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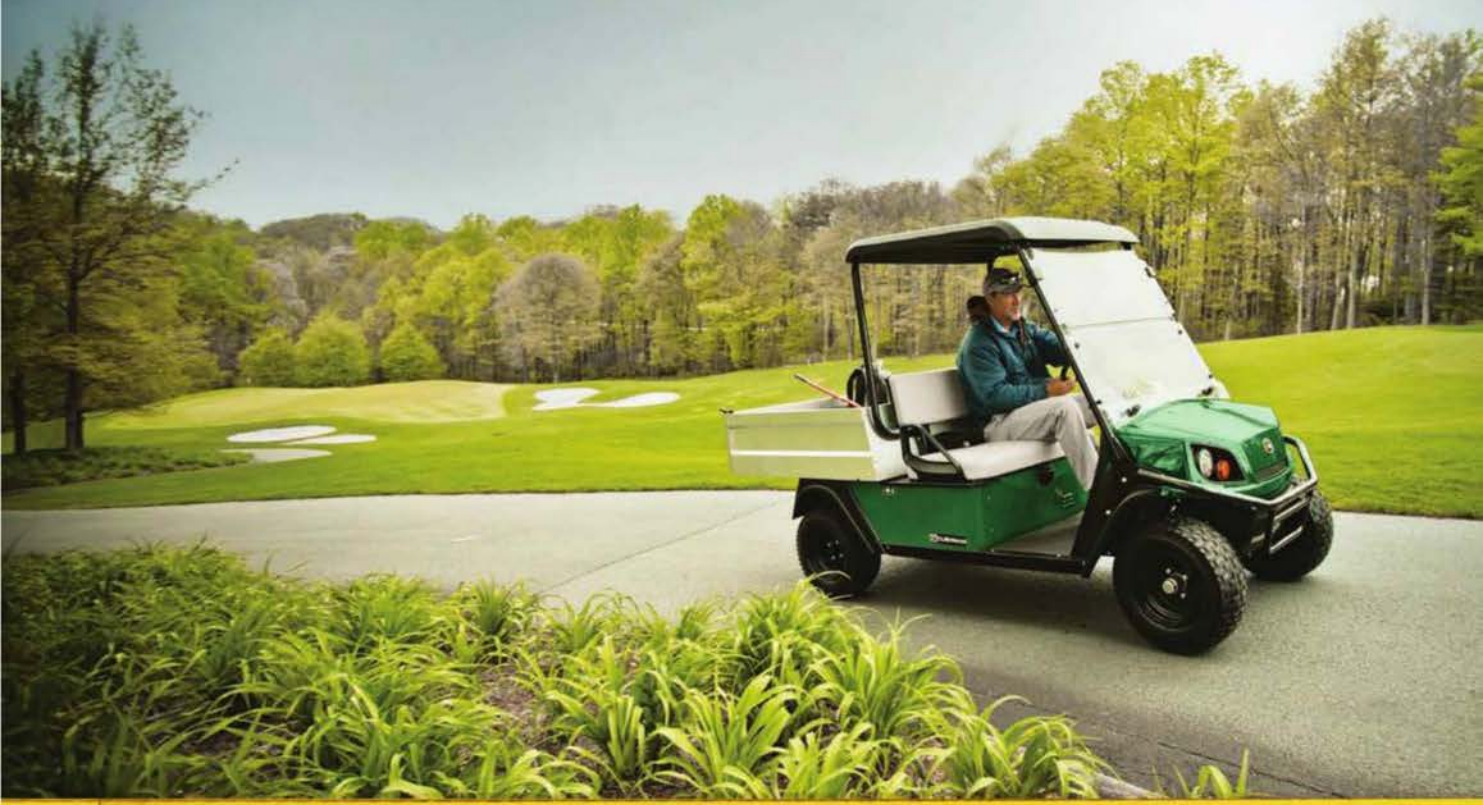

