Unwired

GAPS IN WIRELESS IRRIGATION SYSTEMS NEED TO CLOSE BEFORE THEY GAIN COMPLETE ACCEPTANCE

by DEREK RICE

During recent years, wireless technology seems to have become ubiquitous. From the use of cell phones and pagers to the ability to surf the Internet wirelessly from a local coffee shop, most people take technology for granted.

So with all the wireless technology available, it should come as no surprise that wireless irrigation systems for golf courses are well into development. However, the move to completely wireless systems has been slow to happen for the golf course industry, according to David Davis of David D. Davis Associates in Crestline, Calif.

"I would say that if we give our clients a choice of a wireless system, a wired system or a hybrid, about 95 percent of them are going to want a combination of the two, and all the different manufacturers offer that," says Davis, who specializes in irrigation system design for golf courses.

Defining wireless

There are a number of reasons for the slow acceptance of wireless irrigation systems. For starters, there seems to be some confusion in the industry about what a wireless irrigation system means. To some, it means being able to control the system through radio or cellular signals. To others, it means a system completely without wires, which combines wireless rotors and wireless controls. No such system currently exists on the market, according to Davis.

"If you ask most people today about wireless, it only has to do with the central controller to the satellite communication system," he says. "Someday, and they're experimenting with it now, it will mean wireless from either the central only or the field unit to a rotor."

While some might disagree, many of the wireless controllers on the market aren't completely wireless systems, according to Rick Holanda, superintendent at Aronimink Golf Club in Newton Square, Pa.

Photo: The Toro Co.

Most golf courses choose a hybrid irrigation system that is part wired and part wireless.

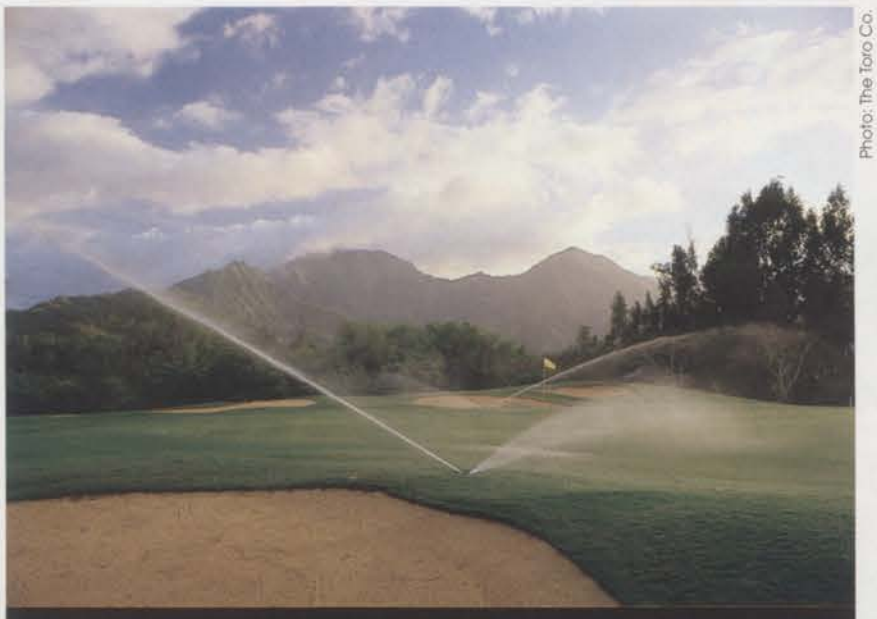

Photo: The Toro Co.

A positive aspect of a wireless irrigations system is the ability to upgrade a system without digging.

"You still have to have the communication wires in the central system to communicate to the satellites," he says.

Signature Control Systems has created the closest thing to a wireless communication system that's on the market, according to Holanda.

"I know their control box can communicate from satellite to satellite, so they took out the central," he says. "With that, you don't need the communication wires because everything is communicated by antennas on top of the control boxes. It's not completely wireless, but it is wireless communication."

Holanda says that next year Aronimink will install a new irrigation system to replace the current system, but he hasn't completely decided what manufacturer he plans to use. One thing that's certain is he's not ready to cut the cord.

"It's going to be a traditional system with all the communication wires and power wires," he says.

While Paul Jett, superintendent at Pinehurst No. 2 in North Carolina, has some interest in a completely wireless system, should one become available, he says he wouldn't install one just for the sake of having it.

"I'm sure we'd consider it, but I don't believe we'd put one in at the moment unless it was a new golf course construction," he says. "We've got systems in place already, and I don't believe that we'd up and close the course just to put one in because it's wireless."

Benefits of wireless

The positive aspects of wireless systems include not having to worry about lightning strikes taking out large portions of the irrigation system's hardware as well as the ability to upgrade a system without digging.

