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D E C I S I O N
of 26 November 2002

Case Number: T 0718/98 - 3.3.6

Application Number: 91306359.0

Publication Number: 0466511

IPC: C10L 1/30

Language of the proceedings: EN

Title of invention:
Motor fuels of enhanced properties

Patentee:
ETHYL PETROLEUM ADDITIVES, INC.

Opponent:
Mr William C. Orr

Headword:
Reduced emissions/ETHYL PETROLEUM

Relevant legal provisions:
EPC Art. 114(2), 56

Keyword:
"Admissibility of late filed evidence (no) - abuse
of procedure"
"Inventive step (no)"

Decisions cited:
T 0715/95; T 1002/92; G 0001/86; G 0004/92; T 0534/89;
T 0017/91; T 0219/83

Catchword:
The introduction at a very late stage of the proceedings of evidence which could have been filed much earlier, used as a strategic measure for improving its own case against the adverse party, amounts to an abuse of procedural rights and therefore is to be dismissed independently of the possible relevance of the evidence.



Case Number: T 0718/98 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 26 November 2002

Appellant: Mr William C. Orr
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 18 May 1998
concerning maintenance of European patent
No. 0 466 511 in amended form.

Composition of the Board:

Chairman: P. Krasa
Members: L. Li Voti
C. Holtz

Summary of Facts and Submissions

- I. The present appeal is from the interlocutory decision of the Opposition Division to maintain in amended form the European patent No. 0 466 511 relating to an unleaded gasoline fuel composition and to the use therein of a cyclopentadienyl manganese tricarbonyl compound (hereinafter referred to as MMT).

The set of claims found to comply with the requirements of the EPC contained independent claims 1, 13 and 20 having, respectively, the following wordings:

"1. An unleaded gasoline fuel composition having a Reid vapor pressure (ASTM test method D-323) of 8.5 psi (58.6 kPa) or less containing no more than 25% by volume of aromatic hydrocarbon components and at least one fuel-soluble cyclopentadienyl manganese tricarbonyl compound in an amount up to 1/32 gram of manganese per gallon (0.008 g/litre).";

"13. Process for the production of gasoline which comprises forming a base unleaded gasoline having a Reid vapor pressure (ASTM test method D-323) of 8.5 psi (58.6 kPa) or less containing no more than 25% by volume of aromatic hydrocarbons and providing therein up to 1/32 gram of manganese per gallon (0.008 g/liter) as at least one fuel-soluble cyclopentadienyl manganese tricarbonyl compound.";

"20. The use of up to 1/32 gram of manganese per gallon (0.008 g/liter) as at least one fuel-soluble cyclopentadienyl manganese tricarbonyl compound in an unleaded gasoline fuel composition having a Reid vapor

pressure (ASTM test method D-323) of 8.5 psi (58.6 kPa) or less containing no more than 25 percent by volume aromatic hydrocarbon components for the purpose of reducing carbon monoxide and nitrogen oxides (NOx) emissions during engine operation."

Dependent claims 2 to 12, 14 to 19 and 21 to 27 related to particular embodiments of the claimed product, process or use, respectively.

II. In its notice of opposition the Appellant (Opponent) had sought revocation of the patent on the grounds of Article 100(a) EPC, because of an alleged lack of novelty and of inventive step of the claimed subject-matter in the light inter alia of the following documents:

(2): G. H. Unzelman: "Reformulated gasolines will challenge product-quality maintenance", Oil and Gas Journal, 9 April 1990, pages 43 to 48;

(6): WO-A-87/01384;

(17): Hearings of 11 January 1990 before the Subcommittee on environmental protection of the Committee on Environment and Public Works of the United States Senate, pages 1, 3, 193, 198 and 294.

III. In its decision, the Opposition Division found in particular that

- none of the cited documents disclosed an unleaded fuel composition comprising all the features of claim 1 of the patent in suit;

- the cited prior art did not suggest that the addition of MMT to an unleaded fuel could bring about a reduction of the emissions of CO and NOx during engine operation and on the contrary it suggested that the use of MMT alone led to an increase of polluting emissions;
- the experimental evidence supplied by the Respondent (Patent Proprietor) proved that the addition of MMT to an unleaded fuel having the claimed characteristics successfully reduced the emissions of CO and NOx;
- therefore the claimed subject-matter was novel and involved an inventive step.