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GET PUMPED

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

By Rob Thomas

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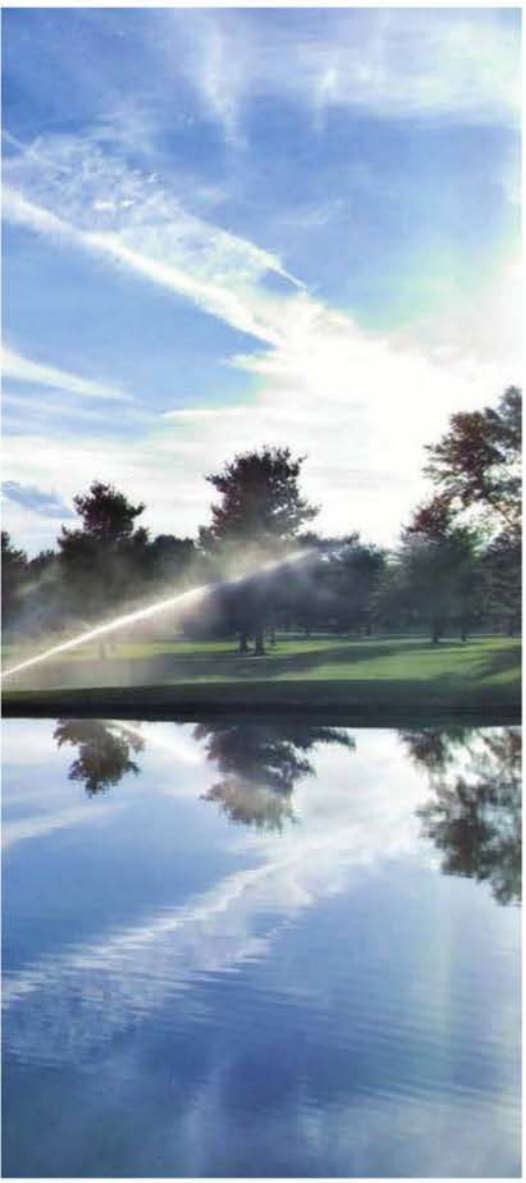
Obsolete can be a bit of an overstatement when describing a 10-year-old pump station. After all, if it's still doing its job and the turf is healthy, is there really a need to replace?

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.

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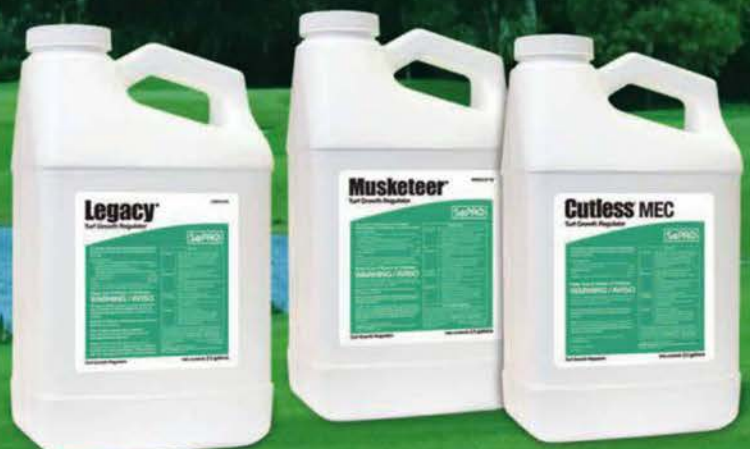

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Brian Vinchesi, the 2009 EPA WaterSense Irrigation Partner of the Year, is president of Irrigation Consulting Inc., a golf course irrigation design and consulting firm headquartered in Pepperell, Mass., that designs irrigation systems throughout the world. He can be reached at bvinchesi@irrigationconsulting.com or 978/433-8972.

PUMPING IN A BOX?

Scheduling your pump system operation reduces energy and maintenance costs.

