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Continue to learn

Graeme Francis discusses the thinking that is required before making a decision on renovating, upgrading or installing a new irrigation system

Last month in 'Continue to Learn', Barry Beckett wrote about the future of turf management. Barry, an international Senior Marketing Manager at Toro, discussed a wide number of new technologies that are set to change the face of many aspects of course management. Among these was irrigation, in particular the impact that computers will have on the management of golf course watering.

This article focuses entirely on irrigation and how Course Managers and greenkeepers can ensure that they make the right purchasing decisions when renovating, upgrading or installing a new system.

Many factors come into play during this process, but the increasing sophistication of irrigation systems, the wide choice and significant capital expenditure involved, all make it essential to take a well-planned step-by-step approach.

A modern system can have an effective working life of up to 25 years and making the right decisions at the outset can have great bearing on that life expectancy being realised.

As with any important project there has to be strong emphasis on planning before anything else. With irrigation, planning involves laying down the parameters, criteria and objectives within the project.

At some point the Course Manager or greenkeeper, as the client, will be asked a number of questions that relate to what is required. These will include:

- What are the areas of the course to be watered?
- Is there a need to expand the system to other areas in future and if so where?
- What is the optimum time available to irrigate, and are there restrictions through pressure from players and course maintenance operations?
- What is the proposed water source?
- Are there any planning restrictions or implications?
- If radio operation of the system is desired, do any licensing regulations need reviewing?
- What is the budget?

During the process, one imperative aspect of golf course irrigation that must be considered is the water source. It's likely to have a significant bearing on the scope and success of the new system provision.

Much has been written about the new Water Bill and indeed this legislation could be very relevant to any individual course. The Water Bill justifies its own article, but there should be an awareness that the supply of water will be more controlled in the future.

Almost everything that's done in establishing the objectives and selecting a new system will be affected by the source of the water.

When it is almost certain that a non-potable water supply will be required for larger systems such as fairways, the whole area of water availability, control and cost must be investigated at the earliest possible opportunity.

In addition to technical aspects, ask why the club is looking to improve what's already there. What are the reasons and motives behind the choices and decisions? What is wanted from the system? This should be a thought process geared more to the benefits that a good efficient system will bring rather than simply taking a strongly technical bias. All these elements will have a direct impact on the design of the system and the project as a whole and they need to be considered before approaching contractors or consultants.



In recent years the Construction (Design and Management), or CDM Regulations, have entered the golf-contracting field. This regulation places increased responsibility on clubs as the client with regard to Health and Safety. It is essential to establish if the contracting provision of the new system comes under the CDM Regulations, as there are certain tasks that have to be undertaken by the client at the outset.

Having established the project's CDM status and fulfilled any obligation, the next move is to establish the basis upon which bids will be sought.

There are two approaches to choose between once the basic criteria have been set.

A design/build project is the more common route. This path involves asking a number of contractors to submit proposals based upon the designs they produce. With this approach it's absolutely essential to ensure comparable proposals are received.

Every irrigation designer produces a different solution to meet individual requirements, which makes true comparison more difficult. An effective way to overcome this is to insist that all product selection and performance information is submitted with the bid.

This includes sprinkler data, application rates, system operating times, pump capacities and operating pressures and, importantly, water-use figures.

The British Turf and Landscape Irrigation Association has for many years produced a list covering all technical operation data that should be provided within a design/build bid. It can be found on the Association's website at www.btlia.org.uk

A design cannot be produced without the generation of this information and any company that has undertaken a comprehensive design should be able to provide it as a matter of course.

The other path is to employ an irrigation consultant. There are a number of irrigation consultancy practices in the UK. Employing their services brings their expertise and experience into the equation. They can provide advice on the technical and contractual aspects of the project as well as areas such as CDM Regulations and water sourcing. The consultant may be making product



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recommendations and it is important, therefore, to work with one who holds a truly independent commercial status.

Whichever option is chosen – the design/build or consultant-led bidding process – a number of contractors need to be selected to bid.

There are a relatively large number of irrigation contractors in Britain. They vary from small service-orientated companies that usually operate locally, to large national and international businesses.

Some of the selection criteria should include establishment of golf irrigation experience, depth of resources to carry out the contract, long-term service and support strategies, product linkage, financial standing and levels of insurance cover.

Real, relevant references are best to get a good feel for the suitability of a particular company for the work, but all too often they are not sought. If a thorough evaluation is made there is no need to ask more than three or four contractors to bid.

