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courses that have poor water quality in their old or improperly maintained systems.

“There’s a lot of wear and tear on an irrigation system, especially where you have iron in the water,” he says. “Things start to wear out, whether it’s the piping system or the pumping station. You run into problems with algae in ponds, things like that.”

But advances in technology have enhanced the quality and performance of irrigation systems. Most new systems are designed to last about 20 years at high efficiency. Pipes and fittings might have a longer physical life, but changes in technology have made it worth replacing nozzles, controllers and software far more frequently, says Dave Davis of irrigation consulting firm Da-

vid D. Davis and Associates, based in Crestline, Calif. A small investment made in an irrigation system could result in considerable savings.

“If a superintendent has expensive water and power, updating nozzles more frequently can save huge amounts of water, power and money,” Davis says. “Updating software more frequently can improve conservation and pay for the change quickly.”

IRRIGATION IMPROVEMENTS

Charlie Babcock, golf course superintendent at Tunxis Plantation Country Club, a 45-hole facility in Farmington, Conn., has been dealing with irrigation problems for 26 years. Ten years ago, Babcock liked the new technology at the time and decided to retrofit 27 holes with a variable frequency pump, new main irrigation lines in the rough and laterals into the fairways.

Babcock is pleased with the results of the project, which cost about \$250,000 and was done

Paradise Valley Country Club spent \$1 million upgrading its antiquated irrigation system. Photo: Paradise Valley Country Club

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Between repairs and the man-hours needed to conduct those repairs, Tri Mountain Golf Club's old, 18-hole irrigation system consumed between 20 and 30 percent of superintendent Dan Bierscheid's annual maintenance budget. Photo: Tri Mountain Golf Club

in house in three years. In terms of maintenance and avoiding problems, the biggest thing for Babcock was switching to variable frequency drives for the pumps. Now there's a slower, more controlled release of water into the system.

"You don't have that blast of pressure that can cause fittings to weaken and eventually burst," he says.

"I would advise superintendents not to undersize their irrigation pipes just to save money," he adds. "We used iron fittings at the elbows and T's of the pipes and locked them up securely with cement. We rarely have had a problem in 10 years."

John Roth, golf course superintendent and part owner of the 18-hole Paradise Valley Country Club in Casper, Wyo., and his crews were battling leaks in the course's irrigation system constantly.

"The pipes were old, the pumps were old and it was an archaic design, so the system was out every night," Roth says. "We would fix the problem, and it would happen all over again the next day. It was a huge commitment of manpower and was taking us away from other course maintenance."

Two years ago, Roth and others convinced Paradise Valley members to undertake a \$1-million project to install a new irrigation system.

"We had zero problems last year," he says. "We might have had an issue with a sprinkler head here and there, but we don't need a backhoe and 20 guys to fix a leak as we did with the old system."

Roth also incorporated more native-grass areas into the course. This reduced the need to water and lowered the water pressure, reducing wear and tear on the pumps and system in general.

"We have great temperature fluctuations here – 105 degrees in the summer and minus 40 in the winter – that can really damage the pipes," he says. "But I went home this past winter not worrying about leaks with the new system."

System maintenance

Brian Vinchesi of Irrigation Consulting in Pepperell, Mass., offers tips to help superintendents maintain an irrigation system properly:

- Check to make sure sprinklers are level and at grade monthly.
- Make sure sprinkler heads turn, go on and off, and go up and down.
- Track water use daily so you can notice changes as a result of leaks or nonoperating equipment.
- Check the pumping station at least once a week, even if it seems to be working fine.
- Meg controller grounds every seven months for the first few years after a system's installation to make sure the grounds are acceptable throughout.
- Open and close all gate valves (lateral and mainline) at least once a year to keep them from locking in an open position.
- Check drain and air-release valves each spring, and during winterization (if applicable), for proper operation. If you irrigate year round, they should be checked at least twice a year.



Dan Bierscheid, golf course superintendent of Tri Mountain Golf Club, a municipal course in Ridgefield, Wash., found himself in a similar situation, battling problems with the irrigation system almost daily.

"We were spending between \$3,000 and \$4,000 a year on irrigation repairs, and that didn't include the money to pay my crew doing the work," Bierscheid says.

Bierscheid convinced the town to approve a new irrigation system installation at Tri Mountain, which is being done in house. He and his crew completed nine holes last fall and will complete the other nine this fall. Bierscheid hired a contractor to do the digging and a few temporary guys to augment his staff, which installed all the lines.