If you have been involved in a new irrigation system installation this century, you were probably committed to making sure that the irrigation system was customized to your golf course and management style. You would have paid particular attention to how the greens, tees and fairways as well as bunkers and surrounds were irrigated. You also would have hopefully been concerned with the location and type of the controllers and maybe how the system was piped. You will have managed the irrigation system and set the schedule on a regular basis, daily or at least every few days.

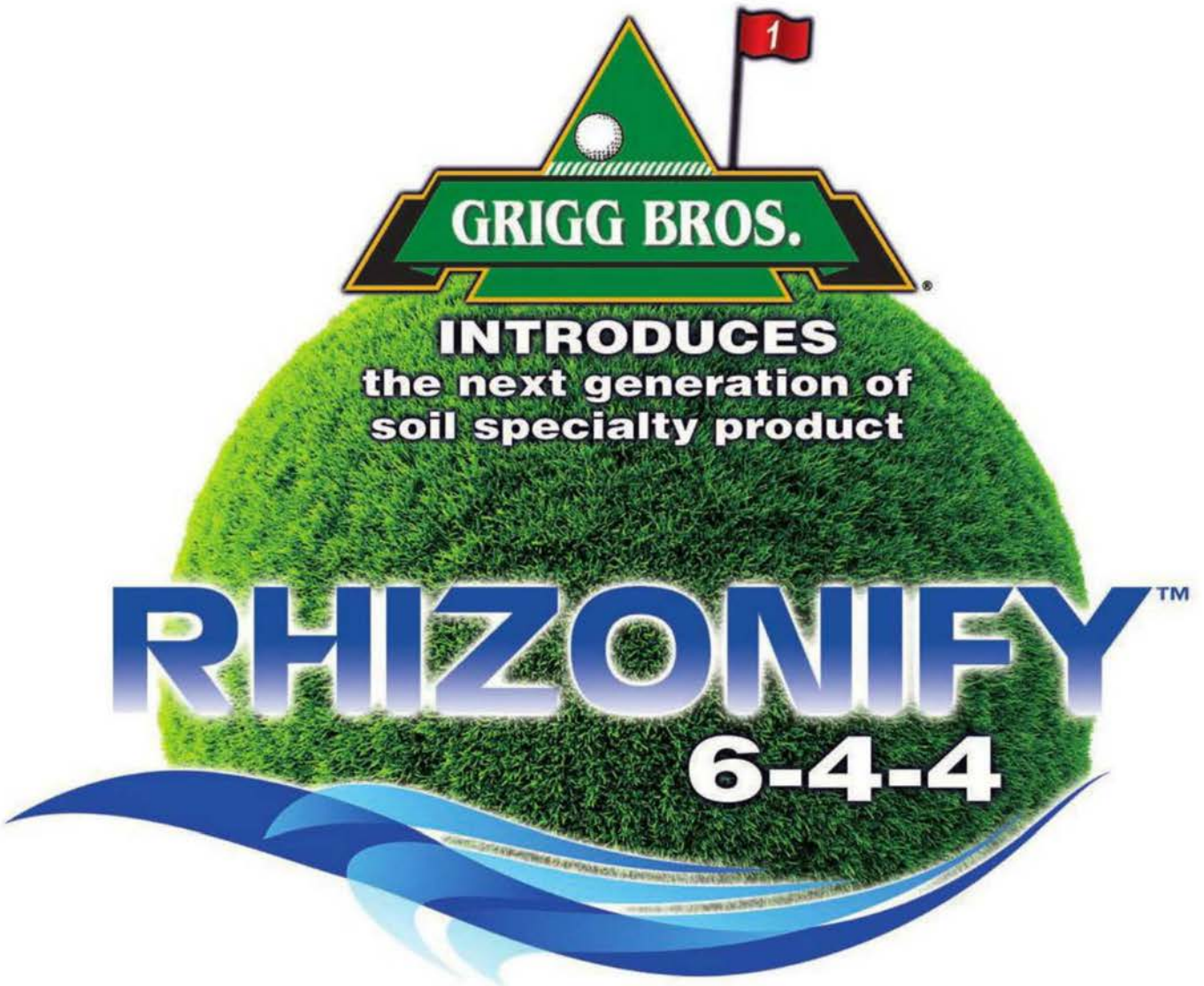
After all the irrigation system parameters were decided upon the designer would have told you that you needed a pump system at a specific flow and pressure; for example 2,400 gpm at 120 psi. The pump system would have most likely been prefabricated from a major manufacturer and it would have had little customization. After all, it was only supposed to pump a set flow at a set pressure and be reliable. As VFDs came along, the pump system would reduce flows as required while maintaining the designed pressure in lieu of a pressure regulating valve. Once the pump system was set up and programmed during its installation you pretty much left it alone. Rarely did anyone alter the set points or programming.

