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**Datasheet for the decision
of 9 February 2023**

Case Number: T 2973/19 - 3.2.03

Application Number: 09715074.2

Publication Number: 2246649

IPC: F25B1/00, C09K5/04

Language of the proceedings: EN

Title of invention:

REFRIGERATING APPARATUS

Patent Proprietor:

Daikin Industries, Ltd.

Opponents:

Mexichem Fluor S.A. de C.V.
The Chemours Company FC, LLC

Relevant legal provisions:

EPC Art. 123(2), 87, 54, 56, 83

RPBA Art. 12(4), 12(3)

EPC R. 80

Keyword:

Amendments - allowable (yes)

Priority - same invention (yes)

Novelty - multiple selection

Inventive step - non-obvious alternative

Late-filed facts - admitted (no)

Late-filed evidence - admitted (yes)

Sufficiency of disclosure - (yes)

Amendment occasioned by ground for opposition - (yes)

Decisions cited:

T 0279/89



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Case Number: T 2973/19 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 9 February 2023

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Decision under appeal: **Interlocutory decision of the Opposition**
Division of the European Patent Office posted on

6 September 2019 concerning maintenance of the
European Patent No. 2246649 in amended form.

Composition of the Board:

Chairman	C. Herberhold
Members:	B. Miller
	F. Bostedt

Summary of Facts and Submissions

I. European patent EP 2 246 649 B1 relates to a refrigeration apparatus including a refrigerant circuit comprising a refrigerant mixture.

II. Two oppositions against the patent were filed on the grounds under Article 100(c) EPC, Article 100(b) EPC and Article 100(a) EPC together with Articles 54 and 56 EPC.

In the interlocutory decision the opposition division found that the contested patent met the requirements of the EPC, on the basis of the claims of auxiliary request 5 submitted during the oral proceedings on 15 July 2019.

III. The patent proprietor and opponent O2 appealed against the interlocutory decision. As the patent proprietor and opponent O2 are both appellants and respondents in the appeal proceedings, whereas opponent O1 is a party as of right to these appeal proceedings, for the sake of simplicity the Board will continue to refer to the parties as the patent proprietor and the opponents in the present decision.

IV. The following documents already cited during the opposition proceedings are of particular importance for the present decision:

P1: JP 2008050855 & English translation,
Reference Number 2007P01908; Priority 1

P2: JP 2008070240 & English translation,
Reference Number 2007P02198; Priority 2

P3: JP 2008105821 & English translation,
Reference Number 2008P00105; Priority 3
D1: EP 2 249 104 A1 (earliest priority date
4 March 2008)
D4: WO 2006/094303 A2
D5: JP H4-110388 A & English translation (D5a)
D10: WO 2008/009922 A2
D14: US 6,536,225 B1
D15: EP 1 780 476 A1
D16: US 2004/0118145 A1
D19: Decision in opposition proceedings against
EP 2 475 737 B1 dated 23 October 2018

The following documents were cited for the first time
in the appeal proceedings:

- by opponent O2

D23: WO 2007/148046 A1
D24: Manual: "Luft-Wasser-Wärmepumpe LA 11A / LA 16A
für Aussenaufstellung", Dimplex
D25: JP H10-306952 A & English translation (D25a)
D26: EP 1 739 371 A1

- by the patent proprietor

D27: JP 2008-054089 (priority application of D1, D27a)
& English translation (D27b)
D28: Expert opinion by Mr J. Judge and Mr F. Horn
D29: Translation of Priority 2
D30: Translation of Priority 3

Furthermore, in the appeal proceedings opponent O2 and
the patent proprietor re-submitted further experimental
evidence which had already been filed during the

opposition proceedings (opponent O2: letter of 13 May 2019; patent proprietor: letter of 8 July 2019).

- V. With a letter dated 5 October 2022 opponent O2 withdrew its opposition and its appeal and also indicated that it would not be attending the oral proceedings before the Board.
- VI. With a letter dated 21 October 2022 opponent O1 withdrew its request for oral proceedings and requested a decision in the written proceedings.
- VII. The summons to attend oral proceedings was then cancelled and the appeal proceedings continued in writing.
- VIII. The patent proprietor requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or on the basis of any of auxiliary requests 1 to 5 as submitted with the statement setting out the grounds of appeal or any of auxiliary requests 6 to 13 as submitted with the reply to the appeal.

Opponent O1 did not submit any arguments in relation to the other parties' appeals.

Opponent O2 withdrew its opposition and appeal.

- IX. The claims of the main request correspond to the claims as granted with the exception that an error has been corrected in the wording of claim 2.

