Patents Act 1977 **Opinion Number** **16/22**

OPINION UNDER SECTION 74A

Patent	GB2593987B
Proprietor(s)	S A EXEL INDUSTRIES
Exclusive Licensee	
Requester	MEISSNER BOLTE (UK) LIMITED
Observer(s)	
Date Opinion issued	05 August 2022

The request

1. The comptroller has been requested by Meissner Bolte (UK) Limited to issue an opinion as to whether GB2593987 (the patent) is invalid on the grounds of lack of inventive step. The request was filed on 25th May 2022 and was accompanied by a statement making the request. The statement refers to a number of non-patent literature documents NPL1-NPL5, and patent documents US20080058995A (PL4), WO2005002321 (PL5), WO2004080161A (D1), US6337635 B1 (D7), WO2016162085 (D9) and US20130035774A (D11). Documents NPL1-NPL5 all relate to a sprinkler system called “OpenSprinkler”.

2. More specifically, the requester asserts that the OpenSprinkler system as described by NPL1-NPL5 shows that claim 1, 2, 5 and 9 are not inventive. Claims 2, 3, 4, 6, 7 and 8 are also alleged to lack an inventive step in light of various combinations of common general knowledge or the disclosure in PL4, D1, D7 or with the OpenSprinkler system.

3. They further assert that claims 1, 3 and 4 lack an inventive step in light of PL4 as a stand-alone document.

Observations and observations received in reply

4. No observations were received.

Previous Opinion

5. The requester acknowledges that all of the above documents have already been considered in opinion 06/22 which was issued in respect of the claims on this application. However, I agree with the requester that since the request in opinion 06/22 was to consider the novelty of claim 1 and not the inventive step, this request relates to a different issue which has not previously been considered. As such it is

allowed. The construction of the claims in opinion 06/22 has also been used here where necessary.

The evidence

6. A digital archive of the World Wide Web, “Wayback machine” has been used to demonstrate that the documents NPL1-NPL5 predate the application. The Manual of Patent Practice used by the UKIPO sets out, in section 18.09.3, that evidence from Wayback Machine may provide justification that there is little doubt about the publication date of the disclosure. I am happy to accept the evidence submitted in the form of NPL1-NPL5 and the disclosure dates accorded to them by the requester.

7. The requester argues that NPL1-NPL5 do not represent different prior art but are merely different online sources pointing to the same prior art. I agree that they all refer to the same OpenSprinkler system and are intended to be read together to establish all the necessary information about the device. Thus, when I refer to NPL1-NPL5 I intend them to be read as a single disclosure.

The Patent

8. The patent is entitled “Garden Watering Controllers“. It relates to a control system for controlling the supply of water into a garden watering arrangement, such as a garden sprinkler. Referring to figure 1 of the patent below, a controller 1 receives wireless data signals and operates a valve in dependence on the received data signals. The unit can store programming data and operate the valve in dependence on a stored watering schedule.

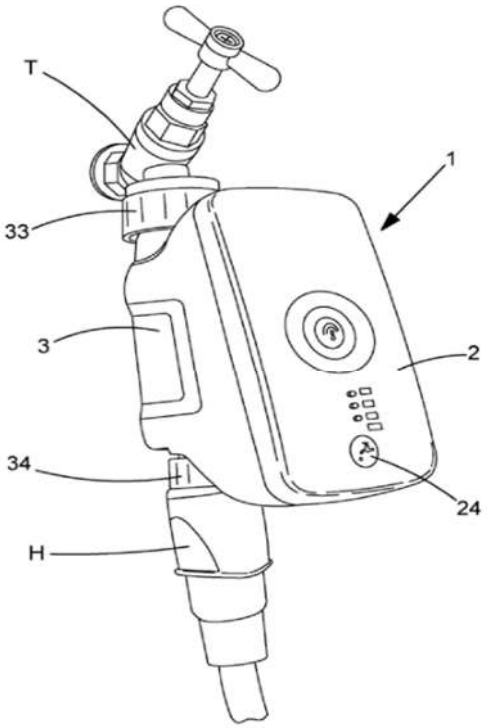


Figure 1

9. Figure 3 of the patent below shows that a stored schedule 301 can be held in

the controller memory. A “water override” 302 may be triggered manually by pressing button 24 on the unit. Alternatively, a wireless water override signal 303 may be sent via the app. When the water override ends the controller reverts to the stored schedule.

