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**Datasheet for the decision
of 13 July 2021**

Case Number: T 0576/18 - 3.3.02

Application Number: 10839048.5

Publication Number: 2518135

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C10N30/02, C10N40/25, C10N30/10

Language of the proceedings: EN

Title of invention:
SYSTEM LUBRICANT OIL COMPOSITION FOR CROSSHEAD-TYPE DIESEL
ENGINE

Patent Proprietor:
JX Nippon Oil & Energy Corporation

Opponent:
Afton Chemical Corporation

Headword:

Relevant legal provisions:
EPC Art. 56
RPBA Art. 12(4)
RPBA 2020 Art. 12(2), 13(1), 13(2)

Keyword:

Inventive step - main request (yes)
Late-filed objection - admitted (no)
Late-filed evidence - admitted (no)

Decisions cited:

T 0724/08

Catchword:



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Case Number: T 0576/18 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 13 July 2021

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
20 December 2017 concerning maintenance of the
European Patent No. 2518135 in amended form.**

Composition of the Board:

Chairman M. O. Müller
Members: M. Maremonti
 R. Romandini

Summary of Facts and Submissions

- I. The appeal by the opponent ("appellant") lies from the opposition division's decision, according to which European patent No. 2 518 135 ("the patent"), as modified on the basis of the then pending main request and the invention to which it relates, meets the requirements of the EPC.
- II. The main request found allowable by the opposition division included 12 claims, independent claims 1 and 7 of which read as follows:

*"1. A system lubricating oil composition for a crosshead-type diesel engine comprising:
a mineral base oil and/or a synthetic base oil;
(A) (a-1) a star polymer having a vinyl aromatic hydrocarbon structure in the molecule and/or (a-2) an ethylene- α -olefin copolymer or a hydrogenated compound thereof,
and having a base number of 4 to 20 mgKOH/g and a 100°C kinematic viscosity of 7.5 to 12.5 mm²/s;
wherein Component (A) is contained in an amount of 2 to 15 percent by mass on the basis of the total mass of the composition."*

*"7. Use of a system lubricating oil composition in a crosshead-type diesel engine, the system lubricating oil composition comprising:
a mineral base oil and/or a synthetic base oil;
(A) (a-1) a star polymer having a vinyl aromatic hydrocarbon structure in the molecule and/or (a-2) an ethylene- α -olefin copolymer or a hydrogenated compound thereof,*

and having a base number of 4 to 20 mgKOH/g and a 100°C kinematic viscosity of 7.5 to 15 mm²/s; wherein Component (A) is contained in an amount of 2 to 15 percent by mass on the basis of the total mass of the composition."

Dependent claims 2 to 6 and 8 to 12 defined particular embodiments of the composition in claim 1 and the use in claim 7, respectively.

III. The following documents were cited, *inter alia*, during the opposition proceedings:

D1: WO 95/34617

D2: WO 2007/127661 A1

D3: US 5,789,355

D4: US 6,586,374 B1

D5: Marine Lubrication: Stem to Stern, Chevron, 2008, pages 1 to 20

D7: EP 1 985 689 A1

D9: US 2006/0068995 A1

D10: EP 1 728 849 A1

D11: Exxon Mobil Corporation, Product Summary, 31.12.2008

D12: PETRONAS DI SROL 50, Premium Quality 6 TBN Diesel Engine Oils, 2003

D13: Kittiwake Development Ltd., Press Release, Better Onsite Maintenance through Fuel & Lubricating Oil Viscosity Management, 23.2.2006, pages 1 to 5

D15: Year Book 2003: Progress of Marine Engineering Technology in 2002, Chapter 7: Fuel oil,

Lubricating oil, pages 1 to 5, translated from the Journal of the JIME, Vol. 38, No. 7

D24: Rudnick, L.R., *Lubricant Additives*, 2nd Edition, 2009, page 243

D27: ASTM D7468 - 08

D28: ASTM D7484 - 08

D29: API, Engine Oil Licensing and Certification System, 15th Edition, April 2002, pages 2-4

D30: Wikipedia Extract, "*Crosshead*", 8 September 2009

D31: ASTM D4485 - 09

D32: ASTM D6838 - 04

IV. The opposition division came to the following conclusion, *inter alia*:

- The subject-matter of the main request involved an inventive step in view of D7 taken as the closest prior art.

