WHEN SHOULD I UPGRADE OR REPLACE MY IRRIGATION SYSTEM?

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Whenever I buy a piece of consumer electronics, from MP3 player to DVD player, a better and cheaper model is on the market next year. The pace of technological development in irrigation over the last decade has been such that one might be tempted to conclude that it is worth waiting a little while before upgrading or replacing your system, since something cheaper and better will be on the market soon. So, is there any merit in this argument?

Unlike consumer electronics, the cost of irrigation systems has never dropped. So the argument that a technological innovation might make irrigation systems much cheaper for similar or better performance would certainly be highly optimistic, at least on historic grounds. You can be pretty sure that the cost of an irrigation system is not going to drop in the future, either.

This is because a major element of the cost of a new irrigation system is the sprinklers, valves, pipe and fittings, which are all made from plastic, the cost of which is predominantly dependent on the price of oil; which is unlikely to drop significantly any time soon.

Approximately 30-40% of the cost of a new irrigation system is the installation element which is dependent on the cost of labour, machinery and fuel - our friend oil again! While the direct cost of unskilled labour has dropped a little (due to the recent expansion of the EU to Eastern Europe), this has been more than offset by the rising cost of skilled labour and associated employment costs and legislation.

In real terms, the cost of the electronic components (decoders, controllers etc) has probably dropped in recent times, but these components account for less than 15% of the entire cost of a new irrigation system.

So if you need a new irrigation system there's no benefit in waiting on the grounds that costs might drop. One might arguably justify waiting on the grounds that one could benefit from some future technological advance, but on this rationale we would never upgrade or replace anything as there is always the potential for future technological advances.

The dilemma most commonly faced by golf clubs is whether to upgrade their current irrigation system or to replace it completely. This will be dependent on the individual circumstances and history of the course's particular irrigation system and ideally should be evaluated and assessed by an independent engineer/consultant, who has no vested interest in selling or installing irrigation equipment.

The cost of purchasing a new irrigation system is a high capital cost for all golf cubs and is often a bitter pill to swallow. With machinery, you buy an item every year and replenish your fleet over time; however irrigation is normally a one-off capital purchase.

The temptation is to keep spending modest amounts and merely upgrade certain specific elements within the system. The problem with this approach is that one tends to end up with an incoherent patch-work quilt of an irrigation system. While financially palatable in the short term, in the long-term this approach costs a great deal more and more often than not performs inefficiently, unreliably and imprecisely.

So under what circumstances is it justifiable to upgrade a system rather than completely replace it? The answer really lies in the pipe and cable network. If both these elements are robust and have sufficient capacity to accommodate any modifications or extensions, then you have a good basis to upgrade the system rather than replace it. If you have an ageing PVC pipe network, then wholesale system replacement should be given serious consideration and money spent on short-term measures, will almost certainly be a palliative and not a cure.

The good news is that while PVC pipe networks have a life expectancy typically no longer than 25 years, polyethylene (PE) pipes have a design-life of 50 years (so long as they are rigorously jointed and installed). In this context, capital expenditure on an irrigation system is potentially a 50 year investment – not one to be undertaken lightly. During the 50 years, there is no doubt that some components will be replaced (sprinklers for example), in the same way that one might replace the tyres on a car. The upgrade v. replacement argument will thus be vastly different in the future for golf clubs with PE pipe networks compared to that faced today for clubs with PVC pipe networks.

By way of illustration let's consider a case study of a current Irriplan project; Saunton Golf Club. This is a 36 hole links on the North Devon coast with an irrigation system than can be summarised as follows:

- Recently installed PC controller, new decoders and new cable network
- Old PVC pipe network of varying age up to 30 years old, with capacity to irrigate greens, tees and approaches only; not fairways
- Sprinkler coverage to greens, tees and approaches and some fairways

(single-row)
- Gear-driven sprinklers of varying ages up to 20 years old
- Old pumping plant, recently upgraded with retro-fitted variable speed drive units

Irriplan's technical brief from the club was to:

- Stop leakages from the ageing PVC pipe network
- Reduce the run time of the system. Over the years, the extent of the sprinkler system has outgrown the original mains pipe network
- Improve sprinkler coverage and water use efficiency
- Eliminate overthrow of the single-row fairway system into the rough
- Increase system capacity to be able to extend irrigation to all fairways in the future

Given the age, condition and capacity of the existing PVC pipe network, replacing this element of the irrigation system was indisputable. The existing sprinkler system was ageing, susceptible to wind and not very efficient - especially the single-row fairway system. The solution to this was to replace the system with modern sprinklers with low-angle, wind-tolerant nozzles.

On the fairways Irriplan proposed the replacement of the single-row system for a double-row of part-circle sprinklers on the edge of the fairway, thus avoiding overthrow into the rough and optimising the consumption of water.

A new pipe network and sprinkler system was what the club wanted and needed, but having recently purchased a new PC controller, new cable network and new decoders, the possibility of re-utilising these elements was given consideration. The disadvantages to keeping the control system were summarised:

- The manufacturer had just announced that the model and type of control system was discontinued and its replacement was not compatible with the existing decoders or solenoids
- The capacity of the system (interfaces and cables) was insufficient to support the extension of the system to all the fairways in the future
- Any contractor would view trying to preserve the existing cable network, whilst installing a new pipe network and then trying to marry them up, as complicated and fraught with risks and would price the contract commensurately
- No contractor would accept responsibility for the existing control system components, which were out of warranty
- The savings in cost were minimal compared to the cost of the entire project

Given that capital expenditure in irrigation is a long-term investment, it was decided to replace the control system and start afresh. However there are some elements that have been retained and these are facets that are easily replaced in the future and do not compromise future selection of equipment. Some of the existing fairway sprinklers are being connected to the new pipe network and new control system, with a view that they can be replaced in the future. The pumping plant also remains, pending the outcome of a feasibility study into the construction of a winter storage reservoir.

So when considering upgrading or replacing your irrigation system, it's as well to remember two aphorisms, clichéd though they are; an irrigation system should be "greater than the sum of its parts" and a "chain is only as strong as the weakest link".

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