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Datasheet for the decision of 6 August 2015

Case Number: T 1271/11 - 3.2.07

Application Number: 02759425.8

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Language of the proceedings: EN

Title of invention:
PROCESS FOR PRODUCING MORE UNIFORM AND HIGHER QUALITY COKE

Patent Proprietor:
Phillips 66 Company

Opponent:
Wolf, Matthias

Headword:

Relevant legal provisions:
EPC Art. 54, 123(2)

Keyword:
Novelty - Main request and auxiliary requests I-II (no)
Amendment - added subject-matter (auxiliary request III -yes)

Decisions cited:
G 0004/95

Catchword:

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Case Number: T 1271/11 - 3.2.07

D E C I S I O N
of Technical Board of Appeal 3.2.07
of 6 August 2015

Appellant: (Opponent)	Wolf, Matthias Hoffmann - Eitle Patent- und Rechtsanwälte Arabellastraße 4 81925 München (DE)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Respondent: (Patent Proprietor)	Phillips 66 Company P.O. Box 4428 Houston, TX 77210 (US)
Representative:	Finnegan Europe LLP 16 Old Bailey London EC4M 7EG (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 1 April 2011 rejecting the opposition filed against European patent No. 1419215 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	H. Meinders
Members:	H. Hahn
	I. Beckedorf

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision to reject the opposition against European patent 1 419 215.

II. Claim 1 of the patent as granted reads as follows:

"1. A delayed coking method for making Premium coke comprising:
(a) supplying heated feedstock to a coking drum at a first average drum inlet temperature during the first half of a fill cycle; and
(b) supplying said heated feed stock to said coking drum at another average drum inlet temperature during the last half of said fill cycle;
wherein the average drum inlet temperature during the last half of the cycle is at least 1.11°C (2°F) higher than said first average temperature."

III. The following documents of the opposition procedure are considered relevant for the present decision:

D1 = US-A-5 028 311
D5 = GB-A-957 396
D6 = GB-A-929 007
and
Declaration of Dr. K. Roussel dated 25 October 2010 (Annex A1)

while the following documents were submitted during the appeal proceedings by the appellant and the respondent, respectively:

D8 = P.A. Thrower (Ed.), Chemistry and Physics of Carbon, Vol. 24, pages 124-126 (1994)

D9 = US-A-4 666 585
D10 = JP-B-2-42876 (and English translation)
and
Declaration of Dr. K. Roussel dated 16 December 2011

IV. The opposition had been filed against the patent under Article 100(a) EPC, for lack of novelty and inventive step, under Article 100(b) EPC, that the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art, and under Article 100(c) EPC, that the patent extends beyond the content of the application as originally filed.

The Opposition Division held that the invention is disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC). It further held that the ground of Article 100(c) EPC does not hold against the subject-matter of the dependent claims 2 to 21. The Opposition Division considered that the subject-matter of claim 1 was novel, particularly with respect to D1, D5 and D6. It further held that claim 1 involves inventive step in view of the closest prior art D6 but also in view of run 4 of D1.

V. With a communication annexed to the summons to oral proceedings the Board presented its preliminary opinion with respect to claims 1-21 of the patent as granted according to the single request.

Amongst others and concerning novelty, the Board stated that the process of claim 1 as granted appeared to be anticipated by runs 3 and 4 of example 1 of D1 and by example 2 of D6 since the value "at least 2°F" of claim 1 has to be interpreted as meaning "at least 1.5 to 2.4

°F", taking account of the standard rules for rounding-off.

VI. With letter dated 6 July 2015 the respondent submitted a slightly amended main request and the auxiliary requests I to III in combination with arguments concerning the basis of the amendments and patentability as well as a request not to admit the documents filed by the appellant at the appeal stage.

VII. With letter dated 6 July 2015 the appellant submitted further arguments and comments taking account of the Board's communication and announced that it would be accompanied by a technical expert at the scheduled oral proceedings.

VIII. Oral proceedings before the Board were held on 6 August 2015. For the course of the oral proceedings, in particular concerning the parties' principal and accessory requests as well as in respect of the issues discussed with the parties, reference is made to the minutes.

a) The appellant requested finally that the decision under appeal be set aside and that the patent be revoked.

b) The respondent requested finally that in setting aside the decision under appeal the patent be maintained in amended form on the basis of one of the sets of claims filed as main request and as auxiliary requests I to III with letter of 6 July 2015.