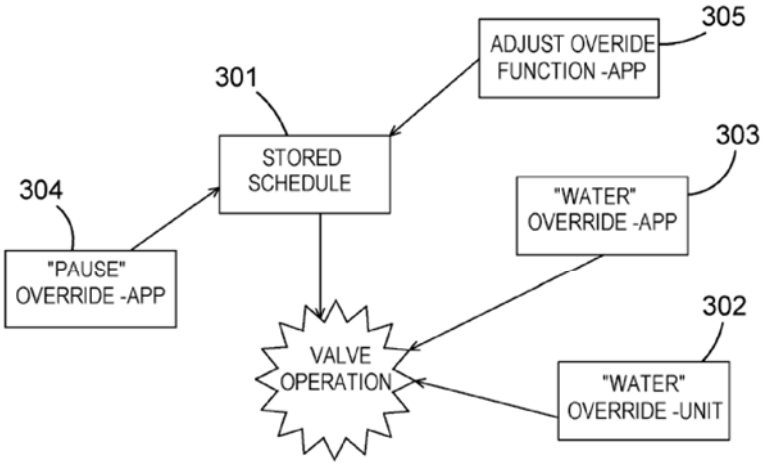
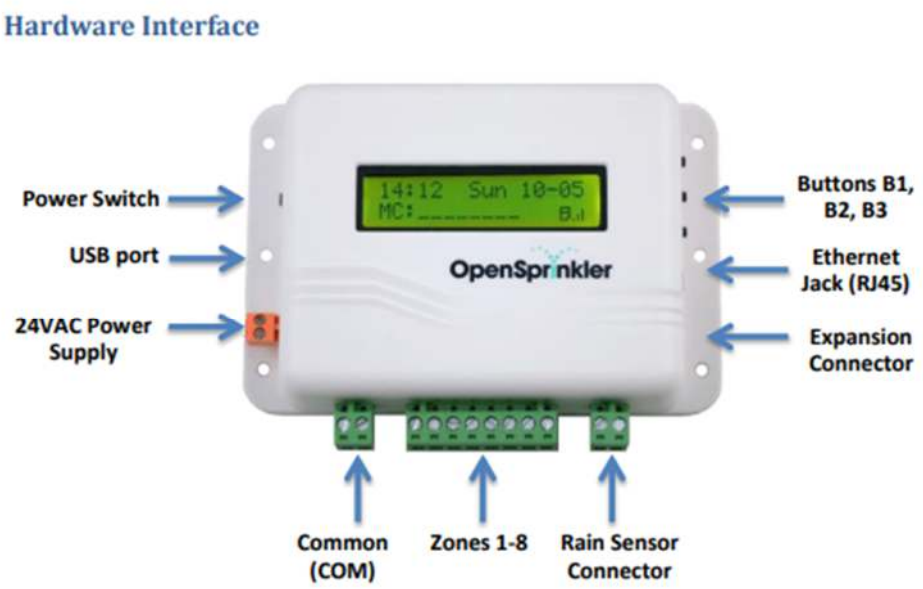


FIG.3

Opensprinkler

10. Documents NPL1-NPL5 refer to a garden watering controller system known as “OpenSprinkler”. This is an opensource, web-based sprinkler controller as shown below. It includes a controller that can replace a conventional sprinkler controller that does not have web connectivity. It has remote access and provides smart weather-based sprinkler control. It can be wirelessly connected to a router to receive control signals and watering programs. A client device such as a computer or mobile device is used to access a controller interface.



11. Documents NPL1-NPL5 are detailed below:

NPL1 is a user manual for the web interface for OpenSprinkler archived 30/03/2014
NPL2 is a video showing someone using a mobile app to program and control the OpenSprinkler system archived 14/12/2013
NPL3 is a user manual for the controller firmware v. 2.1.0 archived 21/03/2015
NPL4 is a history of software updates for the mobile app used with OpenSprinkler archived 28/04/2015
NPL5 is a blog post on a website which posts informal updates about new features of OpenSprinkler archived 15/03/2015

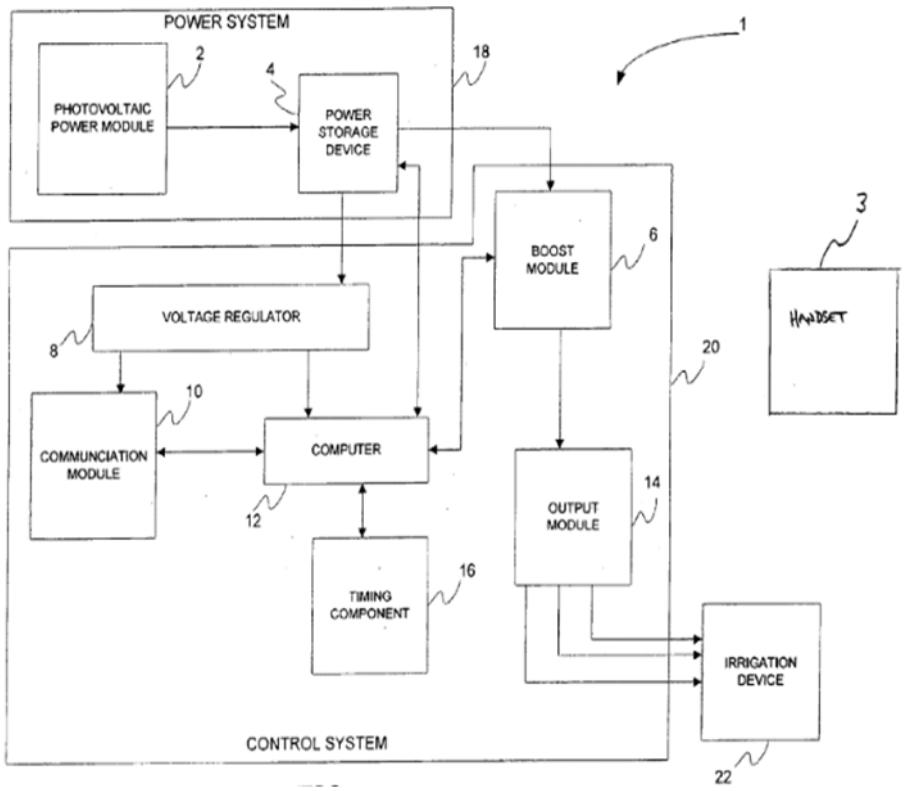
12. It is clear to me that these documents relate to a single system, and that the OpenSprinkler system itself is the prior art being relied upon. All of the documents pre-date the filing date of the application. I agree that the OpenSprinkler system was capable of being operated as described by the documents above prior to the filing of the patent application, provided it was running the latest firmware 2.1.0.

