It's that time of year again

It's time to ensure that the irrigation system is ready for the next six months, and to take into account all associated aspects of its operation. Here Kneale Diamond, Golf District Manager at Rain Bird, offers some key tips

Water Source/Supply

The source/supply of water can be from either mains water supply, winter storage reservoir, summer borehole supply or emergency top up (borehole), grey water, or treated sewage effluent.

Whatever the source, the end user must ensure that the supply is adequate and provides enough water for the areas in question. Is it licensed and legal?

Is it regularly tested for pH, N, P, K and trace elements?

Is it tested for associated disease risks such as Weils disease or Legionella?

Pumping Stations

The pump station is the heart of the system – too low a flow and the sprinklers are ineffective, too low a pressure and the sprinklers are ineffective, too high a pressure (without pressure regulation in place) and the sprinklers are ineffective.

If it's incorrectly configured or maintained it's could be extremely dangerous.

What else does the greenkeeper use that operates usually at 8.0 bar pressure (80 metres), and relies on high voltage power to work correctly?

Water, electricity, and pressure – a potentially lethal combination.

The pump station must be adequately signed, the pressure vessel safe to use and certified, a risk assessment be in place, and adequate segregation be in place (8.0 bar pressure will blow a valve stem 240 feet into the air before coming down!).

Therefore leaking pumps, slippery floors, poorly earthed pumps and inadequately signed pumphouses all need to be addressed before we even look into the pump duty.

Example of a wet pump house floor

Underground Mainline

This is usually made up from UPVC with joints every six metres, or possibly a more modern system which should have Medium Density or High Performance polyethylene as the mainline piping materials.

UPVC is prone to age deterioration, typically a system over approximately 20-25 years in age (some a lot less than this) will suffer from leakage which reduces pressure and reduces sprinkler performance, as well as wasting water and reducing efficiency of usage.

Underground pipelines must be 'sized' to take into account required water flows and pressures at the sprinkler; too small a pipelines size creates a higher velocity, more friction loss, more water hammer, more joint damage, and less water pressure at the sprinkler.

Solenoid Valve Assemblies and Solenoid Valves

Solenoid valves should be installed within assemblies and chambers that allow easy access, are clean and free of debris and allow manual operation of the system if required.

Many valve assemblies within ageing irrigation systems are incorrectly installed, within poorly installed chambers, with products that are prone to failure as they age, harden and corrode.

Solenoid valves should be pressure regulating in operation, allowing the correct downstream pressure into the sprinklers preventing over-pressurisation of the droplet and subsequent wind drift.

Poorly installed chambers, cracked lids, leaking or corroded valve assemblies all create a risk to health and safety to both the operator and golfer, and should be repaired or replaced as soon as possible.

Sprinklers

All sprinklers on the course should be regularly inspected for correct operation i.e.

pop up action, nozzle performance and pressure, action in operation, radius of throw, and correct retraction.

In order for sprinklers to achieve uniform application they must be evenly spaced, throw head to head and be set level within the turf.

Once this is achieved, accurate precipitation rates and run times can be calculated which will improve water use, efficiency, and provide a more consistent uniformity.

Sprinkler models and mode of operation will also play a huge part in uniformity and reliability.

For example, modern sprinklers have nozzles and gear drive units designed to higher tolerances, thus providing much higher uniformity across the area of coverage.

Older sprinklers lose efficiency, have non uniform rotation speeds, and worn nozzles.

Liken the sprinkler to an engine, the older it is, the more likely it is to be inefficient, be underpowered, and to lose reliability.

Control Systems

When I ask golf clubs how much water they apply to their course, how often do you think I get the reply "Six minutes most days and 10 minutes when it is really hot"? This is no use, we need to calculate in millimetres per m^2 per day, and it can be done (remember $1m^3$ of water is 220 gallons).

So, how much water do you want to apply to your golf course? Maybe 3mm per m^2?

This is where you can use weather stations to give you accurate readings to help you make that decision based on fact rather than guesswork.

You can then apply exactly the amount required and you can prove your efficiency and conserve water!

All modern PC based control systems will allow you to do this if properly configured and used correctly, if you are unsure please check with your manufacturer.

Other elements associated with the control system operation apart from programming are usually cable jointing and reliability and this is one of the most crucial parts within an irrigation system.

This can be maintained prior to the season starting when the ground is wet and when time is a little less urgent.

So, if you have prepared yourself for the summer ahead then well done, if not don't worry.

There are some very good independent consultants in the market who can help you put a plan in place to reach your end goal and set a blueprint within your golf club for years to come.