BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 21 October 1996

Case Number: T 0653/93 - 3.3.1

Application Number: 90309772.3

Publication Number: 0417980

IPC: C10G 21/00

Language of the proceedings: EN

Title of invention:
Process for the production of process oils with a low content of polycyclic aromatic compounds

Applicant:
BP Oil Deutschland GmbH

Opponent:
-

Headword:
Process oils/BP

Relevant legal provisions:
EPC Art. 54(1), 56

Keyword:
"Novelty (yes) - processes defined by a 'multiple selection' of paramters"
"Inventive step (yes) - non-predictable technical effect"

Decisions cited:
T 0453/87; T 0245/91; T 0500/89; T 0198/84; T 0026/85; T 0666/89

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0653/93 - 3.3.1.

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 21 October 1996

Appellant: BP Oil Deutschland GmbH
Neuhöfer Brükenstrasse 127-152
21107 Hamburg (DE)

Representative: Preece, Michael
BP International Limited
Patents and Agreements Division
Sunbury Research Centre
Chertsey Road
Sunbury-on-Thames
Middlesex TW16 7LN (GB)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 26 January 1993 refusing European patent application No. 90 309 772.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. J. Nuss
Members: P. Krasa
R. E. Teschemacher

Summary of Facts and Submissions

I. The Appellant (Applicant) lodged an appeal against the decision of the Examining Division refusing European patent application No. 90 309 772.3 comprising seven claims.

Independent Claim 1 reads:

"Process for the production of process oils with an aromatic content of more than 50 weight % according to ASTM D 2007 and a content of polycyclic aromatic compounds of less than 3 weight % according to IP 346 characterised in that primary extract, obtained by treatment of a lubricating oil distillate originating from a mineral oil, is extracted in a counter current extraction column with a polar solvent wherein the volume ratio of the primary extract feed to the polar solvent is in the range 1:1 to 1:1.8 and the head temperature in the counter current extraction column is 50-90°C and the bottom temperature in the column is 20-60°C and wherein the head temperature is higher than the bottom temperature."

II. In its decision, the Examining Division held that the subject-matter of Claim 1, did not meet the requirements of Articles 52(1) and 54 EPC having regard to the document

(1) DE-A-2 343 238

which was mentioned in the application as originally filed and was the only document cited in the Search Report.

Further, the Examining Division held that the subject-matter of Claim 1 - even if its novelty could be established - did not involve an inventive step, since

- it resulted from a mere optimisation of the reaction conditions disclosed in document (1), which was deemed to be within the competence of a person skilled in the art,

- the range of the column head temperature (CHT) was too broad and too close to the CHT range disclosed in document (1) as to form the basis of a selection invention, and

- since no advantage had been shown to be linked to the volume ratio of the primary extract feed to the polar solvent (VR) as defined in Claim 1.

III. The Appellant argued that the process of Claim 1 was novel as it referred to a combination of three process features with selected ranges and of product features of special limits, which combination was not disclosed in document (1). He further submitted that the claimed process was also inventive, since the underlying technical problem, which was seen in providing a process oil containing aromatics in high concentration but with a low level of polycyclic aromatics (PCA), was not addressed in document (1). He also maintained, relying on experimental evidence, that the claimed process features were critical for obtaining the product aimed at.

IV. The Appellant requested that the decision under appeal be set aside and a patent be granted on the basis of Claims 1 to 6, submitted on 8 January 1996 (containing an amendments to the original Claims 2 and 3, and deleting original Claim 7) in response to a communication from the Board.

Furthermore, the Appellant requested oral proceedings only in case the Board was unable to allow, on the basis of the written record, his 'Principal Request' set forth together with an 'Auxiliary Request' in the Grounds of Appeal, both together being superseded by the above request of 3 January 1996.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

Claim 1 is as originally filed. The only amendments are to be found in dependent claims 2 and 3 and specify the extract fed to the process as "primary" extract for the sake of consistency of terminology (Rule 35(13) EPC). These amendments are supported by the application documents as originally filed (see page 3, lines 28 and 34, respectively) and, thus, comply with the requirements of Article 123(2) EPC.

