

Australian Golf Course Recycles Municipal Wastewater with Onsite ZeeWeed MBR

Application: ZeeWeed* MBR for wastewater reuse

Location: Beecroft, New South Wales, Australia

Capacity: 650 m³/day (172,000 gpd)

Commissioned: March, 2008

Challenge

More than a decade of drought in south east Australia, the worst on record, has severely stressed water supplies and raised major concerns about the sustainability of the region's water reserves.

Amid the drought, severe water restrictions were imposed for more than four million residents in the Greater Sydney area. Major cuts to irrigation were also considered at agricultural lands, parks and golf courses to conserve supplies.

For Pennant Hills Golf Club, one of Sydney's championship golf courses, watering restrictions limited its monthly use to 20,000 m³ (5.3 million gallons), an amount that was well short of its requirements during the dry summer months. The ongoing drought conditions and watering restrictions posed a continuous threat to the sustainability of the business.

With regional reservoirs down to 20 percent capacity and years of above average rainfall needed to replenish these water reserves, Pennant Hills Golf Club needed to look beyond conventional water sources to ensure that it would have a consistent, reliable supply.



Solution

Pennant Hills Golf Club began working with GE Water & Process Technologies to find a solution to its escalating water worries. GE's broad portfolio and global experience helped the golf club find a new untapped water source that flowed right beneath the fairways of the course itself.

The first of its kind for Australia, GE's solution would tap into a municipal sewer line and withdraw wastewater as the source of a new, drought-proof water supply for the golf club.

The team began plans for design and construction of the sewer mining operation and water reclamation plant and within nine months the system was operational. Today, an advanced ecomagination-certified ZeeWeed Membrane Bioreactor (MBR) system transforms previously unusable wastewater into sustainable, high quality water for irrigating the club's greens, fairways and gardens.

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Located along the 10th fairway, the water recycling plant is capable of treating up to 650 m³ (172,000 gallons) per day and recovers 98 percent of the water from the waste stream. A separate plumbing system directs Class A recycled water—the nation’s highest standard—to sprinklers throughout the property.

Discretely placed among trees and gardens, and partially buried in an embankment, the plant operates quietly, produces virtually no odor, and is barely noticed by club members.

The advanced system combines ZeeWeed hollow-fiber ultrafiltration membranes with biological wastewater treatment to remove nutrients and virtually all suspended particles. Chlorine and ultraviolet light provide final disinfection before the water is sent to a storage tank.

The high quality effluent meets or exceeds the world’s highest standards for water reuse, including Australia’s Class A Recycled Water Standard.

Results

In May 2008, GE awarded Pennant Hills Golf Club with an ecomagination Leadership Award for its innovative approach to solving its water scarcity challenge and for reducing its demand on the municipal potable water supply.

By reclaiming high quality effluent from municipal wastewater, Pennant Hills Golf Club now has a drought-proof supply of water for its irrigation needs. The new water source also enables the golf course to dramatically reduce its use of municipal potable water and conserve as much as 94,600 cubic meters (25 million gallons) of water per year.

To celebrate Pennant Hills Golf Club’s environmental leadership, GE also supplied over 1,800 members with a compact fluorescent light bulb. Using up to 75% less energy and lasting up to 10 times longer than regular bulbs, the annual energy savings from the CFL bulbs equals the approximate energy consumption of the new plant—making the Pennant Hills Water Reclamation Plant virtually carbon neutral.

