



Depending on the design, an average 18-hole golf course may use 30 percent to 60 percent less wire than a comparably sized controller-based system.

# Out of Sight

BY MATTHEW MIKUCKI

**“Where did you hide your irrigation controllers?”**

Almost every superintendent who visits his course asks Dave Davies, certified golf course superintendent at TPC San Francisco Bay at Stonebrae Country Club in Hayward, Calif., that question. It turns out, there are no irrigation control pedestals at Stonebrae. The golf course irrigation system uses a unique device called a decoder that allows the entire control system to be hidden underground.

Underground decoder systems for golf course irrigation have been in use for more than 20 years. However, the technology is relatively new to the western United States.

Decoder technology, long used in other industries, was adapted for irrigation control in Europe, where it became the system of choice during the 1980s. In the 1990s, these systems migrated to the northeastern United States, where they are now one of the most popular configurations used to intelligently irrigate golf course turfgrass.

While decoders are sophisticated electronic devices, the irrigation control system is really quite simple. A computerized central control system is linked by buried cable to many decoders — small devices distributed throughout the course, below ground in a

valve box or even buried directly in the earth. Software installed on the central computer intelligently manages the hundreds or even thousands of valve-in head sprinklers, electric valves and sensors installed on a golf course. In this way, decoders replace traditional above-ground, pedestal-mounted field satellite controllers with a below-ground system that is just as powerful, yet entirely out of view.

The decoder itself is an uncomplicated, waterproof device that’s about the size of a soda can. Decoders are designed to interact with software running on a desktop computer via a two-wire path that carries power and communication signals. In addition to their underground installation advantages, a simple two-wire path is the other major difference between decoder systems and satellite control systems.

Centrally controlled irrigation systems using satellite controllers have one set of wiring supplying power to the pedestal and another set of wiring serving as the communication path used to signal the controllers from the central computer. Even before one begins to consider the significant cost advantages of decoder systems related to the wire alone, their simple design also has a tremendous impact on how the system is installed,

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Superintendents rave about underground decoder systems used for golf course irrigation

## Out of Sight



Decoders are waterproof devices about the size of a soda can.

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maintained and even expanded. A decoder is typically located in the ground next to a valve-in-head sprinkler or located in a valve box at the end of a lateral irrigation pipe. Since below-ground decoders only require a simple two-wire path to both operate and power the decoders, far less copper wire is required when building a typical system of this type.

Depending on the design, an average 18-hole golf course may use 30 percent to 60 percent less wire than a comparably sized controller-based system, which could save up to between \$25,000 and \$150,000 in material and labor costs alone. Elimination of all this copper wire also simplifies the design and improves the overall expected system reliability, further reducing the total cost of ownership.

“Eliminating satellite controllers on the golf course means there’s one less thing to worry about,” said Kyle Dykstra, certified

golf course superintendent at Sierra View Country Club in Roseville, Calif. “The crew no longer has to trim weeds or mow around the satellite controllers.”

Dykstra played an important role in the decision to install a below-ground decoder system at Sierra View. He says no single factor motivated him to select decoders over field controllers. But when he put all the pieces together and thought about the entire irrigation system, decoders just made sense.

Because the technology was new to him, Dykstra did what any responsible superintendent would do before making the decision to use decoders. He learned the technology and conducted some of his own research. As with any technology on the golf course, the most important part of that research was talking to other superintendents who already had decoder systems. The extremely positive feedback he received from every course he called was a significant factor in his decision.

According to Dykstra, eliminating insect problems and improving the visibility and aesthetics of the golf course, plus the reliability and ease of troubleshooting the system were among the most important reasons he ultimately chose decoders for the new irrigation system at Sierra View. Now, three years after the decoder system was installed, Dykstra can’t recall encountering a single problem with his decoders.

Back at TPC San Francisco Bay at Stonebrae, one of the many decoder system benefits Davies has experienced is the ease with which the system can be expanded. When the system was first installed in 2006, the design for much of the landscaped areas had not been finalized, and therefore irrigation could not be installed. As the incomplete areas came online, the staff simply located an existing wire, then spliced in a new decoder — a process that’s no more complex than installing a sprinkler and simply isn’t possible with a satellite control system.

“All they have to do is string a little wire and pipe, and they’re done,” Davies says. “That’s when the light bulb went on — the irrigation team could not believe how easy it was to add new sprinklers to the system.”

As soon as the decoder is spliced into the

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wire path, a new four- or six-station loop immediately becomes available for landscape irrigation. Davies also says that Stonebrae architect David McLay Kidd created a design with “nothing above ground on the golf course other than the flagsticks.” Having a system that could eliminate the negative visual impact of controllers was a key component of the architect’s overall vision for the course.

