GET PUMPED

Recent innovations make upgrading your irrigation pump station an attractive option.

By Rob Thomas

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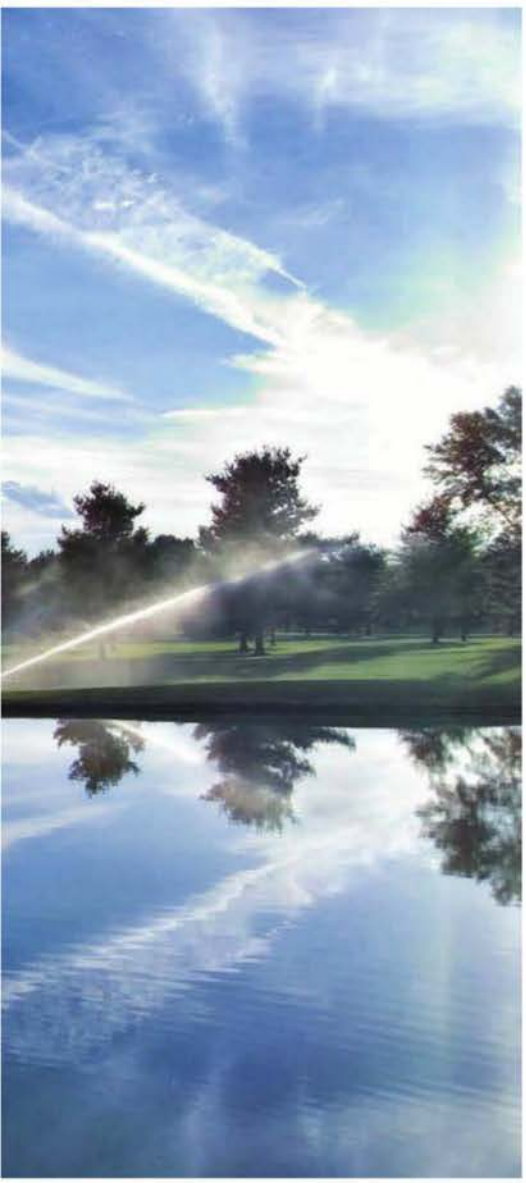
Obsolete can be a bit of an overstatement when describing a 10-year-old pump station. After all, if it's still doing its job and the turf is healthy, is there really a need to replace?

With today's advances, the market is flush with new, improved features that may make trading up a very attractive option.

The latest technology includes the ability to connect to the pumping station touch screen with Virtual Network Computing capabilities, says Paul Roche, national sales manager at Rain Bird.



"Essentially this takes your smart phone or iPad/tablet and turns it into your pump station touch screen no matter where you are, providing you have a wireless connection," Roche says. "Superintendents and irrigation technicians use this to access and control their pump station from anywhere. Having the same look and feel as the touch screen on the pump station makes it simple and easy to use."

On the topic of easy, what could be easier than having your system complete checks and balances for you? Smart Pump, a software module for Rain Bird central controls, compares actual water flow to expected flow.

"Rain Bird Smart Pump technology is a cutting-edge technology that is new and innovative," Roche says. "With a communication link to the pump station, Smart Pump shares actual pump station operational data from the pump station so the irrigation control system and the pump station are working together to maximize efficiency and to act as a 'watch dog' for any unmanaged flow activity. Smart Pump can dramatically increase operational efficiency while acting as a full-time flow management attendant on the golf course."

Both Smart Pump and Virtual Network Computing capabilities increase efficiency that earlier pump stations lack.

"Having tools that allow remote system access to view pump station operation or make changes to pump station settings saves time, while allowing for on-the-fly setting changes that otherwise would require someone to be on site and at the pump station," Roche says.

"Smart Pump is a tool that allows the pump station and irrigation central controls to work together to maximize system operational efficiency," he adds. "During an irrigation cycle, if flow is available, the Rain Bird central control system will automatically select sprinklers to turn on to maximize station flow and reduce the water window – the time it takes to complete an irrigation cycle. At the same time, if there is any unmanaged flow - perhaps a broken pipe or leaking valve - the central control system will recognize this and respond accordingly, which may include sending out a text message to the system manger or simply shut off the pump."

Bob Sylvester, golf market manager at Watertronics, takes a less-tangible view.

"The newest technology today is not an individual piece of technology, but the intelligence to design and integrate available technology to provide solutions to problems facing golf course superintendents," Sylvester says.

His example: An increasing number of superintendents are forced to irrigate with tertiary, effluent or poor-quality well water. To help manage these challenges, Watertronics stations are equipped with advanced technology to monitor, trend and even blend multiple water sources to help the superintendent manage and mitigate the effects of poor water quality.

"In the most recent application, the golf course superintendent had very poor quality groundwater high in TDS levels (total dissolved salts) and very expensive city water," Sylvester explains. "He needed an integrated solution to manage the water quality and reduce the club's annual water budget. What resulted was a pump station designed to blend the poor quality well water with good – but expensive – city water."