The parties' respective requests with respect to a technical expert speaking on behalf of the appellant

and to admit into the proceedings documents D8 to D10, require neither a mention nor a detailed discussion of their arguments, because the requested expert did not speak at the oral proceedings and none of the aforementioned documents is relevant for the present decision.

At the end of the oral proceedings the Board announced its decision.

IX. Claim 1 of the **main request** reads as follows (amendments as compared to claim 1 of the patent as granted are in bold with deletions in strikethrough, emphasis added by the Board):

"1. A delayed coking method for making **P**premium coke comprising:
(a) supplying heated feedstock to a coking drum at a first average drum inlet temperature during the first half of a fill cycle; and
(b) supplying said heated feed stock to said coking drum at another average drum inlet temperature during the last half of said fill cycle;
wherein the average drum inlet temperature during the last half of the cycle is at least 1.1~~1~~°C (2°F) higher than said first average temperature."

X. Claim 1 of **auxiliary request I** is identical with that of the main request.

XI. Claim 1 of **auxiliary request II** reads as follows (amendments as compared to claim 1 of the patent as granted are in bold with deletions in strikethrough, emphasis added by the Board):

"1. A delayed coking method for making **P**~~p~~**premium** coke comprising:
(a) supplying heated feedstock to a coking drum at a first average drum inlet temperature during the first half of a fill cycle; and
(b) supplying said heated feed stock to said coking drum at another average drum inlet temperature during the last half of said fill cycle;
wherein **the drum inlet temperature has an increasing temperature profile in which** the average drum inlet temperature during the last half of the cycle is at least 1.1~~1~~°C (2°F) higher than said first average temperature."

XII. Claim 1 of **auxiliary request III** reads as follows (amendments as compared to claim 1 of the patent as granted are in bold with deletions in strikethrough, emphasis added by the Board):

"1. A delayed coking method for making **P**~~p~~**p**remium coke comprising:
(a) supplying heated feedstock to a coking drum at a first average drum inlet temperature during the first half of a fill cycle; and
(b) supplying said heated feed stock to said coking drum at another average drum inlet temperature during the last half of said fill cycle;
wherein **the drum inlet temperature has an increasing temperature profile in which** the average drum inlet temperature during the last half of the cycle is at least least ~~**1.11**~~ **2.8**°C (**5** ~~**2**~~°F) higher than said first average temperature; **and wherein the drum inlet temperature is increased during the first 50% of the fill cycle**."

XIII. The appellant argued, insofar as relevant for the present decision, essentially as follows:

Accessory request to allow a technical expert to speak

Mr. Nakanishi should be allowed to speak on behalf of the appellant at the oral proceedings. The respective request has been submitted in time with the letter dated 6 July 2015, i.e. one month before the oral proceedings. Therein it is outlined that he should make statements particularly concerning the declarations of Mr. Roussel. These statements are no presentation of new evidence but only constitute a technical discussion. He is intended to provide the point of view of a skilled person when it comes to technical questions and he should supplement the interpretation of the declarations on file. Even if this expert has a more advanced knowledge than the skilled person he can provide information on what the skilled person would know.

Principal request: novelty objection against the main request and the auxiliary requests I to III

The arguments for lack of novelty over D6 have been summarised quite well in the Board's annex to the summons. Even under the premisse of the interpretation of the temperature profiles of example 2 of D6 according to the respondent (i.e. the declaration by Mr. Roussel) these profiles result in an average drum inlet temperature (=ADIT) in the second half of the cycle that is 1.7°F higher than in the first half. Since claim 1 originally defined a temperature of 2°F, which value (based on the applicable rounding rules) means a range of 1.5-2.4°F, the embodiment of example 2 of D6 falls under the definition of claim 1 of the main

request. The respondent's argument that different rounding rules would apply to the temperature value of claim 1 of the main request since the ADIT, i.e. an "average" temperature, is concerned, cannot hold since the rounding rules are only based on the number of digits and claim 1 does not define any accuracy in the value of the average temperature.

