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D E C I S I O N
of 17 January 2006

Case Number: T 0268/03 - 3.3.10

Application Number: 96906548.1

Publication Number: 0809621

IPC: C07C 17/269

Language of the proceedings: EN

Title of invention:
Synthesis of tetrafluoroethylene

Patentee:
E.I. DU PONT DE NEMOURS AND COMPANY

Opponent:
Dyneon GmbH & Co. KG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Admissibility of late filed requests (yes)"
"Main and auxiliary request 1: inventive step (no) - obvious alternative"
"Auxiliary request 2: inventive step (yes) - improvement credible - fair comparative test"

Decisions cited:
T 0038/84, T 0197/86

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0268/03 - 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 17 January 2006

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 18 December 2002 revoking European patent No. 0809621 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: R. Freimuth
Members: P. Gryczka
D. Rogers

Summary of Facts and Submissions

I. The mention of the grant of European patent 0 809 621, in respect of European patent application No. 96906548.1, which is based on the International application PCT/US96/02261 filed on 14 February 1996, was published on 4 August 1999.

II. Notice of opposition was filed in which revocation of the patent in its entirety was requested on the grounds of lack of novelty and inventive step (Article 100(a) EPC).

Inter alia, the following documents were cited during the opposition proceedings:

(1) DE-A-1 207 370,

(2) DE-A-1 170 935,

(3) DE-A-1 073 475 and

(4) M. Fedurtsa: "Mechanism of Thermal Decomposition of Octafluorocyclobutane", Ukrainskii Khimicheskii Zhurnal, (1987), Volume 53, pages 870 to 872.

III. In a decision issued in writing on 18 December 2002, the Opposition Division revoked the patent. The decision was based on a main request filed with a letter dated 9 March 2001 and an auxiliary request submitted during the oral proceedings before the Opposition Division.

The Opposition Division came to the conclusion that the subject-matter of claim 1 of the then pending main request was not novel with regard to the process disclosed in document (1).

Document (1) was considered as the closest prior art document for the subject matter of the independent claims 1 and 4 of the then pending auxiliary request. This document did not disclose the pressure range and the low conversion level specified in claim 1. However, document (1) taught that lower conversions resulted in less by-products. In addition, it could be derived from document (2) that the pressure range indicated in claim 1 was usual for this type of process. Hence, the subject matter of claim 1 of the then pending auxiliary request lacked inventive step.

The presence of an inert diluent as specified in claim 4 of the then pending auxiliary request was not disclosed in document (1). However, it was known from document (3) that yield and conversion could be improved in the presence of steam as diluent. Therefore, the subject matter of claim 4 of the then pending auxiliary request also lacked inventive step.

IV. On 24 February 2003, the Appellant (Proprietor of the patent in suit) lodged an appeal against the above decision. During the oral proceedings held before the Board on 17 January 2006 the Appellant defended the maintenance of the patent in suit on the basis of a main request and five auxiliary requests that were filed on 19 December 2005, superseding all previous requests.

The main request comprised a set of nine claims, independent claim 3 reading as follows:

"3. Process comprising pyrolyzing CF_2HCl to obtain tetrafluoroethylene as desired reaction product and C_4F_8 as undesired reaction product, and further comprising co-feeding C_4F_8 along with said CF_2HCl to the pyrolysis reaction in an amount effective to reduce the formation of C_4F_8 as undesired reaction product essentially without consuming C_4F_8 in the pyrolysis reaction, thereby increasing the yield of said tetrafluoroethylene reaction product, said pyrolysis reaction being carried out in the presence of diluent."

The auxiliary request 1 comprised a set of eight claims, independent claim 3 of that request differing from claim 3 according to the main request exclusively in the presence of steam as diluent, and in that the reaction is carried out at 750°C to 850°C.

The auxiliary request 2 comprised a set of two claims, the sole independent claim 1 reading as follows:

"1. Process comprising pyrolyzing CF_2HCl to obtain tetrafluoroethylene as desired reaction product and C_4F_8 as undesired reaction product, and further comprising co-feeding C_4F_8 along with said CF_2HCl to the pyrolysis reaction in an amount effective to reduce the formation of C_4F_8 as said undesired reaction product, essentially without consuming C_4F_8 in the pyrolysis reaction, thereby increasing the yield of said tetrafluoroethylene reaction product, said pyrolysis reaction being carried out under a total pressure of 0.8 to 1.2 atmosphere (89-121 kPa) to a conversion of

CF_2HCl of from 10% to 50%, wherein no inert diluent is used and wherein said C_4F_8 concentration is from 5% to 10% based on the combined weight of C_4F_8 and CF_2HCl."

