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**Datasheet for the decision
of 19 March 2024**

Case Number: T 0177/22 - 3.2.03

Application Number: 15178605.0

Publication Number: 2966365

IPC: F24D11/00, F24D19/10, F24D12/02

Language of the proceedings: EN

Title of invention:
CONTROL OF HOT WATER

Patent Proprietor:
EC Power A/S

Opponent:
Grundfos Holding A/S

Headword:

Relevant legal provisions:
EPC Art. 100 (c), 123 (2), 76 (1), 100 (b), 54 (2), 56

Keyword:

Claim interpretation in the context of the description (yes)
Claim interpretation in a uniform and objective manner (yes)
Grounds for opposition - insufficiency of disclosure (no) -
subject-matter extends beyond content of earlier application
(no)
Novelty - main request (yes)
Inventive step - non-obvious modification - main request (yes)

Decisions cited:

G 0002/88, G 0006/88, G 0003/14, T 0518/00, T 1473/19,
T 0367/20, T 0450/20, T 0092/21, T 1537/21, T 0438/22,
T 0447/22

Catchword:

A given patent claim's subject-matter must be interpreted and determined in a uniform and consistent manner. This excludes interpreting the same claim differently when assessing sufficiency of disclosure on the one hand, and when assessing novelty and inventive step on the other hand (Reasons 3.1 to 3.4).



Beschwerdekammern

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Case Number: T 0177/22 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 19 March 2024

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
10 November 2021 concerning maintenance of the
European Patent No. 2966365 in amended form.**

Composition of the Board:

Chairman N. Obrovski
Members: R. Baltanás y Jorge
B. Miller

Summary of Facts and Submissions

- I. European patent No. 2 966 365 B1 ("the patent") relates to "*Control of hot water*".
- II. An opposition was filed against the patent based on Article 100(c), (b) and (a) EPC in conjunction with Articles 54 EPC and 56 EPC.
- III. The present appeal lies from the interlocutory decision of the opposition division whereby the patent - derived from an earlier application numbered 08775906.4 / 2 171 360 in accordance with Article 76 EPC - was found to meet the requirements of the EPC in view of the amendments made to auxiliary request 2 as filed during oral proceedings before the opposition division.
- IV. This decision was appealed by the opponent and by the patent proprietor.
- V. Oral proceedings were held on 19 March 2024.

At the end of the oral proceedings before the Board, the opponent withdrew its appeal.

VI. Requests

The patent proprietor (appellant) requested that the decision under appeal be set aside and the patent be maintained as granted, or in the alternative in amended form in accordance with one of auxiliary requests 1 to 11 filed with its statement setting out the grounds of appeal.

The opponent (respondent) requested that the patent proprietor's appeal be dismissed.

VII. Claim 1 as granted (main request), including the numbering of its features basically as adopted by the parties, reads as follows:

- 1.1 *A hot water system comprising:*
- 1.2 *a heating device water circuit (4)*
- 1.3 *connected via an input (7) and an output (6) to a main water circuit (5);*
- 1.4 *a first temperature sensor (9);*
- 1.5 *a second temperature sensor (10); and*
- 1.6 *an apparatus for controlling connection of the heating device water circuit to the main water circuit,*
- 1.7 *the connection including a valve (8) for controlling flow of water from the heating device water circuit output to the main water circuit,*
- 1.8 *the apparatus comprising:*
a control system for controlling operation of the valve,
- 1.9 *wherein the control system has two sensor inputs for measurements of temperature from the first and second temperature sensors,*
- 1.10 *wherein:*
the first temperature sensor is installed at a location upstream of the heating device water circuit output
- 1.11 *and in a flow path extending between this output and a heating devices [sic] (1) for heating water, in the heating device water circuit; and*
- 1.12 *the second temperature sensor is for measuring a forward temperature of the main water circuit and*

is installed on the main water circuit downstream of the heating device water circuit output,

1.13 *characterized in that the first temperature sensor is for measuring a return temperature.*

Claim 8 as granted, including the numbering of its features basically as adopted by the parties, reads as follows:

- 8.1** *A method of controlling a valve (8) for controlling flow of water from a heating device water circuit (4) output (6) to a main water circuit (5),*
- 8.2** *the method comprising:
measuring (9) a return temperature at a location upstream of the heating device water circuit output*
- 8.3** *and in a flow path extending between this output and a heating device (1) for heating water, in the heating device water circuit;*
- 8.4** *measuring (10) a forward temperature of the main water circuit at a location downstream of the heating device water circuit output; and*
- 8.5** *adjusting the valve when the measured temperatures meet certain conditions.*

VIII. Prior art

The following documents have been cited, both in the statements setting out the grounds of appeal and during the opposition proceedings, and are relevant to this decision:

- D1: GB 1,107,086 A
- E1: US 4,708,287 A

E2: US 5,904,292 A
E3: DE 200 01 539 U1
E4: EP 1 160 515 B1
E5: WO 2005/036060 A2

IX. The appellant's arguments concerning the main request can be summarised as follows:

(a) Added subject-matter

The subject-matter of granted claim 1 did not comprise any new technical teaching which was not already disclosed in the parent application.

