

## Irrigation: Ready to leap forward?

By BRUCE SHANK

Irrigation's place as a management tool for golf courses is taking a quantum leap forward.

Advances in golf course irrigation now outpaces the ability of many courses to stay current, while the golf course irriga-



Watering time at Merion Golf Club in Ardmore, Pa.

tion specialist is evolving from a specialized plumber into a database manager.

With this progress, however, a number of questions arise. Does your course require state-of-the-art irrigation technology to meet modern standards for quality of play?

Pick a standard, then decide. But one

*Bruce Shank works with Irricom, the communications arm of the Fairfax, Va.-based Irrigation Association*

fact remains constant: top-shelf golf requires state-of-the-art irrigation.

The plant palette on elite courses is complicated and microclimates abound. The superintendent needs to track every influence on every microclimate on his course to deliver superior playability.

Today's central controllers can do that, providing the water distribution system is equally sophisticated.

Standards for play are increasing across the board. Manual, quick-coupler irrigation falls far short today. Ironically, quick couplers are now used predominantly to give irrigation managers the flexibility they can't get from their automatic systems.

They give them the ability to stretch their systems to meet the needs of plant material in more complicated golf course designs. That tells us that average automatic irrigation systems are falling short on a growing number of courses.

Meeting standards on existing courses is one thing. What about future courses?

The greatest limiting factor to the expansion of golf is water. To maintain the growth of the game, golf courses will be

Continued on page 50

## Sulfur dioxide generator to the rescue

By PETER BLAIS

CHARLESTON, S.C. — "It would have made life a lot easier to have this sulfur dioxide generator before the Ryder Cup." — George Frye, superintendent, Kiawah Island's Ocean Course

While the golf world focused on the drama of watching the Americans win back that coveted trophy from the upstart Europeans six years ago, Frye's attention was on the beleaguered turf and trees that were suffering from irrigation water with pH levels of 9.0 and bicarbonate levels running upwards of 1,100 parts per million.

According to Dr. Thomas Ruehr of California Polytechnic University, when the pH level is above 7.5, large amounts of nitrogen evaporate from the water into the air through a process called ammonia volatilization. Nitrogen fertilizer efficiency is reduced and soil-borne plant pathogens frequently multiply in high pH soils. This is all bad news for turf.



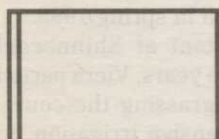
George Frye's favorite new toy

"Only 30 to 40 percent of the irrigation water we put on the course was available to the grass [back in 1991]," Frye recalled. "We needed to do something."

Frye researched the problem and came to the conclusion that a sulfur dioxide generator was the way to go. According to Ruehr, sulfur dioxide positively affects water by reducing pH, dissolved oxygen, carbonate and bicarbonate levels. It also buffers against the aggressive effects of four

Continued on page 50

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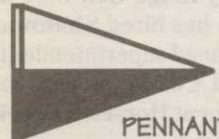
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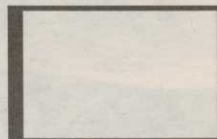
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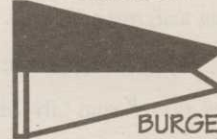
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## Casper keynotes

Continued from page 1

Hotel and Resort. Casper's keynote at 9 a.m. will kick off two days of educational sessions on course management and marketing, development and maintenance.

Casper's 51 PGA Tour victories stand him 6th on the all-time win list and earned him induction into the World Golf Hall of Fame in 1978 and PGA Hall of Fame in 1982. He won two U.S. Open titles (1959 and 1966), a Masters Championship (1970), a U.S. Senior Open title (1983)

and was twice named PGA Player of the Year (1966 and 1970). Eight times he played on the U.S. Ryder Cup teams and in 1979 was the non-playing captain.

