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Datasheet for the decision of 16 March 2026

Case Number: T 0280/25 - 3.3.02

Application Number: 18202654.2

Publication Number: 3461871

IPC: C09K5/04, C10M171/00

Language of the proceedings: EN

Title of invention:
COMPOSITIONS COMPRISING trans-HFC-1234ze AND HFC-1234YF

Patent Proprietor:
The Chemours Company FC, LLC

Opponents:
Mexichem Fluor S.A. de C.V.
Daikin Industries, Ltd.
AGC Inc.
Suzuki France
Suzuki Motor Corporation

Headword:
THE CHEMOURS / REFRIGERANT MIXTURES

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - all requests (no)

Decisions cited:
T 0364/20, T 1318/21

Catchword:

Europäisches Patentamt
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Beschwerdekammern

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Case Number: T 0280/25 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 16 March 2026

Appellant: (Patent Proprietor)	The Chemours Company FC, LLC 1007 Market Street Wilmington DE 19801 (US)
Representative:	Mewburn Ellis LLP Aurora Building Counterslip Bristol BS1 6BX (GB)
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Party as of right: (Opponent 3)	AGC Inc. 5-1, Marunouchi 1-chome Chiyoda-ku Tokyo 100-8405 (JP)
Representative:	Müller-Boré & Partner Patentanwälte PartG mbB Friedenheimer Brücke 21 80639 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted/ electronically transmitted on 13 February 2025 concerning maintenance of the European Patent No. 3461871 in amended form.**

Composition of the Board:

Chairman	M. O. Müller
Members:	M. Maremonti
	M. Blasi
	P. O'Sullivan
	L. Bühler

Summary of Facts and Submissions

I. The appeals by the patent proprietor and interveners/ opponents 4 and 5 ("opponents 4/5") are against the opposition division's interlocutory decision, according to which European patent No. 3 461 871 ("the patent") as amended in the form of auxiliary request 3, the claims of which were filed during the oral proceedings, and the invention to which it relates, meets the requirements of the EPC.

II. Claim 1 as granted reads as follows:

"*1. A composition comprising trans-HFC-1234ze and HFC-1234yf.*"

III. Three oppositions and two interventions under Article 105 EPC were filed invoking the grounds under Article 100(a) to (c) EPC. Reference was made to the following documents, *inter alia*:

D2: US 2004/0256594 A1

D21: Experimental Data

IV. Opponents 1 and 2 withdrew their oppositions during the proceedings before the opposition division.

V. The patent proprietor maintained the patent as granted as its main request and filed several sets of claims of auxiliary requests, in particular of auxiliary requests 1 to 8 by letter dated 19 September 2024. During the oral proceedings, the patent proprietor filed two further sets of claims of auxiliary requests 9 and 10 and made these auxiliary requests its auxiliary requests 2 and 3. Previous auxiliary request 5 was renumbered as auxiliary request 1. The remaining

auxiliary requests were renumbered as auxiliary requests 4 to 10.

VI. The opposition division's conclusions in the appealed decision included the following:

- the subject-matter of claim 1 as granted extended beyond the content of the earliest application as filed; therefore, the ground for opposition under Article 100(c) EPC prejudiced maintenance of the patent as granted;
- the subject-matter of claim 1 of auxiliary requests 1 and 2 infringed Article 76(1) EPC;
- the subject-matter of claim 1 of auxiliary request 3 met the requirements of Article 76(1) EPC, was sufficiently disclosed, novel and involved an inventive step in view of D2 as closest prior art.

For brevity, the board will refer to the parties as patent proprietor and opponents in the following.

VII. In its statement of grounds of appeal and its reply to the opponents 4/5' appeals, the patent proprietor argued, *inter alia*, that the claimed subject-matter involved an inventive step. The patent proprietor submitted the following items of evidence (A42 was denoted as D42 by the patent proprietor; new numeration introduced by the board):

A42: Interlocutory decision of the opposition division in the case concerning European patent No. EP 3 388 495

Annex 1: Summary of the experimental data filed before the opposition division in the current case

A42 was filed with respect to the issue of added subject-matter. Since this issue is not relevant for

the present decision, A42 will not be referred to in the following.

VIII. In their statements of grounds of appeal, their replies to the patent proprietor's appeal, and a further submission, opponents 4/5 as well as opponent 3, party to these proceedings as of right under Article 107 EPC, submitted, *inter alia*, that the claimed subject-matter lacked an inventive step.