V. The Appellant's arguments can be summarised as follows:

The new requests were filed at the oral proceedings before the Board in response to formal objections concerning the amendments made in the previous requests. Since the Appellant should have the opportunity to overcome these objections, the new requests should be admitted into the proceedings.

Whereas document (3) should be considered as the closest prior art, document (1) could also be considered as an adequate starting point for the assessment of inventive step of the process according to claim 3 of the main request and the first auxiliary request. The problem solved by the claimed process with regard to the process disclosed in document (1) was to provide a further process for preparing TFE with high yields. The solution to that problem as reflected by claim 3 was to carry out the pyrolysis of CF_2HCl in the presence of steam at a reaction temperature in the range of 750 to 850°C. Document (1) could not suggest this solution since it did not consider the possibility of carrying out the reaction in the presence of steam. In addition the recycling of the mixture of by-products, as taught by document (1), could not be applied in the presence of steam since the skilled person expected under these reaction conditions a hydrolysis of the chlorinated by-products. Document (3) did not mention the recycling of C_4F_8. Furthermore, documents (1) and (3) could not be combined so as to arrive at the claimed

process since both documents approached differently the problem underlying the patent in suit. Document (1) taught to improve the yield by pyrolysing under high conversion conditions and recycling the by-products which were also pyrolysed, whereas the process disclosed in document (3) was based on the findings that CF_2HCl was surprisingly stable to hydrolysis under conditions of pyrolysis in the presence of water. The method of steam dilution was known to the authors of document (1) since document (3) was filed five years before document (1) by the same applicants. Yet, document (1) was entirely silent upon steam dilution. On the other side, document (3) neither considered the role of C_4F_8, nor did it mention the recycling of any heavy components.

Thus, the process according to claim 3 of the main request and of the first auxiliary request involved an inventive step.

The process of claim 1 according to the second auxiliary request required levels of conversion of 10 to 50%. In contrast thereto, document (1) which reflected the closest prior art, disclosed a method involving high conversions, i.e. 84%, for which high temperatures were required. Under these conditions a large portion of unwanted by-products was formed which could be cracked at high temperature if they were separated and re-fed to the pyrolysis reaction. In this context document (1) disclosed the recycling of 4% by weight of C_4F_8. With regard to this prior art, the problem underlying the present invention could be seen as providing a method for achieving higher yields of desirable end products. The solution provided by the

patent in suit was characterized by conducting the pyrolysis under low conversions, i.e 10 to 50%, while co-feeding with the starting material 5 to 10% of C_4F_8. It could be deduced from the experimental data in the patent specification that when compared to a co-feeding of less than 5%, the co-feeding of 5 to 10% by weight of C_4F_8 reduced the amount of C_4F_8 produced and increased the yield in desirable end products. There was no indication in document (1) that C_4F_8 could have a significant role in the yield increase. In addition, document (1) was also completely silent with regard to the influence of the amount of C_4F_8 co-fed. None of the other cited prior art documents gave any indication in this respect.

Thus, the process according to claim 1 according to the second auxiliary request involved an inventive step.

VI. The Respondent's arguments can be summarised as follows:

Fresh requests were filed by the Appellant at a very late stage of the proceedings. In these requests, the expression "effective" present in claim 1 as granted was restored in the independent claims instead of the expression "controlled so as" present in the claims previously filed in the appeal proceedings. Since the expression "effective" had a broader meaning than the expression "controlled so as" this modification amounted to a broadening of the claims. However, the Appellant had given up broader claims containing the expression "effective" in the first instance proceedings and while filing the present appeal. Therefore, these requests should not be admitted into the proceedings.

The process according to claim 3 of the main and first auxiliary request only provided an alternative to that disclosed in document (1). This alternative was characterised by the fact that the pyrolysis reaction was carried out in the presence of steam as diluent. However, the use of steam as diluent in the pyrolysis of CF_2HCl was known to the skilled person from document (3). Neither document (1), nor document (3) mentioned that the by-products generated by the pyrolysis of CF_2CHCl would hydrolyse in the presence of steam. Thus, the alleged prejudice against using steam had not been proven.

