

OPINION UNDER SECTION 74A

Patent	GB 2521049 B
Proprietor(s)	SENTINEL PERFORMANCE SOLUTIONS LIMITED
Exclusive Licensee	
Requester	Haseltine Lake Kempner LLP
Observer(s)	
Date Opinion issued	31 December 2024

The request

1. The Comptroller has received a request from Haseltine Lake Kempner LLP (the requester) to issue an opinion on the validity of GB 2521049 B (the patent).
2. The patent has a filing date of 6 November 2014 and a claim to an earlier priority date of 7 November 2013. The patent was granted on 9 August 2016 and it remains in force.
3. No observations were received.
4. The request questions the validity of the patent based on a lack of novelty or lack of inventive step in relation to two documents:

D1	DE 202013005919 U1	(AEW WASSERTECH.)	2 October 2013
D2	DE 102007055132 A1	(LOTZE H)	20 May 2009
5. Translations of these documents were supplied.

Preliminary matters

6. Neither D1 nor D2 were explicitly identified by the examiner in relation to this application, and no objection based on them was ever raised. However, they were both identified by the International Search Authority in relation to the proprietor's equivalent PCT application published as WO 2015/067917. Objections based on D1 were subsequently raised in the Written Opinion and the International Preliminary Report on Patentability (D1 of those documents) and during processing of the European regional phase application EP 3071891 (D1 of the examination report of 4

January 2018). The European patent was subsequently granted with claims of narrower scope than those of the GB patent.

7. D2 was cited as background art in the International Search Report. No objection based on D2 was ever made.
8. Previous Office decisions¹ have held that requests for opinions should be refused where no new question is raised, unless the conclusion reached by the examiner is clearly perverse. Based on this case law, it is established practice not to re-visit or reconsider documents as part of an opinion when they have already been considered by examiners as part of the examination process. The requester and proprietor were warned of the possibility that D1 might not be considered.
9. The requester responded with reasons why we should reconsider D1. In particular, the requester points to Section 3.4 of the Opinions Manual which states that “*any request that merely repeats an argument that was clearly raised by the examiner and answered by the applicant to the satisfaction of the examiner will be refused.*” This reflects the statement by the hearing officer in BL O/289/07:

21 Hence it would seem clear that the intent was always that there should at least be something new – the request should not simply seek to go over old ground. The rationale for this would seem to be, not unreasonably, that a patentee should not be asked to deal again with questions that he has already dealt with to the satisfaction of the Office pre-grant.

10. The requester points out that as D1 was never raised in an examination report then the patentee has not *answered it* nor had to *deal* with it.
11. This argument appears to have been dealt with already in a subsequent office decision (BL O/370/07), where an opinion request was refused and the hearing officer observed (my underlining):

30 in pre-grant examination there is no corresponding window on the mind of the examiner. Although it may be possible to draw inferences from a sequence of correspondence, the examiner rarely gives an explanation as to why a particular line of argument or objection has been dropped. This is particularly true in relation to a decision not to pursue a citation made in a search report. It will therefore rarely be possible to draw the conclusion with any degree of certainty that a particular question has been “sufficiently considered”. Applying the test proposed by Mr Wallin would, it seems to me, lead to the outcome that many, possibly most, issues involving the relevance of prior art referred to pre-grant could end up being re-examined in an opinion. I do not believe that this was the intention of the legislator and it would not in my view be an appropriate use of the opinions service.

12. The hearing officer in this decision goes on to consider what might be new documents or arguments as follows:

32 But what is “a new question or argument”? Mr. Wallin suggested that a

¹ See for example Office decisions BL O/370/07, BL O/298/07 and BL O/289/07.

new question “just has to be something that you can see from the prosecution history has not been considered before”. I agree with this statement, although I think I probably differ with him over the detail of what it means in practice. It is an intrinsic part of the substantive examination process to assess the novelty and obviousness of the claims, as properly construed, in the light of the prior art. In this context, “prior art” means documents cited in the search report (at least under category “X” or “Y”, which indicate possible relevance to novelty or inventive step) as well as material which has come to the examiner’s attention in some other way. I think it reasonable to suppose in general that the examiner will have done his or her job properly in the absence of indication to the contrary, and I see no reason why this assumption should not apply even if the examiner has decided not to raise objection on the basis of any of the citations at substantive examination.

