Let your fingers do the watering

BY MARK LESLIE

The touch of a keyboard in the office has replaced the turn of a controller dial out on the fairway at many golf courses, and the trend should continue as water wars limit water availability and increase costs.

Personal computers (PCs) — teamed with weather stations — have revolutionized irrigation by providing a computerized central control system. Using a PC-based system, armed with the evapotranspiration (ET) rate and other data affecting turf, a superintendent can control the entire irrigation system and its "satellites" from one location and one computer.

"Computers give you the highest possible level of control, which is critical when you're looking at trying to reduce the amount of water you need to give your customer what they demand without wasting water," said Ray Davies, superintendent at Virginia Country Club in Huntington Beach, Calif., and president of the Golf Course Superintendents Association of Southern California.

In Southern California, he said: "Everybody who can afford it is (installing a computerized system). Irrigation systems cost so much right now that if you are going to install one, you're a fool not to put in a computer."

Even superintendents in unlikely areas are using computers to confront the problem of low water supplies.

"We're on wells here, so we don't like to waste any water if we can help it," said Ken Wright, superintendent at Devil's Pulpit in Caledon, Ontario, which gets a substantial annual rainfall.

A computer's "ability to control the amount of water you use is definitely an asset, especially if you're in an area where you're restricted in the volume of water you can use," said Wright. "You don't waste water. You can control it to the minute, where with a lot of electro-mechanical systems you can't do that."

Portland (Maine) Country Club superintendent Pat Lewis expects a huge reduction in manhours devoted to irrigating after a computerized system is installed in fall 1991. He said while most crews probably consume about 80 hours a week irrigating courses with manual or electro-mechanical systems, he will save at least 200 manhours a week.

"That's equivalent to five full-time people — five I can better use doing other jobs," he said.

Lewis added he anticipates major energy savings, partly because the computer will meter the water so well that he won't need to run a pump to irrigate some of the course.

John Mervis, an irrigation consultant and president of Clubmaster Software Systems in North Ft. Lauderdale and Tampa, Fla., said of the impact of computerization on irrigation systems: "Statistically it gives the golf course superintendent more feedback than the old syringe system. He can now tell what the water flow was; how long it was on; if a satellite failed...

"With the old syringe system, you'd tell it to irrigate and never know if it did because lightning or ants might short-circuit a controller. Sometimes the course burns up before you find out the satellite doesn't work. With the new systems, information comes back telling you that the controller didn't respond."

Dwindling resources

Kurt Thompson, national sales director for Buckner, Inc. in Fresno, Calif., said dwindling supplies of potable water, increasing use of effluent for irrigation, more affordable computers and technically well-schooled superintendents are all spurring sales of computer controllers.

He said 50 to 60 percent of computer controllers in the golf market are being sold to existing courses and the rest to new ones.

Steve Christie, director of sales and marketing for Rain Bird Sales' Golf Division, said 80 percent of his companyu's sales are to new

Continued on page 18

GOLF COURSE NEWS

Exclusive survey

	Buckner, Inc. 4381 N. Brawley Fresno, CA 93722 David Truttmann 209-275-0500 **Circle #201**	Motorola, Inc. 9848 Business Park Dr. #F Sacramento, CA 95827 David Megeath 917-735-8884 **Circle #202**		Rain Bird Sales 145 N. Grand Ave. Glendora, CA Peter Johnson 818-963-9311 **Circle #203**	Thompson Manuf. 5075 Edison Ave. Chino, CA 91710 Michael Bravo 714-591-4851 **Circle #204**	The Toro Co. P.O. Box 489 Riverside, CA John Skidgel 714-688-9221 **Circle #205**
	Buckner COPS	Motorola MIR 5000	Motorola OSMAC	Rain Bird MAXI V	Thompson Mark 1	Toro Net. 8000
Is system PC dedicated?	No	No	Yes	No	No	No
Can system control aerators, lights, etc. not related to irrigation?	Yes	Yes	Yes	Yes	Yes	Yes
Is system Evapotranspiration Rate-based?	Yes	Yes	Yes	Yes	Yes	Yes
How many weather stations can it monitor?	396	9	9	8	10	1
Is information downloaded to satellite or stored in computer?	2-way	Downloads	Computer only	Computer only	2-way	2-way
When installing system into existing irrigation system, can you simply install controllers and satellites without changing irrigation hardware?	Yes	Yes	Yes	Yes	Yes	Yes
Are computers and satellites going to be reverse-compatible when one or the other is upgraded to a new version?	Yes	Yes	Yes	Yes	No	Yes
Must the computer be an IBM-PS2 or can it simply be IBM-compatible?	Compatible	Compatible	Compatible	Both	Macintosh 2	Compatible
Must superintendent buy his computer from your company?	No	No	No	No	No	No
What would be the cost to install the system at a new golf course that has 5 weather stations, is 6,500 yards long on 125 acres?	$50,000-$200,000	$100,000-140,000	$30,000-$55,000	$60,000	$800,000	$780,000
How many service centers does your company have in the U.S.?	70	900+	900+	100+	3,000+	55
Do your satellites have internal UPS (uninterruptible power supply)?	*Nonvolatile RAM	Yes	Yes	No	* Nonvolatile RAM	* Nonvolatile RAM
Does your system include a constant-voltage transformer at every satellite?	Yes	Yes/24 VAC	Yes/ 24 VAC	No	Equivalent	Available
How many satellites can your system operate?	99x999	8000	8000	5800	136	800
What is your hardware guarantee?	2 years	1 year	1 year	1 year	3 years	1 year