Since reducing his playing time, the 66-year-old Casper has devoted increasing time to the course design firm Casper Nash & Associates, which he formed in 1986. From their Phoenix headquarters, he and partner Greg Nash have teamed on more than 60 mostly public-access golf courses, including nearly 27 for Del Webb's master-planned communities. The average golfer, he said, is his main target and

he designs his courses "to be very flexible" and to "offer an enjoyable challenge to average players while still testing the limits of a scratch player's abilities."

Meanwhile, Billy Casper Golf Management Inc., formed in 1988, operates 16 facilities from the mid-Atlantic to Hawaii. A dozen of those properties are daily-fee exclusively or semi-private. Headquartered in Vienna, Va., the firm provides consultation services on the planning, development and

construction of new courses, and offers complete turnkey management services to new and existing courses.

"We're thrilled to have Billy Casper headline our conference," said *Golf*

*Course News* publisher Charles von Brecht. "He knows every side of the golf industry and has been admired for his character and integrity his entire career."

For more information about Public Golf Forum, call 207-846-0600.



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CIRCLE #146

## H<sub>2</sub>O REPORT CONTINUED

## Sulfur dioxide

Continued from page 30

major cations: sodium, potassium, calcium and magnesium.

Likewise, sulfur dioxide-treated water that contacts soil reduces the soil pH while reducing sulfur and sodium levels.

Frye installed a sulfur dioxide generator at a cost of \$27,000. The results? The Ocean Course's turf and trees were able to utilize 80 to 90 percent of the irrigation water applied to the course, up from 30 to 40 percent previously. The improved efficiency allowed Frye to cut water use between 20 and 30 percent, a number that found favor with state environmentalists.

"[Course architect] Pete Dye couldn't believe the difference in the quality and health of the turf and trees when he came back recently, particularly the trees," Frye reported. "You can always replace turf, but not a 40-year-old live oak."

"I heard Raymon Finch [one of the developers of nearby Wild Dunes] say once that water had more influence on the success of a golf course than any other single thing. I think he's absolutely right."

The Ocean Course is preparing to host the World Cup on Nov. 17-23, the facility's first pro event since the Ryder Cup. Sixty-four of the world's top players from 32 countries are expected to participate. Frye closed the course for 30 days this spring while new fittings were placed on an updated irrigation system.

## Ready to leap

Continued from page 30

forced to use only that water necessary to meet standards.

Which leads to the next question: Is state-of-the-art irrigation necessary to deliver water most efficiently? The answer is "Yes," in the long term. Present-day automatic systems have application efficiencies in the 80-percent range.

Can we cut another ten percent with better control and delivery? The answer is "Yes," with improved sensor/controller feedback.

A great savior for golf is recycled water. Irrigating with treated effluent is a very promising short-term solution. However, the efficiency of irrigation systems, not recycled water, will determine the growth of the sport in the long run. Consequently, state-of-the-art irrigation technology is the long-term key to the growth of golf.

How quickly can current superintendents, irrigation specialists and other golf course personnel be trained to understand and manage advanced, central-computer irrigation systems? With the database of these systems expanding beyond irrigation, the superintendent can no

*The efficiency of irrigation systems, not recycled water, will determine the growth of the sport in the long run.*

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longer delegate operation of his central to one person. Chances are, irrigation specialists, mechanics, pesticide applicators, and equipment operators will need some access to the information gathered and organized by the central computer. At the same time, the information in the database must be secure from mistakes and unauthorized use.

This is a sizable training challenge. Will training from the manufacturers and distributors of these central systems be enough? If not, can irrigation consultants handle the job?

If you have read about the new total management packages from irrigation manufacturers, you know that implementation requires a very tight survey of your course so its layout can be digitized for the database. Any changes you make in the course have to be added to the database. Who will do this for thousands of courses in the coming years?

You can see how important it is to improve your irrigation system on a regular basis. By staying knowledgeable through training and making reasonable upgrades, you not only protect the future of your golf course, you protect the future of the sport.

GOLF COURSE NEWS