13. The reference to “*material which has come to the examiner’s attention in some other way*” is apparently intended to include documents identified on equivalent applications. It is also clear from the examiner’s notes that D1 was considered before he allowed the application to proceed to grant and it *clearly came to his attention*.
14. D2 was not cited as category X or Y. For that reason I consider that it is appropriate to consider D2 as part of the opinion, and it is for this reason that D2 was not referred to when the requester and proprietor were advised about the possible inadmissibility of D1.
15. The hearing officer further outlines the circumstances in which previously raised prior art may be reconsidered:

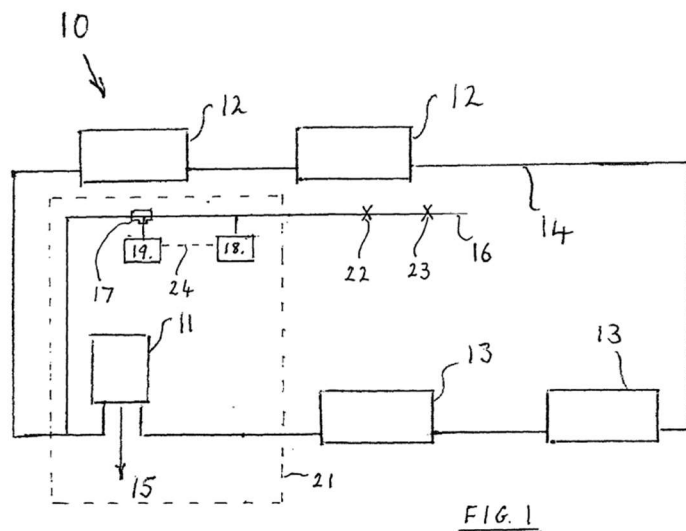
33 Having said that, I have to acknowledge the possibility that a decision by an examiner to discount a citation might be shown to have been clearly perverse, in the sense that no reasonable person could have reached it. Only in such a case might it be appropriate to reconsider the citation in an opinion as there could be said to be a new argument.

16. However, in situations such as this, where there is no correspondence between the examiner and the applicant, and there is *no window into the mind of the examiner*, then it is seemingly impossible for the requester to know if the examiner has reached a decision that is clearly perverse, other than by requesting an opinion on the basis of prior art that has already been considered. Nonetheless, the requester does not know the reasons for the examiner’s decision and cannot argue that such reasons are perverse or unreasonable. If there is to be any possibility of reconsidering previously considered prior art in these circumstances then, short of having a hearing on the matter, I believe it is permissible for me to determine if the examiner’s actions could be considered *prima facie* unreasonable.
17. In this case, the examiner has provided brief reasons why he considers claim 1 to be distinguished from D1, and these are recorded on the unpublished part of the file. Insofar as I understand those reasons I do not agree with them. Furthermore, on the basis of my understanding of them, they do not appear to be reasons a reasonable examiner would agree with. I note also that the EPO examiner arrived at a different conclusion on the allowability of the same claims in relation to D1, and those claims

were subsequently narrowed. Therefore, in the particular circumstances of this case, I consider that it is appropriate to also reconsider D1 as part of the opinion.

The patent

18. The patent describes a system for monitoring and maintaining the concentration of a chemical additive in a liquid flow circuit. In particular, the system is for monitoring and maintaining the concentration of a corrosion inhibitor in a central heating system.
19. The patent identifies that, for example, when a radiator of a central heating system is replaced, a portion of the circulating fluid will be drained and then replaced. In such situations the lost inhibitor may not be replaced. The system is therefore intended to allow for an appropriate amount of inhibitor to be added as water is added to the system. To do this a volume flow sensor is provided which detects the amount of water being added to the central heating system and determines a corresponding amount of inhibitor to be added by a dosing device.
20. Figure 1 of the patent illustrates the general arrangement of the system.



21. The central heating system is made up of boiler heat exchanger (11), and radiators (12, 13). A mains water supply is indicated by reference numeral 16 which connects to the main circulatory system via a tee and can be used to fill or refill the central heating system. The invention comprises the volume flow sensor (17), a display (19) and a dosing device (18). The display indicates the volume of water added, as determined by the flow sensor, as well as the quantity of inhibitor which should then be added via the dosing device (18).