Due to the temperature increase of the furnace transfer temperature (=FTT) during the addition of the fines, which was made to **affect** the quenching effect of the cold gas oil and coke fines, there is no decrease or drop of drum inlet temperature (=DIT) (see D6, page 4, right hand column, lines 30 to 34). This view is supported by the increase of the DIT from about 910°F at the beginning to about 925°F at the end of the fill cycle (see page 2, lines 94 to 99).

There exists no ambiguity concerning example 2 of D6 since there are only two options based on the parameters and data given in the description of this example which both end up with the same result, i.e. an embodiment which is novelty destroying, even accepting that the respondent stretched its interpretation of example 2 to its benefit. Therefore the example 2 of D6 is novelty destroying for the subject-matter of claim 1 of the main request.

The objections concerning novelty apply identically to the claims 1 of the auxiliary requests I and II, of which the former is identical with claim 1 of the main request, while the additional feature in the latter (an increasing temperature profile of the process) is implicitly met by D6.

The amendments of claim 1 of auxiliary request III have been taken from the description but the quoted paragraphs [0045] and [0046], although claim 1 relates to the average drum inlet temperature (ADIT), do not relate to the ADIT at all. Paragraph [0045] relates to claim 1 as originally filed while said ADIT was only comprised in claim 19 as originally filed. These two claims 1 and 19 were separate independent claims and their features cannot simply be mixed. For example a 5°F DIT increase during the first half of the fill cycle, as derivable from paragraph [0046], does not result in an increase of at least of 5°F of the ADIT in the second half of the fill cycle. Such an embodiment does also not lead to the claimed increase of the temperature in the first half of the fill cycle as now defined in claim 1. Therefore the combination of features incorporated into claim 1 of the auxiliary request III is not disclosed as such a combination in the original application WO-A-03/018715. There exists a difference between DIT and ADIT values, i.e. an increase of a first DIT to a second DIT reveals nothing with respect to the following remaining temperatures which can either be higher or lower than this second DIT. There are further interpretations possible which do not result in that the ADIT is increased by 5°F at all. It is also not credible that these features represent "key points" of the invention, since they were not contained in the patent in suit but only in the application as originally filed and have been deleted in examination. Therefore claim 1 of auxiliary request III contravenes Article 123(2) EPC and should not be admitted.

XIV. The respondent argued, insofar as relevant for the present decision, essentially as follows:

Accessory request to allow a technical expert to speak

Mr. Nakanishi should not be allowed to speak on behalf of the appellant. The subject-matter to be dealt with by him has not been properly specified and announced as required by the decision G 4/95 (OJ EPO 1996, 412). The technical arguments to be provided by him could have been presented in writing before the oral proceedings. Furthermore, the expert is not the notional skilled person since he has a more extensive knowledge. The letter of the appellant dated 6 July 2015 was received only two weeks before the oral proceedings. This time period was too short for the respondent to make the necessary preparations.

Principal request: novelty objection against the main request and the auxiliary requests I to III

For D6 to be novelty destroying the subject-matter of claim 1 must be directly and unambiguously derivable therefrom. Any ambiguity cannot be accepted. At present there are two interpretations wherein assumptions are made. This does not result in information which is derived directly and unambiguously from D6. The skilled reader is not led to only one of the interpretations, without any pointer thereto.

There exists ambiguity since there are competing interpretations. The teaching of D6 is incomplete. In order to be novelty destroying it must be the subject-matter contained in D6 but not a selection thereof.

D6 does not give sufficient information concerning the DIT value due to the injection of the fines (see page 4, right-hand column, second paragraph), i.e. the degree of the quenching effect is not known.

As stated in points 4.3 to 4.4. of the second declaration of Dr. Roussel (dated 16 December 2011) different rounding rules apply to the temperature value of claim 1 of the main request since the ADIT, i.e. an "average" temperature, is concerned.

Therefore the subject-matter of claim 1 of the main request is novel over D6.

No further arguments concerning the additional feature of claim 1 of auxiliary request II are submitted.