Claim 1 of the main request thus corresponds to claim 1 as granted and reads:

"A refrigeration apparatus, comprising:

- (i) a refrigerant circuit (11) suitable for performing a refrigeration cycle by circulating refrigerant, wherein
 - a compressor (12),
 - a heat-source-side heat exchanger (13),
 - an expansion mechanism (15), and
 - a utilization-side heat exchanger (14)are connected together;
- (ii) in the refrigerant circuit (11), a refrigerant mixture of
 - 77-79 wt.-% of HFO-1234yf and
 - 23-21 wt.-% of HFC-32; and
- (iii) a casing (10a) in which the whole of the refrigerant circuit is accommodated."

The wording of the auxiliary requests is not relevant for this decision.

X. The patent proprietor's arguments in relation to the main request can be summarised as follows.

(a) Admittance of the main request, admissibility of the appeal, Rule 80 EPC

The set of claims according to the main request as filed with the statement setting out the grounds of appeal was identical to the set of claims of the main request considered in the contested decision. The appeal was thus sufficiently reasoned and its extent clear, so the main request in the proceedings and the appeal were admissible. Moreover, the amendment in dependent claim 2 of the main request was in reply to an added-matter objection raised by the opponents, so it complied with Rule 80 EPC.

(b) Admittance of D23 to D26

D23 to D26 filed by opponent O2 in the appeal proceedings could and should have been filed in the opposition proceedings.

(c) Admittance of D27 to D30

In the annex to the summons to oral proceedings, the opposition division considered the priority claim of the patent to be valid. This assessment changed only at the oral proceedings before the opposition division in response to the filing of an amended translation of paragraph [0071] of the application as filed in Japanese and a new objection under Article 123(2) EPC made on that basis.

D27 to D30 were filed in response to the events during the opposition proceedings and directly addressed the reasoning in the contested decision.

(d) Admittance of the new inventive step attack based on D14

The inventive step attack based on D14 should have been raised in the opposition proceedings. The course of the opposition proceedings did not provide any justification for filing new attacks in the appeal proceedings.

(e) Admittance of the further experimental evidence

The further experimental evidence had already been filed during the opposition proceedings in response to the experimental evidence filed by the opponent.

(f) Amendments

Claim 1 is based on a combination of claims 1 and 10 as filed. The further amendments were based on paragraph [0071] of the application as originally published in Japanese (WO 2009/107364) and the corresponding paragraph on page 21, lines 1 to 12 of the translated application as originally filed in English.

Moreover, the application disclosed that the described refrigeration apparatus could be applied in various systems (see page 21, lines 19 to 21). Hence, the subject-matter of claim 1 did not extend beyond the teaching of the application as filed.

Furthermore, the amendments to claims 2, 4 and 5 reflected the technical teaching of the application as originally filed.

(g) Sufficiency of disclosure

The patent provided sufficient guidance for putting the invention into practice, for example in Figure 1.

(h) Validity of the priority claim

Claim 1 defines the same invention as disclosed in the priority document P1. For the skilled reader it was immediately apparent that the various possible "proportions" described in paragraph [0062] of P1 all referred back to the same mixture of two refrigerants. This interpretation of P1 was in line with the corresponding meaning in the original Japanese text, as explained in the expert declaration D28.

(i) Novelty

In view of the valid priority date, D1 was not prior art under Article 54(2) EPC.

D4 did not disclose a mixture of 77-79 wt.-% of HFO-1234yf and of 23-21 wt.-% of HFC-32.

D14 to D16 disclosed a refrigeration apparatus but did not disclose the refrigerant mixture as defined in claim 1.

(j) Inventive step

The combination of HFO-1234yf and HFC-32 in the amounts as defined in claim 1 provided a synergistic effect, namely a reduced pressure loss combined with a low GWP (global warming potential).

This effect was not derivable from D4 or any other prior art such as D5 or D10.

XI. The arguments of the former opponent O2 in relation to the patent proprietor's appeal can be summarised as follows.

(a) Admittance of the main request, admissibility of the appeal, Rule 80 EPC

In the notice of appeal and in the statement setting out the grounds of appeal, the patent proprietor requested as the main request that the patent be maintained as granted. However, the main request attached to the statement setting out the grounds of appeal was identical to the main request on which the contested decision was based.

The requests filed by the patent proprietor were thus ambiguous and the extent of the appeal was not clear. Consequently the request and the appeal were inadmissible. Moreover, the amendment in claim 2 of the main request attached to the statement setting out the grounds of appeal was not occasioned by a ground of opposition, contrary to the requirements of Rule 80 EPC.

(b) Admittance of D23 to D26

The filing of D23 to D26 in appeal proceedings constituted an adequate reaction to the late filing of auxiliary request 5 by the patent proprietor during the opposition proceedings.

(c) Admittance of D27 to D30

D27 to D30 should not be admitted into the appeal proceedings since the patent proprietor did not provide any reasoning for their late filing.

(d) Admissibility of the new inventive step attack based on D14

The inventive step attack based on D14 was triggered by the filing of amended claims in opposition proceedings.

(e) Admittance of the further experimental evidence

The experimental evidence had already been filed in the opposition proceedings and therefore should be considered in the appeal proceedings.

