

Automatic Irrigation

FROM SKEPTICISM TO

Ten years ago Sea Island installed a semi-automatic irrigation system, the significance of which went ignored by the golf industry. The system worked, its critics were nonplussed, and golf course irrigation finally moved into the 20th century

By **WILLIAM H. BOWERS**

Ten years ago T. Miesse Baumgardner, vice president of the Sea Island Company, gambled on a long shot when he called on William H. Bowers, Inc., of Neptune Beach, Fla., a company that specializes in irrigation systems.

Baumgardner wanted Bowers' company to install at Sea Island the most modern golf course irrigation system. He had heard that a new type, called a semi-automatic system, had been already installed at two courses on the West Coast. Following the advice

of the late O.J. Noer, internationally famous agronomist, Baumgardner had written to those courses, but had never received any replies.

So Baumgardner gambled on the feasibility of the idea and went ahead with his plan.

The odds favored his choice. Today he can not only show the savings in materials, equipment and labor to his company, but some other irrigation firsts at Sea Island: the first automatic single row system ever installed



ENTHUSIASM IN A DECADE

and the first system in the world to be installed with independent automatic valve controls.

That the concept of automatic watering caught on is expressed by Herb Clark, director of research, Buckner Sprinkler Company: "After the first automatic system was installed on one of the three nine-hole courses at Sea Island in the mid-1950s—and the system worked—the idea of automation in sprinkler systems spread rapidly."

Harvey Linderman, landscape



architect with the Mountain Lakes Corp. in Lake Wales, Fla., recalls his first-night jitters. "When I think back to 1964, it somewhat frightens me that I stuck my neck out so far in making statements on the advantages of automatic watering and the estimated years for amortization."

Today's courses have benefited from irrigation's early pioneers. Automatic irrigation is now an accepted fact. One of the newest and largest projects is the Boca Raton West complex in Florida. Its three complete courses—soon to total six full 18-hole courses—are "under one roof" and "fence to fence," according to Bowers.

One advantage of the system is savings in materials. Mountain Lakes, for example, does not have a regular fungicide program. In fact, fungicides have been rarely used since 1965. Linderman credits the irrigation system, which "gives us absolute control of watering at all times." At the time of conversion Linderman admits that a weed problem did occur and herbicides were used for eradication. Subsequent control, however, has been done by spot spraying so that now "weeds are hard to find on the course."

Bowers echoes Linderman's feelings about complete control of watering, but warns "the results of this usage, either proper or improper, are immediately visible."

Ellis Geiger, the superintendent at Doral CC, Miami, Fla.,

also cites savings in labor and mechanical parts as another advantage of the automatic system. (Refer to automatic versus manual chart on page 53). Labor and parts, for example, run about \$500 a year. With a manual system, parts alone cost about \$500 a year. Added to that figure is labor, which generally runs about \$10,000, for a total of \$15,000. The savings per year can be \$10,000.

However, although the system employs no hoses or portable sprinklers, Bowers maintains that this system should be viewed as a piece of equipment, requiring maintenance, repairs and adjustments, just as mowers, tractors and pumps do. Many courses employ one or two full-time mechanics, but somehow they think that an automatic system requires no attention.

Watering programs under automatic systems vary. In general, according to Bowers, automatic systems use less water than manual systems because watering is controlled and can be regulated to what is required.

Mountain Lakes' tees and greens are overseeded with Penn-lawn fescue, bluegrass and Sea-side bent during the winter months, so watering of those areas ranges three to five minutes to 30 and 45 minutes during April and May. Elevation plays a big part in the length of time of application, and the frequency is nightly

continued

Sea Island GC, Ga. (far left, bottom), was one of the first to recognize the potential of automatic irrigation. Doral CC in Miami (left) is another club which benefited from its automatic system (see chart on page 53).

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as required. Syringing during the hours of play has been unnecessary with this program.

Fairways are also watered nightly. Again the time varies from six minutes during the cool months to 30 minutes during

the dry months.

Says Linderman, "We were cautioned that this frequency would damage the root system of our grass, but this has not been the case. It has been our aim since conversion to replace the amount of water we felt was being lost and used by the turf." The purpose was to maintain a uniform moisture through the soil

instead of the "feast or famine supply that existed under the manual watering system," explains Linderman. He adds, "One might think that this type of watering would soon dissipate any fertilizer applications. It has been my experience that these applications seem to last longer. Maybe this is because there is more plant to absorb and store the food.

