

VFDs have waged winning battle for hearts of supers

By KEVIN KNIGHT

A big controversy among golf course superintendents is whether variable frequency drive (VFD) pump systems offer significant benefits over "conventional" systems with pressure-reducing valves. At trade shows, seasoned veterans argue the pros and cons of system maintenance, power consumption, reliability and more.

Several things become clear, however:

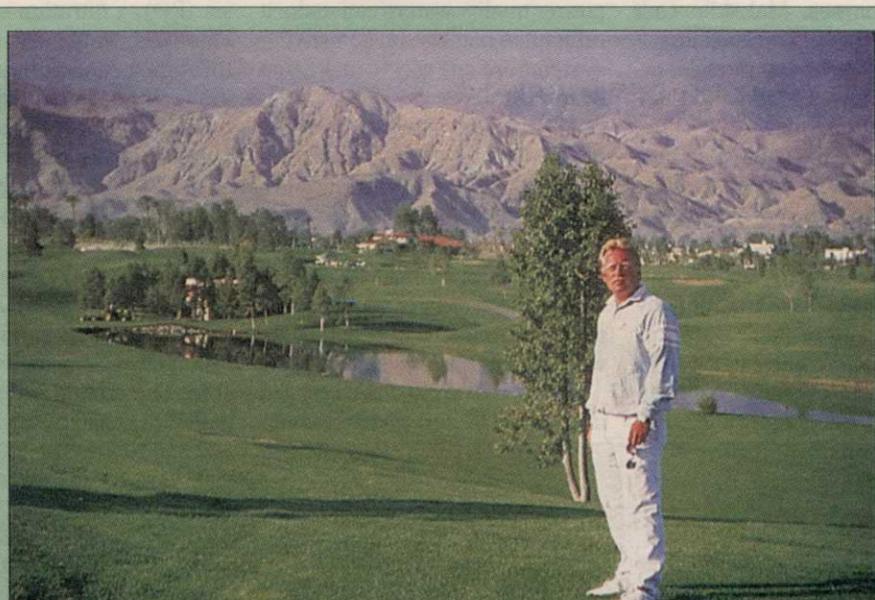
- Conventional systems are more established on golf courses but VFD systems are growing in popularity.
- VFD systems tend to be more expensive but they eliminate water hammer, provide significant energy savings and reduce maintenance.
- As VFD technology becomes more popular, prices will continue dropping.

To better understand VFD technology, seven golf course maintenance professionals across North America shared their opinions on VFD systems.

POWER SAVINGS

Since its studies have shown VFD tech-

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Roger Compton overlooking Mission Hills Resort Course, with the pumphouse in the trees in the background. Photo courtesy of Flowtronex International

nology saves power, Southern California-Edison has offered significant rebates — representing up to 30-percent discounts — for conserving energy.

"In 1989 I compared power usage between two identical pump stations," said Cal-Edison engineer Tom Olson. "One was

a conventional unit. The other was its replacement, a VFD system. They had identical pumps and motors and moved the same amount of water. The VFD system was nearly twice as efficient as the conventional system and saved the golf course \$12,000 annually in power costs."

Although such huge savings aren't the rule, engineers like David Brockway of Flowtronex International say savings of 20 to 30 percent are typical.

"There have been a lot of debates among people wondering if these systems actually use less power," Brockway said. "The easiest way to answer that question is by asking a superintendent who made the switch. In seven years I haven't found one who hasn't noticed an improvement."

Superintendent Ian Chapman of Castlemoor Country Club in Toronto, Canada, has documented 30-percent power savings since converting his system to VFD three years ago.

"We were spending \$4,000 to \$5,000 annually to power the irrigation system. One year after converting to VFD we pumped 21 million gallons and only had a \$2,800 power bill. Those kind of savings add up," Chapman said.

He added that lower electric bills are only part of the reason for converting. "A lot of people said these systems were overkill for Northern courses with short golf seasons. I don't buy that. Fewer line breaks (due to reduced water hammer) justifies VFD. Power savings are just the cherry on

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Rotors saving water, energy and turf in increased use at golf courses

By PETER BLAIS

Water shortages, higher costs and increased effluent use have led to climbing sales of part-circle irrigation rotors, industry experts report.

Part-circle rotors are adjustable, allowing superintendents to place water exactly where they need it and avoid areas better left unirrigated.

Full-circle models, on the other hand, distribute water evenly in a 360-degree pattern. That can waste water on areas that don't need it, said Rain Bird's Scott Salter.

Full-circle rotors can also cause an unwanted scalloping pattern to the turf when used along the edges of wall-to-wall irrigated areas, according to Toro Co. Golf Marketing Division Manager Scott Morgan.