The amendment made in claim 1 of auxiliary request III is based on paragraphs [0044] to [0047] of the application as originally filed (corresponding to the published WO-A-03/018715), the latter paragraph discloses the feature of an "increasing temperature profile" which is also shown by all the examples. Paragraph [0045] talks about the increase of the DIT during a portion of the fill cycle, including an increase during the first 50% thereof, while paragraph [0046] discloses in general a temperature increase of "at least 5°F". The skilled person considers the whole disclosure of the application and he understands that some features are key points of the claimed solution and that he has various options to achieve the objective of the invention. He is told which shape the temperature profile as well as the increase of the temperature should have. Therefore the skilled person would seriously contemplate that the disclosure is in the way as done in claim 1 of auxiliary request III. The fact that one embodiment, as described by the appellant, does not fulfil the criteria of this claim 1 does not mean that the amendment contravenes Article 123(2) EPC. An analysis of figure 1 shows that all the

increasing temperature profiles depicted therein meet the criteria of claim 1 of auxiliary request III. Therefore claim 1 of auxiliary request III complies with Article 123(2) EPC.

Reasons for the Decision

1. *Admissibility of amendments made in claims 1 of the main request and the auxiliary requests I and II (Rule 80 EPC and Article 123(2) EPC)*

Since the Board considers that the subject-matter of the claims 1 of the main request and the auxiliary requests I and II in any case lacks novelty (see point 2 below) there is no need in this decision to deal with the question whether the amendments made therein comply with Rule 80 EPC and/or Article 123(2) EPC.

2. *Novelty (Article 54 EPC)*

Main request

2.1 The Opposition Division acknowledged in its impugned decision novelty of the subject-matter of claim 1 of the patent as granted over the disclosure of example 2 of D6 on the basis of an ADIT of the second half of the fill cycle calculated by the respondent "which is only 1.7°F higher than the average drum inlet temperature during the first half of the fill cycle, **which is less than the temperature increase of at least 2°F** as defined in claim 1 of the main request" (see impugned decision, points 6.1 to 6.6 of the reasons).

2.1.1 The value "of at least 2°F" of claim 1 of the main request is used for a comparison with the prior art but is interpreted by the Board differently to the impugned decision, namely by applying the common general knowledge of the skilled person and the applicable rounding rules to the next full digit within the applicable error margins so that "at least 2°F" is technically equated with a range "of at least 1.5-2.4°F".

The respondent's argument to the contrary, namely that different rounding rules would apply to the temperature value of claim 1 of the main request since the ADIT, i.e. an "average" temperature, is concerned, cannot hold since the rounding rules generally applied are only based on the number of digits specified and because claim 1 of the main request does **not** define any inaccuracy of the temperature average as argued in points 4.3 to 4.4. of the second declaration of Dr. Roussel dated 16 December 2011.

2.1.2 Since claim 1 of the main request, due to its definition "of at least 2°F", defines an upwardly open temperature range all that needs to be calculated is whether or not this temperature criterion is met by a delayed coking process of the prior art, such as the one according to example 2 of D6.

2.1.3 Furthermore, it was uncontested by the parties that:
a) the general relationship:
FTT > DIT > drum outlet temperature (DOT)
is correct,
b) the DIT is somewhat lower than the FTT, and
c) the temperature difference between the FTT and DIT remains at a constant value after equilibration of the system as long as the settings are not changed.

2.2 D6 discloses a delayed coking process (page 1, lines 11 to 15) wherein the feedstock is pumped through a furnace, heated to the required temperature and discharged into the coke drum for thermal decomposition and wherein recovered coke fines are injected into the coker feed. This process is continued until the drum is filled with a mass of coke (see page 1, lines 35 to 67). According to D6 the pressure in the coking drum is maintained at 20-80 psi and the feedstock is continuously introduced to the coke drum at a temperature increasing from about 910°F at the beginning to about 925°F at the end of the run (i.e. the DIT has an increasing temperature profile from 910°F to 925°F) and after the coke drum is full the coke is cooled and removed from the drum (see page 2, lines 51 to 106). The feedstock supply is continuous from the start to the end of the coking process. D6 is silent how the DIT is increased over the coke run (= fill cycle), namely whether this increase is more or less linear or stepwise, and is likewise silent about the general length of this fill cycle.

