Going Automatic

If you're a greenkeeper, superintendent or owner looking for ways to improve the efficiency of your irrigation system, ask yourself if the key to efficiency is right at your fingertips - literally!

Continue to learn

Start your search for enhanced efficiency at the control board or PC keyboard you use to control your irrigation. If it's been more than two to four years since your irrigation control system was installed in new construction, or updated, it's likely you could update your control system and enjoy significant and measurable improvement in your irrigation efficiency.

New control system technology minimises consumption of resources such as water and electricity, and it optimises the look and playability of your course. So stop drumming your fingers on that keyboard and start crunching some numbers.

NO CONTROL SYSTEM?

Let's begin by considering the different types of control systems in use. They include: no irrigation control system, manual controls, stand alone satellite controllers and central satellites/decoders control systems. The last two types are considered automatic irrigation systems, and we will focus on these.

You may ask how a golf course can have no control system at all? One way is for the course to have no irrigation system. This is most common on courses in northern climates, many of which are designed in the 'Traditional' or 'Old School' manner. Nature, not irrigation, is typically relied upon to provide 100 per cent of the water the golf course receives. Can such a course be 'improved' with an irrigation system? It depends on your definition of improvement, but consider this example of how the industry is changing - a full irrigation system has been installed in recent years on the 99 holes (five 1/2 golf courses) at St. Andrews Links in Scotland.

Management at the 'Birthplace of Golf' decided to supplement rainfall to maintain consistency. This decision was probably the result of the pressure for play (high player traffic) that these prestigious courses receive and the heightened expectations of today's golfers.

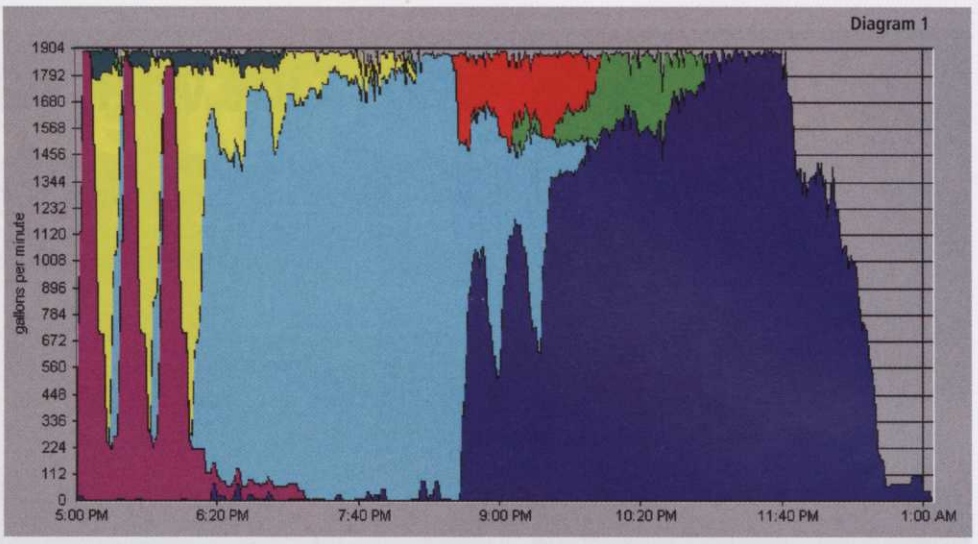
AUTOMATIC CONTROL SYSTEMS

Now let's look at automatic irrigation systems. Earlier, we defined two types of systems - semi automatic and fully automatic.

Semi automatic systems typically have remotely located controllers, in most cases one or more per hole. Sometimes called satellite controllers, they allow the greenkeeper to set up the irrigation schedule for each hole by adjusting zone run times, sequences, start times and active days for watering. By doing so, the greenkeeper can be virtually certain that his watering instructions will be carried out precisely as planned.

Fully automatic systems have a central controller that allows the greenkeeper to adjust when, where and how much water is applied. These automatic systems are more consistent and reliable than a manual system. Sprinkler run times are controllable and can be adjusted as necessary. Most controllers have a percentage adjust so that as the weather gets warmer or cooler and irrigation requirements change, it is fairly simple to make adjustments.

Diagram 1



MANUAL SYSTEM CONTROLS

Manual systems typically have no automatic controls. Such a system might consist of a series of quick coupler valves and the quick coupler key and sprinklers are moved around the course until watering is complete. Or it might be a series of sprinklers that are installed with manually operated valves so they can be activated as desired. Today's manual systems are usually a combination of both examples, as well as hoses that greenkeepers can drag to areas requiring extra water.