In the last several years, decoder systems like the ones at Stonebrae and Sierra View have begun to spring up in hot, dry climates typical of the western United States. Advances in the technology now allow for larger systems, making decoders a practical option. When decoder systems were first popularized in Europe and the northeastern United States, they were used as supplemental irrigation in those cooler climates with regular rainfall. These early systems were not designed for courses requiring 1,500-plus sprinklers to maintain turf in more arid climates like California. Today, below-ground decoder systems are capable of controlling as many as 4,000 individual sprinklers from a single central-control computer.

One commonly asked question about decoder systems is how well they handle in-field sprinkler control. With decoders, in-field control is limited to a hand-held radio or a cell phone with Internet connectivity. Because decoder systems are completely underground, they do not have easily accessible pedestals with control panels that can be seen and touched. This can be a little unusual to someone who has always used field controllers. Davies actually uses hand-held radio control to his advantage.

“The people who are doing the irrigation work have been forced to learn the mobile control system,” Davies says. “It is a benefit to the golf course since they learn to use the map and are more adept at using the central control software.”

The benefits of below-ground decoder technology are numerous. Less wire (and the resulting lower cost), invisible control and simple expansion make decoders an option for many courses. Even with the relatively long history of this technology, the rate at which new decoder systems are installed



continues to increase year after year. Decoders are being installed on new golf courses, course expansions and major and minor renovations throughout the world. Each year, more superintendents will find themselves being asked the same question that Davies hears so often: “Where did you hide your controllers?” ■

*Matthew Mikucki is golf central control product manager for Rain Bird in Tucson, Ariz.*

**Architect David McLay Kidd created a design for TPC San Francisco Bay with “nothing above ground on the golf course other than the flag sticks,” making underground decoders the perfect choice for the course’s control system.**

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# TOP Assistants

Michigan man finds professional, recreational and spiritual solace in the great outdoors

*Editor's note: If you'd like to nominate someone for the feature, please send an e-mail to Larry Aylward at [larylward@questex.com](mailto:larylward@questex.com).*

Kevin Breuker has worked in the golf course maintenance industry for 11 years, but it was his five months in an office that solidified his desire to pursue a golf profession.

"Toward the end of that time (tele-marketing lawn care services), I craved being outdoors again — away from the computer, telephone and that evil copy machine," Breuker says.

Now he's the assistant superintendent at the Traverse City (Mich.) Golf and Country Club, and he is an active member in the Michigan Golf Course Superintendent Association, where he sits on the assistant superintendent committee and helps coordinate continuing education events throughout the state.

**Kevin Breuker (right) discusses mowing strategies with an operator at Traverse City Golf and Country Club.**



■ **What's your favorite part of the job?**

The last 20 minutes before our August member/guest invitational. I take one last tour to check the golf course. Seeing the months of planning, decision-making and execution by our crew culminate with impeccable course conditions is extremely rewarding. That is what motivates me when I get up and head to work every morning.

■ **Who has been the biggest influence on your career and why?**

My father, through his instruction and actions, taught me the core values of honesty, dedication, hard work and ingenuity. I have used these skills to begin building my career in the golf course business, and I will continue to rely on them as I move forward. His encouragement and support for me has never wavered. Thanks dad, I owe it all to you.

■ **What's your favorite product or piece of equipment and why?**

Our Rainbird Nimbus II irrigation system. The ability to control water distribution so precisely on such a large scale is amazing. The possibilities for its use are limitless. It has enhanced our golf course playing conditions, improved the health of the turf and maximized our chemical applications.

■ **If you could change something about the industry right now, what would you change?**

The increasing cost and time commitment to play a round of golf. I think it is the main factor in golf's inability to consistently attract new players both young and old to pick up the game.

■ **Describe yourself in one word.**

Integrity.

■ **What is your favorite hobby and why?**

Trail running. For 45 minutes, I can focus all of my attention on nature's beauty, my physical performance and spiritual concerns; everything else fades away. Running keeps my mind sharp, my body physically fit and my spirit focused.

■ **What's your favorite vacation spot?**

Cedar Point in Sandusky, Ohio. It is the ultimate playground for anyone who loves the thrill of riding roller coasters.

■ **What's your favorite golf course besides your own?**

Forest Dunes Golf Club in Roscommon, Mich. It can be described in two simple words: pure golf.

■ **If a movie were made about your life, what famous actor would play you?**

Matt Damon.

