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Datasheet for the decision of 4 September 2007

Case Number: T 1256/04 - 3.3.05

Application Number: 00128544.4

Publication Number: 1116689

IPC: C01B 3/38

Language of the proceedings: EN

Title of invention:
Process and reactor for the preparation of hydrogen and carbon monoxide rich gas

Applicant:
Haldor Topsoe A/S

Headword:
Soot suppression/HALDOR TOPSOE

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
"Amendments not allowable (both requests)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1256/04 **-** 3.3.05

D E C I S I O N
of the Technical Board of Appeal 3.3.05
of 4 September 2007

Appellant: Haldor Topsoe A/S
Nymollevej 55
DK-2800 Kgs. Lyngby (DK)

Representative: -

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 2 June 2004 refusing European application No. 00128544.4 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: J.-M. Schwaller
Members: B. Czech
H. Preglau

Summary of Facts and Submissions

I. The appeal is from the decision of the examining division refusing European patent application No. 00128544.4 on the ground of lack of novelty.

II. With its statement of grounds of appeal dated 8 October 2004, the appellant filed two fresh independent claims 1 as main and auxiliary requests, respectively. It requested that the contested decision be set aside and that a patent be granted on the basis of claim 1 according to the main request, or in the alternative, on the basis of claim 1 according to the auxiliary request. It also requested oral proceedings should the board decide not to allow any of these requests.

III. Claim 1 according to the main request reads as follows:

"*1. Use of a reactor for suppression of soot formation in the preparation of hydrogen and/or carbon monoxide rich gas comprising within a pressure shell a refractory lining on an inner wall of the shell, an upper portion adapted to receive a hydrocarbon feedstock and an oxygen containing atmosphere and to partially oxidise the feedstock with oxygen, and a lower portion which may be provided with a reforming catalyst adapted to receive and steam reform the partially oxidised gas from the upper portion, and a reforming catalyst arranged at least on surface of the upper portion of the reactor.*"

Claim 1 according to the auxiliary request 1 reads as follows:

"*1. Use of a reactor for suppression of soot formation in the preparation of hydrogen and/or carbon monoxide rich gas comprising within a pressure shell a refractory lining on an inner wall of the shell, an upper portion comprising a burner mounted at the top of the reactor which is adapted to receive a hydrocarbon feedstock preheated to 400 – 700°C and to mix said hydrocarbon feedstock with steam and oxygen containing atmosphere so as to provide a process gas with an oxygen/carbon mole ratio between 0.5 to 0.7 and steam/carbon mole ratio between 0.5 and 1.5, and a lower portion which may be provided with a reforming catalyst adapted to receive and steam reform the partially oxidised gas from the upper portion, and a reforming catalyst arranged at least on surface of the upper portion of the reactor.*"

IV. In its statement of grounds of appeal, the appellant argued that the amendments to the claims found a basis in the application as filed and that the claimed subject-matter was novel and inventive.

V. In the annex to the summons to oral proceedings, the board inter alia questioned the allowability of the two amended claims 1 under Article 123(2) EPC, pointing out in particular that the said claims were not limited to a use in partial oxidation and autothermal catalytic reforming of a hydrocarbon feedstock and that they merely referred to a reforming catalyst but not to a steam reforming catalyst arranged in the upper part of the reactor. Furthermore, the board pointed out that

claim 1 according to the auxiliary request, in contrast to what was described in the application as filed, also related to a process wherein steam was mixed with the feedstock but wherein catalytic steam reforming in the lower reactor part was merely optional.

A time limit was set for filing amended application documents.

VI. In its reply dated 4 July 2007, the appellant only indicated that it would not attend the oral proceedings. It did not file further amended claims.

VII. Oral proceedings were held on 4 September 2007 in the absence of the appellant. At the end of the oral proceedings the board announced its decision.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. Allowability of the amendments

2.1 Independent claims 1 and 5 of the application as filed respectively refer specifically to processes involving "*partial oxidation*" (claim 1) and "*partial oxidation and/or autothermal steam reforming*" (claim 5) "*of a hydrocarbon feedstock*". Moreover, they specifically refer to a catalyst "*active in steam reforming*", i.e. to a steam reforming catalyst, arranged at least on surface of the reactor upper portion. Neither the

claims nor the description of the application as filed refer to other processes for preparing hydrogen and/or carbon monoxide rich gas or to other kinds of reforming catalysts.

2.2 Present claim 1 relates to the "*use of a reactor for suppression of soot formation in the preparation of hydrogen and/or carbon monoxide rich gas*". The reactor to be used is defined in terms of apparatus features and comprises a "*pressure shell*", a "*refractory lining on an inner wall*" thereof, an "*upper portion*", a "*lower portion*" and a "***reforming** catalyst arranged at least on the upper portion of the reactor*" (emphasis added by the board).

2.2.1 According to claim 1, the said reactor is further characterised in that said "*upper portion*" is "***adapted to** receive a hydrocarbon feedstock and an oxygen containing atmosphere and to **partially oxidise** the feedstock with oxygen*" (emphasis added by the board). In view of the wording used ("*adapted to*"), these features do not constitute mandatory steps of the method for the "*preparation of hydrogen and/or carbon monoxide rich gas*", to which claim 1 relates.

2.2.2 Moreover, according to claim 1, the "***lower** portion may be provided with a reforming **catalyst** adapted **to** receive and **steam reform** the **partially oxidised** from the upper portion*" (emphasis added by the board). Considering the wording used ("*may*"), these features are only optional. Moreover, claim 1 does not refer to steam reforming in connection with the "*reforming catalyst*" arranged in the said upper part.

2.2.3 Consequently, the presently claimed use is not limited to the "*preparation of hydrogen and/or carbon monoxide rich gas*" by **partial oxidation** or **autothermal catalytic reforming** and the "*reforming catalyst*" arranged in the upper portion of the reactor is not necessarily a **steam reforming** catalyst.

2.3 By virtue of these generalisations, amended claim 1 thus covers subject-matter which extends beyond the content of the application as filed. The amendments in question are thus not allowable under Article 123(2) EPC.

Auxiliary request

3. Allowability of the amendments

3.1 In view of its wording, present claim 1 is also not limited to the use of a reactor having a **steam reforming** catalyst arranged in the upper portion of the reactor. As in the case of claim 1 according to the main request, the generalisation of the type of catalyst arranged in the upper part finds no support in the application as filed.

3.2 Moreover, the application as filed differentiates between, on the one hand, non-catalytic partial oxidation processes wherein hydrocarbons are reacted with oxygen, and, on the other hand, autothermal catalytic reforming, wherein hydrocarbons are first partially reacted with oxygen, the residual hydrocarbons then being reacted catalytically with steam mixed to the feed (see page 1, line 14 to page 3, line 6). Present claim 1 however refers to a process

wherein steam is mixed with the feedstock, but wherein catalytic steam reforming in the lower reactor part is merely optional (see "***may be*** *provided with a reforming catalyst*"). Such a process is, however, not disclosed in the application as originally filed.

3.3 Amended claim 1 thus covers subject-matter which extends beyond the content of the application as filed. Consequently, the amendments in question are not allowable under Article 123(2) EPC.

4. In the absence of a reply from the appellant to these objections already raised in the annex to the summons to oral proceedings, there is no reason for the board to deviate from its earlier negative opinion concerning the allowability under Article 123(2) EPC of the respective amended claims 1 according both the main and the auxiliary request.

Neither of the appellant's two requests can thus be granted.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar	The Chairman
C. Vodz	J.-M. Schwaller