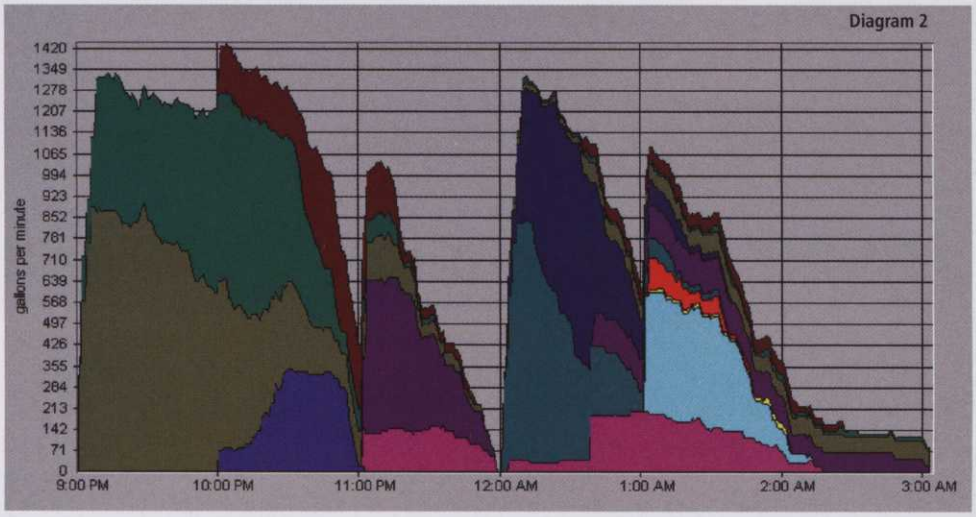
While manually controlled irrigation systems are comparatively inexpensive to install, they offer few other benefits. They can waste precious water (no rain sensors or automatic shut-offs) and put great demands on your staff's time, perhaps even including controlling or moving equipment in the middle of the night. Achieving desired results, appealing appearance and playability, using manual systems demands a significant, ongoing investment in labour. That's expensive, not efficient.

They are less labour-intensive, as usually one or two workers can handle any desired spot watering, maintenance and repairs. This allows the greenkeeper and staff to concentrate on other projects because the time required to manage the irrigation is minimised.

The major difference between a semi and fully automatic system is the cost of a communications cable and a central controller. If the pipe, wire, fittings, pumps, sprinklers and controllers cost the same with each system, a fully automatic system costs approximately five per cent more than a semi automatic one. One look at the benefits and you could agree it's the best five per cent you'll ever spend.

Are there downsides to automatic controls? There are issues to consider, including the potential for lightning damage and considering all the wiring involved in a Fully automatic system. Today, however, surge and lightning protection equipment lessens these concerns significantly. Computer complexity and potential language barriers have also been minimised as today's operating systems are user friendly and available in several languages.

Kenne James discusses the advances in irrigation systems and the benefits of an automatic control system.



AUTOMATIC SYSTEM BENEFITS

A fully automatic system offers the Golf Course Manager and greenkeeper many advantages.

- First, they can make changes in sprinkler run times, start times - in fact, everything that can be changed from the field controller - all from the central controller. This not only saves time driving around the course to make adjustments, but because it's so easy, it can be done daily, not just weekly or monthly, which is commonly when most semi automatic systems are adjusted. This flexibility results in consistently accurate watering daily, which produces further turf benefits and cost savings.

- They provide 'flow-management', which means the central software can schedule each station to run at a precise time and in combination with exactly the other sprinklers necessary to 'maximise' the flow output of the pump station, while ensuring that the flow velocity of water in every pipe in the system is kept at a safe level. These are huge advantages, because a pump station that operates at its designed optimum output through the entire irrigation cycle will be extremely efficient. This alone can result in electricity cost savings of five to 15 per cent to move the same amount of water. This also reduces long term maintenance costs by protecting the pipe network and eliminating pump station 'cycling' (See Diagrams 1 and 2).

- Reporting is enhanced, as the central controller allows the greenkeeper to see what is currently operating, what has already been watered, what is scheduled to run, how much water is scheduled, etc. The greenkeeper also has access to failure or error reports without having to tour the course daily. This data is accurate and updated by the minute. Some courses also choose to employ many of the advanced features available with fully automatic systems, such as radio remote control, weather station input and GIS mapping of the entire golf course (See Diagram 3).

THE BENEFITS OF AN UPGRADE

In a recent survey by the Golf Course Superintendents Association of America (GCSAA) respondents were asked what industry change in the past 10 years had made the single largest improvement in managing their irrigation system and reduced costs? The top answer, by a large margin, was a computerised central control system.

A central control system is a tool that helps greenkeepers and superintendents perform their jobs more efficiently and effectively, and it typically frees up time for them and their crews. Automatic control systems are powerful, loaded with features and offer numerous benefits, yet they are rarely utilised to their fullest.

Most greenkeepers use only the tools and features they need and are comfortable with. Surveys have shown that operators utilise only 40 per cent of most systems' capabilities, so it's clear that training and ongoing education will help greenkeepers derive the greatest benefits. This is especially true, as upgraded versions of control system software are typically introduced every two or three years.

Consider upgrading your system to make it more automatic. You may be able to do so without significant construction or excavation. Some older existing systems can even be upgraded to the highest standard with no trenching, so it's worth asking your irrigation dealer or distributor to assist you in a site analysis. More comprehensive renovations usually produce results that pay for themselves over just a few years and these systems normally remain effective for many years beyond that.

In the search for increased efficiency, it is wise to explore the opportunity of a new or upgraded irrigation control system. Not only do they tend to pay for themselves, they continue to offer savings each time they are used - savings you can use to invest in other course improvement projects.

So which system is right for you? As there is only about a 20 percent difference in cost from the most basic to the most sophisticated control system, the answer might seem clear - the best system available, of course! But the answer actually emerges from a thorough assessment of factors such as your current system, your irrigation needs, budget, climate and so forth.

Worldwide, the trend is clear. Even when considering the many 'developing' countries where new golf courses are being constructed along with the more established and mature markets, over 95 percent of golf courses being worked on today are being upgraded to a fully automated central control system. It's an investment in efficiency.

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