At the click of a mouse, that superintendent could choose a daily water blend to meet his objectives of mitigating the effects of poor water quality, while reducing the cost of expensive city water.

Hans Stewart, director of global marketing for Xylem's Applied Water Systems unit, says the newest technology available includes advanced variable frequency drive (VFD) control logic, Internet connectivity, browser interface and the ability for remote diagnostics. All increase efficiency, leading directly to cost-cutting benefits.

"The VFD control logic allows the pump to operate at the Best Efficiency Point (BEP)," Stewart says. "By operating at BEP, there is a reduction in energy consumption, which not only reduces electricity use, but [also] extends the life of the equipment."

The age-old adage "time is money" fits with Roche's thoughts on justifying the cost of new pump station technology.

"Managing irrigation system operational costs is an objective for almost all golf courses," Roche says. "Reducing time to make system changes while having access to operational activity is an important feature

of any pump station. Running on actual flow – as monitored at the pump station flow meter – maximizes pump station efficiency and reduces the time it takes to complete an irrigation event and reduces the electrical costs to run the station while reducing wear on the pumps."

Efficiency doesn't begin and end with the equipment, Sylvester says. "Our pump station solutions provide efficiencies beyond what is seen as standard in a pump station design – i.e. high-efficient motor, most efficient pumps and central software integration," he says. "Our solutions add the efficient use of water, labor and time. All of which result in increased productivity and savings."

With dollars tight, seeing a viable return on investment is critical. "A superintendent might have a functioning pump station, but that doesn't necessarily mean that it is efficient," Roche says. "Many older stations do not have variable frequency drive (VFD) technology that helps match pump output with demand. A complete pump station assessment is necessary to evaluate the efficiency of the pump station and to see if modifications can be made to increase the operational efficiency of the station.

In regions of the country where utility costs are high and where pump stations accumulate a lot of run time, updating an inefficient station can have an immediate reduction in the operational costs, and can even provide some significant payback that helps pay for the investment over time.

Today's newest tech is not an individual piece of technology, but the integration of available technologies.

According to Stuart, additional features superintendents are asking for include: Remote access to the pump station, real-time integration with the central irrigation control system, surge and lightning protection, power savings data, accurate flow meter technology, and responsive service capabilities.

"Water quality and water scarcity continue to be challenges for golf course irrigation," Stuart says. "Newer, more creative and sustainable solutions are needed for keeping the fairways green, including ways to reduce the water needed, alternate ways for sourcing water and treating the water the course already has access to. Courses are looking at closed-loop systems where the water is recycled and used again, therefore never leaving the course. When brackish water is the only source available, reverse osmosis is available for treatment."

While new construction continues to lag, courses looking to replace their pump stations not only need a simple replacement, but also have challenges in mind when they retrofit. "These challenges include reducing water usage, increasing efficiency and creating a more sustainable golf course experience," Stuart says. "Additionally, the courses must appeal to the new standards for luxury, including being green from an environmentally friendly standpoint."

Because superintendents have increased requirements to report water and electrical use to local agencies and municipalities, Roche says heightened efficiency will be a continued focus.

"For golf course pump station manufactures, the challenge will continue to be to increase operational efficiency and to reduce the cost to apply water," Roche says. "Pump stations will start to directly monitor electrical consumption and make adjustments to operation based on electrical consumption."

Considering "you get what you pay for" proves true more times than not, both Roche and Stewart advise superintendents to consider the quality of any equipment brought onto the course.

"A pump station is a long-term investment," Roche says. "Look for a pump station that is made of quality materials and has a durable finish that will protect it from the elements over time. You don't want it to rust out before it wears out. Also be sure that a new pump station incorporates the latest control technology that provides remote system access and the ability to truly integrate with the irrigation central control system to maximize operational efficiencies."

"The lowest price isn't always the best value," Stewart says. "When the economy was lagging, everyone was looking to cut costs and find the least expensive option available, but in the long run, these may not have been good investments. Quality, advanced technology and outstanding aftermarket service will add value for years to come."

A supplier should sit down with the superintendent to learn their needs and challenges before developing the best fit. "Talk to a pump station professional," Sylvester says. "There are many innovative solutions available to consider." **GCI**

Breakdown

Based upon a 1500 GMP @ 120 PSI pump station with two 75 HP turbines, Hans Stewart says the return on investment can be seen in three to five years. He breaks it down as such:

Maintaining your old pump station for three more years

Motor rewind for two motors	$7,000
Preventative maintenance	$2,250
Drive replacement	$8,000
Pump replacement	$9,000
Filter replacement	$15,000
New controls	$26,000
Personnel labor to maintain (1 person at 10 hours/week at $15/hour)	$23,400
Emergency repairs	
Total	**$90,650+ or $2,520 a month**

Monthly cost to own a new pump station

Pay as low as	$85,000 - $2,360 a month
Preventative maintenance	$0
Energy cost savings	$6,480 or $180 a month
Total	**$2,180 a month**

With pump stations, the lowest price isn't always the best value.