IX. The parties were summoned to oral proceedings as per their requests. In preparation for the oral proceedings, the board issued a communication under Article 15(1) RPBA. In this communication, the board expressed, *inter alia*, the preliminary opinion that the subject-matter of all claim requests lacked an inventive step.

X. The patent proprietor replied to the board's preliminary opinion and submitted further arguments, *inter alia*, in support of inventive step.

XI. Oral proceedings before the board were held on 16 March 2026 in the presence of all parties.

XII. Final substantive requests relevant to the decision

The patent proprietor requested that the appealed decision be set aside and that the patent be maintained as granted, meaning that the oppositions be rejected. Alternatively, the patent proprietor requested that the patent be maintained in amended form on the basis of the claims of one of auxiliary requests 1 to 11 filed with the statement of grounds of appeal. Auxiliary request 3 is identical to auxiliary request 3 filed before and found allowable by the opposition division. Maintenance of the patent on the basis of auxiliary request 3 thus implies the dismissal of the appeals of opponents 4/5.

Opponents 4/5 requested that the appealed decision be set aside and that the patent be revoked in its entirety.

Opponent 3 requested that the patent proprietor's appeal be dismissed.

XIII. As regards the parties' submissions relevant to the present decision, reference is made to the reasons for the decision set out below.

Reasons for the Decision

Main request (patent as granted) - claim 1 - ground for opposition under Article 100(a) EPC and Article 56 EPC - inventive step

1. The abbreviations used in claim 1 of the main request (point II above) refer to the following compounds:

HFC-1234yf: 2,3,3,3-tetrafluoropropene

HFC-1234ze: 1,3,3,3-tetrafluoropropene

The abbreviation HFC refers to the class of hydrofluorocarbon compounds; substances belonging to this class are also referred to in the prior art as hydrofluoroolefins (HFOs).

2. Closest prior art

2.1 It was common ground that, *inter alia*, document D2 could be selected as the closest prior art.

2.2 Document D2 (see paragraphs [0019] and [0029]) discloses compositions comprising one or more C3 or C4 fluoroalkenes, whereby cis and trans isomers of HFC-1234ze are stated to be highly preferred. Table I in example 1 of D2 (paragraphs [0100] and [0101]), reports the results in terms of coefficient of performance (COP), relative refrigeration capacity

(CAP) and compressor discharge temperature ("discharge temperature") for compositions comprising HFC-1225ye, cis-HFC-1234ze, trans-HFC-1234ze or HFC-1234yf in comparison with the same properties of HFC-134a (1,1,1,2-tetrafluoroethane). It was common ground that the composition comprising trans-HFC-1234ze can be taken as the starting point within D2.

3. Distinguishing features

It was undisputed that, when starting from the composition including trans-HFC-1234ze, the subject-matter of claim 1 of the main request differs from this prior art disclosure in that the refrigerant composition additionally includes HFC-1234yf.

4. Objective technical problem

4.1 In its argumentation, the patent proprietor referred, *inter alia*, to D21 and, albeit only in writing, the experimental data summarised in annex 1. The board notes that the data reported in D21 are identical in substance to those shown in table 1 on page 3 of annex 1. Therefore, the considerations made in the following with respect to the data in D21 apply *mutatis mutandis* to the data in table 1 of annex 1.

4.1.1 The patent proprietor submitted that the patent aimed to develop environmentally friendly refrigerant mixtures having a low global warming potential (GWP) and refrigeration properties comparable to those of the commercially available HFC-134a, so that these mixtures could be used to replace HFC-134a.

4.1.2 According to the patent proprietor, the data in D21 indicated that when HFC-1234yf was increasingly dosed into a composition of trans-HFC-1234ze, the discharge temperature was beneficially lowered in comparison with trans-HFC-1234ze alone and remained substantially lower

than that of HFC-134a. Running the refrigeration system less hot had the benefit of reducing the temperature stress on the equipment so that less maintenance was required; at the same time, a good COP was maintained and an advantageous near-azeotropic behaviour was observed as confirmed by the data reported in example 1 of the patent. Therefore, the combination of HFC-1234yf and trans-HFC-1234ze as claimed allowed a good balance between COP and the wear on equipment in terms of discharge temperature and running pressures. As regards the latter, the patent proprietor admitted that D21 showed that the addition of HFC-1234yf to trans-HFC-1234ze resulted in a pressure increase; however, the operating pressures were still comparable with those of HFC-134a. Additionally, the opponents had not shown that a pressure increase would have been detrimental to the refrigeration equipment during long-term operation.