13. In paragraph of 5.0 of the request, the requester makes further observations regarding the product “OpenSprinkler DIY Kit v2.1u”. This kit comprises the garden watering controller which can be controlled via the OpenSprinkler mobile app (NPL5, page 13, bottom left picture). There is also evidence of the blogger himself holding the product inside a store (NPL5, page 13, bottom right picture). Page 10 of this blog states that this controller is eligible to upgrade to the firmware v2.1.0 which is detailed in NPL3. This satisfies me that the OpenSprinkler system with all of the features set out in the various documents provided was available to the public before the priority date.

US20080058995 (PL4)

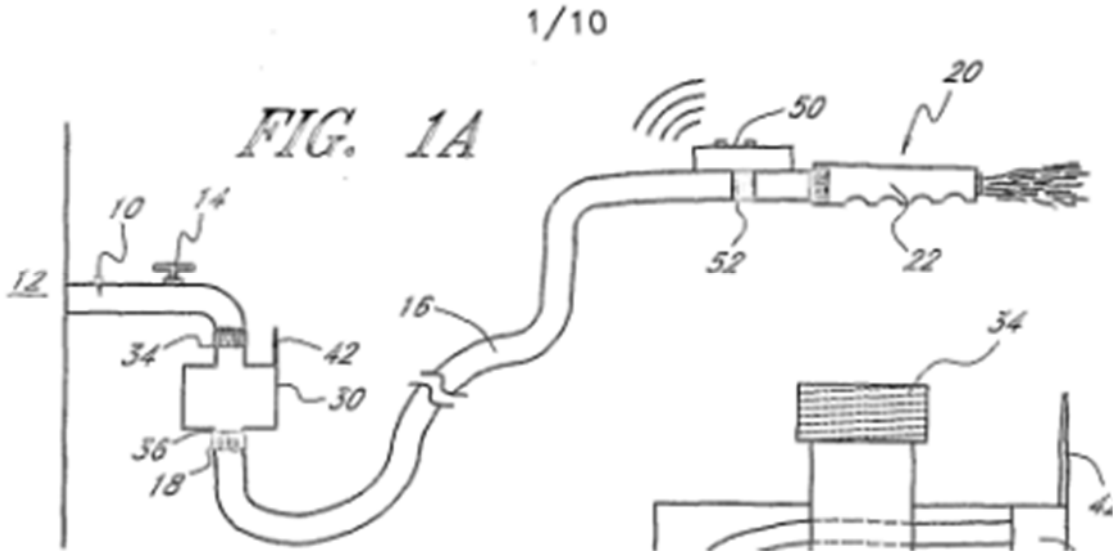
14. The requester also refers to the disclosure in PL4 – which is published US patent application US20080058995 A1. This application is directed to a solar-powered irrigation control device. It can be connected to one or more irrigation

devices in an irrigation system, and it can receive operational signals wirelessly from a handset. The invention is concerned with the efficient use of energy so that a small photovoltaic power module can be used as the only power source. One way that the power is conserved is by having inactive periods to reduce transceiver power requirements. Figure 1 of PL4 is reproduced below.



WO2004/080161 (D1)

15. D1 discloses the feature of a tap mountable garden watering controller unit, see controller 30 in figure 1A reproduced below.



US6337635 (D7)

16. D7 discloses the feature of a tap-mounted controller 28 which is detachable from a unit 22 containing the valve and a solenoid – see figure 7 reproduced below.

