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File Number: T 128/91 - 3.2.3

Application No.: 86 305 097.7

Publication No.: 0 250 667

Title of invention: Control of fluid temperature in a wet central heating system and components suitable for a central heating system

Classification: F24D 19/10, G05D 23/19

D E C I S I O N
of 5 March 1993

Applicant: British Gas Corporation

Headword:

EPC Articles 52(1) and 56

Keyword: "Inventive step (confirmed after amendment of claim)"



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Boards of Appeal

Chambres de recours

Case Number : T 128/91 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 5 March 1993

Appellant : British Gas Corporation
Rivermill House
152 Grosvenor Road
London SW1V 3JL (GB)

Representative : Morgan, David James
British Gas Corporation
Patents Department
326 High Holborn
London WC1V 7PT (GB)

Decision under appeal : Decision of the Examining Division 2.3.01.073 of
the European Patent Office dated 29 October 1990
refusing European patent application
No. 86 305 097.7 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : C.T. Wilson
Members : H. Andrä
L.C. Mancini

Summary of Facts and Submissions

I. European patent application No. 86 305 097.7 filed on 1 July 1986 and published on 7 January 1988 under No. 0 250 667 was refused by a decision of the Examining Division dated 29 October 1990.

II. The decision was based on Claims 1 to 7 received on 9 May 1990.

The reason given for the refusal was that the subject-matter of Claim 1 did not involve an inventive step having regard to the prior art disclosed in US-A-2 444 733 and in FR-A-2 213 707.

III. An appeal was lodged against this decision on 4 January 1991, the appeal fee being duly paid.

The Statement of Grounds of Appeal was received on 15 January 1991 together with a new set of Claims 1 to 8 according to the main request. According to the subsidiary request, the subject-matter of Claim 2 should be incorporated into Claim 1 of the claims according to the main request.

IV. As a result of objections raised by the Board in a communication dated 10 December 1992, the Appellants submitted new Claims 1 to 8 with their letter received on 19 January 1993.

V. After a discussion by telephone between the Rapporteur and the Representative concerning formal requirements of the application, the Appellants filed, by letter received on 13 February 1993, amended pages 1 and 1a which replace the introduction to the description on page 1 as originally filed.

The Appellants request the grant of a patent on the basis of the new documents together with original pages 2 to 22 of the description and sheets 1/11 to 11/11 of the original drawings.

VI. The effective Claim 1 according to the main request reads as follows:

"Apparatus for controlling the temperature of the water in a wet central heating system providing space heating and domestic hot water within a building during a heating cycle when the flow water is circulating within the system, the apparatus comprising a fuel-fired burner (21) for providing a heat output to heat the water and means (17,24,26,28) for controlling the heat output of the burner, the burner heat output controlling means (17,24, 26,28) being dependent upon both the prevailing flow water temperature within the system and upon the prevailing ambient temperature outside the building when there is demand for space heating alone, characterised in that the burner heat output controlling means (17,24,26,28) is independent of the prevailing ambient temperature outside the building when there is a demand at least for domestic hot water."

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC; it is admissible.
2. Main request
 - 2.1 Article 123 EPC

The features according to the preamble of Claim 1 are derivable from Figures 1 and 2 in combination with the corresponding description, in particular page 19, last paragraph to page 21, line 1, of the original documents. The features contained in the second part of Claim 1 are disclosed on page 7, last paragraph to page 8, paragraph 1 of the original description in combination with Figure 3 of the original drawings.

Claim 2 is based on page 20, paragraph 3, first sentence of the original description, Claim 3 on the original Claim 2, Claim 4 on Figures 2 and 12 of the original drawings with corresponding description, Claim 5 on Figures 2 and 11 of the original drawings with corresponding description, Claim 6 on the information given on page 6, paragraph 4 and on page 19, paragraph 2 of the original description and Claim 7 on Figures 1 and 3 of the original drawings in combination with the original description page 5, paragraph 4, page 16, paragraph 3 and page 21, paragraph 3. The subject-matter of Claim 8 derives from page 3, paragraph 2 to page 6, last paragraph of the original description.

Claims 1 to 8, therefore, meet the requirement of Article 123(2) EPC.

2.2 Novelty

After examination of the citations revealed in the search report, the Board is satisfied that none of them describes an apparatus for controlling the temperature of the water in a wet central heating system providing space heating and domestic hot water including all the features stated in Claim 1. Since this has not been disputed in the proceedings before the first instance, there is no need for further detailed substantiation of this matter.

Therefore, the subject-matter as set forth in Claim 1 is novel (Article 54 EPC).

Considering the subject-matter of the new amended independent Claim 1, the nearest prior art, in the Board's view, is shown in FR-A-2 213 707 which document describes all the features according to the precharacterising portion of Claim 1.

2.3 Inventive step

2.3.1 The citation FR-A-2 213 707 discloses an apparatus for controlling the temperature of the water in a wet central heating system providing space heating and hot water (cf. "l'eau chaude sanitaire" and "l'eau chaude de chauffage" on page 3, lines 2 and 4) within a building during a heating cycle when the water is circulating within the system, the apparatus comprising a fuel-fired burner (2) for providing a heat output to heat the water and means (5, 6, 11 to 18) for controlling the heat output of the burner, the burner heat output controlling means being dependent upon both the prevailing water temperature within the system and upon the prevailing ambient temperature outside the building when there is demand for space heating alone.