For Jett, having a partially wireless control system has been helpful. When it was installed, none of the old system had to be changed, and the software needed only three or four upgrades during that time.

"We still have all the wires going from the head to the box, but we use a radio frequency to control the whole thing, so it's still a manual thing," he says.

The system allows Jett to radio in from anywhere on the course to what he calls a "people finder" located in the office. The system in the office then relays the command to the individual satellites on the course, which Jett says saves him and his crew a lot of time and effort.

"It's a wonderful system, and it's obviously a whole lot more user-friendly than the old boxes that you had to go to with the manual dials and turn them off and on from the box there," he says. "It's a much more efficient system than that."

While a typical wireless system might be costly to install, superintendents will have to weigh the long-term benefits as well, Holanda says.

"No question about it – there's a place for the technology that's available out there, especially with the cost of wire and copper going so high in the past year or so, so there is a place out there for the system," he says. "You're talking about less wire out there and fewer people cutting through it."

Increased reliability

One of the questions that has arisen from the marriage between space-age technology and good old-fashioned agronomy is whether the technology is reliable enough to satisfy the average superintendent.

"The superintendent is by nature not an optimist," Holanda says. "They're always looking at the potential for the worst case. They love new technology that automates things for them, but they're conservative to know that they need a backup."

When wireless technology was first introduced to irrigation systems more than a decade ago, the control systems that were being rolled out at the time were light years ahead of their time, even if today they seem like relics. Systems that tell sprinklers not to operate in the rain have existed for several decades, but the hand-held remote control devices that allow superintendents to operate the systems wirelessly from around the course are relatively new and might take some getting used to, Davis says.

"As radio becomes more reliable, you can get away with radio only," he says. "We went radio only on lots of systems for a while, and a lot of our clients came to us and asked us to go back and put in the cable as a backup."

Davis says that because of worst-case-scenario thinking the day might not come when a completely wireless system – one that includes wireless controllers that communicate directly with wireless rotors – is installed on a course.

"We're probably never going to be totally wireless because there's always an innate fear by a superintendent that they're losing control," he says. "It's what we call the fear factor. They're scared to death to lose the grass."

For wireless to really take off in the golf course industry, Davis says some of the fears about control and security will have to be as-

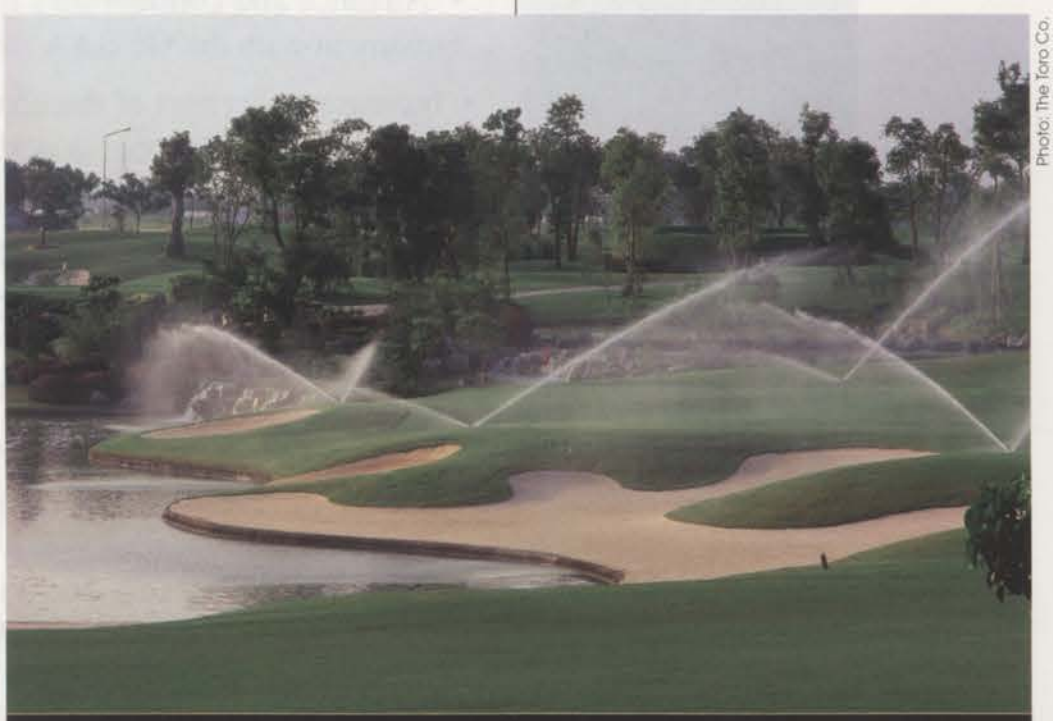

Photo: The Toro Co.