IV. An appeal was filed against this decision.

The Appellant submitted in writing and during the oral proceedings held before the Board on 26 November 2002 essentially that:

- the claimed subject-matter was novel over the cited prior art;
- Mr Babikian's statement, which is part of document (17), made clear that a fuel called EC-1 was made available to the public by the Arco Products Company on 1 September 1989; this fuel provided reduced emissions during engine operation and differed from that of the patent suit only insofar as it did not contain MMT;
- since the fuel of document (17) already brought about a reduction of CO and NOx emissions, the

technical problem underlying the patent in suit consisted only in the provision of an alternative fuel containing an additional anti-knock agent;

- document (6) suggested the addition of MMT to an unleaded fuel composition which could have an aromatic content and an RVP as required in the patent suit for producing more clean and complete combustion products and thereby reducing the emissions due to the use of aromatic hydrocarbons and MMT, i.e. hydrocarbons, carbon monoxide and nitrogen oxides;
- therefore, it could not be considered inventive to add the known anti-knock agent MMT to the fuel disclosed in document (17) and the claimed subject-matter had to be considered obvious in the light of the teaching of the prior art.

As regards the experimental evidence filed by the Respondent at first instance by letter of 26 February 1998 (hereinafter referred to as **EXREP**), which evidence (consisting of a table showing graphically the results of the tests, Mr Davidson's affidavit explaining how the tests were carried out and the document US 5599357, which is referred to in said affidavit) was resubmitted during the appeal proceedings, the Appellant argued in essence that:

- the tests contained only comparisons of a fuel containing MMT with one obtained by adding xylenes to the same fuel without MMT in order to match the octane number of the first fuel; since it was known in the prior art, e.g. from document (6), that xylenes increased the emissions of carbon

monoxides and nitrogen oxides, the tests could thus not prove that a reduction of the questioned emissions was achieved simply by adding MMT.

Finally, the Appellant requested that the priority document (6a) of document (6), document (18), both filed with the letter of 19 November 2002 and Mr Cox's affidavit of 18 November 2002 (hereinafter referred to as **COX 02**), filed with the letter of 21 November 2002, be admitted into the proceedings.

V. The Respondent argued in writing and during the oral proceedings *inter alia* that:

- none of the cited documents disclosed a fuel composition comprising all the features of the claimed one;
- the fuel EC-1 disclosed in document (17) was commercially available before the priority date of the patent in suit and could be considered to be the best starting point for evaluating inventive step of the claimed subject-matter;
- however, the prior art did not suggest that the addition of MMT to a fuel having low RVP and low aromatics content could reduce the amount of carbon monoxide and nitrogen oxides emissions during engine operation without affecting the drivability, which effect had been shown in **EXREP**;
- on the contrary, there was a prejudice in the prior art against the use of MMT in an unleaded fuel because of its known tendency to cause catalyst plugging and increased polluting

emissions as explained e.g. in documents (2) and (6);

- therefore, the skilled person would not have used MMT in the fuel EC-1 known from document (17);
- moreover, the teaching of document (6) was not relevant since it regarded fuel compositions having a greater aromatics content than those of the patent in suit and required the use of a synergistic mixture of MMT with other additive components in order to achieve the reduction of the quantity of hydrocarbon emissions in the exhaust; no teaching was contained in this document in regard to the reduction of carbon monoxide and nitrogen oxides emissions;
- therefore, the technical problem underlying the patent in suit had been successfully solved and the claimed subject-matter involved an inventive step.

As regards the Appellant's criticism of **EXREP**, the Respondent submitted that it compared a fuel comprising MMT and having all the characteristics of claim 1 with the same fuel without MMT. The Respondent contested also the Appellant's allegation that it was known at the priority date of the patent in suit that heavy aromatic hydrocarbons would bring about an increase of NOx and CO emissions during engine operation.

Finally, it requested that the late filed evidence (6a), (18) and (**COX 02**) not be admitted into the proceedings.