Therefore, the process according to claim 3 of the main request and of the first auxiliary request did not involve an inventive step.

Document (1) could also be considered as the closest prior art document with regard to the process according to claim 1 of the second auxiliary request. Since a direct comparison between the claimed process and the closest prior art was missing, the technical problem could only be formulated so as to provide a further process for preparing TFE. The solution to that problem was to apply to the process known from document (1) conversions of 10 to 50% and adding more C_4F_8 in the feed. However, it was known to the skilled person that conversions of 10 to 50% were typical in the art and were linked with the achievement of higher yields of TFE. Furthermore, it could be expected that increasing the amount of C_4F_8 resulted in a higher production of TFE and HFP since it was known from document (4) that

these products were generated by the thermal decomposition of C_4F_8.

Therefore, the process according to claim 1 of the second auxiliary request did not involve an inventive step.

VII. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or subsidiarily on the basis of one of the auxiliary requests 1 to 5 filed during the oral proceedings before the Board.

The Respondent requested that the appeal be dismissed.

VIII. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

2. *Procedural matters: admissibility of the requests*

In response to the objections raised during the oral proceedings with regard to the support in the application as filed of the amended expressions "controlled so as" and "in the presence of inert diluent" in the independent claims of the various requests filed in the written stage of the appeal proceedings, the Appellant submitted fresh requests containing only amendments prompted by the objections raised. The Respondent was not hindered in its

argumentation with regard to novelty and inventive step by the amendments carried out in the claims of the new requests, since the amendments did not amount to create a fresh case necessitating a reconsideration of the objections and evidence brought forward so far by the Respondent against the patentability of the claimed subject matter. Consequently, the fresh requests are admitted into the proceedings.

The Respondent argued that the claims of the fresh requests were broader in scope than those pending before the Opposition Division and filed at the beginning of the appeal proceedings. The Appellant should not be allowed to broader the subject-matter claimed during appeal proceedings.

However, in accordance with the established jurisprudence of the Boards of Appeal of the EPO, in the present case where the Proprietor of the patent is appealing against the revocation of its patent, the Proprietor is entitled to revert to a more broadly worded version of the patent even if it had filed a restricted version before the opposition division and at the beginning of the appeal proceedings (Case Law of the Boards of Appeal of the EPO, 4th. Edition 2001, VI.I.3.1.2, (b), (bb) (1)). Thus, the limitation of claims during *inter partes* proceedings is regarded as a formulation attempt to respond to the objections raised rather than implying an irrevocable renunciation of subject-matter claimed. Therefore, in the present case the appealing Proprietor is not prevented from returning during appeal proceedings to a broader version of its claims.

Main and auxiliary request 1

2. The main and the auxiliary request 1 contain an independent claim 3 according to which the pyrolysis process is carried out in the presence of diluent. The process in accordance with claim 3 of the auxiliary request 1 is more precisely defined than in claim 3 of the main request, since the diluent is defined in the former as "steam" and a reaction temperature range is indicated (see point IV above). Thus, the subject-matter of claim 3 according to auxiliary request 1 is covered by that of claim 3 of the main request. In case the embodiment according to the auxiliary request 1 lacked patentability, such a line of requests would mandatorily result in the conclusion that the subject-matter of the preceding main request cannot be patentable either. Hence, in the present case it is appropriate to examine first whether the objections raised by the Respondent prejudice the patentability of the subject-matter of claim 3 of the auxiliary request 1.

Claim 3 of the auxiliary request 1

3. *Amendments*

Claim 3 is based on the combination of claim 1 and claim 7 of the application as filed. The reaction temperature of 750°C to 850°C indicated in claim 3 is disclosed on page 4, line 26 of the application as filed.

It is not contested that when compared to the patent as granted, claim 3 of the auxiliary request 1 does not extend the protection conferred thereby.

Consequently, the amended claim 3 fulfils the requirements of Article 123(2) and (3) EPC.

4. *Novelty*

The Respondent did not raise any objection with regard to the novelty of the subject matter of claim 3 of the auxiliary request 1. The Board on its own does not see any reason to take a different view. Hence, it is unnecessary to go into more details in this respect.

