

# Wastewater Solutions

## Affordable Wastewater Treatment Solutions from Orenco Systems®, Inc.

Wastewater projects for hotels and resorts have one thing in common – they require a highly effective wastewater treatment system despite variable seasonal flows. Orenco's wastewater equipment has been installed in about 125 hotels and resorts around the world. Whether the project requires exceptional treatment, odor control, rapid deployment, minimal operation and maintenance, low life-cycle costs, or all of the above, Orenco's treatment systems are a proven, affordable solution for the hospitality industry.



*Daniels Summit Lodge in Utah, USA, attracts outdoor enthusiasts year-round. This beautiful mountain location installed an AdvanTex wastewater treatment system to accommodate a restaurant expansion. Photo courtesy of Daniels Summit Lodge.*

### Daniels Summit Lodge, Utah, USA

#### *New system facilitates restaurant expansion*

Daniels Summit Lodge in Utah is a mountain resort surrounded by the majestic Uinta National Forest. As with most resorts, flows at this property fluctuate greatly – from 500 gpd (1.9 m<sup>3</sup>/d) up to 13,000 gpd (49.2 m<sup>3</sup>/d) over short durations. In 2006, resort management wanted to expand the restaurant. However, the wastewater system was already unable to accommodate high-flow days, let alone the increased loading from an expansion. The property needed a treatment system that could provide excellent results despite widely varying flows, clay soils, shallow groundwater, and extreme temperatures.

The Lodge installed an AdvanTex Treatment System – the first in Utah – which included six AX100 treatment units. The new system's performance and capacity allowed management to complete its restaurant remodel. As of December 2013, BOD<sub>5</sub> was averaging 9 mg/L, with TSS and TKN of 7.4 and 4.3 mg/L, respectively.

### DESIGN CONSIDERATIONS FOR HOTELS & RESORTS

Hotel and resort properties require wastewater systems that can start up quickly and handle highly variable flows. Moreover, systems must also operate quietly, produce no noticeable odor, and blend into the landscaping.

Orenco's AdvanTex® Treatment Systems use a multi-pass, packed-bed filter treatment technology that is well-suited for hotel and resort applications. AdvanTex offers more process stability and more consistent effluent quality than conventional activated sludge systems, which are difficult to operate part-time, especially with inconsistent influent.

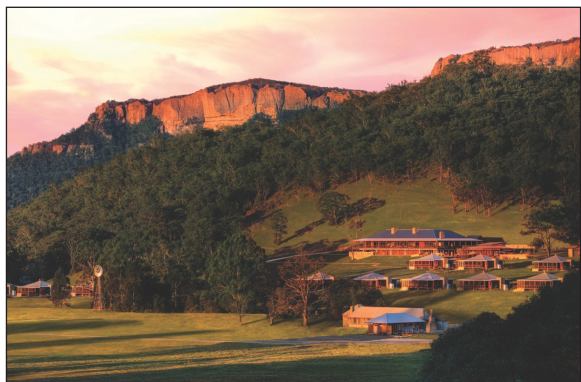
AdvanTex systems are also environmentally sustainable. They use little power (< 3 kWh per 1,000 treated gallons or 3,785 L) and, depending on local regulations, AdvanTex effluent can be reused for subsurface irrigation.

To request a copy of Orenco's AdvanTex Design Criteria, call 800-348-9843 or +1 541-459-4449.

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## CUSTOM SOLUTIONS FOR HOTELS & RESORTS

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Emirates Wolgan Valley Resort and Spa, an eco-resort in Australia, chose a low-impact AdvanTex system to meet the needs of its environmentally sensitive site. Effluent is disinfected and used for irrigation. Photo courtesy of Emirates Wolgan Valley Resort and Spa.



When their wastewater treatment system failed, the St. Constantin Village Hotel installed an innovative AdvanTex system to meet the hotel's space constraints. Photo courtesy of St. Constantin Village Hotel.



Kauri Cliffs, an award-winning Relais & Chateaux golf resort in New Zealand, replaced its failing activated sludge plant with an AdvanTex wastewater treatment plant, eliminating unpleasant odors in the process. Photo courtesy of Kauri Cliffs.

#### Emirates Wolgan Valley Resort and Spa, Australia *Eco-resort chooses sustainable treatment*

Emirates Wolgan Valley is a luxury resort located in the Greater Blue Mountains Heritage Area between two national parks. The resort was designed to limit its environmental impact on this pristine wilderness area and, as a result, describes itself as “Australia’s most environmentally responsible tourist destination.”

After discussions with Innoflow Technologies, an Auckland-based Orenco distributor, the resort installed twelve AdvanTex AX100 filter pods to treat wastewater flows that average 26,417 gpd (100 m<sup>3</sup>/d), with peaks to 34,342 gpd (130 m<sup>3</sup>/d). This low-impact, low-maintenance system provides excellent treatment with minimal energy usage. Wastewater passes through primary and secondary treatment, followed by UV disinfection. The resulting effluent is used to irrigate pastures and gardens, furthering the resort’s environmental goals.

#### St. Constantin Village Hotel and Suites, Greece *Innovative design overcomes space constraints*

The St. Constantin Village Hotel and Suites in Gouves, Crete, had a major wastewater problem. The 101-room facility’s aerobic treatment system had failed, and an odorless alternative was needed that could fit on the resort’s very compact site.

The hotel’s wastewater engineer, Dialynas S.A., designed a highly innovative interior system. Then a recirculation tank was installed and a room was built above the tank to hold six AdvanTex AX100 treatment units. These units were installed right next to guest rooms, while the septic tanks feeding the system were under the poolside lounge. Consequently, odor control was critical. Finally, the walls and stairs were rebuilt and the resort was able to open. Sampling done in January 2013 showed effluent quality averaging 9 mg/L and 11 mg/L BOD<sub>5</sub> and TSS, respectively.

#### Kauri Cliffs, New Zealand

##### *Odorless treatment for an ultra-luxe resort*

Kauri Cliffs, an ultra-luxe golf and spa resort on New Zealand’s North Island, was confronting serious wastewater issues. This award-winning resort had an activated sludge treatment plant that was producing low-quality effluent and unpleasant odors that blew over the resort’s chalets.

Management began looking for a new system that would eliminate odors, provide excellent treatment, and blend into the landscaping. Innoflow Technologies, NZ, worked with the owners on system design and installed six AdvanTex AX100 treatment pods. After installation, General Manager Kerry Molloy was impressed with the system’s aesthetics and performance: “I could not be happier with the actual visual impact of the installation. So far, (I) have not managed to sniff even the faintest odor, and this is the first time I can say this in quite a few years.” As of May 2014, effluent quality was averaging 6 mg/L cBOD<sub>5</sub> and 4 mg/L TSS, with TN of 12 mg/L and NH<sub>3</sub>-N of 1 mg/L.

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