The term "hot water system" had to be considered in view of its usual meaning, and did not imply any feature which was not already derivable from the content of page 6 of the parent application, second paragraph. Therefore the subject-matter of claim 1 had a basis in the second paragraph of page 6, since the only modification was the change of focus from a control apparatus used within a system to a system including such control apparatus. Consequently, the whole of the technical teaching corresponding to the subject-matter of claim 1 was disclosed in this passage of the parent application. The same argument applied regarding the application as originally filed.

(b) Sufficiency of disclosure

The respondent's objection concerned clarity instead of sufficiency of disclosure.

Paragraph [0012] of the patent specification disclosed three possible locations for the first temperature sensor. The skilled person was therefore informed about

how to implement the invention in this regard. The term "upstream" was to be interpreted in the only way which made technical sense, namely as upstream with respect to the normal flow direction of the system.

(c) Novelty

D1

Feature 1.8 defined "a control system for controlling operation of the valve". Thus the purpose of a "control system" within the meaning of claim 1 was to control the valve introduced in feature 1.7 (*"a valve for controlling flow of water from the heating device water circuit output to the main water circuit"*).

Document D1 disclosed such a "control system", namely the relay control unit G receiving a signal from the thermostat D. This signal was the only input received by the relay control unit D, contrary to feature 1.9, which defined two sensor inputs in the control system for measurements of temperature from first and second temperature sensors.

Even though the cable from the thermostat D passed through the meter unit F as shown in Figure 2, this did not imply that the meter F played any role in controlling the valve J. The purpose of the connection between the thermostat D and the meter F was to inform the meter F when the valve J was actuated, such that the meter registered consumption and the customer could be charged accordingly. The meter F was therefore functionally separate from the control of the valve and had no effect on it. The skilled person would understand that a meter did not modify the signal provided by the thermostat D. An element which did not

not play any part in controlling the valve J could not be part of a "control system" within the meaning of claim 1.

E1, E2 and E3

Firstly, if the interpretation of feature 1.11 adopted by the Board in its preliminary opinion was to be accepted, none of the documents disclosed this feature.

Secondly, this prior art did not disclose a location in accordance with feature 1.11 even if any other possible interpretation of the feature was adopted.

In E1: "upstream" within the meaning of claim 1 was to be interpreted as referring to a location along the bypass pipe (16) and back to the boiler (17).

In E2: "upstream" within the meaning of claim 1 was to be interpreted as referring to a location along the passage (16) and back to the boiler (not represented in Figure 1).

In E3: "upstream" within the meaning of claim 1 was to be interpreted as referring to a location along the pipe portion connecting the port K and the pipe (31) returning to the tank (4).

Since the temperature sensors referred to by the respondent were not arranged at any of these locations, feature 1.11 was not anticipated by any of E1, E2 or E3.

(d) Inventive step

E4 did not address the problem of flow reversal but aimed at controlling a pump. E4 did not disclose any valve between the heating device water circuit (HDWC) and the main water circuit (MWC) to be adjusted in order to prevent flow reversal. Consequently, starting from E1 or E2 the skilled person did not find a solution to the problem of preventing flow reversal in E4.

X. The respondent's arguments concerning the main request can be summarised as follows:

(a) Added subject-matter

The parent application did not provide a basis for the object of granted claim 1 - namely for the feature "a hot water system" - in isolation from a number of other features which were disclosed in combination with this subject-matter and which had not been included in the claim.

The disclosure in the second paragraph of page 6 of the parent application did not relate to a "hot water system" but to an "apparatus for controlling the connection of a heating device water circuit to a main water circuit". Such a control device was not a "hot water system" since the two circuits were not part of the apparatus disclosed therein. The parent application only disclosed one type of such a "hot water system", namely a system comprising two heating devices, one being a combined heat and power (CHP) unit. Since these further components of the hot water system were not defined in claim 1, the subject-matter of the claim extended beyond the disclosure of the parent

application. The same argument applied with regard to the application as originally filed.

(b) Sufficiency of disclosure

The term "upstream" in feature 1.10 ("*the first temperature sensor is installed at a location upstream of the heating device water circuit output*") was unclear, in particular in view of the possibility of a change of flow direction when reverse flow occurs. Therefore the skilled person did not know whether the first temperature sensor had to be installed along the MWC or the HDWC. Paragraph [0012] of the patent specification did not help in this context, since there was a contradiction between its first and second sentences. A contradiction was also found when comparing the embodiments of Figures 2 and 4, where the first temperature sensor was arranged in different circuits. Paragraph [0024] disclosed that two temperature sensors were needed, one on the HDWC and one on the MWC upstream of the HDWC. As to Feature 1.11, there was a contradiction between the claimed subject-matter as it had to be understood for sufficiency of disclosure and at least the embodiment shown in Figure 4. In view of the contradictory teaching in the patent the skilled person was unable to reproduce the invention defined in claim 1.

(c) Novelty

The claimed subject-matter had to be determined differently for novelty and inventive step than for sufficiency of disclosure, namely in a broader manner. Novelty and inventive step had to be established for all possible interpretations of claim 1.

