

MOLEAER NANOBUBBLES BRING CLARITY AND A BREATH OF FRESH AIR TO PALM SPRINGS GOLF COURSE

The city of Palm Springs, California, is famous for its warm weather and more than 100 meticulously designed golf courses. This desert paradise, located in the southwest corner of the United States, also boasts over 1,000 ponds, lakes, and ornamental bodies of water. The responsibility for maintaining many of these ponds can be a daunting one - ensuring that they stay in pristine condition all year-round for the residents, club members, and resort guests. Unfortunately, golf course ponds are prone to nutrient run-off which can create numerous challenges for maintenance companies.

One such challenge was with a two-million gallon pond located on a private golf course. The clarity of the water was very poor and unpleasant odors emanated from certain areas of the pond as a result of insufficient circulation. The maintenance company was further challenged because the project's requirements excluded the use of conventional aerators for aesthetic reasons, and diffusers because of their localized effect and poor mixing capabilities. Other options, such as blowers equipped with diffusers, would also require extensive submerged piping systems that are both labor and capital intensive.

Client:
Private Pond Maintenance Company, Palm Springs, California

Type:
Aquatic Management - Golf Course Pond

Unit Type:
200 GPM

Installed:
July 2017

Benefits:
Increased DO by 60%
Improved Water Clarity by 42 inches (1 meter)

Pond Size:
2 Million Gallons



Moleaer's nanobubble generator saturates the feeder tank with nanobubbles before being dispersed into the irrigation system.



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Moleaer's nanobubble generator presented a cost-effective and simple-to-install solution to deliver a supplementary source of oxygen-enriched nanobubbles throughout the entire pond. Moleaer's nanobubbles are neutrally buoyant, enabling them to remain in suspension and aerate the entire water column from top to bottom. Once installed at the Palm Springs golf course, the nanobubble generator quickly delivered oxygen to all reached of the pond and within the first week, the pond's water clarity improved dramatically, and foul odors were eliminated. Below is a timetable representing the pond's dissolved oxygen (DO) levels and depth of water clarity measured with a Secchi disk.

Date	Clarity Depth	DO level at bottom	Average DO concentration
July 11, 2017	18 inches (0.46 meters)	2.5 mg/L	3.5 ppm
July 13, 2017	200 GPM Moleaer Nanobubble Generator is installed		
August 1, 2017	30 inches (0.76 meters)	4.9 mg/L	Not measured
August 17, 2017*	>60 inches (1.52 meters)	5.1 mg/L	5.6 ppm

*After measurement were taken, the nanobubble generator was turned off for a period of two weeks, during which the clarity depth rapidly dropped to 15 inches (0.38 meters). The nanobubble generator was turned on again after those two weeks and within one week, clarity depth increased to 24 inches (0.61 meters).

Both the maintenance company and the residents surrounding the two-million gallon golf pond have been extremely impressed with the dramatic improvement in water clarity after the installation of the Moleaer nanobubble generator. This simple-to-install nanobubble generator transfers gas with greater than 90% efficiency. And unlike conventional micro bubbles, Moleaer's unique nanobubbles stay in suspension long after saturation. This is especially critical in large ponds where foul odors can quickly develop without sufficient aeration and circulation.

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