Pump systems have changed considerably over the last decade. They are more sophisticated, smarter, more expensive and in many respects more electronic in nature than mechanical. VFDs are standard and customization is more the norm than the exception. The pump system operating software has become very elaborate with the ability to monitor not just the flow and pressure, but wet well levels, power to each motor and other items such as pH, turbidity and salts. Today's pump system controls can interact with most manufacturers' irrigation system hardware/software allowing you to have an interactive irrigation/pump system that operates both the pump and irrigation systems more efficiently. All this increased knowledge allows the pump system to be more interactive with you the operator, and when taken advantage of, can provide a more energy efficient and longer lasting pump system.

Scheduling your pump system operation is a way to help reduce energy and maintenance costs.

As discussed, you are used to scheduling your irrigation system, but have you ever thought about scheduling your pump system? There are a number parameters that can be scheduled including discharge pressure, energy use and flow availability. For example, your irrigation system has a water window – time required to irrigate through a cycle – that may be anywhere from 4 to 12 hours depending on your system. For that water window, the pump system needs to operate at its design flow and discharge pressure, say 2,400 gpm at 120 psi as discussed above. At that flow, let's say your water window is 7 hours. For the remaining 17 hours of the day, you are probably not irrigating unless watering in an application. You are probably doing some hose syringing depending on the weather. Hose syringing doesn't require 120 psi though, so for the 17 hours you are not irrigating you could set the discharge pressure from the pump system to say 75 psi or even less instead of 120 psi for those 17 hours. This will provide more flow from the same pump and use less energy. It will also make it safer to connect and disconnect the syringing hoses. Another example is power company demand charges. Depending on the primary electrical service you have, you may be paying demand charges if you use over a certain amount of energy during different times of the day. You can schedule your pump system to make sure that you never have an electrical load that triggers the demand charges. This can save lots of dollars. If your course is in an area where you irrigate all year long your pump system is designed for the maximum capacity needed in

(IRRIGATION *continues on page 49)*



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Profile nozzles undergo the catch-can test to determine coverage efficiency.

THE FIXER

Superintendents provide case studies in how irrigation nozzle replacement was the solution for stubborn turf problems.

by Helen Stone

It's showtime!

Playing Arnold Palmer's Bay Hill Club is on many golfer's "bucket list." The course was certainly good luck for Tiger Woods, who won the Arnold Palmer Invitational in March, 2013, starting a comeback that led to his being named this year's PGA Tour Player of the Year.

Bay Hill was built in 1961, nestling on the shores of the Butler Chain of Lakes in Orlando, Fla. In 1965, Arnold Palmer played the then-unknown course and was enamored with its natural beauty. Five years later, he made the course his own and it has been his family's winter home ever since.

Superintendent Matt Beaver came on board more than 10 years ago with high expectations to fulfill. Although Orlando enjoys more than 50 inches of rain a year, winters can be relatively dry and irrigation is a must.