5. *Inventive step*

5.1 For the assessment of inventive step in accordance with the "problem-solution approach", it is necessary to establish the closest prior art in order to determine in the light thereof the technical problem which the invention addresses and solves. The "closest prior art" is normally represented by a prior art document disclosing subject-matter aiming at the same objective as the claimed invention and having the most relevant technical features in common (Case Law of the Boards of Appeal of the EPO, 4th. Edition 2001, I.D.3.1).

5.2 The patent in suit is directed to a process for pyrolysing CF_2HCl to obtain tetrafluoroethylene (TFE) comprising co-feeding C_4F_8 along with said CF_2HCl to the pyrolysis reaction.

5.3 The preparation of TFE by pyrolysis of CF_2HCl involving the co-feeding C_4F_8 along with said CF_2HCl to the pyrolysis reaction belongs to the state of the art as evidenced by document (1).

Document (1) discloses a process for the manufacture of TFE, which comprises pyrolysing CF_2HCl and after separation of the TFE and lower boiling materials obtained, mixing the by-products formed which have a higher boiling point than TFE with fresh CF_2HCl and subjecting the mixture to pyrolysis (claims 1 and 4).

According to the sole example of document (1) a mixture comprising CF_2HCl and 4.5 kg C_4F_8 was subjected per hour to a pyrolysis in a platinum tube heated to 940°C. After leaving the reaction tube, a mixture containing TFE, perfluoropropylene (HFP) and 5.0 kg C_4F_8 was obtained per hour. The yield of TFE was 94% at a conversion rate of 84%. When, under the same reaction conditions, only the unreacted CF_2CHCl was subjected to further pyrolysis, the yield was merely 72% (example, columns 3 and 4).

Thus, document (1) discloses a process for pyrolysing CF_2CHCl to produce TFE comprising co-feeding C_4F_8. In addition, the process is operated without consuming C_4F_8, since 4.5 kg thereof are co-fed into the reactor whereas 5.0 kg thereof leave the reaction tube.

Neither party contested that document (3), which was addressed by the Appellant as a possible starting point, discloses a process having less features in common with the claimed process than the process according to document (1). In particular the most relevant feature

of the claimed process, namely the co-feeding of C_4F_8 without its consumption, is not disclosed in document (3).

Therefore, the Board considers in agreement with the Appellant and the Respondent, that document (1) represents the closest prior art and starting point in the assessment of inventive step.

5.4 Having regard to this prior art, both parties submitted that the technical problem underlying the subject-matter of the patent in suit as defined in claim 3 of the auxiliary request 1 was to provide a further process for preparing TFE in high yields.

5.5 The solution to this problem proposed by the patent in suit is the process according to claim 3 of the auxiliary request 1, which is characterized by the features that the pyrolysis reaction is carried out at a temperature of 750 to 850°C in the presence of steam as diluent.

5.6 The Respondent never disputed that the claimed process produces TFE in high yields and the Board is not aware of any reason for challenging that finding. The specification of the patent in suit reveals in paragraph [0012] and in the examples given the successful use of steam, on the one hand, and of the temperature range claimed, on the other.

5.7 It remains to be decided whether or not the proposed solution to that objective technical problem, namely the process according to claim 3 of the auxiliary request 1, is obvious in view of the state of the art.

5.7.1 The skilled person looking for an alternative to the process disclosed in document (1) would turn its attention to document (3) which belongs to the same technical field and addresses the problem underlying the patent in suit of preparing TFE. This latter document discloses a process for the manufacture of TFE by the pyrolysis of CF_2HCl, wherein the pyrolysis is operated in the presence of superheated steam. In example 1 of document (3) the pyrolysis is carried out in the presence of steam at a reaction temperature of 840°C (column 4, lines 30 to 33). In addition document (3) teaches that the conversion is increased to about 65 to 70 % and a yield of 90 to 94 % TFE is achieved when pyrolysing a mixture of CF_2HCl and steam (column 1, lines 39 to 46). Thus, document (3) clearly teaches that the pyrolysis of CF_2HCl can be operated in the presence of steam at 840°C and results in high yield.