V. In its statement of grounds of appeal, the appellant submitted that the subject-matter of claim 1 of the main request lacked novelty over the newly filed document A033:

A033: US 2008/0110799 A1

Moreover, it argued that the claimed subject-matter also lacked inventive step in view of each of A033 and D1 to D4 taken as the closest prior art.

VI. In its reply to the statement of grounds of appeal, the patentee ("respondent") contested, *inter alia*, the admittance of A033 into the proceedings. It filed the following new documents in the event that document A033 was admitted into the proceedings.

A034: Kishore Nadkarni, R.A., Guide to ASTM Test Methods for the Analysis of Petroleum Products and Lubricants, 2nd Ed., 2007, pages 35 to 39 and 290

A035: Guide to measuring TAN and TBN in Oil, Spectro Scientific, White Paper, 2017

A036: van Dam, W *et al.*, "*TBN Retention - Are we missing the Point?*", SAE Technical Paper Series, 1997, pages 115 to 120

The respondent further rebutted the appellant's arguments and submitted that the claimed subject-matter was novel over document A033 and involved an inventive step in view of D7 taken as the closest prior art. The respondent also filed sets of claims according to auxiliary requests 1 to 24.

- VII. The parties were summoned to oral proceedings in accordance with their requests.
- VIII. In preparation for the oral proceedings, the board issued a communication pursuant to Article 15(1) RPBA 2020 in which it expressed its preliminary opinion that document A033 should not be admitted into the proceedings and, as a consequence, that A034 to A036 should not be admitted either.
- IX. In a subsequent communication, the board informed the parties that in view of the coronavirus pandemic, it planned to reschedule the oral proceedings as a videoconference. The board invited the parties to reply if they disapproved of the oral proceedings being held by videoconference.
- X. No reply was received in this respect.

- XI. In a subsequent communication, the board informed the parties that the oral proceedings would be held by videoconference.
- XII. By letter dated 13 April 2021, the appellant replied to the board's communication under Article 15(1) RPBA 2020. In this letter, it raised a new objection under Article 123(3) EPC against the main request and objections under Article 123(2) EPC against some of the auxiliary requests.
- XIII. The respondent replied to the board's communication by letter dated 12 May 2021. It contested the admittance of the appellant's new objection under Article 123(3) EPC. It also replaced the auxiliary requests on file with new sets of claims according to auxiliary requests 1 to 63.
- XIV. Oral proceedings before the board were held on 13 July 2021 by videoconference.
- XV. Final requests
- The appellant requested that the decision under appeal be set aside and that the patent be revoked.
- It also requested that document A033 be admitted into the proceedings.
- The appellant further requested that auxiliary requests 3 to 29 and 34 to 63 not be admitted into the proceedings.
- During oral proceedings, the appellant also requested that the respondent's argument according to which the skilled person would not have recognised multigrade oils as being suitable as *system oil* for crosshead-type diesel engines not be admitted into the proceedings.
- With regard to this last request, the respondent's argument as referenced did not have any bearing on the

board's final decision (see below). Therefore, the board is not required to make a decision on this request.

The respondent requested that the appeal be dismissed, i.e. that the patent be upheld in the form considered allowable by the opposition division (main request).

Alternatively, it requested that the appealed decision be set aside and that the patent be maintained in amended form on the basis of the claims of one of auxiliary requests 1 to 63 as filed by letter dated 12 May 2021.

In particular, the respondent requested that it be given the opportunity to make the description consistent with the claims as allowed, most preferably by referral back to the opposition division, should the board refuse the main request but consider the claims of any auxiliary request to be allowable.