2.2.1 Example 1 of D6 discloses run times of between 3 and 2 ¼ hours at (constant) **coker temperatures between 950°F and 900°F** (see Table I, runs 1-9).

2.2.2 Example 2 comprises three test runs I to III and states that the FTT was raised 20°F above normal while injecting the fines to **affect the quenching effect** of the cold gas oil and coke fines (see page 4, lines 5 to 36). Table II relating to example 2 discloses for all three runs an initial FTT of 925°F, a FTT of 935°F after 16 hours and a FTT of 940°F after 20 hours up to the end of the 24 hours test run.

Taking account of the total quantity of 15 tons of fines injected in run II with 0.88 tons per hour (see Table III) it can be calculated, as did the respondent, that the fines were injected during 17 hours of the fill cycle.

2.3 According to the second declaration of Dr. Roussel dated 16 December 2011 the initial FTT is offset by 15°F with respect to the DIT, due to the heat loss in the transfer (initial FTT means that no fines are introduced). The initial FTT of 925°F in Table II corresponds to the 910°F DIT on page 2, line 97; the 940°F FTT after 20 hours corresponds to the 925°F DIT on page 2, line 97. When fines are added to the feed it is necessary, according to D6, to increase the FTT by 20°F **to offset any quenching effect** of the fines. This would result in a FTT of 945°F (= 925 + 20) at the start of the fines introduction with 955°F (935 + 20) after 16 hours and 960°F (940 + 20) after 20 hours. According to Dr. Roussel such a FTT of 945°F or even of 955°F-960°F for a prolonged period would cause problems with coking already taking place in the feedstock heater (see points 7.4 and 7.14 of his declaration). Therefore he considers that the FTT figures given in Table II include the 20°F offset when the fines are injected.

2.3.1 The Board remarks in this context that this calculable FTT of 945°F is lower than the coker temperature of 950°F used in example 1 of D6 but is still within the general (initial) DIT range from 800°F to 1000°F and within the preferred initial DIT range of 820°F to 975°F according to the patent in suit (see patent in suit, page 5, lines 1 and 2) where such a temperature apparently does not cause any problems.

2.3.2 According to Dr. Roussel fines injection would not take place immediately upon start-up of the run because the first two to four hours are needed for the system to stabilize and the introduction of the fines at this stage would make the process much longer and therefore the fines would be added from about 3 hours into the run (i.e. up to 20 hours, taking account of the calculated 17 hours of fines introduction (see point 2.2 above)).

Taking account of the temperature control systems used at the time of D6 (i.e. 1963) Dr. Roussel arrives at a stepwise temperature profile of an FTT of 925°F (corresponding to a DIT of 910°F) at 0 hours, an increase thereof with the start of fines injection to 945°F (corresponding to a DIT of 910°F) after 3 hours, a downward adjustment to 935°F (corresponding to a DIT of 900°F) after 16 hours and at the end of the fines addition after 20 hours a slight upward adjustment to 940°F (corresponding to a DIT of 925°F) which FTT is then kept to the end of fill cycle at 24 hours. He calculates **a difference of ADIT2-ADIT1 of 1.7°F** (see second declaration of Dr. Roussel, points 7.9 to 7.11 and its exhibit I).

2.3.3 According to point 7.9 of the second declaration of Dr. Roussel the FTT increase of 20°F is to **offset**, i.e. to **compensate**, the quenching effect of the fines injection. Furthermore, the quenching effect in runs II and III will be clearly different to run I as the amount of fines and the rate of injection are lower.

2.4 According to the appellant the skilled person would interpret the FTT temperatures given in Table II of D6 differently.

2.4.1 Since the FTT values given in Table II (925°F - 935°F - 940°F) do not distinguish between the time at which coke fines are injected and periods during which coke fines are not injected, the skilled person would have to figure out whether these FTT values of Table II are the so-called *normal* FTT values referred to in example 1, or the values already raised by 20°F as necessary during fines injection. In any case it is clear to the Board that only one of the two possibilities is addressed in Table II. From the FTT values given in Table II and in view of the generally disclosed increasing DIT range from 910°F at the beginning to 925°F at the end of the fill cycle (see page 2, lines 94 to 99) it is clear that the FTT values in Table II must relate to the *normal* FTT. Otherwise, the FTT without fines injection would be 20°F lower, with starting and end values of 905°F and 920°F, respectively.

