

# Low Cost Irrigation Renovations That Provide Big Project Results

BY JASON TINDOL

## THERE IS A TREND AMONG U.S. GOLF COURSES TO UPGRADE OR PHASE IN IRRIGATION IMPROVEMENTS WHEN THE BUDGET FOR A COMPLETE RENOVATION SEEMS OUT OF REACH.

These improvements can provide big results and can be part of a master plan that can include additional phased in enhancements to an existing irrigation system. With a slowed economy and irrigation renovations regularly exceeding one million dollars, golf courses are looking for alternatives to the big budget renovation.

Rising energy, water, and maintenance cost won't allow golf courses to ignore irrigation problems indefinitely. Therefore some clubs are finding that an upgrade, addition, or partial irrigation renovation will meet their needs for a fraction of the cost.

These improvements can often be phased in over time to minimize the opposition that inevitably arises with large capital improvement projects while providing significant performance improvements.

Even the best golf course superintendent cannot hide the poor performance of an aged or failing irrigation system forever. At some point the turf suffers, costs rise, and the membership has to put up with the inevitable wet and dry spots. For clubs who have masked the problem for too long, a big budget irrigation replacement is the only option. For others, there are some sensible alternatives.

A recent trend with some clubs is to solve many of their problems with smaller scale upgrades. While these clubs wanted the full-scale renovation, the upgrades they performed instead solved 75 percent of the problems at only 40 percent of the cost of the complete renovation.

While results could vary, depending on the condition of the existing irrigation system and the problems experienced, many believe a scaled back upgrade is the best solution.

Usually when an irrigation renovation is needed one of the following is the major problem that needs to be addressed:

**Control** – a lack of control causes overwatering and wet spots. The system may also have to run so long that it interferes with play and course maintenance.

**Poor water distribution** – causes over or under watering creating wet and dry areas.

**Failing sprinklers** – maintenance cost and poor water distribution.

**Lack of coverage** – key areas that are simply not covered by the existing irrigation system.

**Pipe failure** – maintenance cost and inconvenience to play related to cracked or leaking pipelines.

**Undersized pipe** – long watering times and high energy costs.

**Failing pump station** – high maintenance cost and risk of not being able to water because of unreliable performance.

Pipeline failures require additional investigation, but if your course is not having pipe failures, a control, sprinkler, and pump replacement can solve most of these problems at substantially lower cost than complete system replacement.

## UPGRADE EXAMPLE

In 2010, one Arkansas course did just that. They had an undersized, but functioning piping network. They replaced all sprinklers with new rotors that had individual head control built into the sprinkler.

They kept the existing piping network, adding only a few more sprinklers for previously uncovered areas. This upgrade cost about 33 percent of what a complete renovation would have cost, but it addressed most of their irrigation needs.

The new single head control and improved distribution lowered their water usage, energy, and maintenance cost. Their watering time was shortened, despite adding a few sprinklers in previously uncovered areas. When all was done,

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tures at different levels of the greens – 1/8th inch, one inch, four inches, 8 inches, 12 inches and gravel layer – continued. We also poked a 3/8-inch hole down to the gravel layer and measured the temperature of the air coming up through the hole. In most cases the air emerging from the gravel level was in the mid-70s, even though the ambient temperatures were between 90 degrees F, and 115 degrees F.

What we have learned from this research to date is that the percent of moisture being held in our root zones dictate the effects of the cooler air entering the root zones. When the moisture content was high (18-plus percent), the air could not pass through the root zone to have an effect on cooling.

When the moisture content was on the low side (seven percent or less) there was nothing to hold the temperature. Water heats up and cools down, not the sand particles

The greens in which we were able to see positive changes in the root zones and putting surfaces had balanced physical properties, and surface air movement.

Recently I contacted over 30 courses to find out how they were surviving the heat and humidity. On the whole

those that had balanced physical properties survived much better than those that did not have balanced physical properties. Most superintendents were doing every thing possible they could to cool their greens – fans, syringing, air injection through the drain tiles, needle tines, star tines etc.

Courses that started working on balanced physical properties two and three years ago fared much better than those that didn't. Even courses that started working to obtain balanced physical properties in the fall of 2009 did better than those that didn't. What we do in the fall and spring dictates how we will survive the dog days of summer.

Let's learn from this summer from hell and start the process of balancing our physical properties this fall. The first step is to find out what we have and start the modifying process, based on science, this fall and spring. **BR**

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they still had their original but reliable piping network.

Additional pipeline changes are planned for the future but until then they are grateful for the enhancements that came at one-third the cost of a complete system replacement.

For many courses with aging irrigation systems, no amount of control or distribution improvement will resolve their failing piping network. Blowouts, leaks, damaged turf, inadequate pressure, long watering times, and high maintenance cost can only be replaced by new piping.

When possible, a complete renovation is the best solution. In the current economic environment more courses are opting to phase in these complete renovations.

When considering an irrigation renovation, investigate the possibility of a phased in installation. In the past year many courses have started at the pump station and worked out onto the golf course. Some have chosen to make improvements around the greens with sprinklers that provide more uniform water distribution.

Others have begun by replacing the mainline piping. Phase one for others may just mean a new pump station, intake, and wet well. Regardless of the size of your first phase, thoughtful and thorough planning is essential to successfully renovate over several years.

## PHASED IN RENOVATION

One course in Oklahoma chose to start with just two holes of new irrigation. They are running a hybrid control system with older field satellites on 16 holes and the two new holes of an integrated control system running from the same central control.

Phase two could start as soon as next spring and will consist of all or part of the remaining 16 holes. The ability to have this hybrid central control allows the course to manage the entire course as one, despite the various stages of the renovation.

Starting with just two holes may seem ineffective to some, but for many clubs it may mean the difference in getting the project done at all. They will likely have the renovation completed in 2-3 years. If they had to wait until they could do it all at once, it would easily take longer than that. The overall effect that construction has on the play of the course is minimal due to the smaller scale of each phase.

Upgrading or a phased in renovation is not the best solution for all courses, but it is becoming a regular happening across much of the U.S. If a big budget renovation seems out of reach, consider all your options. In 2010, many clubs are finding that there may be a better way! **BR**

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