The respondent also requested that document A033 not be admitted into the proceedings. Should A033 be admitted, the respondent requested that documents A034 to A036 be admitted into the proceedings.

The respondent further requested that the new objection under Article 123(3) EPC raised by the appellant in its letter dated 13 April 2021 not be admitted into the proceedings.

Lastly, the respondent requested that the objections under Article 123(2) EPC raised by the appellant against some of the auxiliary requests not be admitted into the proceedings.

XVI. The appellant's arguments, insofar as they are relevant to the present decision, are summarised as follows.

- The inclusion of use claims 7 to 12 in the main request extended the scope of protection conferred by the claims as granted. The requirements of Article 123(3) EPC were not met. In accordance with established case law and in the interest of third parties, this objection was to be admitted into the proceedings.
- Document A033 had not been found when preparing the notice of opposition, despite having conducted a diligent prior-art search. It had only been identified by preparing the appeal, particularly as a response to the appealed decision, which stated that D1 to D4 were not suitable as the closest prior art. The admittance of A033 did not have any negative impact on the respondent and did not delay the proceedings. Moreover, A033 was highly relevant, thus justifying its admittance; see decision T 0724/08.
- Document D4 could be regarded as the closest prior art, since the skilled person would have immediately appreciated that the lubricating oils disclosed in D4 were suitable for being used as system oils in crosshead-type diesel engines.
- The only distinguishing feature of the claimed composition was the lower 100°C kinematic viscosity. No technical effect arose from this distinguishing feature, meaning that the objective technical problem was to provide an alternative system lubricating oil composition.
- The skilled person would have been prompted by any of documents D5, D7 and D9 to D12 to lower the viscosity of the composition in D4 so as to arrive at the claimed subject-matter.

- It had to be concluded that the subject-matter of claims 1 and 7 did not involve an inventive step.
- Additionally, the appellant argued, albeit only in writing, that the subject-matter of claim 1 also lacked an inventive step when considering any of documents D1 to D3 as the closest prior art.

XVII. The respondent's arguments, insofar as they are relevant to the present decision, are summarised as follows.

- The appellant's objection under Article 123(3) EPC had been raised extremely late in the appeal proceedings. There was no justification for the late filing of this objection. The respondent did not have sufficient time to respond to this objection. Under the Rules of Procedure of the Boards of Appeal, this objection was not to be admitted into the proceedings.
- The admittance of document A033 would have led to an entirely fresh case. No reasons were apparent as to why A033 could not have been filed before the opposition division. This document could not represent a response to the appealed decision since the content of this document was very similar to that of D1 to D4, which were already on file. Under the Rules of Procedure of the Boards of Appeal, A033 was not to be admitted into the proceedings.
- None of documents D1 to D4 was suitable as the closest prior art since these documents made no mention of crosshead-type diesel engines and concerned only multigrade engine oils for the lubrication of petrol and diesel engines.
- Even assuming that D4 was the closest prior art, that the only distinguishing feature was the lower

100°C kinematic viscosity and that the technical problem was to provide an alternative system oil, the claimed subject-matter involved an inventive step. This was the case because D4 was directed to oils having a high viscosity that met the requirements for SAE 5W40 oils and the performance of API service category CH-4 oils. Viscosity modifiers were included to increase the viscosity so as to meet these requirements and compensate for a decrease in viscosity during use. Therefore, the skilled person would not have reduced the viscosity of the compositions in D4. Even assuming that the skilled person had reduced the viscosity, they would have eliminated the viscosity modifiers. The claimed subject-matter would not have been obtained.

- It had to be concluded that the claimed subject-matter involved an inventive step.