(f) Amendments

Paragraph [0071] of the application as originally published in Japanese (WO 2009/107364) and the corresponding paragraph on page 21, lines 1 to 12 of the translated application as originally filed in English disclosed a binary refrigerant mixture of 77-79 wt.-% of HFO-1234yf and 23-21 wt.-% of HFC-32. The amendments to claim 1 did not comply with the requirements of Article 123(2) EPC since the amended claim 1 did not require a binary refrigerant mixture.

Moreover, the definition of claim 1 constituted an unallowable intermediate generalisation of the specific embodiment described on page 21, lines 1 to 12 of the translated application as originally filed.

Furthermore, the amendments to claims 2, 4 and 5 generated new technical teaching which was not derivable from the application as originally filed.

(g) Sufficiency of disclosure

The feature "a casing in which the whole of the refrigerant circuit is accommodated" did not fulfil the requirements of Article 83 EPC.

(h) Validity of the claimed priority

The priority document P1 disclosed (paragraph [0062]) various possible "proportions". It was not unambiguously derivable from P1 that these proportions always referred back to the same mixture of two refrigerants.

(i) Novelty

D1 disclosed a refrigeration apparatus as defined in claim 1 of the main request.

D4 disclosed pre-mixtures of HFC-1234yf (= HFO-1234yf) and HFC-32 that were to be mixed with 10 g of CF₃I. The subject-matter of claim 1 was not novel in view of those pre-mixtures since the amounts defined in claim 1 were arbitrarily selected.

In addition, D14 to D16 disclosed a refrigeration apparatus which was at least suitable for circulating a refrigerant mixture as defined in claim 1.

(j) Inventive step

The patent did not provide sufficient evidence from which it could be concluded that the combination of HFO-1234yf and HFC-32 in the amounts as defined in claim 1 provided a synergistic effect.

The partial problem to be solved using a specific refrigerant mixture as defined in claim 1 could be formulated as providing a further refrigeration apparatus.

Combining known refrigerants in arbitrarily selected amounts did not require any inventive skill.

Starting from D4, the claimed subject-matter was obvious, in particular when additionally considering D5 or D10.

XII. Opponent O1 did not submit any arguments in relation to the patent proprietor's appeal.

Reasons for the Decision

1. Applicable Rules of Procedure of the Boards of Appeal

The revised Rules of Procedure of the Boards of Appeal (RPBA 2020) entered into force on 1 January 2020.

The grounds of appeal and the replies by the patent proprietor and opponent O2 were filed after RPBA 2020 entered into force on 1 January 2020.

Subject to the transitional provisions (Article 25 RPBA 2020), the revised version therefore also applies to both appeals filed in the case in hand.

2. Admissibility of the appeal

Under Rule 99(2) EPC:

"In the statement of grounds of appeal the appellant shall indicate the reasons for setting aside the decision impugned, or the extent to which it is to be amended, and the facts and evidence on which the appeal is based."

The requirements of Rule 99(2) EPC are fulfilled as the statement setting out the grounds of appeal indicates the reasons for setting aside the decision impugned (see point 2.1, where the patent proprietor argues against the opposition division's finding that the main request did not meet the requirements of Article 123(2) EPC), the extent to which it is to be amended (at least in view of the main request annexed to the statement

setting out the grounds of appeal) and the facts and evidence on which the appeal is based.

Therefore, there are no reasons to hold the patent proprietor's appeal inadmissible under Rule 99(2) EPC.

3. Admissibility of the main request

3.1 Under Article 12(3) RPBA 2020:

"The statement of grounds of appeal and the reply shall contain a party's complete case. Accordingly, they shall set out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended, or upheld, and should specify expressly all the requests, facts, objections, arguments and evidence relied on."

A contravention of Article 12(3) RPBA 2020 does not lead to the appeal being inadmissible but may lead to non-admittance of the submission (see Article 12(5) RPBA 2020).

3.2 The main request fulfils the requirement of Article 12(3) RPBA 2020.

In the notice of appeal of 6 November 2019 and in the statement setting out the grounds of appeal dated 15 January 2020, the patent proprietor requested, as the main request, that the patent be maintained as granted.

However, the claims of the main request enclosed with the patent proprietor's statement setting out the grounds of appeal correspond to the claims according to

the main request on which the contested decision is based.

The patent proprietor clarified this ambiguity concerning the main request in a letter of 1 October 2020. On page 1 of the letter the patent proprietor confirmed that the main request was the main request as filed with the statement setting out the grounds of appeal, which is identical to the main request on which the impugned decision is based.

The claims of the main request on file correspond to the claims as granted with the exception that an error has been amended in the wording of claim 2, namely by reference numeral (14) being identified as the utilization-side heat exchanger.

The amendment to claim 2 as such is not discussed in the decision under appeal, nor is it related to the reasons why claim 1 of the main request (which is identical to claim 1 as granted) was found unallowable by the opposition division.

