

Roland Taylor takes time to meet with the irrigation specialists and find out what is afoot...

WATER OF LIFE



Above: Irrigation in action at The Belfry

From the moment man started growing plants for food he discovered that they needed sufficient quantities of the elixir of life – water, to flourish. When it failed to descend from the heavens he had to provide it from another source.

Over the centuries this need has led to some highly innovative systems. In the quest to provide water for crops animal power and counter-weighted devices were used in early Middle Eastern countries. The portable Archimedes screw was invented in Syracuse for lifting river water into irrigation ditches and the Romans built aqueducts that transported water from the snow melts in the mountains to their cities on the plains. With the advent of steam power and followed by the combustion engine, plus electricity, irrigation became mechanised.

In today's world the word "irrigation" conjures up complex systems with pumps, electronics and computers. Strip away all the razz, flashing lights, gizmos and bells and in its crudest form the principle is no different to that of early man carry-

ing water in a pig skin from a river to his vegetable plot. It is simply the transporting of this vital liquid in sufficient quantities from A to B, plus controlling the timing of when this happens.

Here in the UK "timing" is the operative word because unlike other parts of the globe Mother Nature frequently takes over and provides much more water than is needed. Only when she fails to come up with the goods does man have to act. This reason alone raises the question of whether it is necessary to go to the expense of installing a system. In the eventuality of a drought setting in, the chances are that severe and expensive, damage can occur very quickly. This alone says that irrigation needs to be given serious consideration.

During a dry summer transpiration can account for an average loss of moisture of up to 75mm (3 inches) per month in some areas. If there is no rain the grass roots are unable to obtain sufficient water to make up for transpiration losses and problems start to occur. Artificial watering in

this situation is needed to adjust the balance.

The installation of an irrigation system is a big project and requires expert advice and planning. There are plenty of consultants and specialist irrigation companies to choose from and it is worth talking to other greenkeepers who have used their services before deciding who to call in. A number of quotes should be obtained based on a standard specification, which needs to lay out the most important points, including performance requirements.

One of the main items that will have to be considered is where the water is to come from, because an 18-hole course will require a large quantity. Whatever the source, be it purpose-built reservoir, natural lake, river, stream or bore holes an extraction licence from the Environmental Agency will be required.

Changes are continually being made and those courses that already have irrigation systems may want to use the services of a specialist and update their existing units with the latest introductions.

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Ocmis

When it comes to designing and putting in a system, Ocmis has installed over 3,000 here in the UK - so they clearly know what is needed. Once a decision has been reached to either install a system or up-grade the existing one their qualified course surveyor will visit and draw up a detailed survey that shows what will be required to achieve optimum performance. If some form of irrigation is already in place this will be tested to determine whether it can be integrated into the new proposals.

A detailed plan of the course, plus costings, will then be submitted. This will illustrate what can be achieved within a certain budget. Also included are recommendations regarding the necessary installations to meet all the needs. The latest state of the art

Some courses that have older irrigation systems may not be able to meet today's requirements. This is especially the case where changes in the course have taken place, such as lengthening or shortening holes by moving tees or enlarging putting areas. All these affect the irrigation requirements and, according to York & Martin, their experience over the last three decades enables them to provide sound advice on the most economical and best possible action for obtaining satisfactory results.

Rain Bird

When it comes to sprinklers, the range offered by Rain Bird is extensive. As you would expect from one of the market leaders, their rotors incorporate a host of features to ensure optimum performance, mini-

valve seat to be carried out quickly.

The development of computers and the use of satellites in recent years have led to the introduction of software programmes that allow you to monitor and control the flow of water over the entire course without leaving your chair. Rain Bird's Nimbus II provides a map of the course and enables the user to constantly monitor irrigation activities. The efficiency of each pump is monitored and watering can be controlled to prevent over application on areas such as slopes, or where there is poor drainage. There is the option of a Virtual Weather programme that enables transpiration rates to be created from either user-defined values or an optional Weather Station, which collects data on wind, temperature, solar radiation and rainfall.



Above: Rox Burche Golf Club displays its irrigation system

computer aided design (CAD) is used to come up with a suitable system for specific course requirements. Once an agreement has been reached, the company carries out the installation. Ocmis also offers a programme of repair, updating and replacement parts.

Greenkeepers and their staff are trained to ensure they get the best out of their installation.

York & Martin

With over 30 years experience in irrigation, York & Martin say they have the expertise and knowledge to provide independent advice and project management when it comes to fine turf irrigation.

Their services include feasibility studies, site surveys, water sourcing, abstraction licenses, existing system evaluations, design and installation.

mum maintenance, plus savings in energy and water.

They have been designed to prevent algae and debris blocking the unit and on the electric Impact rotors there is a pressure regulator to adjust variation in the supply, thus saving water, eliminating puddling and erosion around the head. Their low angle of trajectory minimises wind drift and the arm is kept out of the water stream to give increased coverage.