Reasons for the Decision

Admittance of the objection under Article 123(3) EPC raised by the appellant in its letter dated 13 April 2021

1. In its letter dated 13 April 2021, the appellant raised an objection under Article 123(3) EPC against the claims of the main request for the first time. In particular, in view of Article 64(2) EPC, the inclusion of use claims 7 to 12 (point II above) in the main request, which were not present in the set of claims as granted, extended the protection conferred. According to established case law, the requirements of Article 123(3) EPC had to be satisfied beyond any reasonable doubt. Only in this way could the rights of third parties be adequately protected. Therefore, even if it

had been filed late, this objection was to be admitted into the proceedings.

The respondent requested that this late-filed objection not be admitted into the proceedings.

2. The main request had been filed by the respondent before the opposition division on 25 May 2016. No objections under Article 123(3) EPC had been raised by the appellant. Such an objection had not been raised in the statement of grounds of appeal either (Article 12(3) RPBA 2020).

As a consequence, this objection represents an amendment to the appellant's case which may be admitted only at the board's discretion, pursuant to Article 13 RPBA 2020. In exercising its discretion, the board considers, *inter alia*, the complexity of the objection submitted, the state of the proceedings, and whether the objection is detrimental to procedural economy (Article 13(1) RPBA 2020).

- 2.1 In the board's view the appellant's objection under Article 123(3) EPC raises complex issues at an extremely late stage of the proceedings. In fact, by admitting this objection, the board would have had to assess whether the inclusion of use claims 7 to 12 extended the protection conferred by the patent as granted. This issue had never been raised and discussed before, either during the first-instance proceedings or in the appeal proceedings. Therefore, the admittance of this objection would have led to an entirely *fresh case* based on Article 123(3) EPC to be considered at an extremely late stage of the appeal proceedings. This would have been detrimental to procedural economy.
- 2.2 Furthermore, the admittance of the appellant's objection would have gone against the primary object of the appeal proceedings, which is to review the decision

under appeal (Article 12(2) RPBA 2020) and not to start new opposition proceedings.

2.3 Finally, the objection under Article 123(3) EPC had been raised after notification of the summons to oral proceedings. Pursuant to Article 13(2) RPBA 2020, as a rule, any amendment to a party's appeal case made after notification of a summons to oral proceedings is not taken into account unless there are exceptional circumstances which have been justified with cogent reasons by the party concerned. No reasons had been given by the appellant in this regard, nor can the board see any exceptional circumstances justifying why the objection under Article 123(3) EPC might not have been raised before the opposition division or, at the latest, when filing the grounds for appeal.

2.4 In exercising its discretion under Article 13(1) and (2) RPBA 2020, the board thus decided not to admit into the proceedings the objection under Article 123(3) EPC raised by the appellant in its letter dated 13 April 2021.

Documents A033 and A034 to A036 - admittance into the proceedings

3. The appellant filed document A033 with its statement of grounds of appeal. Based on this document the appellant contested novelty and, using this document as the closest prior art, inventive step.

The respondent requested that A033 not be admitted.

4. The arguments submitted by the appellant for the admittance of A033 are not convincing for the following reasons.

4.1 Under Article 12(4) RPBA 2007, the board has the discretion to hold inadmissible *inter alia* evidence

which could have been presented in the first-instance proceedings.

4.2 The appellant did not raise any novelty objection against the subject-matter of the main request before the opposition division. Furthermore, it restricted its inventive-step attacks to those starting from D1 to D4 and D7 as the closest prior art (minutes of the oral proceedings before the opposition division, page 1, 4th paragraph and page 2, 3th and 4th paragraph; appealed decision, page 7, points 5 and 6). Therefore, the admittance of document A033 would have led to an entirely *fresh case* regarding the issue of novelty and inventive step to be considered during the appeal proceedings for the first time.

4.3 The appellant argued that A033 was only discovered in preparation for the appeal, despite a diligent prior-art search carried out when drafting the notice of opposition. While this explains why A033 was eventually identified, it is not a sufficient justification as to why A033 could not have been presented in the proceedings before the opposition division. In view of Article 99(1) EPC in conjunction with Rule 76(2)(c) EPC, the relevant time limit for filing all relevant facts and evidence is the nine-month opposition period. This implies that a complete prior-art search must be performed before that time period expires. Only identifying a document much later, namely in preparation for subsequent appeal proceedings, is therefore not a proper justification for admitting this document.