Claim construction

22. As a first step in determining validity I must correctly construe the claims. This means interpreting them in the light of the description and drawings as instructed by Section 125(1). 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*² and the Court of Appeal in *Actavis v ICOS*³.

23. There are two independent claims 1 and 14. They read as follows:

1. A heat transfer system comprising a liquid flow circuit within which a liquid containing a chemical additive is circulated to flow through one or more heat transfer devices, said circuit comprising a sensor operable, in the event of addition of liquid into the liquid flow circuit subsequent to initial filling of the liquid flow circuit, to provide an output signal which is a function of the volume of liquid subsequently entering the liquid flow circuit.

14. A method of operation of a heat transfer system of the type comprising a liquid flow circuit within which there is circulated a liquid containing a chemical additive, said method comprising providing the system with a sensor which is operable, in the event of addition of liquid into the liquid flow circuit subsequent to initial filling of the liquid flow circuit, to provide an output signal which is a function of the volume of liquid subsequently entering the liquid flow circuit.

24. I consider that construction of the claim is largely straightforward and no issues with construction are identified in the request. However, there are a couple of terms which I consider require clarification.

25. Firstly, claim 1 requires (my underlining) “A heat transfer system comprising a liquid flow circuit within which a liquid containing a chemical additive is circulated” with “said circuit comprising a sensor”. The nature of the *circuit* is important in determining whether or not the sensor is located in the *circuit*. With reference to figure 1 of the patent reproduced above, it can be seen that the sensor (17) lies in a pipe which is attached as a branch to the main circulatory system (comprising boiler heat exchanger (11) and radiators (12,13)). Accordingly, I consider *circuit* should be construed broadly so that it extends to branches attached to the main circulatory system and is not restricted solely to the main circulatory system. I note claim 14 does not possess the same requirement that the circuit should comprise a sensor, only that the system should have a sensor.

26. Secondly claims 1 and 14 refer to the sensor being operable “*in the event of addition of liquid into the liquid flow circuit subsequent to initial filling of the liquid flow circuit.*” It is not clear what sort of restriction this puts on the scope of the claim. I consider that it should be interpreted such that the sensor should be *suitable for* operation in this manner. However, this is somewhat moot as both D1 and D2 appear to refer to refilling operations which are considered to *be additions of liquid subsequent to initial filling.*

² *Generics UK Ltd (t/a Mylan) v Yeda Research and Dev. Co. Ltd & Anor* [2017] EWHC 2629 (Pat)

³ *Actavis Group & Ors v ICOS Corp & Eli Lilly & Co.* [2017] EWCA Civ 1671

Prior art

27. D1 describes a water conditioning system for adding an additive to water before it is added to a heating/cooling circulatory system. Figure 1 of D1 illustrates the general arrangement.