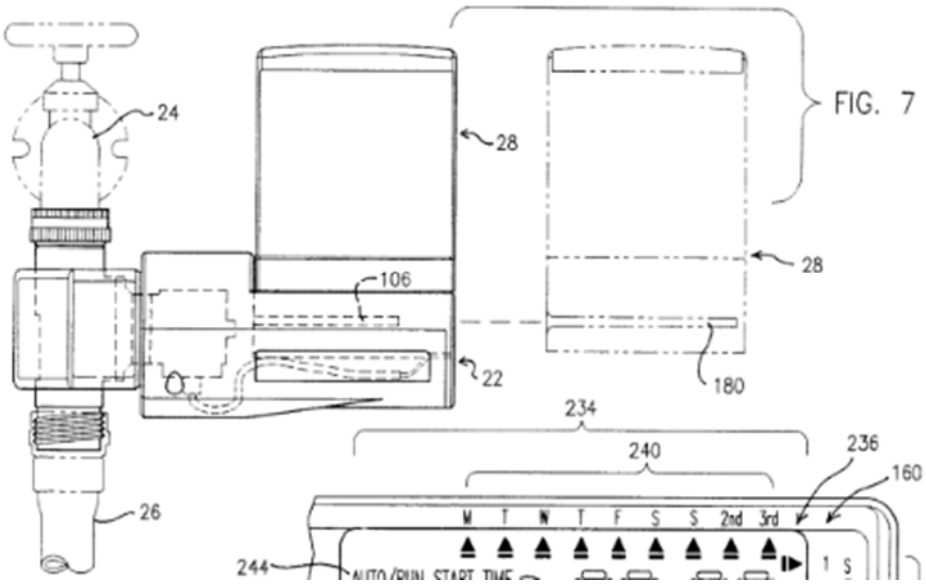


FIG. 7

WO2005/002321 (PL5)

17. This document discloses the feature of motorised valves. On page 20, line 21 it is stated that central valve 302 – shown in figure 6A reproduced below - may be any motorised valve.

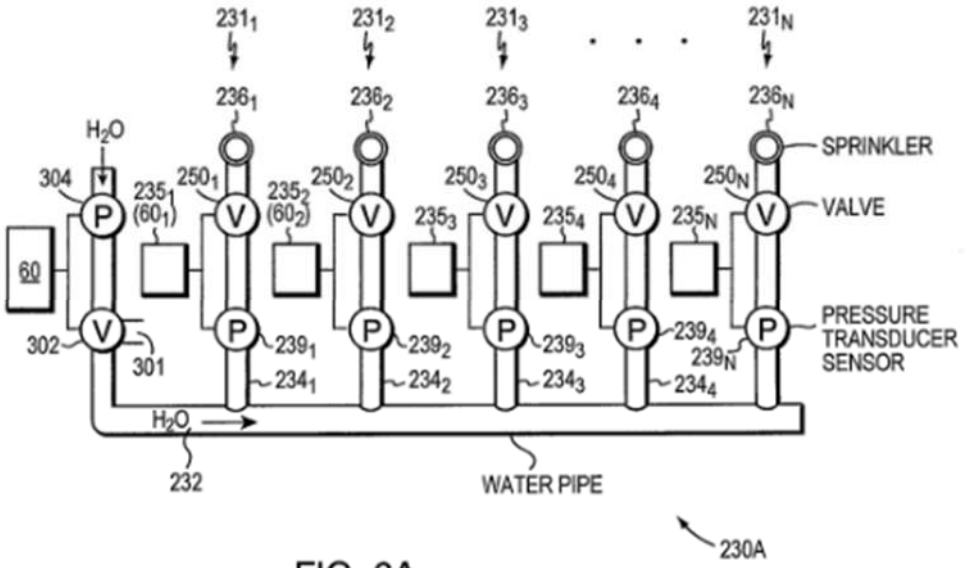


FIG. 6A

Claim construction

18. Before I can determine an opinion as to the validity of the patent, I must first construe the claims. This means interpreting the claims in the light of the description and drawings as instructed by section 125(1) of the Patents Act. In doing so I must interpret the claims in context through the eyes of the person skilled in the art. Ultimately the question is what the person skilled in the art would have understood the patentee to be using the language of the claims to mean. This approach has been confirmed in the decisions of the High Court in *Mylan v Yeda*[1]and the Court of Appeal in *Actavis v ICOS*[2]:

125.-(1) For the purposes of this Act an invention for a patent for which an application has been made or for which a patent has been granted shall, unless the context otherwise requires, be taken to be that specified in a claim of the specification of the application or patent, as the case may be, as interpreted by the description and any drawings contained in that specification, and the extent of the protection conferred by a patent or application for a patent shall be determined accordingly.

19. The requester sets out at paragraph 2 of page 8 of their request that they consider the person skilled in the art to be "an engineer who works with electromechanical devices (such as that claimed)". Since the claims only relate to garden watering controllers, I understand this definition to mean an engineer who works with electromechanical garden watering controllers. In my opinion the skilled person need not necessarily be a qualified engineer, they may alternatively be a regular user of remotely controlled irrigation systems which are commonly the subject of amateur programming projects.