This would clearly lead to DIT values below the desired values of 910°F and 925°F of page 2, lines 94 to 102.

2.4.2 Also, in view of the required increasing DIT from 910°F to 925°F a DIT drop to 900°F as considered by Dr. Roussel after 16 hours is to be excluded since it is **not** supported by the disclosure of D6 and goes against the skilled person's common general knowledge on how to conduct a delayed coking process. This view is further supported by the fact that the FTT is raised 20°F during the fines injection to **compensate** for cooling effects (see page 4, lines 30 to 34), i.e to avoid a drop of the DIT.

2.4.3 Therefore, at the start of the delayed process of example 2 the *normal* FTT will have been set to 925°F so that the DIT (due to heat losses) will be 910°F, i.e.

the temperature drop or offset is 15°F. The final *normal* FTT after 20 hours will have been 940°F; considering the same temperature drop this corresponds to a final DIT of 925°F. This exactly corresponds with the value given at page 2, line 99 of D6. Similarly, the *normal* FTT having been 935°F after 16 hours results in a DIT of 920°F.

These FTT values are **during fines injection** raised by 20°F above their *normal* values to compensate for the lower temperature of the injected material to keep the DIT constant.

The question whether the DIT increase from 910°F at the beginning to 920°F (935 - 15) after 16 hours and 925°F (940 - 15) after 20 hours is achieved by a more or less linear (taking account of the available control technology at the time - 1963 - when D6 was issued) or by a step-wise DIT increase is of no importance since a **difference of ADIT2-ADIT1 of 8.3°F**, i.e. 8°F, is calculated for both cases, which is well within the open range of claim 1 of the main request (see the statement of grounds of appeal, pages 32 to 33, point (iii) and annexes GA-6 and GA-7).

2.5 The Board notes that the two parties have different interpretations of the disclosure of D6 with respect to the 20°F-FTT increase to compensate the quenching effect on the DIT during fines injection in the fill cycle of example 2. However, both interpretations based on the experimental data of example 2 given in Tables II and III and the general teaching of D6 lead to a calculation of the ADIT values of the first and the second half of the 24 hour fill cycle that end up - after application of the rounding rules; see point

2.1.1 - with a temperature difference of ADIT2-ADIT1 of **at least** 2°F.

Furthermore, the respondent's interpretation includes a drop in the DIT after 16 hours, i.e. in the second half of the fill cycle the existence of which the Board is not convinced of (see points 2.3.1 and 2.4.1 above). Having a DIT below the required values of 910°F up to 925°F in D6 is not acceptable. In any case, in respect of the calculable difference ADIT2-ADIT1 that interpretation was to the benefit of the respondent.

2.5.1 The fact that different ADIT2-ADIT1 values result from the above two interpretations is not seen by the Board as detrimental for compliance with the principle of a direct and unambiguous disclosure. This is due to the fact that both interpretations, as far as their calculated results are concerned, go into one and the same direction. The respondent's arguments at the oral proceedings to the contrary thus cannot hold.

2.5.2 The argument of the respondent at the oral proceedings that D6 would not contain sufficient information concerning the quenching effect during fines injection so that the DIT cannot really be calculated with sufficient certainty, cannot hold since its own expert, Dr. Roussel, stated that the 20°F FTT increase was to offset said quenching effect (see point 2.3.3 above) and did not raise any question in this respect. In fact, he considered that the DIT remained constant at 910°F up to 16 hours.

2.6 Hence the Board considers that example 2 of D6 is novelty destroying for claim 1 of the main request. The main request is therefore not allowable.

Auxiliary request I

2.7 The above conclusion in point 2.6 concerning claim 1 of the main request applies *mutatis mutandis* to the identical claim 1 of auxiliary request I (see point X above).

Auxiliary request II

2.8 Claim 1 of auxiliary request II differs from claim 1 of the main request in that it now additionally specifies that "the drum inlet temperature has an increasing temperature profile" (see point XI, above).