The initial ambiguity as to the wording of claim 2 of the main request does not generate any doubt as to why the patent proprietor sought to have the contested decision reversed. The arguments in relation to the validity of the priority claim and novelty of claim 1 are unrelated to the wording of claim 2 and apply to both the granted version and the set of claims considered as the main request in the decision under appeal.

Moreover, the main request as submitted with the statement setting out the grounds of appeal, as clarified with the letter of 1 October 2020, i.e. the

main request in this appeal, corresponds to the main request on which the decision under appeal was based and therefore complies with the primary object of the appeal proceedings to review the decision under appeal in a judicial manner (Article 12(2) RPBA 2020).

The Board therefore considers that the main request based on the claims as submitted with the statement setting out the grounds of appeal and the related reasoning in that statement comply with requirements according to Article 12(3) RPBA 2020.

4. Rule 80 EPC

Opponent 2 had argued that the amendment to claim 2 as granted was not occasioned by a ground for opposition and thus contravened the requirements of Rule 80 EPC (letter dated 2 June 2020, point 4.1.2). However, the deletion of the "utilization-side heat exchanger" had been objected to in the notice of opposition dated 19 April 2018 (see item 3.2) as being an unallowable extension of subject-matter beyond the patent application as originally filed.

For this reason, the amendment can be accepted as having been occasioned by a ground of opposition, thus fulfilling the requirements of Rule 80 EPC.

5. Admittance of the various requests, facts, objections and evidence submitted for the first time on appeal

5.1 The patent proprietor and opponent O2 filed various requests, facts, objections and evidence for the first time on appeal.

In this regard the following principles laid out in the articles of the RPBA 2020 apply.

In view of the primary object of the appeal proceedings to review the decision under appeal in a judicial manner, a party's appeal case has to be directed to the requests, facts, objections, arguments and evidence on which the decision under appeal was based; see Article 12(2) RPBA 2020.

Any part of a party's appeal case which does not meet these requirements is to be regarded as an amendment (unless the party demonstrates that this part was admissibly raised and maintained in the proceedings leading to the decision under appeal) which may be admitted only at the Board's discretion; see Article 12(4) RPBA 2020.

5.2 Admittance of D23 to D26

The Board cannot see any convincing reason why D23 to D26 were not already filed in the opposition proceedings (Article 12(6), second sentence, RPBA 2020).

Opponent O2 justified filing these documents in the appeal proceedings by referring to the patent proprietor's late filing of auxiliary request 5 during the opposition proceedings.

Auxiliary request 5 was based on auxiliary request 1 as filed in the opposition proceedings. It had been filed during the oral proceedings before the opposition division in response to an objection raised by the opponents concerning the allowability of the amendments to claim 1 due to the lack of the word "binary". This

objection was itself raised for the first time during the oral proceedings; see point 2 of the reasons in the grounds for the contested decision and points 2 to 4 of the minutes of the oral proceedings before the opposition division.

The opponents cannot have been surprised by the fact that a term whose omission they had previously contested was then added to the claim. As such, this cannot justify the late filing of D23 to D26.

The further amendments in auxiliary request 5 are based on claims 1, 2 and 5 as granted. Thus, opponent O2 could have been expected to be prepared for these amendments irrespective of the addition of the term "binary" since the dependent claims as granted are an obvious option when amending claim 1. Moreover, opponent O2 had already raised its objections against dependent claims 2 to 7 in the notice of opposition (point 6.3).

Moreover, this assessment is not changed by the fact that claim 2 as granted, and consequently claim 1 of auxiliary request 5, was further corrected in response to an objection raised by opponent O2. This correction was already present in all the requests filed in the opposition proceedings, in particular also in the main request as considered during the oral proceedings before the opposition division.

Therefore, the circumstances of the appeal case cannot justify the filing of further documents on appeal in order to raise new objections.

Therefore, the Board does not admit D23 to D26 into the proceedings (Article 12(6), second sentence, RPBA 2020).

5.3 Admittance of D27 to D30

D27 to D30 concern the validity of the priority claim of the patent and of D1. In the annex to the summons to oral proceedings, the opposition division considered the priority claim of the patent to be valid. This assessment changed during the oral proceedings before the opposition division in response to the submission of an amended translation of paragraph [0071] of the application as published in Japanese (WO 2009/107364) and a new objection under Article 123(2) EPC made on that basis.

In preparation for the oral proceedings before the opposition division the patent proprietor had no reason to expect that it would need further evidence, such as D27 to D30, to defend the priority claim of the patent. Moreover, submitting D27 to D30 together with the statement of grounds of appeal directly addresses the reasoning in the contested decision.

Therefore, the Board admits D27 to D30 into the appeal proceedings (Article 12(4) RPBA 2020).

5.4 Admissibility of the new inventive step attack based on D14

The Board sees no convincing reason why the inventive step attack starting from D14 was not already raised in the opposition proceedings. The opposition division had already indicated (see point 5 of the annex to the summons to attend oral proceedings) that the subject-

matter of the claims of the main request was novel. The division pointed out that D14 did not disclose an apparatus comprising a refrigerant mixture.