20. Claim 1 of the patent reads:

> *A garden watering controller for operating a valve for controlling supply of water into a garden watering arrangement, the controller comprising wireless receiver means for wirelessly receiving programming data signals, and a central unit for outputting control signals for operating the valve in dependence on the received programming data signals,*
> *wherein*
> *the central unit is arranged to store a watering schedule received via the programming data signals and arranged to operate the valve in dependence on the stored watering schedule; and*
> *the controller comprises a manual override control that is arranged to operate the valve to allow immediate watering for a user selected period before the controller reverts to a state for operating the valve in dependence on the initially stored watering schedule.*

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[1] *Generics UK Ltd (t/a Mylan) v Yeda Research and Dev. Co. Ltd & Anor* [2017] EWHC 2629 (Pat)

[2] *Actavis Group & Ors v ICOS Corp & Eli Lilly & Co.* [2017] EWCA Civ 1671

21. The requester has not put forward any arguments regarding the construction of the claims, and there have been no observations filed. The requester has helpfully broken claim 1 down into its constituent features and labelled them as follows:

> A garden watering controller (1) for operating a valve (31) for controlling supply
> of water into a garden watering arrangement (M0101),
>
> the controller comprising wireless receiver means (22) for wirelessly receiving programming data signals, and (M0102)
>
> a central unit (21) for outputting control signals for operating the valve in dependence on the received programming data signals, wherein (M0103)
>
> the central unit (21) is arranged to store a watering schedule received via the programming data signals and (M0104)
>
> arranged to operate the valve (31) in dependence on the stored watering schedule (M0105).
>
> In addition to the above features of independent claim 1 the controller comprises (M0106):
>
> a manual override control that is arranged to operate the valve to allow immediate watering for a user selected period before the controller reverts to a state for operating the valve in dependence on the initially stored watering schedule (M0107).

22. Features M0101-M0106 are considered to be clear and I do not believe the skilled person would have any trouble construing their scope.

23. Feature M0107 relates to a "manual override control". The description of the invention (page 11, paragraph 5) clearly describes how a user interacts directly with the controller unit in order to operate the manual override control 24. It specifically discloses a "user operable button" on the controller unit which may be manually pressed to cause immediate watering. This is different from the water immediately override *signal* which may be operated by sending a wireless signal to the controller unit via the app. Figure 3 of the patent represented above shows how each of these operations 302, 303 are considered to be separate. Page 6, paragraph 1 discusses an override signal received from the client device and page 12, paragraph 6 describes a *“water immediately override signal”* received from the client device. In my opinion the skilled person would understand the application to disclose two options for operating the override to cause immediate watering; a manual override control which involves interacting directly with the controller unit, and a wireless override control which sends a water immediately override signal from a client device. Claim 1 requires the use of manual override control as an essential feature. I consider the manual override control of feature M107 to include only direct interaction at the controller within its scope.

24. Additionally, feature M0107 requires that the controller "reverts to a state for operating the valve in dependence on the initially stored watering schedule". There is little disclosure of how this happens in the description of the invention. It is clear that any manual or wirelessly operated override operates for a defined period (page 3, paragraph 8) until the override is cancelled or the override is over (page 14, paragraph 6). In the absence of any disclosure to the contrary, it is my opinion that a skilled person reading the description of the patent would understand that this reverting to the initial schedule takes place *automatically* at the end of the override period without any specific action being taken by the user.

Inventive Step

25. To determine whether or not an invention defined in a particular claim is inventive over the prior art, I will rely on the principles established in Pozzoli[3], in which the well-known Windsurfing steps were reformulated:

> *(1)(a) Identify the notional "person skilled in the art";*
> *(1)(b) Identify the relevant common general knowledge of that person;*
> *(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;*
> *(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;*
> *(4) Viewed without any knowledge of the alleged invention as claimed, determine whether those differences constitute steps which would have been obvious to the person skilled in the art.*

26. As set out in paragraph 19 above, in my opinion the skilled person may be an engineer who works with electromechanical garden watering controllers or a regular user of remotely controlled irrigation systems which are commonly the subject of amateur programming projects.

27. This skilled person would be aware from at least the Opensprinkler disclosure and PL4 that water immediately override functions are known in remote controlled watering systems. I agree with the requester that the skilled person would also know that sending a signal wirelessly is only one implementation that may be used by the person skilled in the art, and that other means of interaction would be within the skilled person's common general knowledge.

28. I have construed claim 1 in paragraphs 20-24 above, and I will go on to discuss the differences of the invention from the prior art, and whether they constitute an inventive step, below.

Claim 1

29. The requester argues that NPL1-NPL5 (OpenSprinkler) disclose a controller and at least one valve (sprinkler station) meeting M0101, and they describe how the

[3] Pozzoli SPA v BDMO SA [2007] EWCA Civ 588

controller can be connected wirelessly to a client device via a home router, thus disclosing M0102.

30. The interface described in NPL1 allows a user to set program schedules (NPL1, page 6) and the controller outputs signals to the sprinkler valves to operate them in dependence on the set schedule, thus disclosing M0103 and M0105. NPL1 page 5-page 6 explains how the programs are stored in the controller memory as required M0104. In addition, the controller is arranged to receive wireless override control signals such as the “Run-Once” program described on page 8 of NPL1. I agree with the requester that M0101-M0106 are disclosed in NPL1-NPL5.