3. *Novelty*

3.1 Document (1) discloses a multi-step process for the treatment of a mineral-lubricating oil in which a primary extract resulting from a first extraction step undergoes in a second step a counter current extraction with furfural in an extraction column. While designated as being "preferred" the following numerical ranges are the only ones actually disclosed in document (1) for the respective process parameters:

- a CHT of from 40°C to 100°C,
- a column bottom temperature (CBT) of from 35°C to 80°C, and
- a VR of 100 : 50-250, i.e. 1 : 0.5-2.5.

After removal of the furfural, the pseudo-raffinate obtained, which whenever containing more than 50 weight % of aromatics, does not contain less than 3 weight % of PCA (the lowest value given for polar hydrocarbons being 3.6 weight %; see the examples), may be freed from waxes and paraffines and then be hydrogenated (see page 4, lines 12 to 32, page 5 lines 22 to 25; claims 1, 8 and 10).

The Examining Division argued that all the process features of the process of Claim 1 of the application in suit were explicitly disclosed in document (1), with the exception only of a PCA level of less than 3 weight% in the obtained product. However, according to the Examining Division, this latter feature was not a distinguishing one, since the Appellant failed to demonstrate that "... the choice of process features specified in Claim 1 did **not necessarily** give rise to a PCA level of less than 3%". The subject-matter of Claim 1 of the application in suit was, so the Examining Division concluded, therefore anticipated by document (1).

3.2 The Board cannot accept this line of argument.

3.2.1 First of all, it has to be emphasised that in situations like the present one the question of novelty cannot be answered by contemplating the ranges of the various parameters separately. This would be, in the Board's judgement, an artificial and unjustified approach, since **not the specified ranges** of the three respective parameters or their agglomeration **form the subject-matter of Claim 1, but the group of processes** defined by the combination of these ranges, **which is rather small** when compared with the group of processes disclosed in document (1).

3.2.2 Bearing in mind this principle, it is to be noted that the presently claimed group of processes, which are characterised by the combination of the three process parameters

- a CHT of 50 to 90 °C,
- a CBT of 20 to 60 °C, and
- a VR of 1:1 to 1:1.8,

was not explicitly disclosed in document (1). This citation contains no pointer to the particular combination of the ranges given for the three parameters which fall completely (CHT and VR) or in part (CBT) within the respective ranges explicitly disclosed in document (1). The group of processes of Claim 1 of the application in suit can also be said to result from a "multiple (i.e. threefold) selection". The Examining Division has failed to show that the person skilled in the art, when applying the teaching of document (1), had any reason to concentrate on the combination of the sub-ranges as defined in Claim 1 of the application in suit, e.g. because the omitted parts of the ranges disclosed in document (1) could be recognised as the less interesting ones (see T 0133/92, No. 3.2.1 of the reasons for the decision, not published in the OJ EPO). In the absence of any indication to this end, the "combined selection" does not emerge from document (1) as being implicitly disclosed for the skilled man (see T 0453/87, No. 7.2 of the reasons for the decision, not published in the OJ EPO; T 0245/91, No. 2.8 of the reasons for the decision, not published in the OJ EPO).

3.3 It follows that the subject-matter of Claim 1 was not disclosed in document (1).

The finding that Claim 1 relates to a new technical teaching is corroborated by experimental evidence provided by the Appellant which is compiled in the following table.

	CHT (°C)	CBT (°C)	VR	AROMATIC CONTENT (WEIGHT%)	PCA CONTENT (WEIGHT%)
Example 1	70	35	1:1,5	70,2	2,1
Example 2	77	41	1:1,5	67,2	1,9
Example 3	88	45	1:1,5	66,5	1,2
Comparative Test A	100	55	1:1,5	44,3	0,6
Comparative Test B	65	38	1:0,55	70,1	9,6
Comparative Test C	85	37	1:0,85	51	6,4
Comparative Test D	65	40	1:0,85	46	2,1
Comparative Test E	65	43	1:2,0	45	0,9
Comparative Test F	85	48	1:2,0	44	1,3

The comparative tests A to F (A and B disclosed in the application as published in table 2; C to F submitted as Appendix 1 to the grounds of appeal) show that process oils having an aromatic content of more than 50 weight% in combination with an PCA-content of less than 3 weight%, as required by Claim 1 of the application in suit, cannot be obtained by processes which are close to, but nevertheless outside of the range of processes claimed. To the contrary, examples 1 to 3 show that processes according to Claim 1 of the application in suit yield the desired process oils.

