

Wastewater Solutions

Affordable Wastewater Treatment Solutions from Orenco Systems[®] Inc.

As supplies of fresh water become increasingly scarce, methods of recycling and reusing this vital resource are getting more attention than ever before. Orenco's AdvanTex[®] Treatment Systems consistently produce clear effluent that meets the most stringent permit limits. This effluent is suitable for a variety of reuse applications (governed by local regulations) including irrigation, toilet flushing, industrial cooling, and car washing. With a 15-year track record, the AdvanTex textile filter is a proven technology that not only treats greywater to reuse levels, but is also ideal for treating residential or commercial wastewater.



Photo courtesy of Ron Kindig, San Luis Obispo Botanical Garden

Two AdvanTex[®] units with small footprints provide effluent that is reused for irrigation at the San Luis Obispo Botanical Garden.

San Luis Obispo Botanical Garden, California

In addition to its focus on horticulture, education, and research, the San Luis Obispo Botanical Garden strongly emphasizes sustainability. So it's no surprise that the Garden's education and administration building earned LEED Gold certification. Large windows on south-facing walls let in sunlight for winter heating. Shelving, counters, and cabinets all contain recycled materials. And effluent from the garden's wastewater treatment facility is used for subsurface drip irrigation.

Designed as a training opportunity for Cal Poly engineering students, the treatment facility has a 15,000-gallon (56.8-m³) septic/equalization tank, followed by three types of secondary treatment: a 980-ft² (91-m²) subsurface wetland, a 500-ft² (46-m²) sand filter, and an AdvanTex[®] Treatment System. With by far the smallest footprint, the AdvanTex system consists of two AX20 units – each occupying just 20 ft² (1.8 m²) – and a 2,000-gallon (7.8-m³) recirculation tank. The system can treat up to 1,600 gpd (6.1 m³/day), compared to the sand filter's maximum of 1,250 gpd (4.7 m³/day) and the wetland's maximum of 1,000 gpd (3.8 m³/day).

Design Considerations for REUSE APPLICATIONS

Wastewater treatment systems designed for reuse applications need to meet permit limits specific to their particular city, county, or state. As water conservation has become a higher priority, more and more jurisdictions are aligning their requirements with NSF/ANSI 350 standards for on-site water reuse.

Orenco's AdvanTex[®] Treatment Systems use a multi-pass, packed-bed filter technology that's ideal for handling highly variable flows and is also inherently more stable than suspended-growth activated-sludge systems. A more stable process means greater reliability, lower operation and maintenance requirements, and greater confidence in meeting permit limits.

AdvanTex Treatment Systems consistently produce outstanding effluent that can be reused in a variety of ways, depending on local regulations. For a copy of Orenco's AdvanTex Design Criteria, call 800-348-9843 or +1 541-459-4449.

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At Cedar Springs Apartments, high-quality effluent from an AdvanTex AX-Max™ is reused for toilet flushing and irrigation.

On-site AdvanTex wastewater treatment and reuse is an important part of the overall sustainability of the award-winning Ecovillage.

Cedar Springs Apartments, La Verne, California

The Ecovillage at Currumbin, Queensland, Australia

For the owners of the Cedar Springs Apartments in La Verne, California, sustainable building practices are an important part of an overall development strategy that includes more than forty properties in and around Los Angeles. That's why they worked with Biohabitats, an ecologically focused design firm, on this new affordable housing community. The firm recommended an AdvanTex AX-Max unit for the job of treating greywater from residents' bathroom sinks, tubs, and showers. The high-quality effluent is then reused for toilet flushing and drip landscape irrigation.

One of the most award-winning developments in Australia is the Ecovillage at Currumbin in Queensland. The key features of this 21st-century development are sustainability and a real sense of community. The ecovillage includes 147 home lots, a café, and a large community center with a swimming pool, kitchen, library, and playground. Project developers were especially pleased to receive the Prix d'Excellence (Prize of Excellence) Award from the International Real Estate Federation as the 2008 "World's Best Environmental Development."

The housing complex consists of 36 one-, two-, and three-bedroom apartments. Start-up for the property's AX-Max treatment system was in early 2016 and the unit handles an average daily flow of 2,600 gpd (9.8 m³/day), with a maximum of 5,300 gpd (20.1 m³/day). If the owners ever want to expand the development, another AX-Max can easily be installed to accommodate the increased flows.

The ecovillage's wastewater treatment facility is a vital part of its overall sustainability. Six AdvanTex AX100s treat an average daily flow of 15,000 gpd (57 m³/day) – of both blackwater and greywater – and can handle up to 30,000 gpd (114 m³/day). Final effluent quality (after membrane filtration, UV disinfection, and chlorination) has averaged 3.4 mg/L BOD₅ and 2.1 mg/L TSS.* This high-quality effluent is reused for toilet flushing, car washing, and laundry, helping residents reach their goal of water self-sufficiency.

Kauri Cliffs Resort, Northland, New Zealand

* Samples collected and analyzed by a third party between 12-11-07 and 6-24-13.

Kauri Cliffs, an exclusive Relais & Châteaux golf and spa resort on New Zealand's North Island, had some serious wastewater issues. Its activated-sludge treatment plant was producing low-quality effluent, and unpleasant odors wafted over the chalets. For an award-winning resort, this was a huge problem.

Emirates Wolgan Valley Resort, New South Wales, Australia

Management began looking for a new wastewater treatment system that would minimize odors, provide excellent treatment, and blend into the landscaping. Innoflow Technologies, NZ, worked with resort owners on system design and then installed six AdvanTex AX100 treatment pods. As of August 2014, effluent quality averaged 6 mg/L cBOD₅, 3 mg/L TSS, and 1 mg/L NH₃-N.* As a further bonus, the resort is able to use the wastewater effluent for drip irrigation.

Emirates Wolgan Valley is a luxury resort on a 7,000-acre (2,800-ha) conservation reserve in the Greater Blue Mountains World Heritage Area. Designed to minimize its environmental impact on the surrounding wilderness, the resort combines deluxe accommodations with a uniquely Australian bush experience that emphasizes sustainability.

After consulting with Innoflow Technologies, an Auckland-based Orenco distributor, the resort chose to install twelve AdvanTex AX100 units to treat wastewater flows that average 26,400 gpd (100 m³/day), with peaks to 34,300 gpd (130 m³/day). This low-maintenance system provides excellent treatment with minimal energy usage. Wastewater passes through primary and secondary treatment, followed by UV disinfection. The high-quality effluent is used to irrigate pastures and gardens.

* Samples collected between 9-10-10 and 8-28-14.

Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of September, 2016.

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