- VI. Furthermore, the Respondent filed during the oral proceedings an auxiliary request consisting of a set of 8 claims corresponding to claims 20 to 27 of the main request and precised that it could bring further evidence for supporting its experimental report and its statements. No request was, however, submitted for the introduction of further evidence.
- VII. The Appellant requests that the decision of the first instance be set aside and the patent be revoked.
- VIII. The Respondent requests that the appeal be dismissed or alternatively that the decision under appeal be set aside and the patent be maintained on the basis of the auxiliary request submitted during oral proceedings.
- IX. At the end of the oral proceedings, the chairman announced the decision of the Board.

Reasons for the decision

1. *Late filed evidence*

- 1.1 The Appellant requested that the priority document (6a) of document (6), document (18), both filed for the first time with the letter of 19 November 2002, and (**COX 02**), filed with the letter of 21 November 2002, i.e. all of them filed about one week before oral proceedings, be admitted into the proceedings.

During the oral proceedings held before the Board on 26 November 2002 the Appellant's representative did not dispute that the Appellant was already previously aware of the content of documents (6a) and (18) and excused

the filing of this evidence at such a late stage of the proceedings with the fact that only a further discussion with the Appellant in the first week of November had prompted it to look for other available relevant documents.

Moreover the Respondent must have been aware of the content of document (18), which originated from the Respondent's own activities.

Therefore, at least this document had to be considered because of its relevance.

- 1.2 Documents (6a) and (18), as admitted by the Appellant, were already in its possession when it started to look for new evidence in November 2002.

As regards (**COX 02**), another affidavit by Mr Cox, dated 11 April 1990, it had been cited on page 6 of Mr Orr's observations which were part of the statement of the grounds of appeal of 28 September 1998 (this affidavit was, however, never submitted to the Board). Mr Cox was therefore known to the Appellant at least 4 years before introduction of (**COX 02**).

The claims maintained by the opposition division were substantially identical to those granted and considered at first instance.

Therefore, the filing of the new documents (6a) and (18) as well as of (**COX 02**) cannot be seen as the reaction to an unforeseeable change of the factual or procedural situation. It follows that there cannot be any justification for the delay in producing the evidence in question. Consequently, the new

documents (6a) and (18) as well as (**COX 02**) must be considered as late filed (see e.g. T 715/95, not published in the OJ EPO, point 3 of the reasons).

- 1.3 It is established case law of the Boards of appeal of the EPO that late filed evidence might be exceptionally admitted at the appeal stage, if it can be considered at first sight to be more relevant than the evidence relied on at first instance and to be prejudicial to the maintenance of the patent (see e.g. T 1002/92, OJ EPO 1995, 605, point 3.4 of the reasons).

However, it is a primary requirement of inter partes appeal proceedings, because of their judicial character, that all parties involved in these proceedings have the guarantee of a fair and equitable procedure (see G 1/86, OJ EPO 1987, 447, points 13 to 15 of the reasons) and that facts and evidence are brought to the attention of the adverse parties and of the Board in sufficient time for their consideration (see G 4/92, OJ EPO 1994, 149, points 5 to 7 of the reasons).

As pointed out, for example, in the Guidance for parties to appeal proceedings and their representative (OJ EPO 1996, 342, point 3.5.5) "the parties should provide all relevant information and documents in good time, i.e. at the latest one month before the hearing".

In the circumstances of this case the Appellant, though knowing the Respondent's arguments since 25 January 1999, waited about 4 years till shortly before oral proceedings before introducing the questioned evidence, although it could have been easily retrieved and brought into the proceedings at a much earlier stage as

explained in points 1.1 and 1.2 above.

A late further clarification between a party and its representative of an essentially unchanged procedural or substantive situation, which in the present case persisted in fact for years, cannot excuse the extremely late filing of such evidence either.

The Board finds that the introduction at a very late stage of the proceedings of evidence which could have been filed much earlier, used as a strategic measure for improving its own case against the adverse party, amounts to an abuse of procedural rights and therefore is to be dismissed independently of the possible relevance of the evidence (T 534/89, OJ EPO 1994, 464, points 2.5 to 2.7 of the reasons and T 17/91, not published in OJ EPO, point 5 of the reasons).

The above mentioned evidence, as requested by the Respondent, was thus found inadmissible by the Board.