4.4 The appellant also argued that A033 was filed in response to the appealed decision, because it refused to take any of D1 to D4 as the starting point for the examination of inventive step; however, the opposition division (appealed decision, pages 7 to 9) considered

that D1 to D4 were not a valid starting point for assessing inventive step, since these documents were neither directed to a similar purpose or effect as the invention nor belonged to an identical or closely related technical field to the patent. In particular, these documents did not mention crosshead-type diesel engines and their specific problem of system oil viscosity increase induced by cylinder drip oil. Document A033 also does not mention crosshead-type diesel engines, let alone the related problem of system oil viscosity increase. The disclosure of A033 is thus equivalent to that of D1 to D4 and its filing cannot represent a response to the specific point from the impugned decision invoked by the appellant. Irrespective of this, the board takes the view that the fact that an opposition division decides that the inventive-step attacks presented to it are not convincing, as such, cannot be used to argue that any new attack is a response to this decision and thus should be admitted. If this were true, any decision adverse to the opponent could serve as a proper justification for filing new attacks on appeal.

4.5 As set out above, admitting A033 would have meant that an entirely new novelty and inventive-step objection would have had to be examined for the first time in the appeal proceedings. In such a situation, it would have been possible for the appellant to use the appeal proceedings as a second round of opposition proceedings; however, this would not be consistent with the primary object of the appeal proceedings, which is to review the decision under appeal in a judicial manner and not to start new opposition proceedings (Article 12(2) RPBA 2020).

4.6 Furthermore, the appellant argued that A033 should be admitted since it was *prima facie* relevant. It referred

to decision T 0724/08; however, *prima facie* relevance is not one of the criteria listed in the Rules of Procedure (either in the 2007 or 2020 version) for the admittance of a document in appeal proceedings. Hence, a board is not obliged to take the relevance of a document into account when deciding on its admittance. This is consistent with decision T 724/08 (reasons, point 3.4) invoked by the appellant. Indeed, in that decision, although the entrusted board stated that the *prima facie* relevance of a document could be taken into account by a board when exercising its discretion on admittance, it made it clear that there is no obligation to do so. In fact, in the case at issue in T 0724/08, the entrusted board did not consider the *prima facie* relevance of the late-filed documents when deciding not to admit the documents under Article 12(4) RPBA 2007.

4.7 Lastly, the appellant argued that the respondent should have been aware of A033 since it had an inventor in common with the patent and appeared to be assigned to a predecessor of or company related to the respondent; however, what matters here is whether the respondent was aware of the appellant's attack made on the basis of document A033. The fact that the document itself might have been known to the respondent does not necessarily imply that it must have been aware of any future attacks that could possibly have been filed by the appellant on the basis of this document. Therefore, this argument must also fail.

4.8 For the reasons set out above, the board decided not to admit document A033 and any novelty and inventive-step attack based on it into the proceedings under Article 12(4) RPBA 2007 and under consideration of Article 12(2) RPBA 2020.

- 4.9 The respondent requested that documents A034 to A036 be admitted into the proceedings should document A033 be admitted. Since the board did not admit A033, it also decided not to admit documents A034 to A036 into the proceedings.

Main request - novelty under Article 54 EPC

5. The appellant attacked the novelty of the claimed subject-matter only on the basis of document A033.

However, as mentioned above, the board decided not to admit document A033 and the novelty attack based on it into the proceedings.

Therefore, the board comes to the conclusion that the subject-matter of the main request is novel (Article 54 EPC).