4.1.3 In view of these technical effects, the patent proprietor formulated the objective technical problem as the provision of an improved composition having a good COP, which is more suited for long-term use as a replacement for HFC-134a, in particular which reduces stress on equipment in terms of pressure and temperature, and achieves good compatibility with maintenance operations.

4.2 These arguments are not convincing.

4.2.1 As submitted by the opponents, the data reported in D21 show that compositions including trans-HFC-1234ze and HFC-1234yf as required by claim 1 of the main request perform worse than the composition of trans-HFC-1234ze alone (D21, table, final row) as far as COP and operating pressures are concerned. As regards the discharge temperature, only a minor reduction is observed when HFC-1234yf is added to the composition of

trans-HFC-1234ze alone. In fact, the relative reduction in the discharge temperature is substantially lower than the relative increase in the operating pressures. By way of example, the opponents noted that a composition containing 50% trans-HFC-1234ze and 50% HFC-1234yf has a discharge temperature of 77.7°C, corresponding to a reduction of 3.2% in comparison with the temperature of trans-HFC-1234ze alone (80.3°C). In contrast thereto, the same mixture has pressures at the evaporator and condenser respectively of 191 and 929 kPa, corresponding to an increase of 29.9% and 21.2% with respect to the values of trans-HFC-1234ze alone (147 and 766 kPa). The board concurs with the opponents' view that the patent proprietor provided no evidence that a small reduction in the discharge temperature would outweigh the substantial increase in the operating pressures as regards equipment stress and long-term maintenance. On the contrary, as pointed out by the opponents, the patent proprietor itself in its statement of grounds of appeal (point 260 on page 38) indicated a reduction in the operating pressures as being beneficial in terms of stress on equipment.

4.2.2 Moreover, the COP decreases when adding HFC-1234yf to trans-HFC-1234ze to values as low as 98.0. This value is even lower than that achieved with HFC-134a.

4.2.3 Therefore, D21 does not show that the effects underlying the patent proprietor's objective technical problem, in particular good COP and less stress on the equipment and good compatibility with maintenance operations are achieved with the claimed subject-matter over the composition of the closest prior art.

4.2.4 Therefore, the patent proprietor's objective technical problem cannot be accepted and the board concurs with the opponents' view that the objective technical

problem lies in the provision of an alternative composition.

5. Obviousness of the claimed solution

5.1 The patent proprietor argued that neither D2 nor any of the other available prior art documents contained any incentive for the skilled person to modify the known composition of trans-HFC-1234ze by adding HFC-1234yf. In particular, D2 taught the skilled person away from preparing mixtures as claimed: on the basis of table I of D2 (paragraph [0101]), the skilled person would have expected that the addition of HFC-1234yf to pure trans-HFC-1234ze would have increased the discharge temperature and unacceptably reduced the COP. Moreover, D2 taught in paragraphs [0029] and [0049] to preferably use pure trans-HFC-1234ze or at most mixtures of trans and cis-HFC-1234ze, and not mixtures of these compounds with HFC-1234yf. Additionally, the skilled person would not have expected or predicted that mixing HFC-1234yf and trans-HFC-1234ze would have led to a near-azeotropic composition. The claimed solution was thus inventive. According to the patent proprietor, the same conclusion applied even accepting the objective technical problem to be the provision of an alternative composition; the reasoning of the opposition division as regards auxiliary request 3 should be followed in such a case.

5.2 The board disagrees for the following reasons.

5.2.1 When the objective technical problem lies in the provision of an alternative, no pointer or incentive is required. It is sufficient that the skilled person would have considered the claimed solution as an alternative to the composition of the closest prior art (see also T 364/20, reasons, point 11.6.2; and T 1318/21, reasons, point 10.2).

5.2.2 As pointed out by the opponents, D2 (paragraph [0029] and claim 9) discloses refrigerant compositions comprising one or more HFC-1234 refrigerants, the latter including both trans-HFC-1234ze and HFC-1234yf. In view of this teaching, the skilled person would have considered a mixture of trans-HFC-1234ze and HFC-1234yf as an alternative to the composition of the closest prior art. Even though D2 refers explicitly only to mixtures of cis and trans-HFC-1234ze, no prejudice is present in D2 that would have prevented the skilled person from adding HFC-1234yf to trans-HFC-1234ze when looking for a solution to the objective technical problem posed above.