3.4 The above experimental data further demonstrate that the said combination of aromatic and PCA content in a process oil is not the inevitable result of the process disclosed in document (1), but is only obtained by particular combinations of process parameters and might

even be regarded as a further distinguishing, functional feature of the processes of present Claim 1 (see T 0500/89, Nos. 3.2 and 3.3 of the reasons for the decision, not published in the OJ EPO). That such combinations of process features would lead to the said results was neither explicitly nor implicitly disclosed in document (1) but for the first time only in the application in suit.

3.5 For the above reasons, the Board concludes that the subject matter of Claim 1 of the application in suit is novel and meets the requirements of Articles 52 and 54(1) EPC.

3.6 This finding is not at variance with the decisions T 0198/84 (OJ EPO 1985, 209) and T 0026/85 (OJ EPO 1990, 22) which both were concerned with so-called "selections" from a numerical range of only one single parameter and, in the Board's judgement, are therefore not applicable in the present case of a "multiple selection" (see T 0453/87, No. 6 of the reasons for the decision, not published in the OJ EPO; T 0245/91, No. 2.8 of the reasons for the decision, not published in the OJ EPO). It is neither in conflict with the decision T 0666/89 where a composition of matter resulting from a twofold selection was found to be anticipated because of a clear teaching in the prior art regarding the claimed particular combination of features (T 0666/89, No. 5 of the reasons for the decision, OJ EPO 1993, 495).

4. *Inventive Step*

4.1 The technical problem to be solved with respect to document (1), which represents the only relevant state of the art, can be seen in providing a process yielding process oils characterised by a high level of aromatic content of more than 50 weight% and a low level of PCA

content of less than 3 weight %. In view of the available experimental data (see No. 3.3), the Board is satisfied that this problem is solved by the processes of Claim 1 of the application in suit.

4.2 The fact that the single ranges of process parameters are either encompassed totally or in part by the respective ranges known from document (1) does not mean that it was obvious for the notional skilled person to combine them purposively with the aim to solve the existing technical problem. This combination is, in the Board's judgement, not merely the result of an optimisation within the competence of the skilled person, since in document (1) this problem was neither addressed nor was it foreshadowed that the particular sets of parameter ranges defining the present processes would provide the desired solution. Thus, this citation contained no incentive to search within the range of processes generically disclosed in it for the specific processes now claimed, the effects of which could not be foreseen by the skilled person.

4.3 The Board can neither accept the Examining Division's other arguments denying inventive step for the subject-matter of Claim 1 (see No. II above).

4.3.1 As already stated, the subject matter of Claim 1 is a well defined group of processes and not merely an agglomeration of (unrelated) ranges of parameters (see No. 3.2.1). Thus, a judgement on inventive step must - as must a judgement on novelty - deal with the **processes as defined by the combination** of parameter ranges and not with the elements of the combination separately. Since it is inappropriate, therefore, to

single out one feature of the processes, the argument must fail that the subject-matter of Claim 1 lacks inventive step because the CHT-range is too broad and too close to that of document (1).

4.3.2 Further, in the present case the Appellant has shown that the processes claimed give rise to an advantageous technical effect which could not be expected by the skilled person in the sense that the claimed group of processes lead to a class of process oils not suggested by document (1). At least in these circumstances it is not deemed to be necessary for the Appellant to demonstrate to what extent this effect is linked to one particular feature of the combination of process parameters such as the VR.

4.4 For these reasons, the Board concludes that the subject-matter of Claim 1 was not obvious for the skilled person and, therefore, involves an inventive step. Dependent Claims 2 to 6 relate to particular embodiments of Claim 1 and derive their patentability from that of Claim 1.

5. In these circumstances and in the light of the above findings, it was not necessary to summon the Appellant to oral proceedings according to his auxiliary request.

Order

for these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent with the following documents:

   - Claims 1 to 6 submitted on 8 January 1996,
   - pages 1 to 8 of the description as originally filed, and
   - figure 1/1 as originally filed.

The Registrar: The Chairman:

E. Görgmaier A. Nuss