Irrigation

Continued from page 16

courses, although his headquarters doesn't learn about many of the "redos," which are handled by distributors.

"The real motivating force to buying these systems is the superintendents coming out of the turfgrass schools and their technical training," Thompson said. "In the old days someone was the superintendent because he knew how to work on the pump — if they had irrigation — and the equipment; and they had to be an arborist, an entomologist, a pesticide applicator, turf manager, personnel manager, public relations expert. The superintendent is terribly underrated.

"Now you have guys coming out of college to be a superintendent, and they are well versed... Usually they've spent time in their youth working on a golf course. They've been exposed to manufacturers. And they've had the technical, academic part of it.

"They realize their livelihood can depend on the computer... If your irrigation system doesn't work in Arizona you don't have a job. You're fired."

Rain Bird's Christie said: "It's almost to the point that you've got to have one (computer-controlled system). We're finding that superintendents are very effectively using these systems. The older superintendents as well as recent graduates are learning how to operate the program and the system. The programs are all menu-driven, and simple to use."

Playing conditions

Keeping golfers happy is the key to keeping a greenkeeper's job.

Virginia CC's Davies said computers help satisfy the club members by making it possible to create "the best possible playing conditions for the golf course — not too wet and not too dry. I'm not saying I'd use less water. But I'd have better distribution.

"We're always on the dry side. Our players do not want wet grass. They want green grass that's dry and that's a pretty tough order. Nothing will draw criticism more than a wet golf course."

Buckner's Thompson said a computerized system can also save tremendously by determining the size of pipe to install in the ground.

Smaller pipes cost less, need less maintenance and undergo less wear and tear, Thompson said.

Plus, smaller pumps save on installation, maintenance and energy, he said.

"The industry average is 25 percent energy saving using a computer-controlled system versus a non-satellite or mechanical system," Thompson said.

Effluent

The growing use of wastewater means more computers at courses.

"If you're using effluent you usually have to strictly control it," Thompson said. "Besides applying it when it won't drift, you have soil-loading constraints that the waste engineers specify.

"You're not just replenishing the water lost through ET. With effluent you get "X" thousands of gallons whether you need it or not, so you've got to be able to store it or use it... You may turn on the roughs extra long, particularly in the wintertime.

"It becomes a complex management process, and that's where the computer comes in."

Davies, whose course uses effluent but isn't under obligation to buy a minimum amount, said the major problem with wastewater is the greens.

A computer system could easily control this, he said, because valves are individually controlled.

Wright added that superintendents caring for bentgrass want "every bit of help they can get. The computer controls the volume of water. You can get it down to the minute, and that's the route to go, I think."

Weather has exacerbated the need for better water management everywhere.

Weather has exacerbated the need for better water management all over the country the last 10 or 15 years. Rainfall was above normal in the East until two years ago when it returned to normal. The Midwest suffered drought conditions the past two years.

"Now other regions are drying out. It moves around with the weather," Thompson said. "The Rocky Mountain states are very dependent on a big snowpack this year to replenish the water table."

Lower costs

Meanwhile, computers that cost $4,000 or more just three years ago now cost $1,500 or $1,600.

"I always thought it funny that people would put in a $250,000 to $500,000 irrigation system and balk at $4,000 more," Thompson said. "Now they can justify it."

Dan Jones, superintendent at Banyon Golf Club in West Palm Beach, Fla., agrees.

