kWh</td>
<td>~ $150</td>
</tr>
<tr>
<td>Clothes washer</td>
<td>~ 298 kWh</td>
<td>~ $ 30</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>~ 217 kWh</td>
<td>~ $ 22</td>
</tr>
</tbody>
</table>


\(^2\) Based on information published in manufacturer’s literature.

\(^3\) Source: www.energystar.gov Web site, March, 2010

\(^4\) As compared to a moderately energy-intensive suspended growth filter, like MicroFAST.