In spring of 2009, Beaver was busy prepping the course for Palmer's annual tournament in March and was plagued by brown spots and "donuts" on four holes. He tried hand watering and longer sprinkler run times, but that resulted in soggy turf. Distribution uniformity (DU) was the problem.

Although the Toro 670 heads and Toro Network VP and Lynx Control System were state-of-the-art when they were installed, that was 20 years ago, and technology has taken leaps and bounds since then. However, the club wasn't ready for a renovation yet.

"By replacing existing nozzles with third-party metal nozzles, the life of the sprinkler can be extended, says Brian Vinchesi, president of Irrigation Consulting Inc., Pepperell, Mass. "Just changing the nozzles as opposed to the whole sprinkler is much less expensive, which is attractive in today's golf economy."

Beaver consulted with colleagues and area turf specialists and decided to try Profile solid metal nozzles on the problem holes. As the tournament drew near, he was impressed with the results. Donuts disappeared and the course shined during the tournament.

As renovations commenced over the next two years on the tees, greens and bunkers, Beaver also switched out 600 nozzles in the fairways and roughs. By 2011, the course was in "showtime condition."

Superintendent Matt Beaver

In addition to improved course conditions, Beaver was also able to cut back on his irrigation scheduling, with run times reduced by as much as a whopping 50 percent. "By improving DU, you inherently reduce water use, as the improved DU should result in shorter overall runtimes," Vinchesi explains.

"We found a practical and reliable solution at Bay Hill," says Beaver. "Wherever we have switched to solid metal Profile nozzles, the donuts have disappeared along with the soggy turf. It's been a workable solution for us."

NETWORKING IMPROVES DU. When Southern California golf comes to mind, many might think about cool coastal settings such as Pelican Hill Golf Club in Newport Coast or

Torrey Pines in La Jolla. Others immediately visualize spectacular desert settings at PGA West in Palm Springs or in La Quinta in the Coachella Valley. But tucked in the rolling hills between the two is a pair of immaculately maintained golf courses that serve everyone from hundreds of enthusiastic amateurs each week to PGA Championship luminaries.

The Morongo Golf Club at Tukwet Canyon in Beaumont, Calif., offers two challenging courses that host numerous tournaments including the Champions Tour National Qualifying Finals, PGA Tour Canada Qualifying, Southern California PGA Professional Championships and NCAA Division III National Championships.

Architects Lee Schmidt and Brian Curley worked to give each course its own defining persona. The Champions layout features gently rolling terrain and is distinguished by its open, native feel and rugged natural bunkering. The Legends boasts riparian streams and is flush with oak woodlands. It features a more classic style of bunkering.

Paul Mayes, CGCS, found Profile nozzles improved irrigation coverage.

Paul Mayes, CGCS, director of agronomy for the courses, has a rich history as a Southern California golf course superintendent. He served as president of the prestigious Hi-Lo Desert Superintendents Association and overseeing at top-rated clubs such as Industry Hills Golf Club.

With his eye for detail and high standards, Mayes noticed patchy areas and "donuts" around many heads. The course is irrigated with Toro 730 heads and a Toro control system, but after running distribution uniformity (DU) tests early in the year, he found the DU was only 65 percent, well below the optimum 85 percent or better.

Mayes has an extensive networking history, so he researched and asked colleagues and turf advisors for recommendations. "We heard about Profile nozzles from other superintendents and found they improve irrigation coverage overall," he recalls.

In spring of 2013, Mayes switched out nearly 2,000 plastic nozzles on the fairways and greens with Profile solid metal nozzles.

"These type nozzles are more customized than the mass-produced plastic nozzles," says Vinchesi. "They are designed for specific sprinkler models and spacings, which allows them to have improved DU."

Mayes saw results right away, with the DU improving to 75 percent. "It was a worthwhile investment in time and resources," he says. **GCI**

Helen Stone is a West Coast-based freelance writer and frequent GCI contributor.