In this apparatus there is provided a temperature sensor 5 for sensing the temperature of the hot heating circuit water, the sensor being connected by means of a circuit 6 on the one hand to an amplifier-indicator unit 7,8 provided for selecting a value of the domestic water temperature and on the other hand to an amplifier-indicator unit 9,10 provided for selecting the temperature of the heating water (flow water).

Figure 1 of the citation shows a control connection (not designated) which extends from the amplifier 7 at first horizontally and then upwards being terminated by an

arrow. It can only be assumed that this control connection leads to the burner control, the manner in which the selected value of the domestic water temperature is processed in the burner control unit not being substantiated.

It appears, however, from the description of Figure 1 and from the claim of the citation, that the burner control is effected by means of heating water temperature sensor 5, circuit 6, ambient temperature sensor 11 with circuit 12, adding device 14, thermocouple 15 and switching device 18. Hence, the burner heat output controlling means depends on the ambient temperature which thus affects during burner operation the temperature rise both of the heating water and of the domestic water. The ambient temperature may thus have a negative influence on the period required for raising the temperature of the domestic water to a predetermined value.

2.3.2 The problem to be solved by the present application therefore resides in designing a wet central heating system as known from FR-A-2 213 707 such that, when there is a demand for domestic hot water, the burner heat output controlling means are adjusted to heat the domestic hot water to temperature as quickly as possible.

The characterising feature according to Claim 1 that the burner heat output controlling means is independent of the prevailing ambient temperature outside the building when there is a demand at least for domestic hot water, has the effect that on demand for domestic water, possibly in combination with a demand for space heating, the influence of the prevailing ambient temperature on the burner heat output controlling means is cut off enabling thus the burner to be operated pursuant to

operating conditions suitable for the production of hot domestic water.

- 2.3.3 The question now arises whether the prior art would provide any suggestion to the solution indicated in Claim 1.
- 2.3.3.1 The citation US-A-2 444 733 which was regarded by the Examining Division to reflect the closest prior art vis à vis Claim 1 then valid, discloses an apparatus for controlling the temperature of the water in a wet central heating system providing space heating within a building during a heating cycle when the flow water is circulating within the system, the apparatus comprising a fuel-fired burner for providing a heat output to heat the water and means for controlling the heat output of the burner, the burner heat output controlling means being dependent upon both the prevailing flow water temperature within the system and upon the prevailing ambient temperature outside the building when there is demand for space heating.

The citation deals in particular with the problem of maintaining the temperature of a space at a predetermined value by controlling the amount of fuel supplied to the burner of the space heating system. There is described a wet central heating system for heating a space without the disclosure of any provision for domestic hot water. The citation is not therefore concerned with the inherent problem to be solved by the invention as defined in above section 2.3.2. Furthermore, due to lack of facilities for providing domestic hot water, the citation can also not teach the particular adjustment of the burner heat output controlling means in the case of a demand at least for domestic hot water as indicated in Claim 1. It follows immediately from these differences that the skilled

person would not envisage any combination of the teachings of FR-A-2 213 707 and US-A-2 444 733.

2.3.3.2 The citation US-A-3 670 807 introduced by the Examining Division in the communication dated 17 March 1989 discloses a hot water heating system in which heat supply is regulated in response to the demand for hot water. It is true that this hot water heating system operates without ambient temperature control. However, the citation does not relate to a combined central heating system providing space heating and domestic hot water in accordance with the type of heating system specified in the precharacterising portion of present Claim 1. Hence, the problem of adjusting the burner heat output controlling means from an operation mode in which space heating is provided to a mode in which domestic hot water is generated, possibly in connection with a demand for space heating, does not arise in the known hot water heating system. Since the citation relates thus to a type of heating system basically different from that according to the invention, the skilled person would not, in the view of the Board, be induced to take account of the disclosure of the citation when searching for solutions to the underlying problem. In particular, he would not separate individual features of the known heating system from their functional context and transfer them to a heating system of a different kind such as illustrated in FR-A-2 213 707.

2.3.3.3 The further documents cited in the search report all lie further away from the subject-matter of Claim 1 and the Board is satisfied that none of them suggests to adapt the apparatus disclosed in FR-A-2 213 707 to include all the features of Claim 1.

2.3.4 For the foregoing reasons, the subject-matter of Claim 1 is to be considered as implying an inventive step in the

meaning of Article 56 EPC and the claim can be allowed having regard to Article 52(1) EPC.

2.4 Dependent Claims 2 to 8 concern particular embodiments of the apparatus according to Claim 1 and are thus likewise allowable.

2.5 The description as at present on file is in agreement with the actual wording and scope of the claims. These documents are therefore suitable for the grant of a patent.

3. Subsidiary request

The main request being allowable, the subsidiary request has not to be dealt with.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

Claims: 1 to 8 filed on 19 January 1993;

Description: pages 1 and 1a filed on 13 February 1993;
pages 2 to 22 as originally filed, with the following amendments to the description as agreed by telephone on 1 March 1993:
page 1, line 6, replace "Fr" by "FR";
page 1, line 7, insert "providing space

heating and domestic hot water" after
"system";

page 1, line 8, insert "flow" between
"the" and "water";

page 1, line 13, insert "flow" between
"prevailing" and "water";

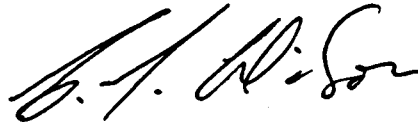
Drawings: sheets 1/11 to 11/11 as originally filed.

The Registrar:



N. Maslin

The Chairman:



C.T. Wilson