D1

A "control system" within the meaning of claim 1 usually comprised several components. This type of control system was disclosed in Figure 2 of D1. The valve J of D1 was controlled by the thermostat D, the signal of which passed through the meter F before reaching the relay control unit G. Consequently, the meter F was a necessary component for controlling the valve J.

There was a further relationship between the activation of the valve J and the meter F since the functionality of the meter unit F depended on the actuation of the valve J. Therefore the meter F was part of the "control system" of the valve J since it was a necessary component for controlling the latter. Since the meter F comprised two sensor inputs for the temperature sensors L and D, feature 1.9 was anticipated by D1.

E1, E2 and E3

According to the appellant's interpretation of claim 1, any location of the first temperature sensor upstream of the HDWC output would be encompassed by claim 1, even if it were not located in the HDWC. Consequently, the term "upstream" was to be interpreted as upstream with respect to the flow direction of the MWC along the piping. This understanding was furthermore justified in view of the disclosure of the contested patent as shown in the embodiment of Figure 4.

When this interpretation was adopted, each of documents E1, E2 and E3 disclosed feature 1.11 (*"and in a flow path extending between this output and a heating*

devices for heating water, in the heating device water circuit").

The temperature sensor (6) at location (2b) in E1 was arranged upstream of the HDWC output, which coincides with the three-way mixing valve (15) (see Figure 1 in combination with column 3, lines 43 and 44). The HDWC was the circuit comprising the boiler (17) to the left of the bypass pipe (16) in Figure 1.

When the passage in column 4, lines 3 to 7 of E2 was considered in combination with Figure 1, the temperature sensor (26) was located upstream of the HDWC output, the HDWC being arranged on the left side of the figure - connected to the upper pipe of the MWC - this circuit being arranged to the right of the figure.

In E3, a temperature sensor (T_{RF1}) was located upstream of the HDWC output (port W).

(d) Inventive step

E1 or E2 as closest prior art

The objective technical problem linked to distinguishing feature 1.11 was how to avoid flow reversal.

The skilled person would find a solution to this problem in E4, which disclosed that a temperature sensor (T_1) could be arranged in a bypass pipe (40) of an HDWC (10) to detect reverse flow (see paragraphs [0012] and [0013]). In the light of this teaching, the skilled person would move the temperature sensors of E1 (sensor (6)) or E2 (sensor (26)) to the corresponding

bypass pipe in each document to solve the problem posed or, alternatively, would arrange a further temperature sensor at that location.

E5 as closest prior art

The embodiment of Figure 7 of E5 disclosed an MWC comprising the "heat storage". This MWC was connected to an HDWC (to the left of the vertical conduit (709)) at the "3-way valve" (706) (the "outlet" within the meaning of claim 1) and at the junction of the pipes (708) and (709).

The measurement of the temperature T_{return} implied a "first temperature sensor" within the meaning of claim 1. This measurement took place in the MWC (see Figure 7).

The measurement of the temperature T_{1v} implied a "second temperature sensor" within the meaning of claim 1. This measurement took place in the HDWC (see Figure 7).

The three-way valve (706) was operated on the basis of a temperature set point, and the last paragraph of page 25 disclosed that the return temperature T_{return} was also taken into consideration. The system of E5 was therefore suitable to be used as defined in claim 1 and to carry out the method defined in claim 8, the corresponding subject-matter being at least suggested by E5 or the combination of E5 and E3.

Reasons for the Decision

1. Main request - added subject-matter - Article 100(c)
- 1.1 It has not been contested by the respondent that the second paragraph of page 6 of the parent application (citations in this respect are made in relation to the corresponding PCT publication WO 2009/007725 A2) discloses all the features of the granted claim 1 apart from the explicit definition of a "hot water system".
- 1.2 This paragraph presents "*a third aspect of the present invention*" (line 15) relating to an apparatus for controlling the connection of a **heating** device water circuit to a main water circuit. The skilled person will thus understand that a **system is disclosed** comprising a **heating** device water circuit (HDWC) connected to a main water circuit (MWC) in which the apparatus for controlling the connection is implemented.
- 1.3 Although the paragraph focuses on the construction of the "*apparatus for controlling the connection*", this apparatus is explicitly disclosed as being used in a generic and unspecified system comprising an HDWC connected to an MWC.
- 1.4 The generic system disclosed in the second paragraph of page 6 is by definition a "hot water system". This is merely one of the possible designations for such an ensemble intended to supply hot water. The respondent has not convincingly shown that the wording "hot water system" in claim 1 implies any further nuances which would not already be encompassed by the ensemble

presented in the second paragraph of page 6 of the originally-filed application.

