# OVERCOMING INADEQUATE IRRIGATION PRESSURES

Last month we touched on the fact that water must be supplied to the sprinklers in an irrigation system at the proper "dynamic pressure" if they are to work properly. "Dynamic pressure", you will remember, is the pressure of water in motion at any given point within the system after accounting for gains or losses to the static pressure ( or potential energy) that is available at the water source.

Since most golf courses draw water for their irrigation systems from storage lakes or subterranean wells, and have a tremendous amount of surface area and topography to cover, the static pressure available at the water source is often far from adequate. Even courses that utilize a domestic water source rarely have enough static pressure at the source to provide water to that elevated green at the far corner of the course that the membership considers to be the signature spot on the layout.

For this reason, golf course irrigation systems often need to utilize one or more pumping stations to boost the water pressure to the proper level required to effectively operate the sprinklers.

The most common type of pump used in our industry is called a centrifugal pump because it adds energy to the water by using the principle of centrifugal force. The pump is driven by a motor that provides rotation to a contained, fan-like device called an impeller. Water is drawn from the water source, into the center of the rotating impeller area, and is thrown outward at an accelerated speed. This action adds energy to the water in the form of velocity, which must then be converted into pressure. The conversion is accomplished by slowing the water down again and storing the energy in a contained environment. Two methods are generally used for converting this energy:

1) The water is slowed down and pressurized in a spiral shaped container surrounding the impeller called a "volute"; or
2) The high velocity water is converted to pressure when it is forced through passages known as "diffusion vanes" which gradually increase in size and reduce the velocity accordingly.

"Volute" type pumps are usually designed to be mounted in a horizontal position and almost always require the incoming water to be provided in a continuous flow a positive pressure (or the pump may lose its prime and start "drawing air"). Because of this, these types of pumps are most useful on golf courses as "in-line booster pumps" on your mainline system.

"Diffuser" type pumps (commonly known as "turbine" type pumps) are usually designed to be mounted vertically with a column or shaft extending into a deep well which draws water from the source. The pump motor is mounted above ground and the impellers (or bowls) are mounted near the bottom of the well where the water source will always provide enough water to keep the pump from running dry. This type of pump is usually used when pumping water out of storage lakes or subterranean wells.

Pump systems are a common method used to overcome inadequate pressures in a golf course irrigation system - but they may not be the only answer to the problem. If you feel you don't have adequate pressure for your course you should take some time to evaluate your irrigation system as a whole before making the decision to install a pump.

***Next month: Evaluating Your System's Pressure Requirements.***

***"The pump don't work 'cause the vandals took the handle..."***

**— Bob Dylan**

## OUR HOST FOR MAY AND THE COURSE

**Blake Swint** began working at Skywest Golf Course in Hayward at age 14 as summer help, and through high school was night Waterman. After graduating from high school in 1972 he joined the maintenance crew full time while attending Chabot College at night studying Horticulture. In 1979 Blake went to work at Orinda CC as an Assistant for one year. He left the golf management skills. He returned to golf course business in 1984 as the Assistant Superintendent at Sequoyah CC and became the Superintendent in December 1984.

Sequoyah CC has been in existence since 1913. A classic old course located in the Oakland Hills, that hosted the Oakland Open with the likes of Ben Hogan and Sam Snead.

Because of its relatively short length, some players feel the course will not offer much of a challenge. The equalizer is fast, true greens that the membership at Sequoyah prides itself in.

Sequoyah CC is a Par 70 with a course rating and yardage: Champ 6938, 6061; Reg 69.1, 5838.

# THANKS PETE

Many thanks to **Pete Bibber** and the staff at Del Monte GC for the great BBQ Chicken dinner at the Annual Meeting held at Del Monte GC in April.