

Irrigation improvements

COST, MORE WATER-DISTRIBUTION CONTROL AND BETTER WATER CONSERVATION ARE AT THE ROOT OF IRRIGATION SYSTEM UPGRADES

by
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The need for golf course superintendents to provide the best possible playing conditions for golfers drives them to look at all aspects of turf management. The enhanced conditions of newer courses have put pressure on older courses to improve their product to stay competitive, and many times, an irrigation system is part of that improvement.

An irrigation system can be the most expensive investment on a course, but it also can have the greatest longevity, lasting an average of 15 to 20 years. The complete replacement of an irrigation system for a championship course can run from \$1 million to \$1.5 million. Even a partial upgrade can cost between \$250,000 and \$400,000, so the decision to upgrade and how to implement a design change need to be considered carefully.

“Many systems that were installed 20 years ago

were done in an era where cost restraints led to the installation of inadequate systems for today’s demands,” says Larry Rodgers of Larry Rodgers Design in Lakewood, Colo. “In some instances, the pipes may not be large enough to carry enough water to be truly efficient. The spacing between sprinkler heads may be too great, which adds to the time needed to apply enough water. Also, the increase in play at a course can put other demands on the superintendent. As you look to the prospect of upgrading the system, all of these factors need to be taken into consideration.”

Self-analysis

The first step when upgrading an irrigation system should be to analyze the existing system honestly and look at the costs, including

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Photo: Willow Point Golf Club

the labor and materials necessary to maintain the current system. By learning the true operation cost for an existing system, it will be easier to determine if a new system is necessary or if a partial upgrade of the infrastructure could be implemented. It's also advisable for a superintendent to document everything about the existing system so the features he likes can be saved or replicated in the new system. This self-analysis will be helpful when presenting the need for upgrading to a membership or management group.

"One of the most overlooked aspects to consider in this assessment phase is for all the decision-making entities, including the general manager, greens committee and superintendent, to identify what the expectations are for this new maintenance tool," Rodgers says. "The superintendent might be looking for more flexibility in the system, the manager might be looking for cost savings, and players want to see the course conditions be as good as the new course down the block. While all of these goals can be obtained, defining the common goals can make it easier to plan what type of upgrade will fit your particular situation."

It's also important to secure the services of an irrigation consultant who knows the golf course's needs and can help develop a plan to retrofit the course.

Each course will present its own unique circumstances that will determine how extensive an upgrade can be achieved. But whether it's a partial renovation that includes adding more heads to specific areas or changing the wiring patterns, or a complete replacement of an old system, the goal for most superintendents is to develop more control and flexibility of their water management program.

More control

The Willow Point Golf Club in Alexander City, Ala., a private golf club with 800 members, underwent a complete renovation, including the irrigation system, in 2002.

"Our old system was a 19-year-old, double-row system where each controller operated three or four heads in unison," says superintendent Cole McInnis. "Over the years, I had numerous problems with it because the hydraulics weren't sufficient and the wiring sequence of the heads wasn't efficient. Ten years ago, we added a dedicated computer to the system, but a lightning strike had seriously damaged it. When we planned the course renovation, we decided to replace the system completely."

The club added new pumps and larger pipes to deliver a more adequate flow rate to the course. The new system also provided

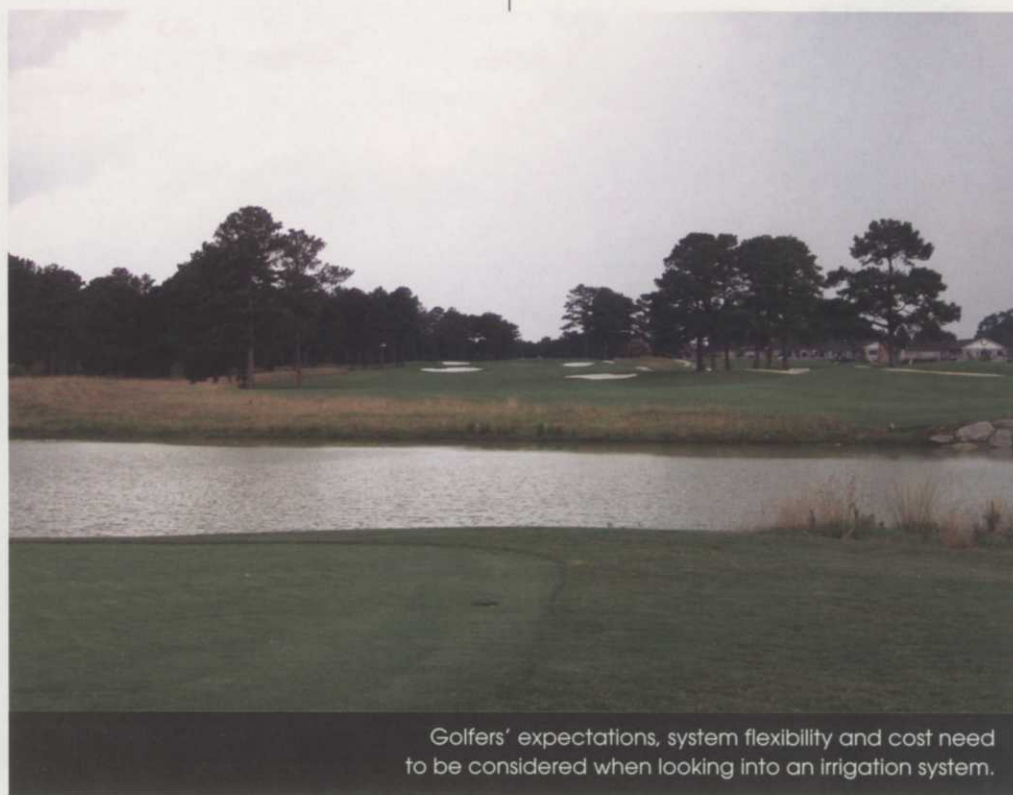


Photo: Willow Point Golf Club

Golfers' expectations, system flexibility and cost need to be considered when looking into an irrigation system.