- 1.5 Contrary to what has been stated by the respondent, the technical information disclosed in the second paragraph of page 6 will be considered as a whole by the skilled person. Thus the skilled person will understand the disclosure of the controlling apparatus, the HDWC and the MWC in this paragraph as a disclosure of the ensemble formed by these elements. Whether or not the HDWC and MWC belong to the apparatus for controlling the connection described in this paragraph has no bearing on this understanding.
- 1.6 Consequently, the subject-matter "hot water system" of claim 1 is disclosed on page 6 of the parent application.
- 1.7 Both parties submitted that the considerations as to added subject-matter in regard to the content of the earlier application as filed are identical to the considerations as to added subject-matter in regard to the content of the application as filed. The Board agrees (see lines 17 to 26 of the originally-filed page 5, corresponding to the passage of the parent application discussed above).
- 1.8 It follows that the ground for opposition based on Article 100(c) EPC does not prejudice maintenance of the patent.
2. Main request - sufficiency of disclosure - Article 100(b) EPC
- 2.1 Meaning of "upstream" in feature 1.10

2.1.1 The respondent argued that the patent specification disclosed two possible flow directions, a first one corresponding to normal operation and a second one when the flow reverses. Thus the feature "upstream" was unclear to the extent of preventing the skilled person from implementing the invention.

2.1.2 This is not persuasive.

The skilled person reading claim 1 with a mind willing to understand will interpret "upstream" as referring to the normal flow direction as usually considered in the technical field when discussing the **normal way** of operation. This understanding of "upstream" is also supported by the patent specification (see, for example, the arrows in Figure 2). Furthermore, the patent specification mentions the reverse flow invoked by the respondent only within the context of its **prevention**.

2.1.3 In view of this, the skilled person will interpret the wording "*the first temperature sensor is installed at a location **upstream** of the heating device water circuit output*" (feature 1.10) in the sense that the first temperature sensor must be installed at a point where water - during **normal** operation - passes before reaching the HDWC output.

2.1.4 The feature "upstream" is not the only restriction to the location of the first temperature sensor according to claim 1. Feature 1.11 specifies, in particular, that the first temperature sensor is located in the HDWC (see next point below), and feature 1.13 specifies that it must be suitable for measuring a return temperature, which implies that it must be located at a position where this function can be performed.

2.1.5 Consequently, the feature "upstream" does not represent an insurmountable obstacle to the implementation of the invention by the skilled person. In particular, there is no difficulty in arranging a first temperature sensor in accordance with the requirements of the claim.

2.2 Feature 1.11 (*"and in a flow path extending between this output and a heating devices for heating water, in the heating device water circuit"*)

2.2.1 The respondent argued that there was a contradiction between the definition of the subject-matter in the claim and at least the embodiment shown in Figure 4, so it was completely nebulous how the first temperature sensor should be arranged in the heating device water circuit and at the same time upstream of the output and detecting the return temperature. The respondent also argued that the skilled person would not know whether the first temperature sensor had to be installed in the HDWC or in the MWC. Figure 4 was not only in contradiction to claim 1 but also in contradiction to paragraph [0024]. Thus the invention could not be carried out by a person skilled in the art.

2.2.2 The appellant argued that paragraph [0012] disclosed three possible locations for the first temperature sensor and that this met the requirement of sufficiency of disclosure. In the oral proceedings before the Board, the appellant carefully avoided explicitly endorsing a claim interpretation according to which the first temperature sensor always had to be installed in the HDWC.

2.2.3 The Board holds that, in order to assess whether the claimed invention is disclosed in a manner sufficiently

clear and complete for it to be carried out by a person skilled in the art or is novel or inventive, the claimed invention must - to the extent to which this is decisive for the outcome of the case - first be determined by interpreting the claim from the perspective of the person skilled in the art (see T 367/20, Reasons 1.3.8 for added subject-matter). When doing this, a Board of Appeal is not limited to the claim interpretations advanced by the parties but may also adopt a claim interpretation of its own (T 450/20, Reasons 3.4.2; T 1537/21, Reasons 1.3.5).

- 2.2.4 In the present case, the Board informed the parties of its interpretation of feature 1.11 *inter alia* in point 17.3.1(e) of its communication under Article 15(1) RPBA and, having heard the parties on this, confirmed this claim interpretation in the oral proceedings.
- 2.2.5 In the Board's view, an interpretation of feature 1.11 according to which the first temperature sensor can be located between the output of the HDWC and the heating device - i.e. **downstream** from the heating device - does not make technical sense. This interpretation would result in an arrangement where it is impossible to measure the **return** temperature, i.e. the temperature of the water returning to the heating device, which is in contradiction to feature 1.13 ("*the first temperature sensor is for measuring a return temperature*").
- 2.2.6 Feature 1.11 specifies that the first temperature sensor is located in a flow path extending between the HDWC output and a heating device for heating water. In order to properly interpret which flow path is defined in this feature, account must be taken of the condition according to feature 1.13 as discussed in the preceding paragraph.

