

Golf course managers throughout Europe are the latest converts to advanced pumping system technology that is revolutionising the way courses pump water. Kevin Shaw of Flowtronex Europe investigates...

# Cruise control



Final checks to control panels before shipping to site

The new intelligent pump systems are more efficient and cut down on waste and maintenance - all important factors in helping to reduce bottom-line costs.

The secret is variable speed control - known in the trade as Variable Frequency Drive (VFD) - which regulates water pressure, extends the life of piping and reduces energy consumption.

Today VFD accounts for more than 80 per cent of all pumping systems sold to golf courses in the United States and now it is set to challenge the conventional technology used on most of Europe's fairways.

Traditionally, irrigation pumping systems are fed by fixed-speed pumps, which function only at full throttle. During non-irrigation times, or low flow demands, a smaller jock-

ey pump keeps pressure in the system. Once the irrigation system is back on line the main pumps are activated and a surge of water shoots through the piping to maintain line pressure while the sprinklers are operating.

These fixed speed systems carry with them certain drawbacks including pipe blowouts, power inefficiencies and additional maintenance. The new

# Cruise control

VFD technology brings with it smoother start-ups and gradual pressure increases, reducing wear and tear on pipe work, cutting electricity consumption and requiring less day-to-day maintenance.

#### Cruise control

Variable Speed Drive systems can be compared to cruise control on a car. Just as cruise control maintains a constant speed by varying the amount of petrol fed to the engine, VFD maintains a constant output pressure by changing the speed of the pump according to the amount of water required in the irrigation lines.

Since a VFD system only runs the pump fast enough to deliver the pressure desired, it operates at a greater efficiency than a fixed speed station.

VFD also reduces the frequency of what is commonly called water hammer, a sudden surge of water that can cause pipes to leak, rupture, or literally blow out of the ground.

Turf irrigation consultant Robin Hume sees the prevention of water hammer as one of the key benefits of variable speed systems. His company, Robin Hume Associates, installed

its first VFD systems in the early nineties, in Belgium.

AVFD is much more controllable, he said. It is particularly good in conjunction with other pumps when you are dealing with different flows, because you can set parameters for ramping up and down, setting pressure and flow limits.

Variable Frequency Drive can be used on large or small irrigation systems. The key factor is the need for controllability, rather than size. We installed a VFD system at Twickenham RFC to irrigate the pitch. The most important thing there was having a fully automatic system that could maintain a smooth flow and allow them to draw off small amounts of water when required.

At the other end of the scale, St Andrews' new VFD irrigation pump set is the biggest in the country. It works superbly and is pleasantly quiet, he added.

The only downside to VFD is the initial capital outlay - variable speed is more expensive than fixed, even though the prices are coming down. But you will save that extra cost in

efficiencies over the lifetime of the system.

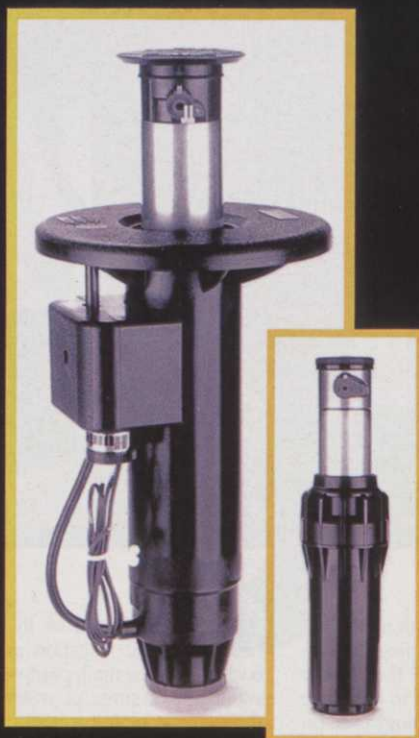
Golf course irrigation consultant Phillip York agrees that VFD brings all-round benefits and says the initial cost should not be a deterrent when considering whether or not to use a variable speed system. The cost is more than offset by the advantages, he said.

VFD provides stabilised pressure, which allows for casual or automatic use of the irrigation system on demand without having to switch units on and off.

We have far less trouble post-installation with variable speed drive because there are less surges through the system, reducing leaks and breaks in the pipes.

#### User-friendly

Another benefit of variable speed systems is their ease of use. The pressure and flow rates of water in the irrigation lines are monitored and controlled by computer technology and Programmable Logic Controllers (PLCs). These controllers help make decisions for the system. For exam-



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Irrigation systems at work at Chart Hills Golf Club, Kent

ple, they measure pressure in an irrigation line and then send back an electronic signal which tells the motor to speed up or slow down, depending on the necessary pressure level.

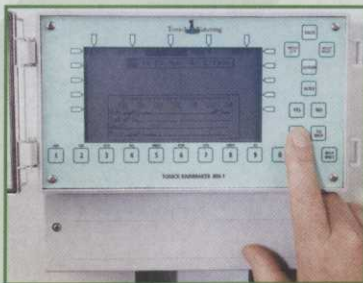
In fact, the introduction of VFD acted as a catalyst for the pump station industry, promoting a technological whirlwind of programmable logic controllers and software as well as a general substitution of electronics for mechanics. Such advancement has changed every pumping system, including conventional fixed speed control.

Some of this software is so advanced that users can remotely monitor systems operations from almost anywhere, via modem, on a personal computer or laptop. The benefits of this are obvious. As well as freeing the course manager from the confines of the pump house, it also allows him to get on with other important tasks elsewhere, while still having access to the system at any time should he require it.

Being able to monitor remotely is a big advantage for us and for course managers, explained Robin Hume.



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Variable speed pumpset installed at the Millennium Dome in London for landscape irrigation

For us it means we can check a system from our office in Shrewsbury and so we need fewer technical people on site, and for managers it means they know exactly what is going on and if there are any leaks in the system.

#### Reaping the benefits

Variable speed control is growing in popularity around the world. While initially more expensive, VFD systems can offer long term savings in power

costs and repairs, as well as simplifying daily maintenance. The technology is tried and tested and the accompanying software can produce better efficiencies, smoother operations and smarter operator interface.

With the rapid pace of developing technology in this field, as in the wider world of computer technology, there may come a time when new systems will be outdated almost as soon as they are installed. But for now the specialist manufacturer of pump sets has

the upper hand. The benefits are many and VFD systems with their compatible technology have unleashed a wave of positive changes.

Reliability, high-tech water delivery, reduced energy consumption and hassle-free operation has enabled variable speed control to revolutionise the irrigation industry. In just over ten years fixed-speed pumps have become the exception rather than the rule in the United States. All eyes are now on the European golf industry.