2. *Main Request*

2.1 Novelty

The Board is satisfied that the claimed subject-matter is novel, which was also conceded by the Appellant.

2.2 Inventive step

2.2.1 Most reasonable starting point and technical problem

The patent in suit and in particular claim 20 relate to the use of MMT in an unleaded gasoline fuel having a RVP not greater than 8.5 and an aromatics content not

greater than 25% (column 1, lines 30 to 37).

The problem dealt with in the patent in suit, as presented in the description, amounted to the provision of an anti-knock agent for an unleaded gasoline fuel having a low RVP and a low aromatics content to bring about and increased octane quality and reduced carbon monoxide and nitrogen oxides emissions during engine operation as compared to a fuel without this anti-knock agent, without any adverse effect on the volatility of the fuel and on the functioning of the exhaust gas catalyst (see column 1, lines 38 to 54 and column 2, lines 12 to 20).

Document (17), as also admitted by the Respondent, teaches that an unleaded fuel called EC-1, having a RVP of 8 psi, an aromatics content of 20% and containing methyl t-butyl ether (hereinafter referred to as MTBE) as octane improver, was available to the public before the priority date of the patent in suit; this fuel provided during engine operation reduced carbon monoxide and nitrogen oxides emissions (pages 193, 194 and 197). Therefore, the Board finds that this state of the art, differing from the subject-matter of claim 20 insofar as it does not make use of MMT, can be considered as the most reasonable starting point for evaluating the inventive step of the claimed subject-matter, as also suggested by both parties.

- 2.2.2 The patent in suit does not contain any comparative tests proving the alleged reduction in NOx ad CO emissions by the addition of MMT.

Respondent's **EXREP** consists of a table showing graphically the results of the tests, Mr Davidson's

affidavit explaining how the tests were carried out and the document US 5599357, which is referred to in said affidavit.

The Board remarks that **EXREP** fails to describe precisely the characteristics of the base fuel used in the tests.

Point 5 of said affidavit, however, specifies that the data were generated using the tests described in Examples 1 and 6 of US 5599357, according to which a base fuel containing additional MMT is compared with a base fuel without MMT but having added thereto xylenes in order to match the octane number of the MMT fuel (see Example 1, column 10, lines 21 to 32 and Example 6, column 18, lines 3 to 15 and aromatic contents of the examples in Table 11). This fact is confirmed by the heading under the table showing graphically the results of the tests, reading: "Octanes equalized by adjusting heavy aromatic content".

Even though the Respondent disputed this interpretation of the tests and alleged that the tests showed a comparison of a fuel comprising MMT with the same fuel without MMT, the Board concludes on the basis of the available evidence that the graphical representation of the results in the table of **EXREP** regards the comparison between a fuel comprising MMT with one without MMT but having added thereto xylenes in order to match the octane number of the MMT fuel as explained in Mr Davidson's affidavit.

The Respondent argued orally that it was not known in the prior art that xylenes would increase such emissions and that, on the contrary, MMT was expected

to increase them.

The Board finds that all these allegations do not find any substantiation in the prior art. On the contrary, the prior art clearly indicates heavy aromatics as responsible for carbon monoxide and nitrogen oxides emissions (see document (6), page 31, lines 3 to 5) and MMT as responsible only for increased hydrocarbon emissions (see document (6), page 2, lines 19 to 26 and document (2), page 47, right column, lines 22 to 28), which emissions were, however, not the object of **EXREP**; the prior art was instead silent about any increase of the carbon monoxide and nitrogen oxides emissions due to the addition of MMT, the passage on page 48, lines 1 to 6 of document (2) only teaching that such addition brings about a shift in the balance among tailpipe carbon monoxide, nitrogen oxides and hydrocarbons without indicating which and whether emissions are increased.

Since it was thus known in the prior art that heavy aromatics caused increased carbon monoxide and nitrogen oxides emissions it cannot be considered surprising that the MMT fuels in **EXREP** show reduced emissions in regard to the comparisons; therefore, even admitting that the tested fuels would comply with the requirements of claim 20 as to RVP and aromatics content, the Board concludes that these tests cannot prove the alleged advantage.