The Eagle series of gear-driven rotors have a closed case for protecting the motor and are claimed to be the only units available with self-flushing when they pop up or down. The gear driven rotors are designed to work with water so no lubrication is required. Maintenance has been kept as simple as possible with patented features that enable clearance of debris and removal of the

The Cirrus programme graphically creates the course, including irrigation layout and showing each individual rotor. This enables the user to click on a specific sprinkler and instantly obtain a status report.

Using Rain Bird's advanced line weather stations the programme is able to monitor and respond to climate changes. By tracking transpiration and using data from other sensory inputs it can alter watering schedules. This helps conserve water and reduce costs. The Phenology Models will send out a warning when conditions are favourable for disease and insect infestations.

All Rain Bird programmes use the latest Microsoft® Windows™ format.

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Toro

The Gemini and Trident are the latest in a series of Toro PC based Controllers from Hydroscape.

The Gemini is a two-wire decoder, which has been designed to allow upgrading from Watermat's TWII Controller. Toro's SC1000 and 3000 controllers can be upgraded using Trident. Both can be used as a complete stand-alone control for a new irrigation system of up to 6000 individual stations. Ease of programming is said to be a main feature of these packages and station operating times and application rates are quickly set up using pull-down menus.

Digital pictures of the course allow for status checks and the programming and manual operation of individual sprinklers, stations or complete greens. Up to 60 different irrigation programmes can be stored. There is a logbook for recording all the activities and a flow gauge is displayed on the

Records of each station are kept including water used, running time and precipitation applied. A log is available for any station which remains un-watered during the last programme and the reason why this happened. For those readers looking for a budget-priced decoder, there is the Demi-Rain. This unit controls up to 100 two-wire decoders and each watering budget from 20% to 250% can be given six starting times per day. This allows the irrigation to be varied without changing the programme in addition the watering sequence can be split to run three times consecutively (each a third of the time allocated) to help prevent run off.

Comprehensive diagnostics have been included to help identify field wiring, decoder or solenoid problems.

There is the option of a wall-mounted version which includes pump-start relay and two inputs for sensors.

Tonick Watering recognises the

nation of drive between main pumps for equal wear and running time; CAPS patented Automatic Priming System for suction lift applications. Quality finish to the customer's specification includes in-house shot blasting and spray painting. Hot dip galvanising finish is also available. Flowtronex say their high quality package design incorporates all components within base-plate parameters. Total control is achieved by a selection of the company's in-house design software - Smoothflow, Oasis and Pumplog.

Hunter Irrigation

The new Hunter EC Controllers which are available from Evenproducts Ltd are designed for 2, 4 or 6 stations. They have three programmes each with 4 starting times per day. A station starting time can be from 1 minute to four hours, in 1-minute increments. There is a seasonal adjust-



Above: Kilarney Golf Club

screen for the whole time that irrigation is taking place.

In addition to water flow management, the programme also includes data on the electrical supply - these combine to make savings on both power and water. Each time the programme is used, a full station test takes place. In the case of a problem occurring there is technical support service available. Hydroscape's Waterworld Helpline is on 01425 476261.

Tonick Watering

This UK company was formed six years ago to design and manufacture decoders. Their latest introductions are the Rainmaker RMI and the Demi-Rain.

The Rainmaker RMI wall-mounted irrigation controller is claimed to do 90% of the job of a PC based system. It is compatible with most existing decoders. The unit has flow and electrical balancing and adjustable order of watering. It is said to have the unique feature of being able to split the programme into 2 or 3 applications, thus reducing water run-off.

importance of providing help when it is needed and the company provide technical support on 01243 554060.

Flowtronex

At the heart of any irrigation system are the pumps and a company that specialises in this field is Hampshire-based, Flowtronex. Their involvement in irrigation spans over 20 years during which time the company has installed over ten thousand packaged pump sets throughout the world.

Flowtronex's standard and bespoke packages include optimum pump selections combined with in-house control systems incorporating ABB variable speed drive and Allen Bradley switch gear. Total control is achieved by selection of in-house design software - Smoothflow, Oasis and Pumplog. To avoid having to completely shut down the units for servicing, captive suction and discharge isolating valves plus a pump check valve are included in the design. Other features include: a pilot operated pressure relief valve for emergency back-up pressure control; auto alter-

ment from 10% to 150% and independent day scheduling options. There is a facility for linking rain, moisture, temperature and wind sensors. The unit will retain the programmes should power be lost.

Genesis is a computerised management application for the programming and control of Genesis radio or hard-wire field controllers, data retrieval units and weather stations. Up to 999 field controllers are available which can be expanded to meet future needs. Automatic ET matches the water usage to weather conditions.

The programme uses Windows™ for all controller configurations.

Conclusion

An irrigation system is like insurance - it is there to protect the investment of money and time that has been put into establishing quality playing surfaces. As every greenkeeper knows, there is a good chance that if there are no irrigation facilities, the sun will shine every day - and the minute one is in place the heavens open continually. That's 'Sods law'.