Hence, opponent O2 should have reconsidered its assessment of D14 in preparation for the oral proceedings before the opposition division.

The further amendments to claim 1 of auxiliary request 5 as submitted during the opposition proceedings are based on dependent claims as granted, which either had already been considered by opponent O2 in the notice of opposition (see above) or concern the refrigerant mixture itself, which is not disclosed in D14 anyway. Hence, the further amendments do not justify the filing of new objections based on D14.

Therefore, the Board does not admit the new inventive step objection based on D14 as the closest prior art into the proceedings (Article 12(6), second sentence, RPBA 2020).

5.5 Admissibility of the further experimental evidence filed by opponent O2 and the patent proprietor

5.5.1 Opponent O2 filed experimental evidence with a letter dated 13 May 2019 in the opposition proceedings.

Although the experimental evidence submitted by opponent O2 was not referred to in the reasons of the contested decision, the opposition division did not exclude the evidence from the opposition proceedings. It can be left open whether the experimental evidence was admissibly filed and maintained during the opposition proceedings. Even if this evidence is considered to be an amendment within the meaning of

Article 12(4), first sentence, RPBA 2020, the Board admits it into the proceedings in exercise of its discretion (Article 12(4), second and fourth sentences, RPBA 2020).

Hence, the re-filing of the experimental evidence by opponent O2 with the statement setting out the grounds of appeal (Tables 1 and 2) is in line with the requirements of Article 12(4) RPBA 2020.

- 5.5.2 In response to the filing of evidence by opponent O2, the patent proprietor filed further experimental evidence in the opposition proceedings with a letter dated 8 July 2019, re-submitting it with the reply to the statement setting out the grounds of appeal.

The experimental evidence filed by the patent proprietor can be seen as a direct reaction to the experimental evidence submitted by opponent O2.

Hence, in exercise of its discretion the Board considers the re-filing of the experimental evidence by the patent proprietor with the reply to the appeal to be in line with the requirements of Article 12(4) RPBA 2020.

- 5.5.3 Therefore, the experimental evidence filed by both opponent O2 and the patent proprietor is considered in the appeal proceedings by the Board.

6. Main request - amendments

- 6.1 The patent stems from the international application WO 2009/107364 A1 as published in Japanese.

6.2 Claim 1 of the main request is based in principle on claims 1, 9 and 10 (refrigerant mixture containing HFO-1234yf (2,3,3,3-tetrafluoroprop-1-ene) and HFC-32 (difluoromethane)) as filed.

The refrigerant mixture has been defined in claim 1 in more detail as:

"a refrigerant mixture of
77-79 wt.-% of HFO-1234yf and
23-21 wt.-% of HFC-32".

6.3 The basis for this specific refrigerant mixture defined in claim 1 is found in the paragraph on page 21, lines 1 to 12 of the English translation of the application as originally filed during the examination proceedings. The translated paragraph corresponds to paragraph [0071] of the international application as published in Japanese (NB: in the publication of WO 2009/107364 A1 in accordance with Article 153(4) EPC, EP 2 246 649 A1, the relevant paragraph is [0072]).

By letter dated 14 May 2019 and filed in the opposition proceedings, the patent proprietor submitted a corrected translation of this paragraph [0071]. According to this translation, paragraph [0071] begins with the words "When using a refrigerant which is a binary mixture of, e.g., the HFO-1234yf and the HFC-32, ...". (emphasis added by the Board). The opponents did not contest the wording of the corrected translation of paragraph [0071].

6.4 According to point 2 of the reasons of the contested decision, the wording of claim 1 extends beyond the teaching of paragraph [0071] of the application as published in Japanese since amended claim 1 was not

restricted to **binary** refrigerant mixtures of 77-79 wt.-% of HFO-1234yf and 23-21 wt.-% of HFC-32.

6.4.1 The patent proprietor challenged this finding by the opposition division, arguing that the term "binary" was redundant in the context of claim 1.

6.4.2 In the Board's view, the first two sentences of paragraph [0071] of the application as published in Japanese make it clear that the various described specific mixtures of HFO-1234yf and HFC-32 directly and unambiguously relate to a binary mixture of HFO-1234yf and HFC-32 addressed in the first sentence of paragraph [0071]. Accordingly, the more specific refrigerant mixture disclosed in the fourth sentence in paragraph [0071] also refers to a binary mixture.

However, by defining the range for the amount of HFC-32 in "inverted" order:

"23-21 wt.-% of HFC-32"

and by respectively matching the two ranges to add up to 100%:

"77-79 wt.-% of HFO-1234yf and
23-21 wt.-% of HFC-32"

claim 1 is understood by the skilled person to refer to a binary mixture even without this explicitly being stated.