2.8.1 When asked by the Board at the oral proceedings the respondent stated that it does not further wish to discuss novelty of the subject-matter of claim 1 of the auxiliary request II. The additional feature that "the drum inlet temperature has an increasing temperature profile" did not imply a difference over D6.

2.8.2 As claim 1 of auxiliary request II uses the term "comprising" it does **not** exclude that there may also be a temperature drop during the fill cycle besides said "increasing temperature profile". Therefore example 2 of D6 reveals an increasing temperature profile of the DIT even according to the interpretation based on the second declaration of Dr. Roussel, exhibit I.

2.8.3 Example 2 of D6 is therefore also novelty destroying for claim 1 of auxiliary request II. Auxiliary request II is therefore not allowable.

3. Admissibility of the amendments made in claim 1 of auxiliary request III (Article 123(2) EPC)

3.1 Claim 1 of auxiliary request III has been amended by incorporating the features that **"the drum inlet temperature has an increasing temperature profile in which** the average drum inlet temperature during the last half of the cycle is at least least **2.8**°C (**5** °F) higher than said first average temperature; **and wherein the drum inlet temperature is increased during the first 50% of the fill cycle"** (see point XII, above; emphasis added by the Board).

3.2 Although the added feature concerning an **"increasing temperature profile"** has an explicit basis in paragraph [0047] of the application as originally filed (corresponding to the published WO-A-03/018715), the feature of a temperature increase of **"at least 5°F"** comes from paragraph [0046] and the feature that **"the drum inlet temperature is increased during the first 50% of the fill cycle"** comes from paragraph [0045], the combination of these features within the **context** of a first half of a fill cycle with an initial average drum inlet temperature (ADIT) and the last half of the fill cycle having another ADIT as specified in claim 1 of auxiliary request III has neither an explicit basis nor is it directly and unambiguously derivable from the entire disclosure of the WO-A-03/018715.

3.3 The respondent's arguments to the contrary cannot hold for the following reasons.

3.3.1 The quoted paragraph [0047] discloses that "The increasing temperature profile useful in the practice of the invention can be conducted in a variety of ways, and can be better understood from Fig. 1, which depicts drum inlet temperature plotted against the percentage of a fill cycle. It has been found that implementing any one of the increasing temperature profiles depicted

in Fig. 1 advantageously improves the quality and uniformity of the coke throughout the height of a coking drum. Specifically the amount of volatile matter in the upper region of the coking drum can be reduced."

In this context it needs, however, to be considered that Figure 1 "is a chart illustrating **exemplary** temperature profiles" (see paragraph [0014]) which means that there exist other embodiments which are **not** shown in Figure 1.

This view is supported by the statement in paragraph [0052] according to which **"In another temperature profile which is not depicted in Fig. 1**, a delayed coking process for making premium coke can include supplying heated feedstock during a first half of a fill cycle at an initial **average** drum inlet temperature and then supplying the feedstock during the last half of the fill cycle at another **average** drum inlet temperature that is at least 2°F higher than the initial average drum inlet temperature".

This paragraph [0052] thus corresponds to the subject-matter of independent claim 19 of the WO-A-03/018715, which underlies claim 1 of the patent as granted. Said original claim 19 did **not** have any dependent claims in the WO-A-03/018715 which specified any preferred embodiments of this particular delayed coking process which specifies an **average** drum inlet temperature (**ADIT**).

3.3.2 Each of the other two paragraphs [0045] and [0046] quoted by the respondent is related to "**another embodiment of the invention**" and thus relates to a different independent claim disclosed in the WO-A-03/018715 referring only to a "drum inlet

temperature" (DIT) but **not** to an "average drum inlet temperature" (ADIT).