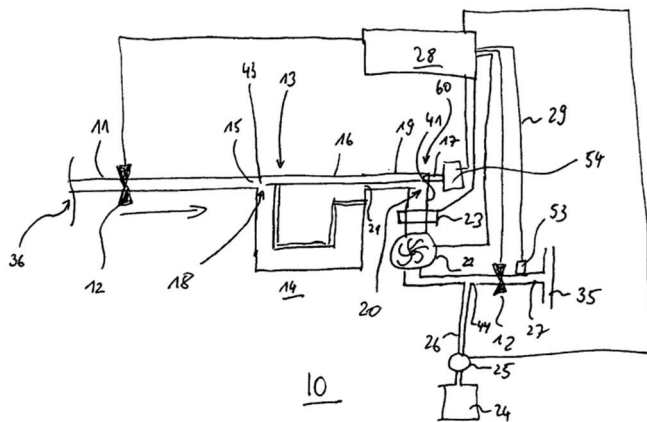


Fig.1

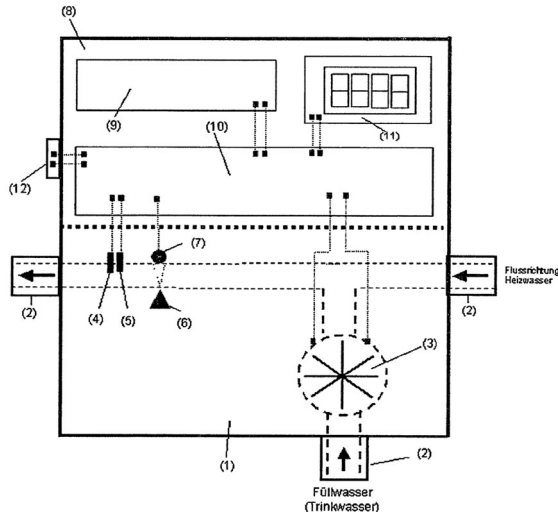
28.

29. The main circulatory system is not shown in figure 1 of D1 save for a small section of pipework (35) where the conditioning system connects to it (27).
30. The conditioning system comprises a water inlet (36), a flow meter (22), a conditioning fluid tank (24), and a conditioning fluid tank pump (25). Paragraph [0030] (translated) describes how conditioning fluid is added to the filling water as follows:

[0030] Line 26 is connected to a tank 24 in which a conditioning fluid is provided as an additive to the conductivity-adjusted filling water. A pump 25 is planned in line 26. The conditioning fluid is fed into line 41 via pump 25 through line 26, whereby the additives are fed into the filling water. The quantity supplied is set by the control system depending on the measurement result of the flow meter 22.

31. D2 describes a monitoring system for a heating system to ensure a sufficient inhibitor concentration is maintained. The system is illustrated in figure 1:

Abbildung 1:



32. The system comprises an inlet and outlet of the main circulatory system (2), a flow meter (3) and sensors (4, 5, 6, 7). The sensors can be used to determine the concentration of inhibitor in the system. Paragraph [0025] (translated) specifies:

[0025] In the measuring module (1), which is resistant to dirty water and pressure, there is a flow meter (3) which measures the amount of water flowing into the heating system during the filling or refilling process and emits the result as an electrical impulse.

Novelty

33. I consider that both D1 and D2 disclose all the features of claim 1 as set out in the following claim comparison table (square brackets indicating paragraphs in D1/D2):

Claim 1	D1	D2
A heat transfer system comprising a liquid flow circuit	[0002] - heating circuit of hot water system.	[0001] - monitoring and diagnostic fitting for heating water, which prevents damage in the heating and/or cooling water circuit
within which a liquid containing a chemical additive is circulated	[0030] - the conditioning fluid is fed into line 41 via pump 25 through line 26, whereby the additives are fed into the filling water.	[0014] - an inhibitor is added to the heating system
to flow through one or more heat transfer devices	implicit in a heating system	[0002] - radiators
said circuit comprising a sensor	flow meter 22	flow meter 3
operable in the event of addition of liquid into the flow circuit subsequent to the initial	[0017] – supplementary filling of recirculating systems	[0025] - refilling

filling of the liquid flow circuit		
to provide an output signal which is the function of the volume of liquid subsequently entering the liquid flow circuit	<p>[0027] - the control system 28 is connected via electrical cables 29 to ... the flow meter 22</p> <p>[0030] - the quantity supplied is set by the control system depending on the measurement result of the flow meter 22.</p>	<p>[0025] - a flow rate measuring device (3) measures the amount of water flowing into the heating system during filling or refilling and outputs the result as an electrical impulse.</p> <p>[0034] - from this data, the following information can be generated and displayed on a display screen: - Each individual refill with volume and date/time</p>

34. Accordingly, I consider that both D1 and D2 fall within the scope of claim 1 and claim 1 is therefore anticipated.
35. Similarly for claim 14, I consider that both D1 and D2 fall within the scope of claim 1, as shown by the table below, and claim 14 is also anticipated.