The application as filed also describes further embodiments with a single refrigerant or a ternary mixture comprising HFO-1234yf, HFC-32 and HFC-125 (pentafluoroethane). However, this separate teaching of further alternative refrigerants based on a single compound or a mixture of three compounds does not

change the disclosure with regard to the specific binary mixture of HFO-1234yf and HFC-32 on which the amendment in claim 1 is based.

6.4.3 The definition in claim 1 of the main request therefore does not extend beyond the disclosure of the application as filed even though the binary refrigerant mixture is defined without explicitly using the word "binary".

6.5 The definition of the refrigerant mixture in claim 1 does not constitute an intermediate generalisation of the disclosure in paragraph [0071] of the application as published in Japanese (page 21, lines 1 to 12 of the translated application in English).

Although the specific mixture of 77-79 wt.-% of HFO-1234yf and 23-21 wt.-% of HFC32 is disclosed in the context of embodiments 1 to 3 of the apparatus comprising a water tank (25), a floor heater (5) or an air conditioning unit, it is nevertheless explicitly disclosed that the refrigeration apparatus may be applied in other systems (see page 21, lines 19 to 21 of the translated application in English).

Furthermore, the water tank, floor heater and air conditioning units are neither essential to the invention (page 21, line 19 to page 22, line 8 of the translated application in English) nor functionally or structurally linked to the specific amounts of HFO-1234yf and HFC-32 in the refrigerant mixture.

In line with the established case law (see Case Law of the Boards of Appeal, 10th edition, 2022, Chapter II.E.1.9.1), defining the refrigerant mixture in claim 1 therefore does not extend the subject-matter claimed

beyond the disclosure of the application as originally filed.

6.6 In this regard, the conclusions regarding the choice of the closest prior art in a decision in opposition proceedings relating to another patent (EP 2 475 737 B1), identified by opponent O2 as D19, are irrelevant. Article 123(2) EPC requires that the subject-matter as changed by the amendments be compared with the teaching of the application as originally filed, not with an interpretation of the application by an opposition division in reasoning regarding the choice of the closest prior art.

6.7 Moreover, reformulating the functional feature of claim 1 as filed, according to which a refrigeration cycle is performed by circulating the refrigerant, into a product feature does not change the overall technical teaching for the skilled reader.

A refrigeration apparatus which performs a refrigeration cycle is inherently suitable for performing that refrigeration cycle. Accordingly, the phrase "a circuit suitable for performing a refrigeration cycle by circulating refrigerant" does not extend beyond the content of the original disclosure.

The same applies to the corresponding amendment to the expression "a heat medium circuit, which supplies a heat medium exchanging heat with refrigerant ..." into "a heat medium circuit (51) for supplying a heat medium exchanging heat with refrigerant ..." in claim 2.

6.8 Claims 4 and 5 are directly and unambiguously derivable from original claims 4 to 6. The omitted intended uses

"for generating hot water" and "as cooling heat exchanger" are intrinsic to the claimed hot water generator and heat exchanger serving for cooling, as defined in claims 4 and 6, respectively.

The wording of claim 4 as granted has also been reformulated compared with claim 4 as filed, to now specify that the refrigeration apparatus comprises the heat utilization target. However, a target as such is not an entity of the apparatus. Furthermore, claim 4 specifies that the heat utilization target is a hot water generator or a floor heater for heating a floor surface in line with the technical teaching in the application as filed.

Although the wording of the claims has been changed, the technical teaching has not been extended beyond that of the application as filed.

6.9 Therefore, the amendments in the claims of the main request fulfil the requirements of Article 123(2) EPC.

7. Sufficiency of disclosure

7.1 According to the established case law of the boards of appeal, the patent specification as a whole, and not claim 1 as such, must convey reworkable teaching for the skilled person (Case Law of the Boards of Appeal, 10th edition, 2022, Chapter II.C.3.1).

Accordingly, a successful objection of lack of sufficiency of disclosure presupposes that there are serious doubts, substantiated by verifiable facts (Case Law of the Boards of Appeal, 10th edition, 2022, Chapter II.C.9.). The mere fact that a claim is broad (for example, in the case in hand, does not define how

the casing is to be construed) does not constitute a reason to assume that the patent does not fulfil the requirements of sufficient disclosure.

In order to establish a lack of sufficiency, the burden of proof is upon an opponent to establish that a skilled reader of the patent, using their common general knowledge, would be unable to carry out the invention.

- 7.2 Opponent O2 has not provided any arguments as to why the skilled person would be unable to provide the apparatus as claimed. Figure 1 of the patent illustrates how to construct a refrigeration apparatus as defined in claim 1 and which components are to be placed within the casing. Arranging the elements within a casing appears to be well within the capabilities of the person skilled in the art.

Therefore, the Board sees no reason to deviate from the finding in point 6 of the reasons of the contested decision that the patent meets the requirements of Article 83 EPC.

