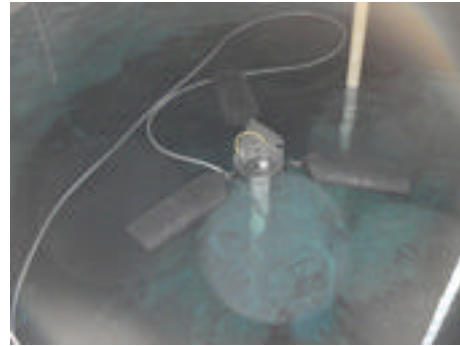


Key Words: recycled water, stratification, odors, water reuse sludge



Photos: First photo shows one of the recycled water storage tanks during SolarBee installation; second photo shows the SB1250PW-v12 collapsible unit in the tank.

Reservoir or Lake Use: The city maintains five (5) recycled water tanks at five (5) pressure zones for recycled water storage and distribution. Four (4) of these are above-ground steel tanks, and the fifth is a partially-buried concrete reservoir. Water used for recycling is secondary wastewater effluent produced at the city's Water Reclamation Plant (WRP). Recycled water is used primarily for irrigation at golf courses, cemeteries, medians and parks, as well as in dual-plumbed toilet facilities.

System Overview and Reservoir: The city has 5 recycled water storage tanks at widely varying elevations to serve over 70 recycled-water customers. Recycle tank volumes range from 128,000 to 304,000 gallons.

Reported Problem Before SolarBee Installation: The WRP treats recycled water to meet secondary effluent standards, which still has significant biochemical oxygen demand (BOD) leaving the plant. The storage tanks had a history of long detention times that resulted in noxious odors. Long water age, together with thermal stratification of the water column, promoted anoxic conditions and the build up of sludge (biosolids) at the bottom of the tanks. SolarBee objectives were to thoroughly mix the tank water to prevent stratification, distribute dissolved oxygen (DO) throughout the water column, and control odors.

SolarBee Installation: Dates: May 2006, one (1) SB1250PW-v12 was installed in one tank; December 2006, four (4) additional SB1250PW-v12 units were installed in the remaining tanks. All of the city's recycled water storage tanks are now equipped with SolarBees. Some units were the collapsible model capable of going through a 24" diameter hatch size; others were the standard model that requires at least a 26" x 26" hatch.

Results: The city's recycled system is operating very well. In each tank a SolarBee circulates 100% of the water volume once a day or less, and thermal stratification and odor complaints have been eliminated. Periodic monitoring indicates increased DO concentrations and the aerobic digestion of remaining BOD. Sludge production has greatly diminished, and the city has noted a decrease in the amount of chlorination required. The SolarBee installation and service crew earned high marks from the city for their diligence, professionalism and resourcefulness in the face of installation challenges. The city has been very pleased with the SolarBees' ability to keep tank water well mixed and prevent odors.

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