Claim 14	D1	D2
A method of operation of a heat transfer system of the type comprising a liquid flow circuit	[0002] - heating circuit of hot water system.	[0001] - monitoring and diagnostic fitting for heating water, which prevents damage in the heating and/or cooling water circuit
within which there is circulated a liquid containing a chemical additive,	[0030] - the conditioning fluid is fed into line 41 via pump 25 through line 26, whereby the additives are fed into the filling water.	[0014] - an inhibitor is added to the heating system
said method comprising providing the system with a sensor	flow meter 22	flow meter 3
which is operable, in the event of addition of liquid into the liquid flow circuit subsequent to initial filling of the liquid flow circuit,	[0017] – supplementary filling of recirculating systems	[0025] - refilling
to provide an output signal which is a function of the volume of liquid subsequently entering the liquid flow circuit.	<p>[0027] - the control system 28 is connected via electrical cables 29 to ... the flow meter 22</p> <p>[0030] - the quantity supplied is set by the control system depending on the measurement result of the flow meter 22.</p>	<p>[0025] - a flow rate measuring device (3) measures the amount of water flowing into the heating system during filling or refilling and outputs the result as an electrical impulse.</p> <p>[0034] - from this data, the following information can be generated and displayed on a display screen: - Each individual refill with volume and date/time</p>

36. Most of the requester's arguments in relation to the lack of novelty of the dependant claims appear straightforward, with the features being clearly disclosed in at least

one of D1 or D2. I do not propose to repeat the arguments, save for where I disagree with them. I agree with the arguments relating to claims 2 to 12 and 15. In particular, claims 2, 3, 12 and 15 are anticipated by D1, and claims 2 to 6, 9 to 11 and 15 are anticipated by D2. See the appendix for text of the claims.

37. I do not agree with the requester's arguments in relation to claim 13, and I only partially agree with the arguments about claim 5.
38. Two arguments are put forward in relation to claim 5, only one of which I agree with. Claim 5 is dependant on claim 4 and requires a reset means to reset the display of claim 4 so that only the volume of subsequently added water is displayed. The requester points firstly to paragraph [0042] of D2 which specifies:

In addition, as an inexpensive variant, a protection claim is made for a simple water meter (counter in liters up to a maximum of 9999), in which it is possible to manually record refilled water quantities by integrating a reset button for the counter (analogous to the trip meter). The effects on the inhibitor concentration can then be calculated from the manually recorded values.

39. It is not clear to me that this *inexpensive variant* includes an *output signal* as required by claim 1, and I consider that this embodiment falls outside the scope of claim 1. It is not therefore relevant to claim 5.
40. The requester also suggests that reset means is essential for the operation of the system, e.g. as described in paragraph [0034] of D2, and is therefore an implicit part of the disclosure. Paragraph [0034] includes statements about the system:

[0034] The following information can be generated from this data, which is displayed on a display:

- Water content of the heating system*
- Each individual refill with quantity and date/time*
- Refill frequency based on defined time periods (month, year, defined period)*
- Refill quantities based on defined time periods (month, year, defined period)*
- Percentage renewal of the watervolume by refilling in relation to the total water content (= dilution of added inhibitors).*

41. I agree that some sort of reset means must be present in order to display the refill quantities. That feature is therefore implicit in D2 and claim 5 is anticipated on this basis.
42. The one claim I disagree with is claim 13 which requires a pressure monitor to initiate an alarm signal in the event of significant loss of pressure in the flow circuit. The requester suggests that such a feature is disclosed in paragraph [0013] of D1

which states:

It is also advantageous to provide a pressure sensor and/or the use of an existing pressure sensor in the circulation system in order to carry out a pressure-dependent fully automatic filling of the circulation system via the control system designed for this purpose. When using this additional equipment, leakage monitoring is also possible.

43. There is no suggestion of initiation of an alarm in this paragraph. The requester argues that *leakage monitoring* implies the presence of an alarm. I do not agree. I consider the skilled person would interpret *monitoring* as simply the ability to see the pressure data such that they can *monitor* it. The provision of an alarm would be additional to the ability to monitor. Claim 13 is therefore considered to be novel.

Inventive step

44. The requester further argues that claims 4 to 11 lack an inventive step based on D1, and claims 12 and 13 lack an inventive step based on D2.
45. In relation to D1, the requester notes that D2 is referred to in the introduction, and suggests that, in view of this link between the two, it would be obvious to incorporate into the system of D1 certain of the features disclosed in D2. I agree. In particular, it is considered obvious to include a display. On this basis claim 4 is considered to lack an inventive step as it would be obvious to include the display of D2 in the system of D1. Furthermore, claims 5 to 8 and 10, the particular features of which are considered to be disclosed in D1, and which depend from claim 4, are also considered to lack an inventive step in view of claim 4's lack of inventive step. Whilst claim 9 is also dependent on claim 4, the particular feature of this claim is not disclosed in D1. It is nevertheless disclosed in D2 such that claim 9 is also considered to lack an inventive step based on a combination of D1 and D2.
46. In relation to D2, I consider that the features of claims 12 and 13 form part of the skilled person's common general knowledge and that it would be obvious to add these features to the system of D2. These claims are therefore also considered to lack an inventive step.