Once requirements for the system have been set and a list of contractors created, it's time to invite the bids.

Contractors will want to meet the club to establish what's required and carry out a detailed site survey. This initial meeting is a good opportunity to get a first impression of the bidders. Are they asking the right questions to fully understand what is wanted? Do they act in a professional manner? Do they instil confidence or raise concern?

As part of initial meetings, a timescale for receipt of tender bids will be agreed and contractors hoping to win the business will submit their bids within this. It's very important to give contractors adequate time to produce comprehensive, well-prepared submissions. Rushing them will only bring errors and ambiguity.

Contractors usually base proposals on the products of one, perhaps two, manufacturers. This will be due to commercial links or the suitability of certain products for particular system requirements that have been set out.

With a tender process based upon a consultant's design and specification, all the performance data will have been part of the consultant's design package. However, with a design/build bid, remember to ensure that all information discussed earlier in this article is provided to allow a fair and true comparison between designs.

Other than design, history shows that key areas of concern for clubs looking at a new irrigation system are course disruption, reinstatement of pipe installation lines, training, plus long-term support and service.

Short and long-term support and spares pricing are other items that should also be investigated, but often aren't. So make sure these are all clearly covered in proposals and that as much ambiguity as possible is eliminated at that stage.

Contractors make a big investment in producing design proposals and bids. While they are responsible for gathering the information they need for the bid, it's perfectly reasonable to allow them to formally present their proposals at the club.

This meeting can give a deeper insight into contractors' individual abilities and provides each with an opportunity to demonstrate how they will meet the requirements.

I mentioned earlier that an irrigation system can be a relatively sophisticated piece of engineering, so there will be questions relating to the technical, installation, operation, and contractual and financial aspects of the proposals and bids. This meeting is the perfect forum for raising these issues. By well managing the timing, with a succession of contractors visiting the club over a short period, a continuity of questioning achieves a better comparison process.

At this point, there is likely to be discussion of particular products. Often this discussion is centred on the control system and particularly the controller. There is no doubt that, as Barry Beckett mentioned last month, PCs will radically change golf course management.

This is no more so than with irrigation control, where PC-based control has been used in the UK for over 15 years. Today's PC-based systems, such as

Toro's Gemini-Trident controller with VIP (Visual Irrigation Program) graphics package, have advanced greatly since then.

The integration of PCs with other course management tasks using GPS and other related technologies is with us now. PC-based control systems offer major operational benefits and it is strongly recommended that when specifying a PC-control system a graphics package is included. A good graphics package, one that shows the actual course, with sprinkler positions and types, can make irrigation system programming, scheduling, operation and diagnostics as simple as is possible.

When it is considered how valuable a turf professional's time is, any management tool that saves time and allows a focus on those tasks that need a direct input must be given very serious consideration. How long does it take to recoup the small extra investment in a PC-based controller when set against the longer-term reduced operational costs?

Other major benefits are the increased flexibility and programmability brought about by PC-based control. The ease with which such tasks as programming, scheduling and fine-tuning of the system can be undertaken reduces the time spent in front of the controller and allows important operational benefits to be derived.

Some Course Managers who've progressed to PC-based control report water savings as high as 30 per cent. Therefore where water costs are a major aspect of irrigation system management, such savings need to be fully evaluated before choosing the controller.

More and more Course Managers and Head Greenkeepers now look at the longer-term support services that manufacturers and contractors provide. PC-based control system support for hardware, software and specialist interface units must be assessed.

This should be not simply an insurance policy against system failure, but should offer other services such as a dedicated telephone helpdesk giving guidance on programming and scheduling. Looking at more general support, it is important to question the level of back-up behind the contractor.

Find out if it's through a strong national distributor with support product and personnel, as it is for example with companies like Lely UK, the distributor for Toro irrigation products. The level and quality of support that contractors get from manufacturers are important points that must be raised during presentations.

Following the bid evaluation and presentations it should be possible to award the contract and move onto the next stage, installation.

An irrigation system must be well designed, installed, operated and maintained to be an effective turf management tool. The process described in this article is only a beginning. But if a thorough, well-planned, well-managed decision process is executed at the outset there is a far greater chance of realising the objectives.



PC-based irrigation control systems like this Toro Gemini-Trident unit offer major operational benefits to Course Managers and greenkeepers