2.2.7 Moreover, feature 1.11 of claim 1 as granted is to be interpreted not only in the context of the other features in that claim but also in the context of the description as granted (for recent case law on this matter see T 367/20, Reasons 1.3.2 to 1.3.7, referring to the principles of claim interpretation as set out in Article 69 EPC and Article 1 of the Protocol on the Interpretation of Article 69 EPC and T 447/22, Reasons 13.1, referring to the general principle under the EPC that claims can be interpreted only in context, which includes the description and the drawings; see also T 1473/19, Reasons 3.3 to 3.16.2, referring to G 2/88, Reasons 4, applying Article 69 EPC and the Protocol for interpreting "the technical features of the claim" when assessing extension of the scope of protection under Article 123(3) EPC, and further G 6/88 (taken on the same day as G 2/88), Reasons 4, last sentence, referring to the question before it as a question of law of general nature concerning novelty, and Reasons 3, first sentence, 6, 7, and 7.1, where the Enlarged Board (directly) applied Article 69 EPC and the Protocol "to construe the claim in order to determine its technical features" when assessing novelty under Article 54(1) EPC; compare also Court of Appeal of the Unified Patent Court, UPC_CoA_335/2023, Grounds 4.d)aa), referring to Article 69 EPC and the Protocol as well as to G 2/88, and stating that the principles for the interpretation of a patent claim apply equally to the assessment of the infringement and the validity of a European patent; as to the harmonised approach on claim interpretation introduced by the EPC see further G 6/88, Reasons 3, referring to Article 69 EPC and the Protocol on its interpretation as "a mechanism for harmonisation" which provides a "method of interpretation of claims of European patents

throughout their life"; see further T 1473/19, Reasons 3.14, referring to the legitimate interests of the users of the European patent system in a common approach to claim interpretation, T 367/20, Reasons 1.3.5, third paragraph and the following comparative analysis of national case law, and T 438/22, Reasons 5.5.3, referring to the overarching objective under the EPC that authorities, courts and the public interpreting the claims should, as far as possible, arrive at the same understanding of the claimed subject-matter as the EPO bodies deciding on its patentability; as to the primacy of the claims under Article 69 EPC and the Protocol see T 1473/19, Reasons 3.16 to 3.16.2; in regard to the latter compare also Court of Appeal of the Unified Patent Court, UPC_CoA_335/2023, Grounds 4.d)aa), referring to the patent claim as not only the starting point, but the decisive basis for determining its subject-matter and scope of protection).

2.2.8 Paragraph [0012] of the patent specification, to which the Board had already referred in its communication under Article 15(1) RPBA, discloses that "*The flow path extending from the heating device water circuit output toward the heating device essentially extends back **along the main water circuit and into the heating device water circuit return, then toward the heating device***" (emphasis added). This paragraph thus confirms that feature 1.11 must be interpreted as relating to the flow path extending **along the MWC**, then **entering the HDWC** through its input (HDWC "return" in the wording of paragraph [0012]) and ending at the heating device.

2.2.9 Since feature 1.11 in claim 1 also specifies that the location of the first temperature sensor must be "*in*

the heating device water circuit" - the only reasonable interpretation of this phrase being that it applies to the location of the sensor and not, as argued by the respondent, to that of the heating device - the location of the first temperature sensor as defined in claim 1 is in the flow path as set out in the preceding paragraph **and** in the HDWC, i.e. a location along the part of this flow path comprised in the HDWC (in the words of paragraph [0012], in the "*heating device water circuit return*").

2.2.10 The patent specification discloses such a location in the embodiment corresponding to Figure 2, thus providing an example of implementation for the skilled person. There is no reason why the skilled person would find any particular hindrance in arranging a temperature sensor in the region defined in claim 1.

2.2.11 The fact that the patent specification discloses embodiments where the first temperature sensor is not arranged in the region defined in claim 1 - such as in the embodiment of Figure 4 or in the third sentence of paragraph [0012] - results in a lack of support by the description under Article 84 EPC (the embodiment according to Figure 4 not being encompassed by claim 1). However, "*the requirements of Article 84 EPC [...] play no role in opposition proceedings where the proprietor seeks to have the patent as granted upheld*" (G 3/14, Reasons 55). For sufficiency of disclosure, this inconsistency between the subject-matter of claim 1 and the description does not create an insurmountable obstacle for the skilled person trying to reproduce the invention defined in the claim.

2.2.12 Concerning the alleged contradiction between the first and second sentence of paragraph [0012], the Board

cannot see any such contradiction, since the first sentence defines the "flow path" to be considered and the second sentence proposes two independent alternatives within this flow path.

- 2.3 No objection in relation to sufficiency of disclosure was raised in relation to independent claim 8.
- 2.4 In view of the above, the ground for opposition based on Article 100(b) EPC does not prejudice maintenance of the patent.
- 3. Same claim interpretation for novelty and inventive step as for sufficiency of disclosure
 - 3.1 The respondent submitted that a different, broader, claim interpretation had to be adopted for the assessment of novelty and inventive step than for the assessment of sufficiency of disclosure (in regard to which the respondent had argued in favour of a narrower claim interpretation).
 - 3.2 The Board disagrees. The "invention" within the meaning of Article 54(1) EPC, the "invention" within the meaning of Article 56 EPC and the "invention" within the meaning of Article 100(b) EPC (and Article 83 EPC) all refer to the claimed subject-matter (see T 1473/19, Reasons 3.11.4, and T 92/21, Reasons 3.2, last sentence), and a given patent claim's subject-matter must be interpreted and determined in a uniform and consistent manner (see T 1473/19, Reasons 3.12.1). This excludes interpreting the same claim differently when assessing sufficiency of disclosure on the one hand, and when assessing novelty and inventive step on the other hand. It also presupposes that the same principles of claim interpretation must be applied when

assessing compliance with any of these requirements under the EPC (as to the applicable principles of claim interpretation see point 2.2.7 above).