8. Main request - validity of the priority claim

The patent claims priority from the three Japanese applications P1, P2 and P3. The earliest priority date is claimed from P1 (JP 2008050855).

P1 discloses a refrigeration apparatus comprising a compressor, a heat-source-side heat exchanger, an expansion mechanism, a utilization-side heat exchanger and a casing as required by claim 1 of the main request; see claim 1 and Figure 1 of P1.

In paragraph [0062] P1 discloses the following (similar to paragraph [0071] of the international application WO2009/107364 as published in Japanese):

"Examples of the refrigerant mixture include refrigerant mixture of two types of refrigerant which are 78% by mass of HFO-1234yf (2,3,3,3-tetrafluoro-1-propene) and 22% by mass of HFC-32 (difluoromethane). For the refrigerant mixture, the proportion of the HFO-1234yf may be equal to or greater than 70% by mass and equal to or less than 94% by mass, and the proportion of the HFC-32 may be equal to or greater than 6% by mass and equal to or less than 30% by mass. The proportion of the HFO-1234yf may be preferably equal to or greater than 77% by mass and equal to or less than 87% by mass, and the proportion of the HFC-32a refrigerant may be preferably equal to or greater than 13% by mass and equal to or less than 23% by mass. More preferably, the proportion of the HFO-1234yf may be equal to or greater than 77% by mass and equal to or less than 79% by mass, and the proportion of the HFC-32 may be equal to or greater than 21 % by mass and equal to or less than 23 % by mass."

It is immediately apparent to the skilled person from the disclosure in paragraph [0062] of P1 that the various possible "proportions" always refer back to the same mixture of two refrigerants. This interpretation of P1, which is an English translation of the original Japanese text, is consistent with the corresponding meaning in the original Japanese text as explained and confirmed by the expert declaration D28.

Hence, P1 defines the "same invention" as the patent, which therefore validly claims the priority date of 29 February 2008.

9. Main request - Article 54 EPC

9.1 In view of D1

D1 was published after the filing date of the patent (24 February 2009) on 10 November 2010. D1 claims an earliest priority date of 4 March 2008, which is later than the earliest priority claim in the patent (29 February 2008). This priority is validly claimed (see above).

Hence, D1 is not state of the art according to Article 54(2) EPC.

9.2 In view of D4

9.2.1 Concerning the refrigeration apparatus, the teaching of D4 is of a rather general nature. For example, D4 does not describe that the whole of the refrigerant circuit is accommodated within a casing.

9.2.2 D4 discloses various compositions for use in refrigeration, air conditioning and heat pump systems. The compositions can be used to produce cooling or heat, in the form of heat transfer fluids, foam blowing agents, aerosol propellants, fire suppressants and fire extinguishers; see page 1, lines 12 to 17.

According to page 55, line 17 to page 56, line 2, the compositions listed in D4 can be used to replace a high-GWP (global warming potential) refrigerant in a refrigeration, air conditioning or heat pump appliance.

The apparatus can be used for mobile air conditioning or for refrigeration in road transport equipment (D4, page 56, lines 3 to 13).

One out of a number of possible compositions proposed by D4 is a composition comprising 40-99 wt.-% HFC-1234yf (referred to as HFO-1234yf in claim 1 of the main request) and 1-60 wt.-% HFC-32 (see Table 2, page 15). The most preferred ratio (which may be considered exemplary) is 95% HFO-1234yf with 5% HFC-32.

9.2.3 T 279/89 developed three criteria which a sub-range has to fulfil for it to be considered novel:

- (a) The selected sub-range should be narrow.
- (b) The selected sub-range should be sufficiently far removed from the known range illustrated by means of examples.
- (c) The selected area should not provide an arbitrary specimen from the prior art, i.e. not a mere embodiment of the prior description, but another invention (purposive selection).

The case law concerning the last criterion "(c)" has been further developed, and the Board agrees with the conclusion arrived at that whether or not a purposive selection was made is relevant for assessing inventive step rather than novelty; see Case Law of the Boards of Appeal, 10th edition, 2022, Chapter I.C.6.3.1.

Hence, the subject-matter of claim 1 of the main request is novel over a composition comprising 40-99 wt.-% HFC-1234yf and 1-60 wt.-% HFC-32 as disclosed in D4.

9.2.4 On page 82, lines 48 to 49, D4 further discloses a ternary refrigerant mixture of 20 wt.-% HFC-32, 10 wt.-% CF₃I and 70 wt.-% HFC-1234yf (= HFO-1234yf). However, the contents of HFC-32 and HFC-1234yf (= HFO-1234yf) do not fall within the ranges defined in claim 1 using a technically sensible and usual interpretation of the wording of claim 1, according to which the amounts indicated in claim 1 need to add up to 100 wt.-%. D4 does not disclose a corresponding binary pre-mixture of 77.8 wt.-% of HFC-1234yf (= HFO-1234yf) and 22.2 wt.-% of HFC-32 to which 10 g of CF₃I are being added, so it does not directly and unambiguously disclose a refrigerant mixture as defined in claim 1.