Full-circle models comprise the bulk of sales in most Eastern areas, where water supplies are plentiful and effluent use is rare, irrigation company executives agree. Rain Bird's full-circles outsell part-circles 4-to-1 there, Salter said.

"In the Northeast, the ratio might be more like 99-to-1 [in favor of full-circle]," said Hunter Industries Golf Division Sales Manager Gard Crow.

But in the South and West, where droughts have taken their toll on water supplies, coats have risen and effluent use is heavily regulated, part-circles have caught up and will soon pass full-circles in sales, Salter predicted.

Toro's part-circle sales constitute 30 percent of its rotor sales, up from 25 percent a few years ago, and will continue to climb,

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Part-circle rotor manufacturers and their models

*Under Valve-in-head model availability
E-Electric, H-Hydraulic, C-Check valve

Company	Model	Radius range (ft.)	Flow (gal./min.)	Pressure range (psi)	Factory pressure setting (psi)	Factory setting	Inlet size (in.)	Outlet trajectory (degrees)	Max. stream hgt. (ft.)	*Valve-in-head availability
Buckner Inc. 4381 N. Brawley Fresno, Calif. 209-275-0500 Dave Truttmann Circle #170	91CV	53-61	12.9-20.4	50-80	N/A	N/A	1	24	N/A	C
	P-71-VIH	49-68	13.2-29.5	60-80	N/A	Adjustable	1.5	22-23	N/A	E
Hunter Industries 1940 Diamond St. San Marcos, Calif. 619-744-5240 Gard Crow Circle #171	G-550	42-70	2.6-30	30-90	N/A	N/A	1	24	N/A	H,C
Rain Bird Sales 145 N. Grand Ave. Glendora, CA 818-852-7227 Scott Salter Circle #172	95D	66-98	26.1-67.2	60-100	80	Adjustable	1.5	23	17	E,H
	47D	49-61	9-17	50-100	60-80	Adjustable	1.5	23	15	E,H
The Toro Co. 5825 Jasmine St. Riverside, Calif. 714-785-3555 Jim Wright Circle #173	650 690	53-86 78-108	11.7-43.7 45.1-82.2	40-100 60-100	50, 65, 80, 100 80-100	Multiple fixed-4 Multiple fixed-2	1.5 1.5	25 25	12.5-18 21-27	E,H,C E,H,C
Thompson Corp. 5075 Edison Ave. Chino, Calif. 714-591-4851 Larry Fossan Circle #174	#1000 Plastic	30-110	2-80	20-100	N/A	Adjustable	1-1.5	23	0	E,H,C
	180 Commander Brass	30-110	2-80	20-100	N/A	Adjustable	1-1.3	23	0	E,H,C
Weather-matic P.O. Box 180205 Garland, Texas 214-278-6131 Gene Johnson Circle #175	PK	41-73	3.6-40.7	40-100	50-80	Adjustable	1	25	18.5	C
	K90	85-101	37-78.3	60-100	80	Adjustable	1.3	23	18	N/A
Weather-Tec Corp. 5645 Clinton Fresno, Calif. 209-291-5555 Nick Dvorak Circle #176	UR-BPC	45.5-65.5	10.6-28.7	40-80	Not pre-set	Adjustable	1	25	N/A	N/A
	35-94	47.5-104	11.6-82.7	50-100	Not pre-set	Adjustable	1.3	23	N/A	N/A

Wastewater symposium organized by golf industry groups

By PETER BLAIS

The U.S. Golf Association and other golf industry groups will sponsor a golf course wastewater symposium March 4-5, 1993 in Newport Beach, Calif.

The goal is to provide architects, builders, developers, irrigation specialists, municipal and county officials and others with information regarding the availability and cost of using or converting to effluent to irrigate their courses, according to USGA Research Director Mike Kenna.

"It should be very helpful for those deciding whether to use effluent on a new

course or to retrofit a system to accept effluent because regular water is scarce or just too expensive," Kenna said.

The first day will follow a conference format with a host of speakers discussing why courses should use effluent; regulations, ordinances and legal liabilities; wastewater quality, treatment and delivery systems; and the effects of wastewater on the turfgrass/soil environment.

Among the speakers will be Dr. James Watson, vice president, The Toro Co.; Dr. Robert N. Carrow, agronomist, University of Georgia; Garrett Gill, golf course archi-

tect; James Crook of Camp, Dresser & McKee Inc.; Anne Townsend Thomas, partner, attorney, Best, Best & Krieger; Dr. Ali Harivandi, University of California; Dr. Marilyn Yates, groundwater quality specialist, University of California, Riverside; Dr. Charles F. Mancino, associate professor, University of Arizona; and Jim Moore, director, USGA Green Section/Mid-Continent Region.