3.3 The Board further holds that a patent claim must be construed in an objective manner (see T 518/00, Reasons 3.1, first paragraph, last sentence, referring to the description and the drawings as an aid to interpretation). This prohibits adopting a certain claim interpretation - be it narrow or broad - only because it is, under a certain ground of opposition (or, for that matter, under a certain ground for revocation or in infringement proceedings), (more) detrimental or beneficial to one of the parties.

3.4 In the following, the Board will thus use the claim interpretation set out above for the assessment of sufficiency of disclosure for the assessment of whether the claimed invention is novel and inventive as well.

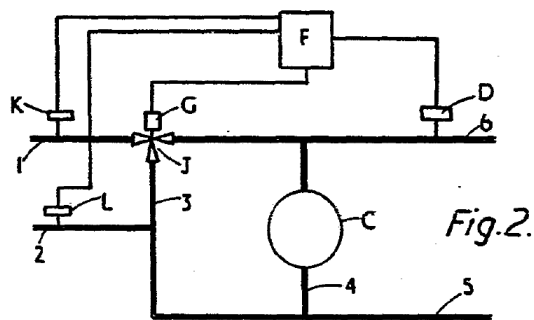
4. Main request - novelty - Article 54(2) EPC

4.1 D1

It is undisputed that D1 discloses an apparatus for controlling connection of the HDWC to the MWC (i.e. the valve J and its control means) (feature 1.6). The connection includes a valve (J) for controlling the flow of water from the HDWC output to the MWC (feature 1.7).

According to feature 1.8, the apparatus for controlling connection of the HDWC to the MWC comprises a control system for controlling operation of the valve.

The thermostat D provides an actuation signal for the valve J depending on the temperature measured by the thermostat, the valve J being "controlled by the relay control unit G" (see page 2, lines 40 to 51 and 93 to 97). Figure 2 (reproduced below) shows that the feedback line from the thermostat D passes through the meter F on its way towards the relay control unit G. This is necessary for billing purposes, since the meter F must register the time during which the valve J is actuated to feed hot water into the system (see page 2, lines 55 to 62 and 103 to 111). In the embodiment of Figure 2, the meter F also receives information from the temperature sensors L and K in order to provide more accurate billing (see page 2, lines 76 to 102).



Given the type of technology involved (D1 was published in 1968) and the roles of the thermostat D, the meter unit F and the relay control unit G, the skilled person will understand that the meter F does not play any part in how the signal from the thermostat D is transmitted to the control relay unit G to actuate the valve J, apart from being connected in series to the cable providing the feedback in order to be informed about the actuation times. The meter F does not have any influence on the controlling function for the valve J.

The respondent argued in writing that the common power supply described on page 2, lines 64 to 69 spoke in

favour of considering the meter unit F as a component of the "control system" within the meaning of claim 1. This is not persuasive. The skilled person will know that multiple electrical devices often share a common power supply without having any common functionality. Also in the present case the common power supply for the control relay unit G and the meter F does not imply to the skilled person that there would be any functional relationship between these elements which might justify considering them as constituting a single "control system" within the meaning of claim 1. This is also supported by the description corresponding to Figure 2 in D1, according to which the controlling function of the relay control unit G is independent of the recording function of the meter F (see page 2, lines 93 to 112).

Consequently, the skilled person will understand that the control relay unit G of D1 is the only element responsible for controlling the operation of the valve J in the embodiment of Figure 2 - thus the only "control system" within the meaning of claim 1 - whereas the meter F is only intended as a means to register the use of hot water for billing purposes.

Hence only the control relay unit G of D1 can be understood as the control system within the meaning of claim 1. This control relay unit does not have two sensor inputs for measurements of temperature from a first and a second temperature sensor as required by claim 1 but a single input (see Figure 2). Thus feature 1.9 is not anticipated by D1.

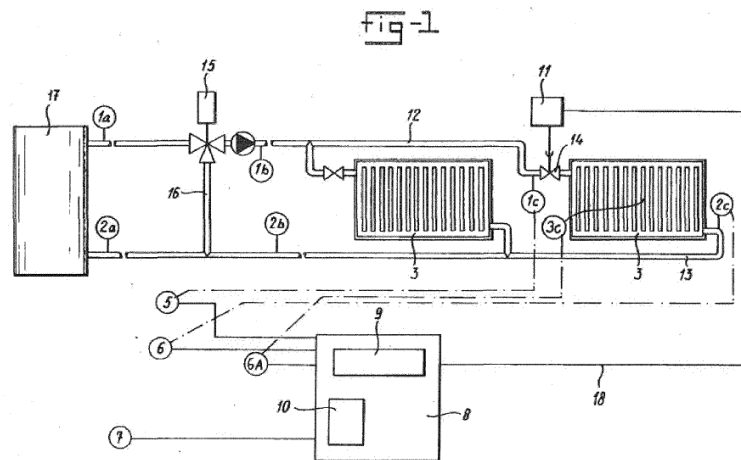
In view of the above, the subject-matter of claim 1 differs from D1 at least by virtue of feature 1.9.

No objection to the granted claim 8 was raised on the basis of D1.