The Board concludes from the above that document (3) gives a clear incentive on how to solve the technical problem underlying the patent in suit of providing a further process for preparing TFE with high yields, namely by operating the process known from the closest prior art document (1) in the presence of steam as diluent at a temperature of 840°C, i.e. within the claimed range, thereby arriving at the solution proposed by the patent in suit.

5.7.2 The Appellant argued in support of obviousness that the skilled person expected under these reaction conditions a hydrolysis of the chlorinated products thereby dissuading him from applying the teaching of document (3) in the present case. However, according to document

(3), CF_2HCl was not hydrolyzed by steam under these reaction conditions (column 2, lines 45 to 49). Thus, even if the skilled person would have postulated the hydrolysis of CF_2HCl or of the fluorinated by-products in the presence of steam, as argued by the Appellant, document (3) teaches that this side reaction does not take place. In addition, since document (3) gives a strong hint to use steam, the skilled person would not have been discouraged from following this clear teaching. On the contrary, in view of the incentive from document (3) to use steam, the skilled person was not deterred from applying the teaching of that document and would try to operate the reaction in the presence of steam with a reasonable expectation of success. This is confirmed in the specification of the patent in suit which acknowledges that steam had been used in the prior art in the pyrolysis of CF_2HCl (page 2, lines 21 to 23).

Thus, in the absence of any substantiating facts and corroborating evidence, the Appellant arguments are mere speculations that the Board does not find convincing.

5.8 For these reasons, the subject-matter of claim 3 according to the auxiliary request 1 turns out to be merely the result of an obvious combination of the teaching of documents (1) and (3) and thus lacks the required inventive ingenuity (Article 56 EPC).

Consequently, the auxiliary request 1 must be refused.

Claim 3 of the main request

6. Claim 3 of the main request covers the subject-matter of claim 3 according to the auxiliary request 1. Since the Board arrived at a negative conclusion with regard to inventive step of the process as defined in claim 3 of the auxiliary request 1, the process according to claim 3 of the main request necessarily lacks inventive step for the same reasons (see point 5 above).

Therefore, the main request must also be refused.

Auxiliary request 2

7. *Amendments*

Claim 1 according to the auxiliary request 2 is based on the combination of claims 1, 3, 4 and 5 of the application as filed. Dependent claim 2 corresponds to claim 6 of the application as filed.

It is not contested that when compared to the patent as granted, claim 1 of the auxiliary request 2 does not extend the protection conferred thereby.

Consequently, the claims fulfil the requirements of Article 123(2) and (3) EPC.

8. *Novelty*

The novelty of the subject matter of claim 1 of the auxiliary request 2 has not been contested. The Board on its own does not see any reason to take a different

view. Hence, it is unnecessary to go into more details in this respect.

9. *Inventive step*

9.1 Both parties considered that document (1) also represents the closest prior art and starting point for the assessment of inventive step for the process according to claim 1 of the auxiliary request 2. The Board on its own does not see any reason to take a different view on the grounds given in point 5.3 above.

The mixture subjected to pyrolysis according to the sole example of document (1) contains 4% by weight of C_4F_8 based on the combined weight of C_4F_8 and CF_2HCl (see Appellant's statement of grounds, page 10, paragraph 1) and the conversion rate of CF_2HCl was 84% (further details in point 5.3 above).

9.2 Having regard to this prior art, the Appellant submitted that the technical problem underlying the subject-matter of the patent in suit as defined in claim 1 of the auxiliary request 2 was to provide a process achieving **higher** yields of TFE and of the useful by-product HFP.

9.3 As a solution to this problem the patent in suit proposes the process according to claim 1 of the auxiliary request 2, which is characterized by co-feeding C_4F_8 in a concentration from 5 to 10 % by weight based on the combined weight of C_4F_8 and CF_2HCl and by carrying out the process so as to achieve a conversion rate of CF_2HCl of from 10% to 50%.

9.4 The parties were divided on the matter as to whether or not the evidence presented, namely the examples of the patent specification, convincingly showed that the technical problem defined herein above (see point 9.2) was successfully solved by the claimed process. In this context the Respondent argued that no example truly reflected the process disclosed in document (1) and that, consequently no improvement with regard to the closest prior art could be identified.