31. There is no clear disclosure in the OpenSprinkler documents of a *manual* override control that is arranged to operate the valve to allow immediate watering for a user selected period before the controller reverts to a state for operating the valve in dependence on the initially stored watering schedule (M0107). The only disclosed override control signal issued to the controller is a wireless signal generated by clicking on the appropriate part of a display on a web-browsing device. As set out above, I consider that the skilled person would understand the teachings of the patent to provide two separate override control mechanisms, a manual override which involves interacting directly with the controller, or a wireless override signal which can be sent from a mobile device.

32. The requester asserts that the skilled person would understand that how a user interacts with the controller unit is not important, as long as the user sends a suitable signal to the controller unit. They further argue that to send a signal wirelessly is a clear and obvious implementation that may be used by a person skilled in the art. Sending a wireless signal is clearly disclosed in OpenSprinkler, claim 1 of the patent requires a *manual* override control. Thus, in order to assess the inventive step of claim 1, the question I need to answer is whether a skilled person armed with the knowledge of all of the features that the OpenSprinkler device provides and their own common general knowledge of the various ways in which one might send a signal to a controller, would include a *manual* override operation of the OpenSprinkler controller without using inventive ingenuity.

33. The OpenSprinkler device discloses a number of buttons on the controller unit including one which is used to manually start “an existing program or a test program” (see NPL3, button B3, page 4, bottom table). NPL3 does not disclose that any of the buttons start an override function. However, it is clear that manual control at the controller itself is envisaged by the OpenSprinkler device. The skilled person would be aware of the wireless override function, as demonstrated clearly by the “Run-Once” function set out in NPL1. The discussion of the “Run-Once” program on page 8 of NPL1 describes how *“the normal program schedules will be temporarily interrupted until the Run-Once program finishes, at which point the controller will return back to the normal program mode”*. That is, the sprinklers will be wirelessly instructed to override the programmed schedule and cause immediate watering of the garden for the specified duration of time. It is further clarified on page 9 of NPL1 that if you want to run an ad-hoc program and would like the controller to automatically return back to program mode, the Run-Once feature should be used.

34. In my opinion the skilled person would understand that this “Run-Once”

override function could be ascribed to the manual buttons present on the controller of NPL3 and that it would be obvious to do so. As such I agree that claim 1 does not involve an inventive step in light of a combination of OpenSprinkler and common general knowledge.

35. The requester also argues that claim 1 is not inventive in light of the disclosure in PL4. PL4 relates to a solar power irrigation control system, which may comprise one or more solenoid-controlled irrigation valves (paragraph 0040). The irrigation controller is described in paragraph 0035 as including *"a microprocessor configured to control internal program operations, and a radio transceiver to receive programming instructions and provide data to a corresponding communication device (e.g. a wireless handset) operated by a user"*. Thus features M0101, M0102 are disclosed. Figure 15, step 310 sets out how the controller may open or close the irrigation valve in dependence on a received programming signal, so feature M0103 is also disclosed. Paragraph 0036 describes how the controller may operate the valves in accordance with a programmed irrigation schedule, so features M0104 and M0105 are disclosed.