5.2.3 The fact invoked by the patent proprietor that table I of D2 (*loc. cit.*) reports for HFC-1234yf a discharge temperature (168°F) slightly higher and a COP relative to HFC-134a (0.98) slightly lower than trans-HFC-1234ze would not have deterred the skilled person from adding HFC-1234yf to trans-HFC-1234ze since the objective technical problem is the mere provision of an alternative and not the achievement of an improvement. Moreover, as pointed out by the opponents, table I of D2 reports for HFC-1234yf also a significantly higher refrigeration capacity (1.10) as compared with trans-HFC-1234ze (0.70), which, if anything, would have been seen by the skilled person as an advantage deriving from the addition of HFC-1234yf. Additionally, the discharge temperature reported for HFC-1234yf is clearly below that of HFC-134a (175°F, see paragraph [0101] of D2).

5.2.4 The board disagrees with the opposition division's reasoning (appealed decision, pages 19 and 20), which - albeit with regard to claim 1 of auxiliary request 3 and not to claim 1 of the main request - on the one hand defined the objective technical problem as the

provision of an alternative composition, yet on the other hand concluded that the skilled person would have looked for "*alternatives with an improved COP*" and that D2 did not provide "*a motivation/pointer to look for mixtures with improved COP*". Firstly, the opposition division's definition of the objective technical problem as the provision of an alternative composition implies that any improved COP does not form part of this problem. The opposition division's reference to an improved COP in its inventive step examination is therefore in contradiction with its definition of the objective technical problem. Secondly, as set out above, when, as done by the opposition division, the objective technical problem is defined as the provision of an alternative, no incentive or pointer is required.

5.2.5 The patent proprietor further argued that the skilled person would not have expected a mixture of HFC-1234yf and trans-HFC-1234ze to be near-azeotropic. This argument is also not convincing since the provision of a near-azeotropic composition is not part of the objective technical problem. Moreover, this argument is not convincing, even accepting, *arguendo*, that the skilled person would have looked for a near-azeotropic composition as argued by the patent proprietor, and further even accepting the definition of "near-azeotropic" given in the patent (paragraphs [0015] and [0093] respectively corresponding to the passages on page 21, lines 3 to 18, and page 77, lines 2 to 6 of the application as filed). According to this definition, a composition is near-azeotropic if, after 50 weight percent of the composition is leaked from a vessel, such as by evaporation or boiling off, the difference in vapour pressure between the original composition and the composition remaining after leaking is less than 10 percent. More specifically, as pointed out by the opponents at the oral proceedings, a

composition containing e.g. 1% or 2% HFC-1234yf, the rest being trans-HFC-1234ze, would at most lose 1% or 2% of the initial vapour pressure upon leaking, i.e. less than 10%. The skilled person would thus have expected such a composition to be near-azeotropic within the meaning of the patent.

6. For these reasons, the board concluded that the subject-matter of claim 1 of the main request does not involve an inventive step when starting from a composition comprising trans-HFC-1234ze as disclosed in D2. Therefore, the ground for opposition under Article 100(a) EPC in combination with Article 56 EPC prejudices maintenance of the patent as granted. Hence, the main request is not allowable.

7. The opponents had requested non-admittance of the data reported in annex 1. Since the board arrived at the above conclusion even considering in substance the data in annex 1 (essentially identical to those reported in D21, see above), there was no need for the board to discuss this request at oral proceedings.

8. The opponents further submitted that the technical effect put forward by the patent proprietor was not derivable from the application as filed in line with decision G 2/21 and that, in any case, this effect was not achieved across the whole scope of claim 1 of the main request. However, since the board arrived at the above conclusion of lack of inventive step without taking these arguments into account, there was no need to consider these submissions by the opponents.

Auxiliary requests 1 to 11 - claim 1 - inventive step under Article 56 EPC

9. Auxiliary request 1

9.1 Claim 1 of auxiliary request 1 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1. A composition comprising* ***1 to 99 weight percent*** *trans-HFC-1234ze and* ***1 to 99 weight percent*** *HFC-1234yf*".

9.2 The patent proprietor's arguments in support of inventive step were the same as for the main request. Additionally, the patent proprietor submitted in writing that a further distinguishing feature over the disclosure in D2 was the recital of specific weight percent ranges for the HFC compounds included in the composition.