more heads to the course with tighter spacing so each head serviced a smaller area. The advantage of more heads in closer proximity is to help reduce the time it takes to deliver an adequate amount of water, as well as reduce power and the amount of water.

The placement of the new sprinkler heads was determined by topography, aerial photos and mapping of the course, which gives an accurate blueprint for the placement of irrigation lines and heads. Another improvement is the addition of multiple heads around the greens, which allows for varying water rates for greens and surrounds. The new sprinkler heads are then pinpointed through GPS mapping to develop a final record of the placement of all pipes and lines for future reference.

"The extra heads around the greens are helpful because the green has a sandy, porous subsurface compared with the hard, red subsoils around the greens," McInnis says. "Each area is its own microsystem and has completely different watering needs. I now have much better control of how much water I need to keep my greens and surrounds healthy and in good condition."

The control of the new system also gives McInnis other advantages. The central computer, which comes from the irrigation manufacturer, has the entire operating software factory loaded. The industry-standard feature has eliminated some of the early computer glitches in which course owners, trying to save money, would provide the computer and then load software on their own.

"I also have complete radio control of

each head while I'm out on the course, and with the handheld PDA, I can make program changes in the field that can be downloaded into the control computer back at the maintenance building," McInnis says. "These new tools have been relatively easy to learn about and use and have made controlling the system easy. We have seen a 40-percent reduction of our water use, and it has been a godsend to not have to work constantly on irrigation problems."

More capabilities

Having better control of a system and all of the components can make a big difference for any superintendent. El Dorado Country Club in Indian Wells, Calif., is located in the desert region, and during the summer, the course sometimes uses one million gallons of water daily, so the ability to manage water efficiently is critical.

In 2002, the course was remodeled and more heads were added to the irrigation system.

"To give me more ability to expand my capabilities, I requested that quick couplers be installed on every other head so I can include hand-watering as an option for any place on the course," says superintendent Craig Ellis. "This just gives me another tool to use."

While upgrading to a new system is what any superintendent would like to do, the economic reality of \$1-million expenditure might dictate another approach. In looking at a partial upgrade, the self-analysis should determine what could be accomplished through the project.



Photo: Torio

With an irrigation system upgrade, some superintendents have the capability to make program changes in the field.

One phase at a time

Butte Creek Country Club in Chico, Calif., is a private club with an aging irrigation system. Superintendent Tim McCoy came to the club last fall after the membership researched the irrigation system considerably. McCoy's recent experience growing in new courses was helpful as the club planned how to address the upgrade issue.

"The existing system is in total disarray," he says. "The heads are spaced far apart, averaging 80 to 85 feet apart, and three to five heads are tied together. While I would like to replace everything, the club decided to break down the upgrade into several phases. The first phase will focus on getting more heads around the green complexes and tees and adding computerized control, which this club has never had. This will lead to eventually replacing pumps, pipes, and more heads to get single head control of the rest of the course."

For McCoy, the key has been the development of a strong team that included consultant Russ Mitchell of Foremost Construction and the continuing input of the membership. "It's important for everyone involved to un-

derstand all aspects of the plan, and so far, that has been the case here," McCoy says.

McCoy plans to keep the course open during the upgrade. In doing so, the construction crew needs to be flexible with their schedules because they have to deal with the impacts of weather and the course needs to be available for weekend events.

The plan is to bring a new service line into the green complexes and add a series of new heads from 100 to 150 feet in front of the green. This will require adding a lot of pipe. The course has Bermudagrass fairways and bentgrass/*poa annua*-mixed greens, so water management is different for each grass type. The inadequate system led to a noticeable loss of turf in the fairways and uneven conditions around the greens.

"Adding more heads to the greens areas will allow me to develop more consistent conditions in these areas," McCoy says. "The success of this project won't be seen by the membership until late next summer, but the improvement will meet their desires. The improvements will also encourage upgrades of other portions of the system."

Conserving water

But even more important than the ability to improve course conditions is the ability to use and conserve water in a more efficient manner. Water usage has become a hot-button topic recently, and it's expected to remain one.

"One of the big changes in irrigation has been the ability to close the watering-window time down considerably through larger main lines, sprinkler heads spaced closer together, and the ability to truly control where the water is going," says Bob Bryant of Bryant, Taylor, Gordon Golf, an irrigation consulting company. "Many upgrade projects might begin as partial upgrades because club members or g.m.s might balk at a new system and think it's just a lot of bells and whistles. But it's important to factor in how a good irrigation system that's properly planned and runs efficiently can also be an important conservation tool for this precious resource." GCN

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