- 2.2.3 Since in the present case the burden of proof is on the party which has brought the experimental evidence, i.e. on the Respondent (see T 219/83, OJ 1986, 211, Corr. OJ 1986, 328, point 10 of the reasons for the decision), and the Respondent has not brought any

further evidence during appeal stage before oral proceedings, the partial technical problem of reducing carbon monoxide and nitrogen oxides emissions during engine operation by adding MMT cannot be considered to have been credibly solved by the claimed subject-matter.

The technical problem underlying the patent in suit, seen in the light of document (17), has thus to be reformulated in less ambitious terms as the provision of an alternative fuel comprising an additional anti-knock agent which would not affect the reduced emissions and low volatility of the fuel and would not plug the catalyst.

The Board has no reason to doubt, for example, in the light of the results contained in the **EXREP**, that this existing technical problem was credibly solved by the subject-matter of claim 20.

2.3 Evaluation of inventive step

2.3.1 The question to be replied is thus whether the skilled person would have added MMT to a fuel as disclosed in document (17) and would have expected it not to affect the low volatility of the fuel and not to cause plugging of the exhaust catalyst.

Document (6) deals, similarly to the fuel of document (17), with the reduction of the polluting emissions caused by the use of various anti-knock additives in an unleaded fuel. This document explains, for example, that MMT, by causing the formation of unoxidized or partially oxidized hydrocarbons and of oxides of manganese, leads to a gradual undesirable

increase of the emission of hydrocarbons and to the plugging of the exhaust catalyst (see page 2, lines 2 to 5 and 18 to 32; page 11, lines 10 to 16; page 28, lines 31 to 34). Lower molecular weight alcohols cause an increased front end volatility or Reid Vapour Pressure (RVP) and consequently increased evaporative emissions (page 5, lines 16 to 21) as well as the so-called "technical enleanment", i.e. a deviation from the predetermined stoichiometric ratio of air to fuel. Aromatic hydrocarbons cause potentially harmful emissions, tend to increase exhaust emissions such as NO_x, carbon monoxide and hydrocarbons and create driveability problems (page 10, lines 15 to 20; passage bridging pages 23 and 24 and page 31, lines 3 to 6).

However, this document teaches to alleviate and correct all these phenomena by combining MMT with lower molecular weight alcohols and aromatics in specific amounts (see page 12, lines 9 to 29; page 13, lines 15 to 19 and page 29, lines 9 to 11; page 31, lines 10 to 20).

Moreover, and contrary to the Respondent's arguments (see point V above), the aromatics content of the fuel according to document (6) is not necessarily more than 30%, as shown in the specific Example 2 on page 44, but it can be even lower than 25% (see table bridging pages 13 and 14 as well as page 17, lines 3 to 7, 17 to 21 and 30 to 33; page 18, lines 12 to 16; page 26, lines 14 to 18 and page 41, lines 20 to 25 of this document). Furthermore, this document explicitly teaches that additional octane improvers such as MTBE, which is used in document (17), can be used together with MMT (see page 43, lines 6 to 12).

2.3.2 Therefore, the Board concludes that the skilled person would have found in the teaching of document (6) a strong suggestion for using MMT as additional anti-knock agent for improving the octane number in a fuel such as disclosed in document (17), which already contained MTBE, without affecting the reduced emissions and the volatility of that fuel and without causing plugging of the catalyst, provided that also alcohols are used as required in document (6).

Since the fuels used in the patent in suit do not exclude the presence of other additives in addition to the MMT and aromatics components, they can also comprise lower molecular weight alcohols. Moreover, even though the Davidson's affidavit alleges in point 7 that the addition of MMT to a fuel comprising lower alcohols would surprisingly override their negative effect on the NOx emissions, a reduction of such emissions was to be expected in the light of the teaching of document (6), as explained in paragraph 2.3.1. above.

The Board concludes therefore that the subject-matter of claim 20 does not involve an inventive step.

Since this request fails already on this ground there is no need to discuss the other claims.

3. *Auxiliary request*

Since claim 1 of the auxiliary request is identical to claim 20 of the main request the arguments put forward in paragraphs 2.3.1 and 2.3.2 above apply *mutatis mutandis* to this claim.

This request must thus also fail for the reasons put forward hereinabove.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The patent is revoked.

The Registrar:

The Chairman:

G. Rauh

P. Krasa