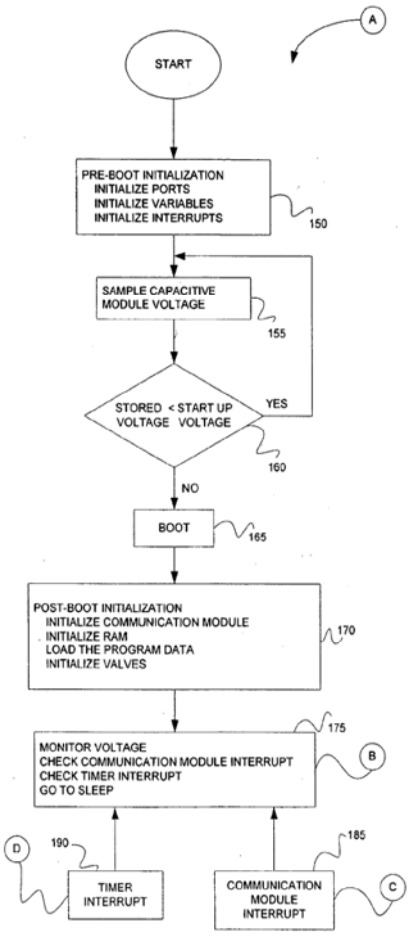

FIG. 12

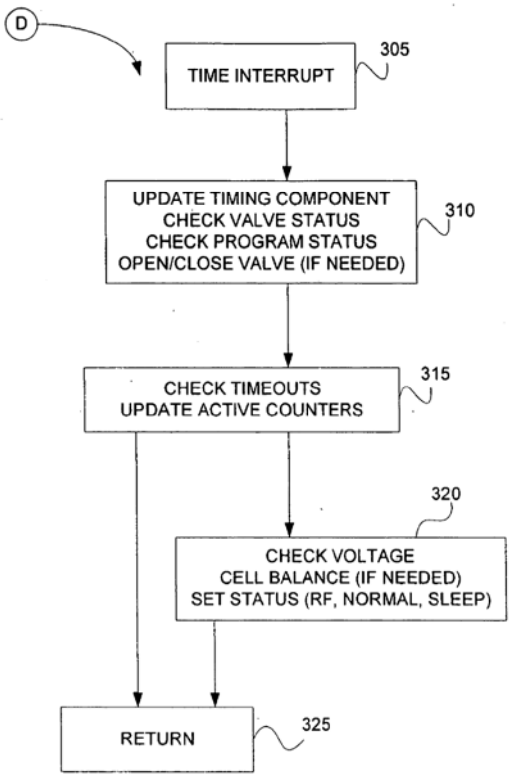

FIG. 15

36. Override control signals may be received by the controller (paragraph 0036)

to start immediate watering or to water at a time which was not previously scheduled. The requester points to paragraph 0079 where reference is made to a “Manual Run counter (temporarily run for XX minutes)” to demonstrate that the override causes immediate watering for a user selected period which is monitored by the counter described in paragraph 0079. Figure 15 sets out the process that is run by the controller when checking the counters for actions that may need to be taken or stopped in accordance with the programmed schedule or override. Paragraph 0079 sets out that if there are no actions to be taken the controller returns to process A, set out in figure 12.

37. The requester suggests that the step of returning to program A where the controller is checking for a timer interrupt signifies that the valve returns to the initially stored program schedule. In particular they point me to box 170, where the instruction is given to “load the program data”. I agree that figure 12 shows that the program data has been loaded by the communication module and is stored in the controller. The timer interrupt process 190 of figure 15 will be intermittently carried out after the program data has been stored by the controller and will include checking program status and carrying out actions (open/closing valves) as necessary (paragraph 0078). If one of those actions relates to the override manual run function then the counter will activate and the action will continue until it rides down to zero. This checking of the program for actions occurs every time a timer interrupt occurs and there is no indication that running the override stops that happening. As such I am of the opinion that PL4 does describe returning to the state for operating the valve in accordance with the initially stored watering program.

38. PL4 does not, however, disclose interacting directly with the control unit in order to operate a manual override function. The requester argues, as with the OpenSprinkler above, that the skilled person would understand that it does not matter how a user interacts with the controller as long as the signal is sent. Paragraph 0052 of PL4 states that the communication module 10, which is part of the controller, can accept operational signals from a user by means of buttons, thus manual interaction with the control unit is envisaged by PL4. As with OpenSprinkler, it is my opinion that the skilled person would understand that the override function could be ascribed to one of the manual buttons present on the controller unit of PL4 and that it would be obvious to do so. As such I agree that claim 1 does not involve an inventive step in light of a combination of PL4 and common general knowledge.

Claim 2

39. Claim 2 relates to a manual override control button which is arranged so that subsequent presses of the button cause cycling through an available range of watering durations. The requester argues that this cycling feature is prevalent across all technology and would be a part of the skilled person’s common general knowledge. I agree that operating buttons in this way, by using a number of presses to cycle through options, is well-known and does not contain an inventive step. This common general knowledge combined with the disclosure in Opensprinkler or PL4 is considered to show that claim 2 lacks an inventive step.

Claims 3 and 4

40. These claims relate to a sleep mode of the garden watering controller, and the length of the wake-up interval. The requester argues that they lack an inventive step in light of PL4. PL4 has a sleep mode (see paragraph 0054) in which the controller does not conduct wireless communication. The controller has a "listen" interval which is described as being "dynamically determined" depending on predetermined conditions, for example the likelihood of receiving a signal. As such the features of claim 3 are shown in PL4 and it is my opinion that it does not contain an inventive step. Claim 4 requires the wakeup interval to be decreased if user override signals are received. PL4 discloses that the wakeup interval can be determined *"based on, for example, the probability of receiving a signal"*. If the system had recently received override control signals it would be obvious to a skilled person that the probability of receiving another signal is increased. As such they would consider arranging the system so that it has a reduced wake-up interval in these circumstances. In my opinion claim 4 does not contain an inventive step in light of PL4 plus common general knowledge.

41. The requester also considered claim 3 to lack an inventive step in light of OpenSprinkler combined with PL4. The requester considers that the common general knowledge of the skilled person will include that it is favourable for electronic devices to be operated independently of a wired power supply by making them battery operated. They assert that the skilled person would seek to improve battery life of a battery- operated device. They also consider that it is part of the skilled person's common general knowledge that battery life can be extended with the help of a periodically paused operation cycle.

