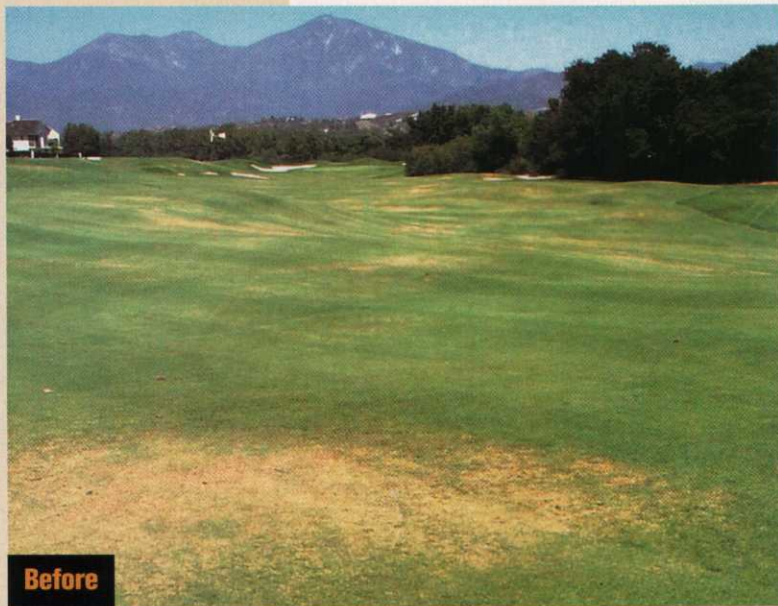


## IRRIGATION TRENDS

# More Bang, Less Bucks

Customized aftermarket nozzles boost coverage for energy-saving irrigation systems

BY FRANK H. ANDORKA JR., MANAGING EDITOR



Poor nozzle design can cause donuts to form around the sprinkler heads.

### Problem

Low-pressure irrigation systems didn't provide adequate fairway coverage.

### Solution

Aftermarket nozzles, which changed the water's distribution for more even application, eliminated the unsightly brown spots through better water use.

**I**n the mid-1980s, California energy providers discovered that the state's burgeoning population would soon strain their resources. Since the energy companies couldn't build new power plants quickly enough to handle the increased demand, they decided to encourage conservation instead. They offered superintendents, whose golf course irrigation systems consumed considerable energy, a deal: If they would install lower-pressure irrigation systems (which require less electricity to start and to stop), the energy companies would pay their courses rebates for every kilowatt-hour of electricity they saved.

The energy companies hoped golf courses would replace older irrigation systems that required 100 pounds per square inch (psi) of pressure to operate with newer systems that required half that pressure, says Mike Huck,

a former USGA Green Section agronomist who is now an agronomist for FCI Nozzles, a manufacturer of aftermarket irrigation nozzles based in Coarsegold, Calif.

Courses leapt at the chance to convert their systems and collect their rewards.

"The older irrigation systems wasted a lot of power," Huck says. "The old motors ran at full speed from the beginning of an irrigation cycle, which meant huge surges of electricity while they ran. The newer systems, featuring variable frequency drives [a pump system that starts and stops pumping water to the irrigation system gradually rather than at once], cut electricity use by 20 percent to 30 percent. The energy companies were paying enormous rebates — some as high as \$60,000. A lot of courses were lured to replace their systems with that amount of money on the table."

One such golf course was Oakdale (Calif.) CC. It switched its irrigation system to a low-pressure model, which provided the energy-savings it promised. Combined with the energy company rebates, it appeared to be a good deal. Unfortunately, there was a catch.

### The problem

Oakdale superintendent Mike Olson quickly discovered the downside to his course's decision. The original low-flow nozzles weren't designed to handle the force of the water being pumped through the system. As a result, the nozzles often broke as the high-pressure water demolished them. Olson says he'd seen the problem before at other courses, so he knew Oakdale wasn't alone in dealing with it.

"The maintenance on these systems became such a headache," Olson says. "You were

fixing the system almost as much as it was running. That wasn't acceptable."