Opinion

47. Based on the evidence and arguments provided, it is my opinion that independent claims 1 and 14 lack novelty in view of D1 and D2. It is also my opinion that dependant claims 2, 3, 12 and 15 lack novelty based on the disclosure of D1 and claims 2 to 11 and 15 are not novel based on the disclosure of D2. Furthermore, I am of the opinion that claims 4 to 10 lack an inventive step based on D1 when combined with the teaching of D2, and claims 12 and 13 lack an inventive step based on D2 in combination with the skilled person's common general knowledge.
48. Accordingly, it is my opinion that the patent is invalid.

Application for review

49. 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.

Matthew Jefferson
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.

Appendix

Claims

1. A heat transfer system comprising a liquid flow circuit within which a liquid containing a chemical additive is circulated to flow through one or more heat transfer devices, said circuit comprising a sensor operable, in the event of addition of liquid into the liquid flow circuit subsequent to initial filling of the liquid flow circuit, to provide an output signal which is a function of the volume of liquid subsequently entering the liquid flow circuit.
2. A system according to claim 1 and adapted for connection to a supply of liquid for flow into the liquid flow circuit.
3. A system according to claim 1 or claim 2 wherein the sensor is operable to provide an output signal which is a function of the volume of liquid flow into the liquid flow circuit during initial filling of the liquid flow circuit.
4. A system according to any one of the preceding claims and comprising a volume flow display to display the volume of liquid which has entered the liquid flow circuit.
5. A system according to claim 4 wherein the display has associated therewith re-set means whereby following addition of liquid or chemical additive to the liquid flow circuit the display may be re-set thereby to display only the volume of liquid subsequently entering the liquid flow circuit.
6. A system according to claim 4 and claim 5 wherein said sensor and display are part of a monitoring device comprising also a data store to store information relating to the volume of liquid introduced into the liquid flow circuit during initial commissioning thereof.
7. A system according to claim 6 wherein the sensor is in communication with, or adapted for communication with a dosing device which is operable to introduce chemical additive into the liquid flow circuit.
8. A system according to claim 7 wherein the dosing device is operable automatically to introduce chemical additive into the liquid flow circuit in response to a signal from the monitoring device.
9. A system according to any one of claims 6 to 8 wherein the monitoring device is operable to guide an operator through performing a set of sequential actions.
10. A system according to any one of claims 6 to 9 wherein the monitoring device comprises a data store operable to record a history of operations undertaken in respect of flow of liquid into the liquid flow circuit and/or introduction of chemical additive.
11. A system according to any one of claims 6 to 10 wherein the monitoring device is operable to monitor the rate of addition of liquid into the liquid flow circuit per unit time thereby to identify a persistent leak of fluid from the system.

12. A system according to any one of the preceding claims wherein the sensor is in communication with, or adapted for communication with a dosing device which is operable automatically to introduce required chemical additive into the liquid flow circuit and wherein an alarm is generated in the event of the dosing device not containing any or containing only insufficient chemical additive needed to restore the concentration of additive to the required level of concentration.

13. A system according to any one of the preceding claims and comprising a pressure monitor operable to initiate an alarm signal in the event of a significant loss of pressure in the liquid flow circuit.

14. A method of operation of a heat transfer system of the type comprising a liquid flow circuit within which there is circulated a liquid containing a chemical additive, said method comprising providing the system with a sensor which is operable, in the event of addition of liquid into the liquid flow circuit subsequent to initial filling of the liquid flow circuit, to provide an output signal which is a function of the volume of liquid subsequently entering the liquid flow circuit.

15. A method according to claim 14 wherein the heat transfer system is a heat transfer system according to any one of claims 1 to 13.