42. I do not agree that a skilled person would automatically feel it is *favourable* to adapt a mains operated device to make it battery operated instead. This may mean that it can be used where there is no mains power, but the very issue of battery life is one that can easily be avoided by using mains power where possible. I agree that energy conservation, which may involve turning off certain components for periods of time, would be an obvious consideration for the skilled person if they were presented with a battery powered controller. However, I do not agree that the skilled person would be motivated to adapt mains powered devices such as OpenSprinkler to have such energy conservation features. In PL4, where electrical energy is stored in a capacitive module, it is stated in paragraph 0004 *"In systems with a wired AC or DC power source, the energy efficiency of the irrigation controller is usually not a concern".*

43. Therefore, I do not consider it obvious for a skilled person to combine the two teachings of NPL1 and PL4 to show a lack of inventive step in claims 3 and 4, but I do consider them to lack an inventive step in light of PL4 alone – see paragraph 37 above.

Claim 5

44. Claim 5 relates to the controller storing a watering schedule which relates to sunrise and sunset times determined in response to geo-location data. The requester refers to the blog post in NPL5 which discusses creating a watering schedule based on sunrise/sunset times. Reference is made at page 9, paragraph 3 to a mobile interface, and I accept that this discloses an interface on a mobile client

device such as a mobile phone. Page 1 of NPL5 also states that sunrise/sunset times can be used in program settings. I consider the skilled person would understand “geo-location data” to be location data that is automatically established. There is no clear disclosure in NPL5 of the sunset and/or sunrise times being automatically determined, rather it is determined from a location input by the user (NPL5, page 9, paragraph 3) *“once you set your location, the firmware can automatically determine your time zone and DST”*. Having said that, using geo-location data to establish someone’s whereabouts or to provide them with information is commonly known across many technologies. In my opinion a skilled person would understand that the same data could be obtained by either acquiring it using geo-location data or by inputting a location. In my opinion it would be obvious to use geo-location data rather than to set a location. I do not consider claim 5 to include an inventive step in light of OpenSprinkler.

Claim 6

45. Claim 6 relates to the garden watering controller being tap mountable. The requester argues that claim 6 is not inventive with regards to NPL1-NPL5 in combination with D1. D1 clearly describes a remote-controlled tap mountable garden watering controller unit and I am satisfied that a skilled person would be aware, either from the disclosure in D1 or from their own common general knowledge, that placing the controller at this location was known in the art. The requester argues that having a garden watering controller and a valve in a single housing reduces installation effort for a user. They also argue that it is favourable to have a second redundant means of controlling the water flow independently of a garden water controller (i.e. the tap), so it is obvious to mount the controller directly at this upstream element. I agree with the requester that it would be obvious to place the OpenSprinkler controller of NPL1-NPL5 outside at the tap. Therefore, in my opinion, claim 6 lacks an inventive step with regards to NPL1-NPL5 combined with D1 or the common general knowledge of the skilled person.

Claim 7

46. Claim 7 relates to the valve unit including a motor driven valve. The requester considers this to be entirely within the limits of the common general knowledge of a skilled person as using a motor to drive a valve is well-known. They also refer to PL5 which describes one of the valves as a motorised valve. I agree with the requester that this is a well-established mechanism for opening and closing valves. It is my opinion that claim 7, in light of OpenSprinkler combined with PL5 or common general knowledge, does not contain an inventive step.

Claim 8

47. Claim 8 refers to the feature of the controller unit comprising a main body housing the valve and motor, and a detachably mounted controller. The requester argues that it is well-known to allow elements such as a controller to be detachable for maintenance and that this is common across all forms of engineering. They refer to D7 to which shows a controller slideably mounted to a valve unit to allow it to be removed therefrom. I agree with the requester that the skilled person would find it obvious to mount the controller on the housing unit so that it could be detached for

maintenance or replacement. Thus claim 8 is not inventive in light of the disclosure in OpenSprinkler combined with common general knowledge or D7.

Claim 9

48. Claim 9 relates to a garden watering controller system comprising a controller and a server arranged under the control of software for communication via a network with a client device which accepts inputs and a controller which carries out the functions of claim 1. As argued by the requester, NPL1 clearly describes a control device which communicates via a network with the client device. Thus it is my opinion that the system of claim 9 lacks an inventive step in light of OpenSprinkler.

Opinion

49. In my opinion, based on the arguments presented by the requester, claims 1, 2, 5 and 9 lack an inventive step in light of OpenSprinkler, as evidenced by NPL1-NPL5. I also consider claims 1, 2, 3 and 4 to lack an inventive step in light of the disclosure in PL4. Thus patent GB2593987B is not valid.

50. I consider claim 6 to lack an inventive step in light of OpenSprinkler combined with D1 or the common general knowledge of the skilled person.

51. I consider claims 7 to lack an inventive step in light of the OpenSprinkler system as evidenced by NPL1-NPL5 plus PL5 or common general knowledge.

52. I consider claim 8 to lack an inventive step in light of the OpenSprinkler system as evidenced by NPL1-NPL5 plus D7 or common general knowledge.

Application for review

53. Under section 74B and rule 98, the proprietor may, within three months of the date of issue of this opinion, apply to the comptroller for a review of the opinion.

Emma Tonner
Examiner

NOTE

This opinion is not based on the outcome of fully litigated proceedings. Rather, it is based on whatever material the persons requesting the opinion and filing observations have chosen to put before the Office.