Main request - inventive step under Article 56 EPC

6. The patent

- 6.1 The patent (paragraph [0001]) concerns a system lubricating oil composition for a crosshead-type diesel engine. In crosshead-type diesel engines a cylinder oil for lubricating the friction point between the cylinders and pistons and a system oil for lubricating and cooling other portions of the engines are normally used. The cylinder oil is required to have, *inter alia*, the function of neutralising the acidic components such as sulfuric acid generated by the combustion so as to prevent corrosion (paragraph [0002]).

The system oil does not contact the combustion gases, unlike the usual diesel engine oil. It is stored in a tank and is supplied to bearings by a circulation pump for lubrication and cooling. It needs to maintain a suitable viscosity for a long period of time because it is used for a long time; however, a problem arises when

the system oil is contaminated by cylinder oil dripping down into the system oil. Since the cylinder oil has a higher viscosity than the system oil, the viscosity of the latter may increase, leading to a deterioration in fuel efficiency resulting from the increased friction loss at bearings and a decrease in the heat-exchange efficiency at piston surfaces to be cooled (paragraph [0003]).

Reading of claim 1

- 6.2 As a solution to the above-mentioned problem, the patent proposes a composition as defined in independent claim 1 of the main request. In a nutshell, this claim refers to a system lubricating oil composition for a crosshead-type diesel engine comprising a mineral base oil and/or a synthetic base oil; and a certain amount of a component (A), namely component (a-1) a star polymer having a vinyl aromatic hydrocarbon structure in the molecule and/or component (a-2) an ethylene- α -olefin copolymer or a hydrogenated compound thereof, wherein the system lubricating oil has a base number of 4 to 20 mgKOH/g and a 100°C kinematic viscosity of 7.5 to 12.5 mm²/s (for details, see point II above).

The parties' opinions differ as regards the limitation placed on the claimed composition by the terms "*system lubricating oil*" and "*for a crosshead-type diesel engine*". More precisely, these differing opinions concern the impact of these terms on the scope of claim 1.

- 6.2.1 According to the appellant (statement of grounds of appeal, page 4), these terms only required the claimed composition to be suitable for use as system oil in crosshead engines. In view of the application as filed (paragraphs [0010], [0048] and [0057]), these terms at most imposed the claimed requirements as regards the

base number and the 100°C kinematic viscosity of the composition. Moreover (statement of grounds of appeal, page 23, point XII), the term "*crosshead-type diesel engine*" mentioned in claim 1 was not limited to engines using both a cylinder oil and a separate system oil. Instead, this term should have been interpreted as any diesel engine including crossheads. In this respect, the appellant referred to D24 and D27 to D32.

6.2.2 The respondent argued to the contrary (reply to the statement of grounds of appeal, pages 3 and 4) that these terms placed unique requirements on the claimed composition in view of the functions of a system oil in a crosshead engine, which typically operates at a slow speed and for long periods of time. These requirements clearly differentiated the claimed composition from oils used in trunk diesel engines, which operate at high speeds and a high temperature and are subjected to frequent cold restarts. System oils were monograde, typically complying with the SAE 30 specification (reply to the statement of grounds of appeal, page 9), and faced the problem of increased basicity due to contamination with cylinder oil. By contrast, oils used in trunk engines were typically multigrade and faced the problem of increased acidity caused by fuel leaking into the sump (reply to the statement of grounds of appeal, pages 14 and 15).

6.2.3 The board holds that the terms "*system lubricating oil*" and "*for a crosshead-type diesel engine*" as included in claim 1 make it unambiguously clear to the skilled person that the claimed composition has to be suitable for use in crosshead-type diesel engines, i.e. in diesel engines provided with both a cylinder oil for lubricating the friction points between cylinder and piston and a system oil for lubricating and cooling other portions of the engines, especially the crankcase

(see for example D5: pages 3 and 4; D15: pages 3 to 5). The more general interpretation given by the appellant on the basis of D24 and D27 to D32 that these terms should also extend to engines including any type of crosshead, e.g. overhead components located between intake and exhaust valves, is regarded as being artificial and not in line with the technical field of the patent (point 6.1 above).

