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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



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

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.

As discussed, you are used to scheduling your irrigation system, but have you ever thought about scheduling your pump system? There are a number of 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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(IRRIGATION continued from page 36)

the hottest month, usually July. However, in January you do not need the same capacity in the pump system as in July, so during less demand times, limit the flow capacity of the pump system to operate fewer pumps. This will save on power again and also reduce the wear and tear on the pump and motor to last longer. For example, if you are in Las Vegas and have a 5,000 gpm pump system with four pumps (1,250 gpm each), in the winter you could disable two of the pumps and still have 2,500 gpm available.

With all the increased technology in the pump system control panel has come better remote monitoring of the pump systems also. Today's monitoring allows you to look at and chart pressure, flow, incoming pressure if applicable, wet well level and energy use. With Internet-based monitoring you can monitor, operate, change and schedule the pump system from any smart device just as if you were standing in front of it. All of the alarms can also be funneled through the smart device so

you always have the peace of mind that it is operating well or the constant reminders of how much trouble the pump system is giving you. Today's monitoring systems have much better graphics, more information available and are much more of an interactive tool than just a screen shot to look at what is going on.

In today's economy where budgets are tight and cost containment is a major focus, scheduling your pump system operation is a way to help reduce energy and maintenance costs. Not all pump system control panels have the discussed abilities, but it is something to consider when buying a new pump system or upgrading controls. If you do not have the newer controls though, you can just shut the pumps off at times manually and get some of the same savings. Scheduling pump system operation is somewhat out-of-the-box thinking, but give it some thought and figure out if it is something that is applicable to your irrigation/pump system. GCI

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