■ **It's your last day on Earth. What would you do?**

In the morning I would make a large custom-ordered breakfast for my family. There would be ample princess playtime with my two daughters. I would spend time telling my family and friends how much they have meant to me. In the late afternoon, I would hit the trail for one last run. As the evening closes, I would listen to some of my favorite gospel hymns and prepare to meet my Lord and Savior Jesus Christ. ■



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# TURFGRASS TRENDS

## COLONIAL BENTGRASS

### Colonial Bentgrass Can Lower Fairway Inputs

By Stacy A. Bonos

Higher energy prices have increased the costs of almost everything, including grass seed, fertilizer and pesticides. As the costs of energy rise, many are looking for ways to cut costs. Additionally, more emphasis is being placed on conserving natural resources and reducing inputs. With all of that in mind, colonial bentgrass on your fairways might make sense for some golf courses.

Creeping bentgrass (*Agrostis stolonifera*) is currently the most widely used bentgrass for golf courses. Its prostrate growth habit and ability to produce vigorous spreading stolons allow it to tolerate low cutting heights and quickly recover from damage. This makes creeping bentgrass a good choice for golf course putting greens in the cool, temperate climates and some cases in warm climates. However, creeping bentgrass as a species is very susceptible to dollar spot disease (caused by *Sclerotinia homoeocapa* F.T. Bennet) and typically requires regular fungicide applications and rigorous cultural practices for acceptable quality.

Dollar spot disease is probably the most common disease on golf course turf in the Northeast. Although breeders have developed creeping bentgrass cultivars with improved resistance, they still can require several fungicide applications per year. Colonial bentgrass (*Agrostis capillaris*) generally has better tolerance of dollar spot disease than creeping bentgrass (Photo 1).

Colonial bentgrass, also known as brown top, has traditionally been used on lawns and golf courses in areas of Northern Europe and New Zealand that have mild (cool

and humid) summers. Compared to creeping bentgrass, colonial bentgrass has a more upright growth habit and spreads by short rhizomes instead of stolons. In addition to differences in growth habit, colonial bentgrass also differs in genetic color.

Colonial bentgrass ranges from light to medium green while creeping bentgrasses typically range from medium green to a dark blue-green color (Photo 2, p. 60).

Additionally, colonial bent-

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PHOTO 1  
Dollar spot disease resistance of colonial bentgrass (left) compared to creeping bentgrass (right).

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grass typically retains more green color during winter compared to creeping bentgrass. Colonial bentgrass also does not accumulate thatch as aggressively as creeping bentgrass cultivars with high shoot density. High-density creeping bentgrasses can require adjustments in management practices, including increased top-dressing and cultivation (aeration, verticutting and grooming) to manage thatch development. Colonial bentgrasses typically do not require aggressive cultural management. Additionally, it has been documented that colonial bentgrass exhibits faster recovery from drought stress compared to creeping bentgrass (DaCosta and Huang, 2007; DaCosta and Huang, 2006). The drought recovery, reduced maintenance requirements and increased dollar spot resistance of colonial bentgrass make it an interesting choice for golf course fairways during a time when environmental conservation, using lower inputs and energy conservation are on the minds of many people.

However, colonial bentgrass does have a major weakness affecting its use in temperate areas of the United States. It is susceptible to brown patch disease (caused by *Rhizoctonia solani* Kühn) (Photo 3). Brown patch can cause some loss of turf density on creeping bentgrass, mainly during July and August, but

severe damage from brown patch disease is unusual on creeping bentgrass in the Northeast and north-central United States. Colonial bentgrass cultivars, however, are quite susceptible to brown patch disease, and loss of turf density (damage) can be strongly evident from June through September.

It has been the goal of the breeding program at Rutgers for the past 10 years to improve the brown patch resistance in colonial bentgrass so that it will be more useful as a potential grass for fairways and tees. Prior to this research, there were no studies conducted on the inheritance of brown patch resistance in colonial bentgrass. It is important to understand how disease resistance is inherited in order to optimize selection procedures.

Traits can be inherited in different ways. Qualitative inheritance typically involves one (or a few) genes that confer complete resistance and are not strongly influenced by the environment. Quantitative inheritance involves a large number of genes that confer partial resistance and are strongly influenced by the environment. If brown patch is inherited qualitatively, then selection could be conducted in one environment, possibly with limited replications. If brown patch is inherited quantitatively, then steps need to be taken to determine the extent of environmental influence



#### QUICK TIP

Having choices is a good thing in any situation. The ability to choose the right products to meet certain specifications is a formula for success, especially in the golf industry. No other product category provides more new options than turfgrass variety research. Each year there are new entries from breeders across the country developing better turfgrass varieties with improved benefits. Agrium Advanced Technologies gives you "Smarter Ways to Grow" by providing a variety of products that fit the nutritional needs of any turfgrass variety. Have a Happy Thanksgiving and enjoy the many choices the dinner table has to offer.

**PHOTO 2**



*Color differences of colonial bentgrass compared to creeping bentgrass. Colonial bentgrass plots have a bright, medium-green color compared to the dark, blue-green color of creeping bentgrass plots.*