Superintendents first asked irrigation manufacturers for help, Huck says. To their credit, the companies retooled the courses with more reliable nozzles at no cost. The new nozzles didn't break as often as the originals, and they still maintained the energy savings. Unfortunately, they didn't provide adequate fairway coverage because their water sprayed in a constant, straight-line stream, says Olson, who rapidly discovered members didn't like the resulting donuts around the sprinkler heads.

"It's hard to explain to screaming members why there is brown grass surrounding a sprinkler head," Olson says. "They think it's as simple as readjusting the trajectory on the water. Every time we tried to do that, however, the location of the brown grass simply moved to another part of the irrigation arc. We were in a no-win situation."

The pressure from his green committee for a solution became unbearable, Olson says. He wracked his brain for a solution.

He could completely retool his pump station to boost the water pressure, increasing his coverage with the current nozzles. Such a plan, however, would cost so much it would negate the energy savings — again. Olson despaired of finding an adequate solution until he stopped at the FCI Nozzles booth at a trade show to see what it had to offer.

### The solution

An FCI representative suggested installing aftermarket nozzles into his existing sprinkler system. FCI nozzles can be customized to provide increased coverage.

Aftermarket nozzles, even the customized ones that FCI produces, are traditionally less expensive than the nozzles built by manufacturers, so they can often be a bargain for superintendents.

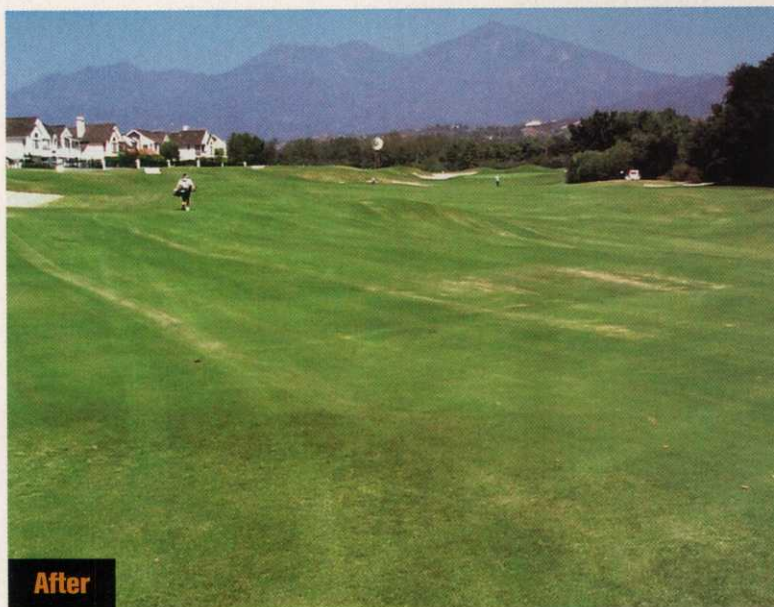
The trick to eliminating Oakdale's donuts was to divert some of the water as it passed through the nozzle, so it hit closer to the head and applied the water more evenly. "We created a nozzle that has a notch at its opening that is lacking in other nozzles," Huck says. "It changes the trajectory on a portion of the water. As a result, you have several different arcs within an irrigation stream. Water is hitting more turf uniformly than with tradi-

tional nozzles."

Olson says he was skeptical of FCI's promise, but at about \$15 per replacement nozzle, he figured it was worth a try. "It would be easier to replace a few heads to see if the product worked than to replace a whole pump station," Olson says.

### Outcome

Olson bought 10 aftermarket nozzles and installed them on one of the most troublesome fairways. The results were visible within days.



PHOTOS COURTESY OF FCI NOZZLES

"You could really see the difference," Olson says. "Where there were dead spots before, there was now healthy turf."

Still, Olson wasn't ready to purchase nozzles for his entire system. He purchased 100 more nozzles and installed them at other problem areas on the course. Only when he was convinced that the aftermarket nozzles improved his irrigation coverage over a couple of months did he decide to retrofit his entire system. He says he's waiting to see how the system performs during a real California summer, with multiple days over 100 degrees F. Last summer was unusually cool.

"It took me a while to be convinced, but this is the only nozzle I've seen that can provide me with this kind of coverage with a low-pressure irrigation system," Olson says. "I'm keeping a close eye on the system because the last time we tried to fix the problem it backfired." ■

**Aftermarket nozzles can provide better coverage because they can be customized.**

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