The examples in the specification of the patent in suit, while keeping the conversion rate constant and within the claimed range, were carried out by modifying the concentration of C_4F_8 in the feed (tables 1, 2 and 3 on page 5). Some of the examples show a concentration of C_4F_8 in the feed within the claimed range of from 5 to 10 % by weight. This finding applies to the examples indicated in the last line of each of the tables 1 and 2 and to the examples in the second to the fourth line of table 3. The other examples of those tables, which involve a feed containing less than 5% by weight of C_4F_8, thus, are not in accordance with the invention. Nevertheless, these examples serve for comparative purposes since they truly reflect the impact of an essential technical feature distinguishing the claimed process from the closest prior art, namely a concentration of from 5 to 10 % by weight of C_4F_8 in the feed versus a lower concentration in the prior art. Thus, the comparison provided by the different examples of the patent in suit is fair and to be taken into consideration when assessing inventive step (see decision T 197/86, OJ EPO 1989, 371).

The experimental data presented in the tables 1 to 3 of the patent in suit show that the yield in TFE and HFP is higher when the concentration of C_4F_8 in the feed is in accordance with the invention. According to table 1 the yield of TFE and HFP is 96,5% when using a concentration of 5,08% C_4F_8 in the feed, i.e. within the claimed range, whereas the yield is 91,7 to 95,8% when the concentration is below the claimed threshold. Corresponding results are given in table 2 which reports a yield of 96,1% when operating the process within the claimed concentration range compared to a yield of 93,2 to 94,6% when operating it below that range, and in table 3 reporting a yield of 95,3 to 95,9% compared to 94,5%.

Although, the increase in yield observed when the feed contains above 5% by weight of C_4F_8 is small, it was not contested that this result is significant and substantial on an industrial scale (see decision T 38/84, OJ EPO 1984, 368).

For theses reasons, the Board is satisfied that the technical problem underlying the patent in suit has been successfully solved.

9.5 It remains to be decided whether or not the proposed solution to that objective technical problem is obvious in view of the state of the art.

9.5.1 Document (1) makes no mention of any effect linked to the concentration of C_4F_8 in the inlet feed. In addition, since document (1) illustrates only a process in which the concentration of C_4F_8 in the feed was 4% by weight, the skilled person cannot derive from that document any

teaching with regard to the effect of the concentration of C_4F_8 on the yield of the desired products. Thus, the skilled person cannot get any hint from document (1) on its own, that an improvement of the yield could be achieved by increasing the concentration of C_4F_8 in the feed to a range from 5% to 10% by weight.

9.5.2 Document (3) is directed to a process for pyrolysing CF_2HCl to TFE, but it does not describe to operate the pyrolysis by co-feeding C_4F_8 along with said CF_2HCl to the pyrolysis reaction. Consequently, document (3) cannot point to the claimed solution which comprises co-feeding C_4F_8 within the particular concentration range claimed.

9.5.3 The Respondent argued that the skilled person was expecting that the co-feeding of C_4F_8 would result in an increase of the yield of TFE and HFP since it was known from document (4) that C_4F_8 was transformed into these products by thermal decomposition.

Document (4) relates to the mechanism of the decomposition of C_4F_8. However, this document does not address the decomposition of C_4F_8 in the context of the pyrolysis of CF_2HCl. In addition, the process according to the patent in suit is operated essentially without consuming C_4F_8 (see claim 1) whereas document (4) relates to the decomposition of C_4F_8, said decomposition involving obviously a consumption of C_4F_8. Thus, that document is silent on the matter of increasing the yield of TFE and HPE in the pyrolysis of CF_2HCl with the consequence that the Respondent's allegation is not supported by the facts. Any explanation now offered by the Respondent of the effect achieved by the claimed

process is mere hindsight since the skilled person could not get any incentive from document (4) to carry out the pyrolysis of CF_2HCl by co-feeding C_4F_8 in a particular concentration in order to improve the yield of TFE and HFP, essentially without consuming C_4F_8.

Consequently, document (4) on its own or in combination with document (1), does not point to the claimed solution to the technical problem defined herein above.

9.6 Therefore, the process according to claim 1 of the auxiliary request 2, and for the same reason, that according to dependent claim 2 involve an inventive step within the meaning of Articles 52(1) and 56 EPC.

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 maintain the patent on the basis of claims 1 and 2 of the auxiliary request 2 filed at the oral proceedings before the Board and a description yet to be adapted.

The Registrar: The Chairman:

C. Moser R. Freimuth