Dr. Charles Peacock, associate professor at North Carolina State University, will kick off the second day with a talk on the advantages and disadvantages of wastewa-

ter use. That will be followed by a series of case studies from various parts of the country and an afternoon field tour of a sewage treatment plant and two golf courses.

The cost of the two-day session will be \$190 including two lunches and the field tours. Room rates at the conference site, the Newport Beach Marriott Hotel, will be \$110.

Others involved in sponsoring the symposium include the Golf Course Superintendents Association of America, American Society of Golf Course Architects, Golf Course Builders Association of America and National Golf Foundation.

Rotors winning supporters, saving water

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Morgan predicted.

"Water quality and price are driving it," said Buckner Inc. Marketing Manager Vahan Bagdasarian. "Here in California, water is a particularly big concern. Part-circles have a big place here."

With potable water getting scarcer and more expensive, reclaimed water is often seen as the golf industry's savior. On the plus side, effluent has usually been screened, removing much of the sand and debris found in fresh water that can clog sprinkler heads. And effluent is plentiful. Local water treatment systems are often happy to sign on golf courses to help them get rid of their excess liquid.

But effluent does have drawbacks. Chief among them is the

Most rotor manufacturers are using diaphragm materials that stand up better to reclaimed water.

high nutrient levels that allow bacteria and algae to flourish. This leads to health concerns, which often result in regulations requiring ef-

fluent to be directed away from certain areas in and around golf courses, such as neighbors' lawns and common walkways. Reclaimed water can also foul freshwater streams and ponds if runoff is allowed to drain into them.

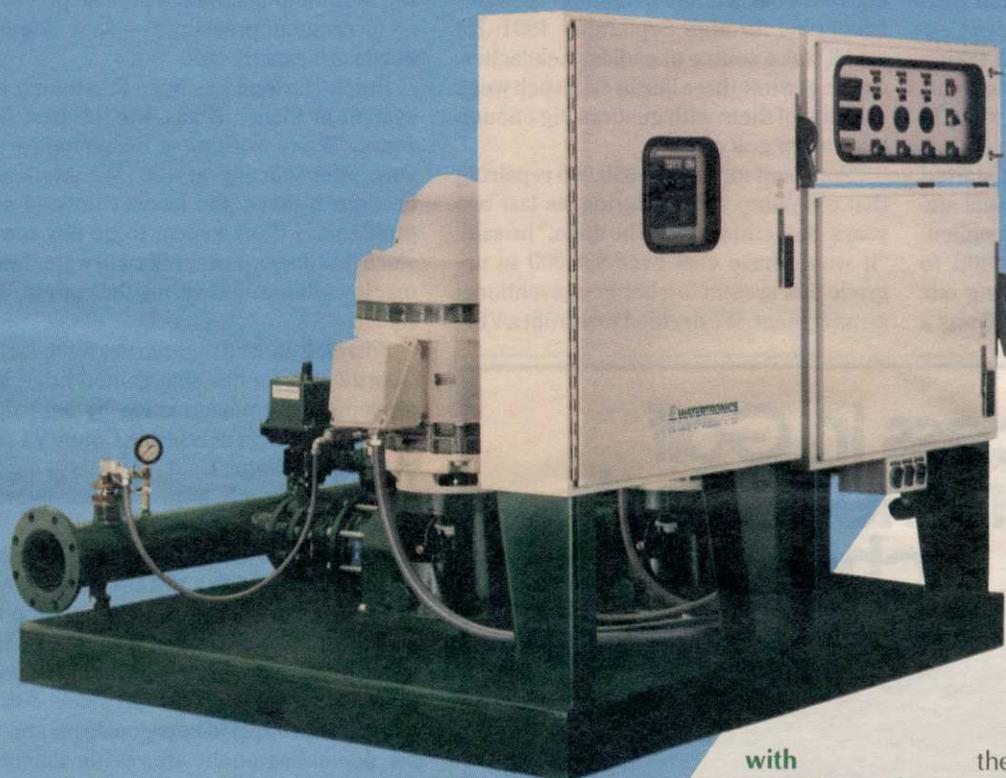
Algae is a particular problem at those courses where reclaimed water can be stored in open ponds, allowing the pond plants to flourish.

New rotors have been designed with larger passageways to allow algae to pass through without clogging the unit, Salter said.

Most rotor manufacturers are using diaphragm materials that stand up better to reclaimed water.

To indicate they disperse effluent, rotors are usually colored purple and bear an international symbol for non-potable water [such as a drinking glass inside a circle with a line running through it].

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