Jones, who is overseeing installation of a new irrigation system, said: "The cost is so insignificant ... to make sure you go first-class and do it right the first time. We're looking at a 30-year investment. We're not looking at a piece of equipment I might turn in every three or four years. I can't make a mistake and say, 'Gee, I'll get it right the next time.' 'Next time' is in 30 years."

Added Christie: "I think the redo market is going to become very lucrative and very active in the next few years. It's very simple and easy to change over from manual or electro-mechanical to computer-based. Muirfield Village in Dublin, Ohio, is changing this week from a mechanical-based satellite system

Continued on page 19

Irrigation

Continued from page 18

to a Maxi 5."

Manufacturers' list prices on computer control systems range from $17,000 to $28,000, but they normally sell for 40 percent less, said one industry source. The price usually covers the software, support, training, and the interface that allows the computer to talk to the satellites.

The satellites cost about $3,000 per unit. An average 18-hole course on the East Coast will install 12 to 15 satellites while a West Coast course, which waters the rough, will have 30 to 40.

A key feature for many superintendents considering a computer controlled irrigation system is whether it can run other programs.

Expanded uses

"The demands of superintendents include so many things," said John Skidgel, golf marketing manager for The Toro Co. Irrigation Division. "They want records. They want to know if there's any shutdown. They want to operate lights on the tennis courts, open and close valves on the ponds to keep the water levels at a certain point. They want to turn on their aerator out in the middle of the pond. On and on and on...

"We've even got additional programs so guys can do things like lightly sprinkle the fairways to remove frost right before play starts in the morning."

Some systems are PC-dedicated; others are not. The difference is that one can be used for other purposes while it is controlling the irrigation; others cannot.

But Wright said it shouldn't matter. "You figure you irrigate from 10 at night to 6 in the morning. No one uses the computer for other things at that time," he said.

The difference from one system to another?

"We don't find a whole lot of difference," said consultant Mervis. "They're all trying to do the same thing."

Future

Continued from page 17

energy and ground water contamination — this is a way of control.

"Superintendents can use computers to solve environmental concerns."

Christie predicted systems will have information "as to how much water, over what period of time, is needed to wash fertilizer in slowly rather than going straight to the ground water."

Sears said one manufacturer is developing a system programmed with weather data from the last 30 years. A superintendent will punch up his ZIP code and the program will plug that data right into the system. The weather station will then base itself, and make daily adjustments from that data.

The cost

The cost of computer controllers, Thompson said, will depend mostly on supply and demand.

"You pay a premium for new technology," Thompson said, "but cost will stay the same proportionately."

Ray Davies, superintendent of Virginia Country Club in Huntington Beach, Calif., and president of the Golf Course Superintendents Association of Southern California, said he doesn't consider it a disservice for a company to promote its system's many capabilities, even if they are not used much.

"It may be an inaccurate sales tool," he said. "You only talk about a bell or whistle if that thing's important to the customer. And it's up to the customer to decide if it's what he needs and to buy accordingly."

Supers

Continued from page 1

gallon more than before. The price of oil had just gone up to $24 a barrel and was destined to climb over $30.

"We get monthly 1,000- to 1,500-gallon deliveries," Jones said. "I hate to think what my next fill-up is going to cost."

Ken Flisek was more optimistic about his situation at The Woodlands course in Falmouth, Maine, which is closed in the winter.

"Our fuel is only about $10,000 out of a $400,000 budget," Flisek said. "That may go up to $12,000 next year. That doesn't count heating fuel for the maintenance building."

In the heartland of the country, Stephen Biggers IV reported a similar feeling.

The president of the Indiana Golf Course Superintendents Association and superintendent at Highland Golf and Country Club in Indianapolis, Ind., Biggers said, "Guys with a longer season will be hurt a lot more than us."

Biggers said gas prices had gone from $1.00 to $1.30 per gallon, but that impact was minimal considering the size of his overall budget.

He said he had not bought oil or chemicals since the Middle East crisis arose, and added: "I don't know what will happen in the chemical industry. I'm sure there's plenty in stock. New materials will probably go up... More than anything else, the cost increase would be in products that use surfactants (surface active agents), wetting agents or emulsifiable concentrate-type materials.

"Luckily, we're almost out of the season for chemical applications."

Saying that he did not think cost increases for chemicals would hurt much, Flisek added, "Unfortunately, once the fuel price goes up, the price of every commodity in the world goes up."

Jones thought the worst effect would come from the domino theory.

"All our fertilizers are based on fuel oil. Our chemicals are based on fuel oil... And I think the domino

Continued on page 21