7. The closest prior art

Claim 1

Document A033

- 7.1 The appellant argued a lack of inventive step in view of document A033 taken as the closest prior art; however, as mentioned above, document A033 and the related inventive-step attack were not admitted into the proceedings. Therefore, any inventive-step attack based on A033 cannot be considered.

Document D4

- 7.2 Furthermore, the appellant put forward that document D4 could be regarded as the closest prior art.

Document D4 (column 1, line 61 to column 3, line 30) concerns lubricating oil compositions for gasoline and diesel engines. According to D4 (column 4, lines 30 to 47), the disclosed compositions comprise a polyalphaolefin as a base oil and an olefin copolymer, and preferably have a 100°C kinematic viscosity ranging from 14.5 to 16.5 mm²/s and a base number of from 10 to 12.5. In particular, claim 29 (by reference to claim 18) discloses a composition comprising a polyalphaolefin copolymer of decene and dodecene (corresponding to the base oil in claim 1) and 12 volume percent of an ethylene-propylene copolymer (corresponding to component (a-2) in claim 1), the

composition having a base number of at least 10 and a 100°C kinematic viscosity from 14.5 to 16.5 mm²/s.

7.3 The appellant argued that, in view of the base number and the 100°C kinematic viscosity of the compositions of D4, the skilled person would have appreciated that these compositions were suitable as a system lubricating oil for crosshead-type diesel engines, as required by claim 1 at issue.

7.4 In the following, for the sake of argument only and in the appellant's favour, the board will assume that D4 may indeed represent the closest prior art and that the skilled person would indeed have recognised the suitability of the compositions taught by D4 as a system lubricating oil for crosshead-type diesel engines despite the fact that such an application is not mentioned in D4.

8. The technical problem

8.1 Always for the sake of argument only and in the appellant's favour, the board will assume that the composition in claim 1 of the main request differs from the compositions disclosed in D4 only in that the 100°C kinematic viscosity ranges from 7.5 to 12.5 mm²/s, while in D4 it ranges from 14.5 to 16.5 mm²/s.

8.2 The board will also assume in the appellant's favour that no technical effect arises from the above distinguishing feature, and therefore the objective technical problem is to provide an alternative system lubricating oil composition, as argued by the appellant.

9. Obviousness of the claimed solution

9.1 The appellant put forward that the skilled person seeking an alternative system oil would have been prompted by the disclosures in each of documents D5, D7

and D9 to D12 to reduce the 100°C kinematic viscosity of the compositions in D4 to values falling within the range as required by claim 1 at issue. In this respect, it referred to the following passages of these documents: D5: section 2.1.2 on page 4; D7: paragraph [0004]; D9: paragraph [0005]; D10: paragraph [0002]; D11: table on page 74, entry "MOBILGARD 300", and D12: table on the right-hand side. Each of these documents disclosed that system oils in crosshead-type diesel engines had a 100°C kinematic viscosity as required by claim 1. The appellant referred to the passage of D4 starting from column 5, line 40, from which the skilled person would have inferred that the viscosity might have been decreased by simply reducing the amount of the ethylene-propylene copolymer. It followed that the skilled person would have arrived at the subject-matter of claim 1 without exercising inventive skill.

9.2 The board disagrees for the following reasons.

9.2.1 According to D4 (column 2, lines 60 to 62), the lubricant oils disclosed are "*especially tailored for use as a high performance lubricant in gasoline and diesel engines*". The oils are "*preferably formulated so as to meet or exceed the requirements for SAE 5W40 lubricants*" and desirably have a viscosity ranging from 14.5 to 16.5 mm²/s (column 3, lines 11 to 18; claim 1). Moreover, D4 teaches that "[I]n order to **increase the viscosity** of the lubricant to a higher level as required for certification as an SAE 5W40 motor oil" an olefin copolymer, preferably an ethylene-propylene copolymer, is added to the composition to achieve the desired viscosity (emphasis added by the board).