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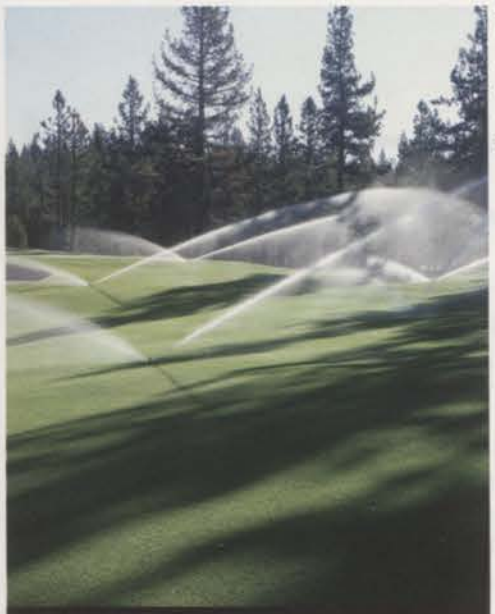

Photo: Hunter Golf

Wireless technology was first introduced to irrigation systems more than 10 years ago.

suaged, although there has been similar apprehension about new technologies in the past.

"I can remember in the old days, 15 or 20 years ago, when some of the central satellite systems were coming out, a fire truck driving by with its sirens on could turn on an irrigation system," he says.

Challenges of wireless

One of the biggest challenges of installing wireless heads is the potential for destruction that normal golf course maintenance can cause.

"A mower is the worst enemy of a sprinkler," Davis says. "And you can imagine that a radio transceiver sitting in the sprinkler or on the lid is going to be susceptible to getting chewed up by a mower."

Holanda says he would be concerned about what would result from a meeting between his heavy equipment and the wireless heads that include self-contained power supplies.

"With those heads that have the little solar panels on top of them, what happens when you go over them with the aerifiers?" he says. "Well, you're going to damage it."

For wireless rotors to come into more widespread use, manufacturers are going to have to come up with something that's almost bulletproof, according to Davis. However, he says there are situations in which using a wireless system is the only option.

"For example, if there's a golf course where there's a lot of concrete around and you can't bore through the concrete to get the cables in the ground, we have no problem suggesting that they go with wireless only," Davis says.

In those situations, he suggests stocking up on replacement parts.

"We tell them to have spare equipment on hand to replace whatever is going to take the biggest beating," he says.

A look to the future

Holanda says despite manufacturers' best intentions, he's not sure a completely wireless system will exist for some time.

"If you ask me what's a reasonable time frame, I don't think any time soon," he says. "Maybe four or five years from now … maybe. "I don't think they're going to have anything ready for the market anytime soon."

Davis agrees the technology isn't quite where it could or should be at this time to make a completely wireless irrigation system practical.

"In all practicality, that probably is a few years off until it is reasonable enough to use," he says.

Rain Bird currently offers its Cyclik wireless control system, which is battery operated and consists of a control module and a field transmitter, as well as its Eagle wireless rotor series. In June, the company released its Freedom-Pad II hand-held remote control, which gives superintendents the ability to control irrigation systems in real-time through a map-based interface, using an HP iPAQ personal digital assistant.

Hunter Golf's Genesis III and Vista irrigation control systems have UHF radio connections from the central computer to the individual controllers in the field. Both systems offer two-way communications and can be used with any combination of hand-wired and radio controllers. The company also offers UHF portable radios that are equipped with a touch-tone keypad, allowing superintendents to address any controller on the course, as well as start-and-stop stations or entire programs.

Toro's entry into the wireless arena is with the SitePro Central Control System, which includes a T.Map interface that allows a superintendent to select irrigation functions, click on an individual sprinkler or a series of sprinklers and make adjustments directly from a map. SitePro also supports hybrid systems and its two-way communication provides the ability to read sensors from the field. When used with Flowtronex Pump Log or Wateronics Watervision software, SitePro provides pump station reflow alarm response.

Signature Controls' Aurora and Constellation product lines allow for remote control of irrigation systems, including global positioning satellite interoperability.

Because the majority of the nearly 17,000 golf courses in the United States don't use a wireless irrigation system, the market is open for manufacturers to roll out their technologies on a small scale for now, with expansion possible in the future, Davis says.

"Hunter, Rain Bird, Toro, they're all going to look at the wireless rotor, he says. "I don't think for widespread use – where every single rotor in the place is wireless – but if you had to add a sprinkler or something like that, and you just can't dig a trench and extend a wire from the controller out to the head, it's just not practical to do it," he says. "That's where the wireless rotors are going to end up for the time being." GCN

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