3.3.3 In particular, paragraph [0045] is for an embodiment wherein the heated feedstock is "initially supplied to a coking drum during a fill cycle at a first drum inlet temperature and at sometime thereafter supplied at a higher temperature", further, the DIT can be increased during a portion of the fill cycle, or throughout the entire fill cycle, for example, it may be increased sometime during the first 75% of the fill cycle or it may be increased sometime during the first 50% of the fill cycle". However, if the DIT according to this disclosure is (only) increased during the first 50% of **the** fill cycle - this definition excludes that the DIT may be, let alone has to be, additionally increased in the second 50% of the fill cycle since this specific embodiment with the DIT being increased during only a part of the fill cycle is the opposite of increasing the DIT throughout the **entire** fill cycle - then it is apparent that this specific embodiment does **not** necessarily and inevitably result in a delayed coking process according to original claim 19 - underlying claim 1 of the patent as granted - requiring an ADIT of the second 50% which is at least 2°F higher than the ADIT of the first half of the fill cycle, let alone in one which ADIT is "at least 5°F higher". If the DIT is increased during the first 50% of the fill cycle for 5°F - which is not suggested in the context of the embodiment of paragraph [0045] - and the DIT is then kept constant through the second 50% of the fill cycle the resulting ADIT of the second half of the fill cycle is obviously not "at least 5°F" higher than the ADIT of the first half, as convincingly argued by the appellant.

3.3.4 Paragraph [0046] discloses a **further** embodiment - which corresponds to original independent claim 20 - and states that it requires that a feedstock having a first DIT that is lower than the conventional DIT is fed to the coking drum at the beginning of the fill cycle, and the DIT is subsequently increased to a second DIT that is at least about 2°F higher than the conventional DIT. Subsequently, in paragraph [0046] the typical and preferred first DIT ranges of the present invention are specified and thereafter it is stated that it has been found that increasing the feedstock DIT at least 2°F higher than the first DIT advantageously improves the coke product and "Preferably, the temperature increase for a process of the invention is at least about 5°F". Thus it is clear to the skilled person that said temperature increase of "at least 5°F" is with reference to the **first DIT** at the beginning of the fill cycle but it is clearly **not** with reference to the **average DIT** (**ADIT)** of the second half of the fill cycle.

3.3.5 The argument that the skilled person when reading the whole disclosure of the WO-A-03/018715 would have seriously contemplated the disclosure to be such that these features can be combined in claim 1 of auxiliary request III cannot hold either. First of all, for the reasons above (see in particular point 3.3.3 above) the skilled person would not have seriously contemplated such a combination of features. Secondly, it is **not** apparent to the person skilled in the art that the feature concerning an increase of the DIT during the first 50% of the fill cycle represents a key point of the invention, as proven by the exemplary increasing temperature profile 120 in Figure 1 wherein the temperature increase starts only at point B at the start or after the start of the second half of the fill

cycle. Consequently, the allegation that an analysis of figure 1 would show that all the increasing temperature profiles depicted therein meet the criteria of claim 1 of auxiliary request III cannot be accepted.

Furthermore, as discussed at the oral proceedings the application as originally filed comprises the four independent claims 1, 19, 20 and 21 which relate to the clearly independent embodiments described in paragraphs [0045], [0052], and [0046], respectively. These original independent claims 1, 19, 20 and 21 attempt to define different embodiments of the underlying invention by using different features such as the **DIT** during the fill cycle (claims 1, 20 and 21) or the **ADIT** during the two halves of the fill cycle (claim 19). Therefore, without any clear indication in either the description or the original claims (e.g. by dependent claims) it is **not** clear to the person skilled in the art that features described in one specific embodiment, which fill cycle requires a certain minimum ADIT value, can or should be combined with other features such as another minimum DIT value or an increase of the DIT during a certain period of the fill cycle, which are disclosed in the context of other specific embodiments and which require only increases of the DIT or which define embodiments which do **not** result in the required ADIT increase (see point 3.3.3 above).

The working examples 2-4 of the WO-A-03/018715 are not helpful in this context since their increasing temperature profiles 310, 320 and 380 as depicted in Figures 5 and 13, respectively, show either a linear increase of the DIT over the entire fill cycle (see profiles 310 and 380 in Figures 5 and 13, respectively) or show a first increase during the first 50% of the

fill cycle followed by another increase in the second 50% thereof (see Figure 5, profile 320).

3.4 Taking account of the above conclusions, it is clear that the amendment made to claim 1 of auxiliary request III contravenes Article 123(2) EPC. Therefore auxiliary request III is not allowable.

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:

S. Sánchez Chiquero H. Meinders

Decision electronically authenticated