9.3 As set out above, the arguments put forward for the main request were not found to be convincing. Moreover, in the absence of any surprising or unexpected technical effect associated with the concentration ranges specified in claim 1 of auxiliary request 1, the claimed ranges are to be regarded as purely arbitrary and thus not contributing to any inventive activity.

9.4 Therefore, the subject-matter of claim 1 of auxiliary request 1 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 1 is not allowable.

10. Auxiliary request 2

Claim 1 of auxiliary request 2 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1. A composition comprising* ***a near-azeotropic composition consisting of 1 to 99 weight percent*** *trans-HFC- 1234ze and* ***1 to 99 weight percent*** *HFC-1234yf.*"

10.1 The patent proprietor's arguments in support of inventive step were the same as for the main request and auxiliary request 1. Additionally, the patent proprietor submitted in writing that while D2 only taught open compositions of HFC compounds, the claimed near azeotropic composition was closed. Furthermore, the claimed composition had been specified to be near-azeotropic, whereas D2 disclosed in paragraph [0035] that the disclosed compositions could be azeotropic, near-azeotropic or non-azeotropic without any further indication.

10.2 As set out above, the arguments put forward for main request and auxiliary request 1 were not found to be convincing. Moreover, the disclosure in paragraph [0029] and claim 9 of D2 referred to above renders obvious to the skilled person, looking for a composition alternative to trans-HFC-1234ze alone, any compositions including one or more HFC-1234 compounds, and thus also compositions consisting only of trans-HFC-1234ze and HFC-1234yf in any amounts. Additionally, the term "near-azeotropic" merely expresses an intrinsic property of any composition consisting of 1 to 99 weight percent trans-HFC-1234ze and 1 to 99 weight percent HFC-1234yf. As such, this term does not impart any additional limitation to the claimed subject-matter as conceded by the patent proprietor itself, see the reply to opponents 4/5' appeal, point 39 on page 8. This was confirmed by the patent proprietor also at the oral proceedings. As regards the involvement of the term "near-azeotropic" for the question of obviousness, the same considerations made by the board for the main request (see above) apply.

10.3 Therefore, the subject-matter of claim 1 of auxiliary request 2 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 2 is not allowable.

11. Auxiliary request 3

Auxiliary request 3 found allowable by the opposition division contains a single claim reading as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1. A* ***near-azeotropic*** *composition* ~~*comprising*~~ ***consisting of 1 to 99 weight percent*** *trans-HFC-1234ze and* ***1 to 99 weight percent*** *HFC-1234yf.*"

11.1 The patent proprietor's arguments in support of inventive step were the same as for the main request and auxiliary request 2. At the oral proceedings, the patent proprietor particularly referred to the reasoning of the opposition division and, as for auxiliary request 2, to the fact that D2 only taught open compositions of HFC compounds and the fact that claim 1 specified the composition to be near-azeotropic.

11.2 As set out above, neither the arguments put forward by the patent proprietor for main request and auxiliary request 2 nor the opposition division's reasoning were found to be convincing. It follows that the same considerations by the board as set out above for main request and auxiliary request 2 apply *mutatis mutandis* to the subject-matter of claim 1 of auxiliary request 3.

11.3 Therefore, the subject-matter of claim 1 of auxiliary request 3 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 3 is not allowable.

12. Auxiliary request 4

12.1 Claim 1 of auxiliary request 4 is identical to claim 1 of the main request.

12.2 It follows that the subject-matter of claim 1 of auxiliary request 4 does not involve an inventive step within the meaning of Article 56 EPC for the same reasons as claim 1 of the main request. Hence, auxiliary request 4 is not allowable.

13. Auxiliary request 5

Claim 1 of auxiliary request 5 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1.* ***A refrigeration apparatus or air-conditioning apparatus containing*** *a composition comprising trans-HFC-1234ze and HFC-1234yf.*"

13.1 The patent proprietor's arguments in support of inventive step put forward in writing were the same as for the main request with the additional submission that a further distinguishing feature of claim 1 was the recital of the particular apparatus in which the composition was contained.

13.2 However, as noted by the board in its preliminary opinion (point 18.5.2) and not contested by the patent proprietor at the oral proceedings, the use of a non-inventive composition within the claimed apparatus does not involve any inventive step. In particular, as pointed out by the opponents, D2 teaches (paragraphs [0010], [0052], [0053], [0078] and example 1) the use of the compositions disclosed therein in an apparatus as claimed.