9.2.5 In summary, the subject-matter of claim 1 differs from the disclosure in D4 in that:

- i) the refrigeration apparatus comprises a casing in which the whole of the refrigerant circuit is accommodated and
- ii) the refrigeration apparatus comprises a mixture of 77-79 wt.-% of HFO-1234yf and 23-21 wt.-% of HFC-32

9.3 In view of D14, D15 and D16

D14 to D16 disclose a refrigeration apparatus but do not disclose the composition of the refrigerant mixture in that apparatus.

The specific refrigerant mixture is, however, an explicitly claimed feature of claim 1 of the main request and must therefore be present in the claimed refrigeration apparatus (the apparatus "comprising" in the refrigerant circuit, a refrigerant mixture ...); see definition in point (ii) in claim 1.

The subject-matter of claim 1 therefore differs from the disclosure in D14, D15 and D16 in that the refrigeration apparatus comprises a refrigerant mixture of 77-79 wt.-% of HFO-1234yf and 23-21 wt.-% of HFC-32.

9.4 It follows from the above that the subject-matter of claims 1 to 7 of the main request is novel and fulfils the requirements of Article 54 EPC.

10. Main request - Inventive step

10.1 D4 as the closest prior art

10.1.1 As discussed above, the subject-matter of claim 1 differs from the disclosure in D4 in that:

i) the refrigeration apparatus comprises a casing in which the whole of the refrigerant circuit is accommodated and

ii) the refrigeration apparatus comprises in the refrigerant circuit a mixture of 77-79 wt.-% of HFO-1234yf and 23-21 wt.-% of HFC-32

10.1.2 The patent proprietor claims a synergistic effect (reduced pressure loss combined with a low GWP) for the combination of HFO-1234yf and HFC-32 in the amounts as defined in claim 1 when accommodated in a casing of a refrigeration apparatus (see paragraphs [0010] to [0011] of the patent).

However, this technical effect is not credible over the entire scope of claim 1 because the casing does not limit the length or volume of the pipes or the volume of refrigerant inside.

Hence, the distinguishing features identified above have to be considered as being a mere aggregation of features which are not functionally interdependent.

Consequently, the two different independent features provide solutions to two independent partial problems; see Case Law of the Boards of Appeal, 10th edition, 2022, Chapter I.D.9.3.1.

- 10.1.3 Focusing on the technical teaching of the patent, the partial problem to be solved by the specific refrigerant mixture can be considered to be providing an alternative refrigeration apparatus.

The solution to this problem as proposed by claim 1 is not obvious with regard to D4.

D4 proposes a long list of possible refrigerant compositions; see Table 2.

Even when a mixture of HFO-1234yf and HFC-32 is selected from a long list of options as shown in Table 2 of D4, the teaching of Table 2 does not point towards the claimed ranges. Instead, D4 proposes using 95 wt.-% HFC-1234yf (= HFO-1234yf) and 5 wt.-% HFC-32 for use in a refrigerant circuit of a refrigeration apparatus.

Moreover, Table 9 of D4 does not provide an incentive to select a composition according to claim 1 since it discloses refrigerant mixtures comprising at most 58 wt.-% HFC-1234yf (= HFO-1234yf).

Example 3 of D4 discloses refrigeration performance data. The long list of possible refrigerants according to Table 11 of example 3 only includes compositions with at least three refrigerants. Therefore, example 3

of D4 does not provide an incentive to use HFC-1234yf (= HFO-1234yf) and HFC-32 in the amounts specified in claim 1.

In summary, D4 does not provide any pointer to use a mixture with the specific amounts of the two refrigerants specified in claim 1, so it does not render the composition according to claim 1 obvious.

10.1.4 In view of this finding, there is no need to evaluate the further experimental evidence provided by the patent proprietor and opponent O2.

10.1.5 The further documents cited by opponent O2 - D5 and D10 - do not provide an incentive to use the specific refrigerant mixture as defined in claim 1 either.

D5 suggests combining HFO-1234yf with HFC-32 but does not provide any information concerning the amounts to be used.

D10 on the other hand discloses ternary refrigerant mixtures (see e.g. claim 1) and therefore does not provide any hint for the skilled person to use the two refrigerants HFO1234yf and HFC32 in the amounts as proposed in claim 1.

10.1.6 Moreover, it should be noted that D4 does not provide any incentive to arrange the whole refrigerant circuit within a casing.

10.1.7 The subject-matter of claims 1 to 7 of the main request is not rendered obvious by the cited prior art and therefore fulfils the requirements of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent as amended on the basis of the following documents:

pages 2 to 7 of the patent specification

claims 1 to 7 of the main request as filed with the letter dated 15 January 2020

Figures 1 to 3 of the patent specification

The Registrar:

The Chairman:



C. Spira

C. Herberhold

Decision electronically authenticated