"I cannot say that our system does not fail or give us trouble, but the incidents are seldom and then always isolated to one section. But anyone considering a conversion or installation has only to observe courses with and without—better yet, fly over different courses. This helped to sell our system."

Automatic Irrigation Versus Manual Irrigation

Compiled by Ellis Geiger, Doral CC, Miami, Fla.

Automatic	Manual
Initial cost: 30% higher*	
Maintenance and labor: \$2,500 per year for 18 holes \$500 labor and parts \$2,000 replacement fund	\$500 parts \$10,000 labor
After 10 years: Savings of \$20,000 Can replace all equipment	Nothing
Savings: Fertilizer 5% Insecticides 5% Fungicides 10% Appearance Up 30%	Nothing Nothing Nothing Same
Weed problem: After one year 12.5% After two years 6.25%	25% of course continuously in weeds
Minutes of watering 13 to 22 minutes on fairways depending on the season and elevation of land Two 7 minute cycles on greens No labor costs	Labor for 54 holes was 3 men at 8 hours a night; 18 men at 2 hours a day for greens and tees, or 20 men hours per day for 18 holes
Everything irrigated every night.	Who knows?
Root level and system: Better than before	Same
Amount of water: Less than one inch per week in southern Florida if applied daily	Zero to two inches, depending on the man

**Editor's note: All figures pertain only to Doral and are not meant to represent an industry-wide average, since situations and conditions vary from course to course.*

Fairway head locations

There are four basic plans:

1. **Center line:** Large heads with the heads on 80 to 90 foot centers. The head covers a 160 to 200-foot diameter, depending on the gallonage and pressure;

2. **Double row or triple row:** Small heads with the heads on 60 to 80-foot triangular spacings. Each head covers a diameter of 100 to 140 feet depending on the gallonage and pressure;

3. A **combination** of the two above, using the double rows in the target areas and approaches and the single row in the remainder of the fairways. This is a very versatile method and allows the average course very good coverage without the extra expense of the complete double, or, in some cases, the triple row systems;

4. **Fence to fence:** The entire area is treated like a park, and roughs are only distinguished by their height of mowing.

Programming

There are three basic methods used in the programming of automatic irrigation systems:

1. **Central control panel:** The controllers are all in the same lo-

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cation, which is usually the pump house, and a specific number of heads in different locations throughout the course operate simultaneously for a predetermined length of time, covering the course in two or three nights;

2. **Section method:** The course is divided into sections with controllers in each section (or in the central control panel) and one or more adjacent heads run simultaneously for the same predetermined length of time and change until the entire section is watered, doing so many sections one night and the remainder on the next night or the next two nights;

3. **Zone method:** The course is divided into zones with controllers in each zone operating one head in each zone. The head is independent of any other head on the golf course and individually time controlled. This requires an individual valve under every head—the same technique developed at Sea Island 10 years ago.

Greens and tees

Because of their individual nature, each green and tee requires different head locations and sizes, so there is no set pattern for establishing this. Each, therefore, must be done separately, and they are usually programmed into one of the methods previously mentioned.

Equipment

Overall, manufacturers have made some remarkable advancements in the last several years. The rapid development of the industry has caused many products to be released before they have been sufficiently tested, and the great demand as well as the mass production, in some cases, have resulted in the loss of a large percentage of quality control. It is unfortunate that in the development of an industry in its infancy these things happen. They result

in hardship for everyone involved and at times hurt the whole industry. However, the majority of manufacturers correct these errors as soon as possible and as a result, make better products.

Master control equipment

Although no one company manufactures a complete pump control unit, it is entirely possible to incorporate a number of different components to be able to have constant downstream pressure, specific backstream retention, opening and closing speed control, high pressure or low pressure, on and off, rate of flow control and valve seat position on and off. The proper use of this equipment is important in an automatic system and should definitely be considered as absolutely necessary for a successful installation. Again, as each installation is specific in its requirements, this unit must be created for the individual job by whoever is doing the construction. Automatic irrigation, its habits and happenings, are rather unique in its performances and is quite complicated to someone not closely associated with its operation. Nevertheless, the results that can be obtained from the proper use of an automatic system are nearly beyond belief, and it is indeed most satisfying and stimulating for those in the industry to know that with each new day and each new project, something is developed that helps men maintain better turf.

The future

Today, experiments with binar (twin wire) to reduce the amount of cable by 400,000 feet on an 18-hole course irrigation system, radio solar batteries for remote control, transmission of messages on water movement and many more seemingly impossible feats are being done. But then 10 years ago, the idea of automatically irrigating a golf course, except to a few, also seemed impossible. □