Bill Brown, CGCS, is CEO of Turf Republic and founder of iTurf Apps. Bill has spent 20 years on golf courses, including the last 5 years at Hartefeld National Golf Club. He's served as an officer and board of director for the Philadelphia Association of Golf Course Superintendents, as well as served on national committees. Contact him at billbrown@turfrepublic.com.

WOMEN IN TURF

Andrea Li looks to inspire the industry's next generation of female superintendents.

In 1971 the first email was sent and nearly 22 years later the first instant message over AOL was delivered by Ted Leonsis to his wife. ""Don't be scared ... it is me. Love you and miss you." These technologies opened a new way to communicate and network, and we could now exchange information with a simple click of the "send" button.

In 2006, Jack Dorsey sent the first tweet "Just setting up my twttr." and a new revolution was born through social media. It has changed political and consumer marketing landscapes. News delivery is no longer dependent upon major broadcasting networks. Education and networking opportunities are now in your pockets.

Over the last several years social media has brought the turf industry closer, allowing us to communicate faster and grow our professional network all over the world. It has brought the industry closer in times of difficult challenges. Who could forget #whosgotmyhose? The pressure to consistently perform at the highest level demands long hours away from families and personal time. Not only have those managing the turf turned to social media for camaraderie, but the spouses of many of these individuals have, too.

This past fall Andrea Li, assistant golf course superintendent at Connaught Golf Club in Alberta, Canada turned to social media after attending the Green Start Academy, sponsored by Bayer and John Deere. Upon her return, feeling rejuvenated and inspired, Andrea began with a simple Twitter handle, @womeninturf. The community has grown to a Facebook page and has joined the Turf Republic community. Andrea's goal is to bring together the women of the turf industry. Those with tenure and wisdom gained from their experiences and those who may just be considering the turfgrass industry. Not only women with boots on the turf, but educators and industry.

I first met Andrea a year ago as she was one of the first to communicate on the Turf Republic platform. I'm excited to see her group grow and the doors it will open for so many. But to really do this story justice, I'll let Andrea share with you her passion for this endeavor in her own words.

Assistant superintendent Andrea Li began a movement with a simple Twitter handle, @womeninturf.

"Over the years I have attended conferences and schools, and the one thing I noticed it lacked were females. I have only met a handful of talented women in my industry and I feel like I fail at connecting with more. I created Women in Turf to provide a community for women to get connected and talk turf. This has opened up a whole different dimension of connection, not only do I get to meet new female turf managers, but finally finding a way to motivate and encourage personal and professional development with these ladies in hopes to inspire more women to grow in the turf industry is such an awesome idea! A few goals that I would love to see with this group are to eventually have leadership sessions available geared towards the Women in Turf at conferences, at schools and host leadership development workshops. Empowering Women to become future Superintendents is going to be a challenge as there aren't many, but in time I hope to see the numbers change. I also want to take this group to a new level of networking because social media opens up more channels and chances to network which I hope to eventually effectively impact the turf industry by promoting more women in the turf industry. There are many women who are a part of turfgrass management, from management of sports fields to soil scientist, we are all interconnected through turfgrass. Women in Turf is a community to interact with women worldwide and share each other's passion.

"I created a Facebook page – Women in Turf and a Twitter account @WomeninTurf to create conversations. It's really simple, all you need to get connected is your own Twitter or Facebook account, hit LIKE and chime in conversation when you want to share. It's a great way to get interactive on these social media sites. I enjoy doing it. I hope to connect with you there and in the future in person. Many people still prefer face-to-face interaction, but with these social media sites we can connect with others globally instantly. The awesome part of that is I can talk to a female superintendent in the UK and at the same time one in South Africa: Both turf managers but one for a golf course and the other for a cricket pitch.

Women in Turf is Dedicated to INSPIRE Women to pursue their dreams in the turf world." **GCI**