

# Water Aeration: A Fresh Approach To Lake Management

**T**en years ago, the concept of a floating aerator for golf course ponds was in its infancy. At that time, Holman Griffith, a former agronomist for the United States Golf Association (USGA) Green Section, stated the merits of such aerators in *Golf Business* magazine after four years of testing. Today Griffin feels as strongly as ever about aerators as evidenced by this recent interview. He is president of GCM Inc., a golf course consulting firm in Plano, TX.

## **Have you seen many changes in floating, fountain-type aerators in the last ten years?**

The original principle of efficient aeration with these units has not changed, but there are many new models and options available that were only a dream then. In my early days with the USGA Green Section I learned basic principles for sports turf construction and management from some real authorities. The benefits of aeration in soil or water never change nor have any of the other basics these men taught. Basics are simply expanded upon to obtain greater efficiency and production of a more desirable product.

The benefits of aeration for cleaning up water have been recognized in one way or another for decades. Though perhaps few understood what was happening, the early settlers found moving water or babbling brooks fresher than any pond water. The world's first sewage treatment plants used aeration and I doubt whether one has ever been constructed that did not employ aeration as part of the cleaning process.

## **Why then wasn't an aerator for water marketed a long time ago?**

They were, but no company came up with a practical design for energy efficiency and effective performance until Otterbine introduced a low-profile, fountain unit. I have seen gasoline units which were cumbersome, paddlewheels that were ineffective and other types of aerators, but they never succeeded because they were inefficient.

## **Is there any scientific measurement for water quality?**

An oxygen meter can measure the dissolved oxygen content in water before and after running an aerator. Biochemical oxygen demand (BOD) is a standard measure of the oxygen required to neutralize or digest decomposable matter present in water by aerobic biochemical action.

There are also numerous other complex tests for measuring the purity of public drink-

ing water, however the BOD test is used as a parameter for the design, loading and measure of efficiency of most sanitary sewage disposal facilities. Dissolved oxygen has a beneficial effect on the quality, purity and usefulness of all water no matter how polluted it is or what the source of pollution may be.

## **Have you seen evidence of pollution reduction and quality improvement by the use of aeration?**

On many occasions I have seen dramatic improvements, some of which have been supported by independent laboratory tests paid for by Otterbine customers. In one case the sludge from a processing plant was introduced into holding ponds with BODs of between 800 mg/l and 1,000 mg/l. A one horsepower floating aerator was put into the center of approximately three quarters of an acre of what appeared to be black jello. After 30 days of continuous operation and frequent monitoring by the lab, the BOD had been reduced to a low of between 8 mg/l and 20 mg/l. The water was clear enough to see turtles swimming below the surface. The pond bottom was visible to a depth of about five feet.

Although many observations were not documented by scientific testing, anyone can tell the visual difference, the reduction in odor, the proliferation and increased vigor of aquatic life, and the elimination of algal blooms present prior to aeration and circulation of the water.

## **What might aeration do for water that is already of good quality?**

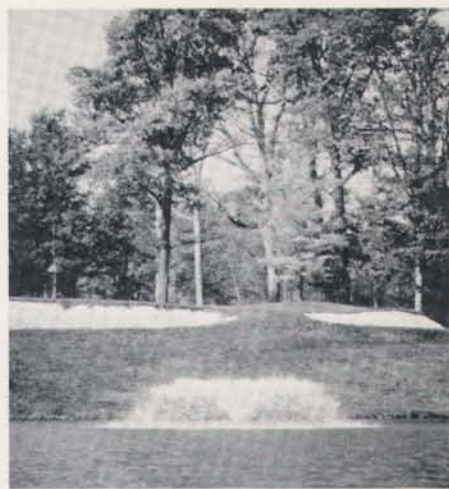
For one thing, it helps maintain that water quality over the year through adverse periods. There are only two kinds of ponds, those that have problems and those that are going to have problems when oxygen and circulation are deficient.

## **How have costs changed over the last ten years for aerators and their operation?**

In some areas the cost of a kilowatt of power may have doubled since 1979, but the units themselves have become more efficient. The cost of power is predictable within a few cents per month of running time based upon the horsepower of the unit. Controls have been added to boost their efficiency with only small increases in price.

## **Several companies are now entering the water aeration market. How can the sports turf manager compare these products?**

First and foremost, he must make sure the product is safe. In my opinion it should



include electrical safety protection provided by special underwater cable, safety switches, magnetic starters, fuses and surge arrestors. The entire system, as well as all components should be ETL or UL approved.

Second, he should check the pumping rate and oxygen transfer rate. In order for an aerator to effectively improve water quality it should pump a minimum of 500 gallons per minute per horsepower and transfer in excess of three pounds of oxygen per hour per horsepower.

He should make sure the local dealer is experienced and knowledgeable about aerators and can provide technical assistance and parts within 24 hours. Finally, he should insist upon a complete package so that he doesn't have to shop for controls, cable, etc.

## **What do you see in the future for this type of aeration unit?**

I can only tell you what I would like to see because I have an interest in natural resources and preservation of a quality environment. An innovative approach as different as the first Otterbine more than ten years ago is needed to clean up large bodies of water. Aeration units could be lighter with housings constructed of materials impervious to any environment in which they are placed. Efficient, solar-powered units would be helpful for remote areas. I'd also like to see aerators with increased oxygen blending reaching greater depths.

One of the undisputable benefits of fountain aerators is the sculptured spray display and the soothing sound of water falling back on itself. This aspect alone persuades more than half of Otterbine's customers to buy. New designs for these spray patterns and improved lighting systems to display these patterns at night are being developed.

I can say, after nearly 14 years of testing, that these units play an important role in water management on golf courses and sports complexes. But we can't just sit back and say we have good units which solve problems and look good when there is so much else that can be done. While the basic principle of aeration remains the same, new models and options are providing increased efficiency and production. I expect to see even greater improvements during the next ten years.