13.3 It follows that the subject-matter of claim 1 of auxiliary request 5 does not involve an inventive step

within the meaning of Article 56 EPC. Hence, auxiliary request 5 is not allowable.

14. Auxiliary request 6

Claim 1 of auxiliary request 6 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1.* ***A mobile air-conditioning apparatus containing*** *a composition comprising trans-HFC-1234ze and HFC-1234yf.*"

14.1 The patent proprietor's arguments in support of inventive step put forward in writing were the same as for the main request and auxiliary request 5.

14.2 As noted by the board in its preliminary opinion (point 18.6.2) and not contested by the patent proprietor at the oral proceedings, the use of a non-inventive composition within the claimed apparatus does not involve any inventive step. In particular, as pointed out by the opponents, D2 teaches (paragraphs [0010], [0052], [0053], [0078] and example 1) the use of the compositions disclosed therein in an apparatus as claimed.

14.3 It follows that the subject-matter of claim 1 of auxiliary request 6 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 6 is not allowable.

15. Auxiliary request 7

Claim 1 of auxiliary request 7 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1.* ***An automobile air-conditioning apparatus containing*** *a composition comprising trans-HFC-1234ze and HFC-1234yf.*"

15.1 The patent proprietor's arguments in support of inventive step put forward in writing were the same as for the main request and auxiliary request 5.

15.2 As noted by the board in its preliminary opinion (point 18.7.2) and not contested by the patent proprietor at the oral proceedings, the use of a non-inventive composition within the claimed apparatus does not involve any inventive step. In particular, as pointed out by the opponents, D2 teaches (paragraphs [0010], [0052], [0053], [0078] and example 1) the use of the compositions disclosed therein in an apparatus as claimed.

15.3 It follows that the subject-matter of claim 1 of auxiliary request 7 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 7 is not allowable.

16. Auxiliary request 8

Claim 1 of auxiliary request 8 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1.* ***A refrigeration apparatus or air-conditioning apparatus containing*** *a composition comprising* ***1 to 99 weight percent*** *trans-HFC-1234ze and* ***1 to 99 weight percent*** *HFC-1234yf.*"

16.1 Therefore, claim 1 of auxiliary request 8 is the combination of claim 1 of auxiliary requests 1 and 5.

16.2 It follows that the same considerations by the board as regards lack of inventive step of auxiliary requests 1 and 5 apply *mutatis mutandis*. Therefore, the subject-matter of claim 1 of auxiliary request 8 does not involve an inventive step within the meaning of

Article 56 EPC. Hence, auxiliary request 8 is not allowable.

17. Auxiliary request 9

Claim 1 of auxiliary request 9 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1.* ***A mobile refrigeration apparatus or mobile air-conditioning apparatus containing*** *a composition comprising* ***1 to 99 weight percent*** *trans-HFC-1234ze and* ***1 to 99 weight percent*** *HFC-1234yf.*"

17.1 The patent proprietor's arguments in support of inventive step put forward in writing were the same as for auxiliary requests 1 and 6.

17.2 As set out above, these arguments were not found to be convincing. It follows that the subject-matter of claim 1 of auxiliary request 9 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 9 is not allowable.

18. Auxiliary request 10

Claim 1 of auxiliary request 10 reads as follows, the amendments to claim 1 of the main request having been highlighted by the board:

"*1.* ***An automobile air-conditioning apparatus containing*** *a composition comprising* ***1 to 99 weight percent*** *trans-HFC-1234ze and* ***1 to 99 weight percent*** *HFC-1234yf.*"

18.1 Therefore, claim 1 of auxiliary request 10 is the combination of claim 1 of auxiliary requests 1 and 7.

18.2 It follows that the same considerations by the board as regards lack of inventive step of auxiliary requests 1 and 7 apply *mutatis mutandis*. Thus, the subject-matter of claim 1 of auxiliary request 10 does not involve an

inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 10 is not allowable.

18.3 Auxiliary request 11

Claim 1 of auxiliary request 11 is identical to claim 1 of the main request. It follows that the same considerations as set out above for claim 1 of the main request apply. Therefore, the subject-matter of claim 1 of auxiliary request 11 does not involve an inventive step within the meaning of Article 56 EPC. Hence, auxiliary request 11 is not allowable.

Conclusions

19. None of the patent proprietor's claim requests is allowable under Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

U. Bultmann M. O. Müller

Decision electronically authenticated