4.2 E1, E2 and E3

4.2.1 In view of the interpretation of feature 1.11 ("and in a flow path extending between this output and a heating devices for heating water, in the heating device water circuit") adopted by the Board (see point 2.2.9 above), none of documents E1, E2 or E3 discloses this feature.

4.2.2 The MWC defined by the respondent in document E1 comprises pipes (12) and (13) extending from the "threeway mixing valve 15" and the opposite end of bypass pipe (16) to the right of Figure 1 (reproduced below), respectively. The HDWC is arranged to the left of the MWC.



According to the respondent, a "first temperature sensor" (6) within the meaning of claim 1 is supposedly arranged at the location (2b) (see column 3, lines 37 to 41).

This argument is not convincing, since the location (2b) is in the MWC, and not in the HDWC as required by claim 1. Hence it does not disclose feature 1.11.

4.2.3 The respondent bases its objection in relation to E2 on the embodiment described in lines 3 to 7 of column 4, i.e. "with all flows reversed from those shown in FIG. 1". The MWC considered by the respondent is the right-hand part of the circuit shown in Figure 1 (reproduced below). The HDWC is the left-hand part of the circuit.

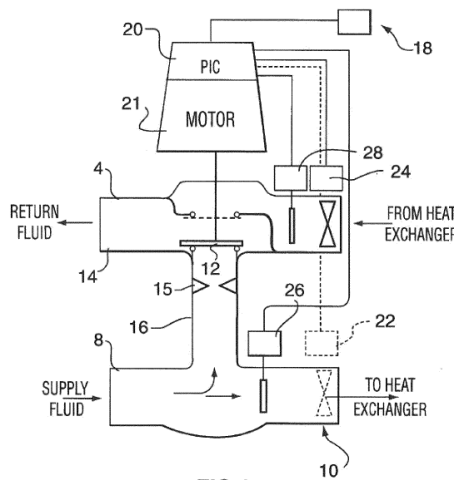
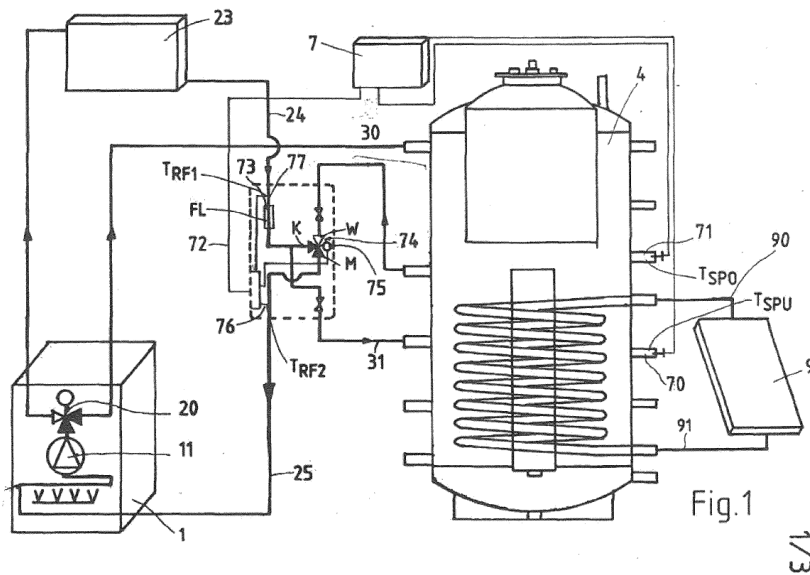


FIG.1

The "first temperature sensor" within the meaning of claim 1 as proposed by the respondent is the temperature sensor (26). This sensor is located in what is defined as the MWC and not in the HDWC, in contrast to what is required by feature 1.11.

4.2.4 The MWC presented by the respondent with respect to E3 is the circuit comprising the boiler (1) and the device (23) in Figure 1 (reproduced below). The HDWC is the circuit comprising the heat reservoir (4) and is connected to the MWC via an output (port (W) of the valve (74)) and an input (pipe junction immediately below the reference (K) in the figure).



The "first temperature sensor" considered by the respondent is the temperature sensor (77) measuring the temperature (T_{RF1}). This temperature sensor is located in the MWC and not in the HDWC, and consequently feature 1.11 is not disclosed.

4.2.5 In view of the above, the subject-matter of claim 1 differs from each of E1, E2 and E3 at least in that a first temperature sensor is installed at a location in the HDWC (feature 1.11) (Article 54(2) EPC).

4.2.6 Since feature 8.3 ("*and in a flow path extending between this output and a heating device for heating water, in the heating device water circuit*") corresponds to feature 1.11, the same distinguishing feature of the subject-matter of claim 8 can be seen with respect to each of E1, E2 and E3.

4.3 In view of the above, the ground for opposition based on Article 100(a) EPC in conjunction with Article 54 EPC does not prejudice maintenance of the patent.

5. Main request - inventive step - Article 56 EPC

5.1 E1 or E2 as closest prior art

It was undisputed by the parties that the objective technical problem relating to the distinguishing feature of a first temperature sensor installed at a location in the HDWC (feature 1.11) is to avoid flow reversal.

