

# Irrigation Innovation

Head and nozzle advances aid superintendents

BY PETER BLAIS



ted and other shapes yield better coverage. Sprinkler hydraulics have also improved, leaving more energy for the nozzle to cover the intended area.

Says Rich Dunn, golf rotor product manager for Hunter Golf: "In the early days, every manufacturer struggled to achieve scheduling coefficients below 1.5. Today, it is common to achieve efficiencies of 1.3, 1.2 and even 1.1 with some combinations of products and spacing. Like Hunter, every manufacturer has introduced certain technologies that make this possible. Our patented PressurePort System is one example."

The PressurePort System is designed to improve coverage close to the head, a challenge with high-flow, high-pressure rotors. According to company literature, the primary stream traditionally tends to draw water away from the companion nozzle, limiting the efficiency of nozzles intended for short- and medium-range coverage. PressurePort reduces velocity and pressure while increasing droplet size from those nozzles, resulting in improved, close-in coverage.

The ability to change nozzle trajectories is one of the primary advantages of Toro's 720 series, according to Jim Wright, the company's marketing and product manager for golf sprinklers. The MultiMatrx nozzle and TruJectory adjustment system allows precise coverage for tee boxes, approaches and other difficult-to-irrigate areas.

"You can adjust the distance of throw so you have true head-to-head coverage with no over-throw," Wright explains. "You can also adjust it down sufficiently to provide improved coverage in the wind. That benefits nozzle performance in general."

Marc Negus, Rain Bird's product manager

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Course operators have welcomed new technology that helps save water.

**W**ater shortages and water price hikes have led manufacturers to develop improved irrigation head and nozzle technologies designed to achieve more uniform coverage, conserve water and save money. Stung by higher costs and fewer rounds, course operators have been receptive to the latest innovations.

A drought crisis usually triggers the use of new technology, according to Dave Davis, a Lake Arrowhead, Calif.-based irrigation consultant.

"You just don't have enough water, as frequently happens in the Southwest," Davis says. "Or it could be like what happened a year ago in Pennsylvania or Virginia when they just didn't have the rainfall they usually do."

Nozzle manufacturers have spent more money on in-house and independent testing in recent years, Davis says. The result has been more consistency in the final product and a greater variety of nozzle shapes. In addition to round nozzles, a combination of square, triangular, slot-

## Problem

Golf courses need irrigation systems to achieve more uniform coverage and conserve more water because of water shortages and water price hikes.

## Solution

Manufacturers have spent more money on in-house and independent testing to develop improved head and nozzle technologies to combat the water crisis.

## Real-Life Solutions: Irrigation Innovation



**Many of the newer sprinklers are more efficient at throwing water just as far at medium- and low-operating pressures as their predecessors were at high pressure.**

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for golf rotors, says the new EAGLE 1100 series rotors throw anywhere from 85 feet to 115 feet but with the same high level of distribution uniformity as the company's other rotors, allowing a course to reduce costs by using fewer rotors and adjusting their spacing.

Davis notes that many of the newer sprinklers are more efficient at throwing water just as far at medium- and low-operating pressures as their predecessors were at high pressure.

"That's important because the more pressure you have to provide per sprinkler, the higher the pressure you have to produce at the pump," he says. "And that takes energy. You like to get that higher distance of throw, but you don't want to have to use 100 pounds of pressure to do it. You would like to be able to do it at 65 pounds to 70 pounds. That 20 pounds to 30 pounds of pressure savings shows up at the pump in electrical savings."

Reduced maintenance costs are another benefit gained through new irrigation head technologies. Rain Bird's top-serviceable rotor design, for example, makes change-out of nozzles, pressure regulators, internals, valves and even rock screens a snap, Negus says.

"No digging is required," he adds. "This feature saves courses a considerable amount of money in labor costs."

Adds Hunter Golf's Dunn: "For years, the gear-drive and inlet valve were the only components in golf rotors that could be serviced without digging up the turf. Access to the pilot valve, regulator and solenoid always meant a big mess around the sprinkler head and many days of turf healing. This has all changed with the introduction of Hunter's top-serviceable TTS Series rotors. Now every serviceable component can be accessed without disruption of the playing conditions, thereby helping the superintendent to further maintain course playability."

Reduced energy and maintenance costs are also major benefits of Toro's Spike-Guard solenoid, which is being incorporated into its valve line this year, according to Wright. The lightning protector, he adds, "draws about half as much as electricity as our former solenoid, and it will withstand lightning storms three times as powerful as traditional solenoids. That's lightning protection exceeding 20,000 volts. Typically, other solenoids on the market will fail at 7,000 volts to 9,000 volts. The savings is in areas with high lightning frequency."

Typically, replacing a solenoid requires digging up the turf to make the replacement. The Spike-Guard will fail less, and by eliminating replacement labor it allows superintendents to do other things more beneficial to the golf course than replacing parts, Wright adds.

As Davis notes: "Control systems are getting very sophisticated. We can almost split hairs in terms of programming, operating times, cycle and soak."

Brian Smith, president and CEO of Signature Control Systems, says even though his company's controllers are capable of turning a head on and off several times in a single second, "this is worthless if you're relying on a poorly designed or installed irrigation system that takes an additional period of time to shut off a head. Given this scenario, no matter how advanced the controller system, you could have an extra few minutes of run time. That means a large amount of excess water being applied for every minute the system runs. The next generation of heads would need to be more accurate in this regard and an intelligent extension of the controller."

Smith says his firm is working on developing new sprinkler technology that will look much the same as traditional models.

"But the operational aspects will be very different," he adds. "They will have different pressure, elevational, throw and radius criteria. You should see some of those in the next 24 months."

Hunter Golf's Dunn made the following comment about his own company, although it could easily apply to other irrigation-component manufacturers.

"When you get down to the core of it, our mission is to help the superintendent maintain playability," he says. "Today's golfer makes a big investment in money and time to play the game and with that comes high expectations with regard to course conditions.

"By helping superintendents maintain playability, we help them satisfy the needs and expectations of the golfer." ■

*Blais is a free-lance writer from North Yarmouth, Maine.*

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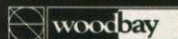
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