"It's very windy here," he says. "The course was capped with eight to 10 inches of sand, which dries out very quickly."

With the old system, Bierscheid would have had to send at least six guys out to hand-water because of the two-row system and a lack of sprinklers in the middle of the fairways.

"There's 85 feet of spacing between sprinklers in the old system, so we have to compensate for that," he says. "It takes a toll and causes a lot of pipe leaks and breaks."

Between repairs and the man-hours needed to conduct those repairs, the old, 18-hole irrigation system consumed between 20 and 30 percent of Bierscheid's annual maintenance budget.

"We'll really get a good comparison this summer between the new system and the old one," he says.

ROUTINE MAINTENANCE

Whether a golf course irrigation system is new, a few years old or 20 years old, superintendents need to maintain it vigilantly to ensure it continues to function properly. The irrigation system at the 18-hole Crystal Springs Golf Club in Vernon, N.J., was installed in 1990 and is still a good system, says golf course superintendent Craig Worts. One reason for that is Worts' maintenance routine.

"We have about \$10,000 in our budget for irrigation system repairs, and that doesn't include my guy who supervises the system," he says. "You can probably add another \$5,000 to \$7,500 on top of the \$10,000 to figure

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RAIN BIRD

At Tri Mountain Golf Club, Dan Bierscheid and his crew completed nine holes of an irrigation renovation last fall and will complete the other nine holes this fall. Photo: Tri Mountain Golf Club

what it costs annually to maintain.”

Worts doesn't have a computerized system that alerts him of malfunctioning sprinkler heads. Rather, he and the crew complete a visual run through of the system every day, taking nothing for granted.

The installation of a 5-horsepower pump is one considerable improvement to the irrigation system at Crystal Springs. The jockey pump saves wear and tear on the two 30-horsepower pumps.

“The small pump kicks on every five minutes during watering so the bigger pumps don't go on full and produce the hammering effect on the system that can result in damaged pipes,” Worts says.



Having a person on staff designated as an irrigation specialist helps the daily management of the course's watering system considerably.

“One of the things I take pride in is our irrigation guy,” Worts says. “I put a lot of faith in him. He's been here 10 years and knows the

system inside and out. Some of the smaller clubs don't have the manpower we do, so the superintendent or assistant superintendent monitors the system.”

Keeping a close eye, and ear, on an irrigation system is the best way to prevent big problems.

“We listen to hear if the pump starts recycling when we aren't watering,” Babcock says. “That might indicate a leak somewhere. The guys who are mowing notice if there are any damaged or malfunctioning sprinkler heads. We just have to eyeball everything continually and not get caught up in something else if we see a problem with the irrigation.”

In the northern regions of the country, there are ways to protect an irrigation system during the winter and make sure it will operate smoothly once the water is turned on again in the spring.

Every fall in middle to late November at the Old Course at Bedford (Pa.) Springs Resort, golf course superintendent Dave Swartzel and his crew blow out the irrigation system by connecting a compressor to the main irrigation line at the pump house to blow air through the system.

“Some courses do it once, but we do it two or three times to make sure we get every bit of water we can out of the system,” Swartzel says. “It prevents water from freezing in the pipes and causing problems.”

When starting an irrigation system in the spring, superintendents recommend that pump pressure should be built up slowly, perhaps during the course of several days, so the pipes aren't stressed by blasting a large amount of water into the system all at once.

Often, repairs or simple maintenance work can be done in house. But it might be wise to

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COURSE MAINTENANCE

seek outside help at times. As a general rule, superintendents recommend contracting out repairs that are specialized, such as pump and filter service, or something that takes a lot of manpower or more than a few days, such as mass replacement of nozzles or rotors and valves, Davis says. Contractor labor can get the job done more expediently.

Perhaps the best way to prevent irrigation system problems is to do it properly from the start.

"Sometimes people don't realize the importance of doing it right, and they try and do things on the cheap," Scott says. "Maybe they get by for a couple of years, but then things start to go wrong, and they wind up with costly repairs. Often, we make recommendations about how to improve an older system. But there are times when it just makes more economic sense to go ahead and replace the system. We usually advise clubs to phase the work during three or four years because it's a costly undertaking." **GCI**



Charlie Babcock, golf course superintendent at Tunxis Plantation Country Club, advises superintendents not to undersize irrigation pipes just to save money. Larger photo: Irrigation Consultants. Smaller photos: Tri Mountain Golf Club

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