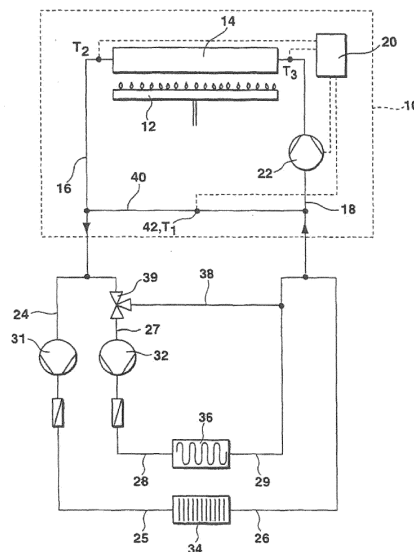
The Board agrees with this problem since it is realistic in view of the technical effect of the distinguishing feature (see paragraphs [0011] and [0024] of the patent specification).

The appellant argues that the solution to this problem as defined in claim 1 was obvious when taking into account the embodiment of Figure 2 of E4.

This argument is not convincing.

Figure 2 of E4 (reproduced below) shows a temperature sensor (T_1) in a bypass pipe (40).

Fig. 2



E4 teaches that the speed of the circuit pump (22) has to be controlled in such a manner that a flow detector ("Strömungsschalter", "Turbine") arranged in the bypass pipe (40) cannot detect any flow (see column 3, lines 20 to 25). To achieve this, a comparison is made among the readings of temperature sensors (T_1), (T_2) and (T_3), which results in a corresponding adjustment of the pump speed (see column 3, lines 35 to 56).

E4 thus relates to the problem of adjusting the pump speed in a particular type of circuit and not to the problem of avoiding flow reversal in a pipe having a normal flow direction, let alone in the kind of circuit disclosed in either E1 or E2, where a valve is used as the controlling system regulating the flow from the HDWC into the MWC. E4 does not comprise any valve for this purpose.

Thus the skilled person would have no reason to take E4 into consideration to solve the problem of avoiding flow reversal in the circuits shown in E1 or E2. No pointer can be found in E4 which might suggest to the skilled person that the solution for pump regulation of the circuit of Figure 2 would be suitable to control a valve at the output of the HDWC as in E1 or E2.

In view of the above, the subject-matter of claim 1 involves an inventive step when starting from either E1 or E2, even in consideration of E4.

Since the subject-matter of claim 8 differs from each of E1 and E2 (at least) by the same distinguishing feature, the same conclusion applies as for claim 1.

5.2 E5 as closest prior art

The respondent argued that the embodiment of Figure 7 (reproduced below) of E5 disclosed an MWC comprising the "heat storage". This MWC was connected to an HDWC to the left of the vertical conduit (709) and comprising the heat exchanger (705).

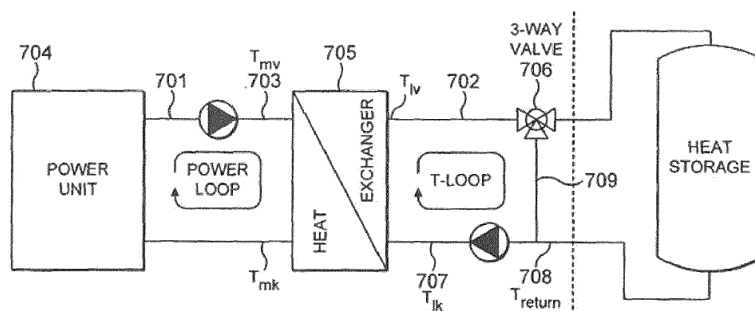


FIG. 7

Document E5 discloses an apparatus for controlling the connection of the HDWC to the MWC, this connection including a valve (706) for controlling flow of water from the HDWC output to the MWC. The apparatus comprises a control system ("the control system") for controlling operation of the valve (706). The control system is disclosed as being connected to a plurality of temperature sensors, including the first and second temperature sensors relating to measurements T_{return} and T_{lv} .

The first temperature sensor measuring T_{return} is located upstream of the HDWC output (coinciding with valve (706)) but **not** in the HDWC as defined by the respondent. Thus this part of feature 1.11/8.3 is not disclosed in E5.

The second temperature sensor measuring T_{lv} is **not** installed on the MWC as defined by the respondent -

i.e. the part comprising the heat storage - but on the HDWC. Therefore it cannot measure "a forward temperature of the main water circuit". Thus feature 1.12/8.4 is not disclosed in E5.

The respondent did not provide any argument as to how the skilled person would arrive at these missing features starting from E5. Modifying the position of the temperature sensors measuring T_{return} and T_{lv} would have massive implications for the operation of the system, so the skilled person would not envisage this unless there was a strong motivation for it.

E3 cannot provide such motivation since it concerns a system based on completely different working principles and does not disclose the location of a first temperature sensor as defined in claims 1 and 8.

Thus the subject-matter of claims 1 and 8 involves an inventive step when starting from E5.

5.3 In view of the above, the ground for opposition based on Article 100(a) EPC in conjunction with Article 56 EPC does not prejudice maintenance of the patent.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:



C. Spira

N. Obrovski

Decision electronically authenticated