CASE STUDY

An Affordable Wastewater Treatment Solution for Commercial Properties

BIN TO BOTTLE, NAPA, CALIFORNIA

Problem A growing custom-crush winery needed a pretreatment system that could handle highly variable flows of high-strength process wastewater.

Solution After primary treatment with aeration to knock down BOD_5, a secondary system based on Orenco's modular AdvanTex® technology provides reliable process water treatment regardless of flows.

Pretreatment System Accommodates Highly Variable Flows

Bin to Bottle is a custom-crush winery in Napa, California. Four partners with backgrounds in winemaking and hospitality started the company after seeing a need for a custom-crush winery independent of any existing label. Within a year, their initiative was rewarded with rapid growth. Today Bin to Bottle has state-of-the-art crushing, fermentation, barrel storage, and bottling equipment that can process 2200 tons of grapes per year.

An AdvanTex® Treatment System specifically designed for wineries pre-treats the process water before it's discharged.

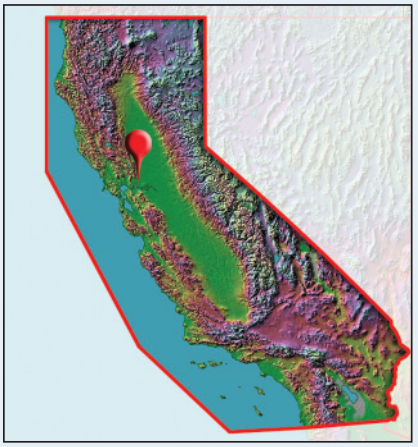
As at any winery, washing all that equipment takes a lot of water. The high sugar content of the resulting wastewater is a burden on treatment systems. To minimize capacity charges from Napa Sanitation District, Bin to Bottle needed a pretreatment system to lower the BOD_5 of the wastewater before it was discharged to the municipal sewer system.

This pretreatment system would face unique challenges. Because Bin to Bottle provides services for many different vineyard clients, it has longer crush and bottling periods than a typical winery would have (three months in the fall for crush, three months in the winter for bottling). Flows are highly variable, and during the peak seasons, the facility would have to be able to treat an average of 2000 gpd of high-strength process waste.

Commercial Market

Project Overview

NAPA, CALIFORNIA



Pre-Treatment Design Parameters
- Design flow: 1500 gpd
- Peak flow: 2500 gpd
- Required effluent BOD_5: 365 mg/L
- Required effluent TSS: 180 mg/L

Pre-Treatment Effluent Quality*
- BOD_5: 98 mg/L
- TSS: 63 mg/L

Primary Treatment
- Five 5000-gal tanks
- VBT Aeration
- pH adjustment
- Bioaugmentation

Secondary Treatment
- One 5000-gal recirculation tank
- Three AdvanTex AX100 pods
- One 1000-gal discharge tank

** Samples collected and analyzed by a third party between 10/25/06 and 9/30/09.*

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Delta Consulting & Engineering (www.deltacivil.com) designed Bin to Bottle's process water treatment system, and Applied Civil Engineering (www.appliedcivil.com) provides ongoing engineering assistance. First, water from the floor drains is collected in five 5000-gallon primary treatment tanks. To pre-treat the wastewater prior to the secondary treatment process, two VBT300 aerators oxygenate the waste in the primary tanks. These aerators produce high volumes of very small Vacuum Bubbles® that remain suspended in the liquid instead of rising to the surface, dissolving as much oxygen as possible in the water. In this application, the process has proven to be energy-and cost-efficient in reducing BOD_5. Equipment from Heritage Systems Inc. (www.heritagesystemsinc.com) provides pH adjustment and bioaugmentation.

Next, the treated effluent goes to a 5000-gallon recirculation tank, where it is dosed to an array of three AdvanTex AX100 treatment pods. In the AdvanTex system, effluent trickles over curtains of an engineered synthetic fabric, creating a stable environment that is ideal for the growth of both anaerobic and aerobic microorganisms. The high internal surface area of this fabric allows treatment to take place in a fraction of the area that other filter media require. Because of its recirculating design and the robust attached-growth treatment environment, the AdvanTex system provides effluent treated to a consistent level, regardless of extreme fluctuations in wastewater flows.

The system was installed by Nielson Construction (www.nielsoninc.com). Because of the modular nature of the AdvanTex system, Bin to Bottle was able to start operations with a single AX100 pod. As the business grew, a second and third pod were added to accommodate increased wastewater volume. The system now accommodates design flows of 1500 gpd, with peak flows of 2500 gpd.

Orenco Systems trained Bin to Bottle employees to operate the system and has worked with them to optimize treatment quality. Composite samples are taken weekly to assess treatment performance. Currently, the system reduces the BOD_5 and TSS of the wastewater to an average of 98 mg/L BOD_5 and 63 mg/L TSS.

Commercial Market

Two dozen California wineries are now using Orenco's state-of-the art AdvanTex® Treatment System to treat — and in many cases reuse — their process wastewater.

For more information about effluent sewers, Orenco Sewers™ and AdvanTex® Treatment Systems, contact Orenco Systems®, Inc.

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Data used by Orenco to derive the representations and conclusions contained within this Case Study were current as of January, 2010.