9.2.2 All the passages of documents D5, D7 and D9 to D12 as invoked by the appellant (see above) disclose that system oils to be used in crosshead-type diesel engines should preferably meet the requirements for SAE 30

lubricants and preferably have a 100°C kinematic viscosity of 11.5 to 12 mm²/s. According to D5 and D7 (D5: *loc. cit.*; D7: paragraphs [0014], [0017], [0046] and [0048]), an oil meeting the requirements of SAE 20 lubricants, i.e. having an even lower viscosity, can alternatively be used. In line with the teaching of the patent (point 6.1 above), this low viscosity is identified as being essential for system oils to compensate for the increase in viscosity over time, which is mainly due to the ingress of waste cylinder oil (D5: *loc. cit.*; D7: paragraph [0008]). The same concept is disclosed in D13 (page 3 under "*Viscosity Increase - Contamination*"), which is also referred to by the appellant.

9.2.3 On the basis of the above teaching in D5, D7 and D9 to D12, the board is convinced that, even assuming that the skilled person would have recognised the oils of D4 as being suitable as system oils in crosshead-type diesel engines, when seeking an alternative system oil, they would have at most *replaced* the oils from D4 with any of the oils as disclosed in D5, D7 and D9 to D12. The skilled person would not have *modified* the oils from D4. In particular, the skilled person would not have *reduced* the viscosity of the oils from D4 to values meeting the requirements for SAE 20 or SAE 30 lubricants, since this would have been completely contrary to the teaching and aim of D4, these being to *increase* the viscosity to meet the requirements for SAE 5W40 lubricants, as set out above.

9.2.4 When replacing the oils from D4 with any of the oils taught in D5, D7 and D9 to D12, the skilled person would not have arrived at the claimed subject-matter, since none of these oils included the ethylene-propylene copolymer as required by claim 1.

9.3 For these reasons, the board concludes that, even having made several assumptions in the appellant's favour, the subject-matter of claim 1 still involves an inventive step when starting from D4 as the closest prior art (Article 56 EPC).

Claim 7

9.4 During oral proceedings, the appellant argued that claim 7 lacked inventive step for the same reasons as claim 1, in particular since the skilled person would have recognised that the oils from D4 had an appropriate base number and 100°C kinematic viscosity for being used as system oils in crosshead-type diesel engines.

9.5 The board disagrees.

9.5.1 Claim 7 (point II above) defines the use of a system lubricating oil composition in a crosshead-type diesel engine. The oil composition is the same as that defined in claim 1, except that the 100°C kinematic viscosity is stated as ranging from 7.5 to 15 mm²/s (7.5 to 12.5 mm²/s in claim 1). The range of 7.5 to 15 mm²/s partially overlaps with the range disclosed in D4 (point 7.2 above).

9.5.2 By analogy with that set out above for claim 1, and again in the appellant's favour, it is assumed that the objective technical problem is merely to provide an alternative use.

9.5.3 In order to arrive at the claimed solution, the use disclosed in D4 would have had to be changed to a use as claimed and a viscosity value would have had to be selected from the range disclosed in D4 so as to fall within the claimed range.

9.5.4 For analogous reasons as set out above with regard to claim 1, the board is convinced that the skilled person would not have selected a 100°C kinematic viscosity that fell within the claimed range in combination with using such a selected lubricating oil as system oil in crosshead-type diesel engines. As set out above, D4 discloses selecting high rather than low viscosity values. Furthermore, the use of the disclosed lubricating oils as system oil in crosshead-type diesel engines is neither mentioned nor suggested in D4. As likewise set out above for claim 1, considering the secondary documents D5, D7 and D9 to D12, the skilled person would have instead completely replaced the oils from D4 with any of the oils disclosed in those secondary documents. For the same reasons as given above, they would not have arrived at the claimed subject-matter in this way.

9.6 Therefore, the board concludes that the subject-matter of claim 7 also involves an inventive step when starting from D4 as the closest prior art (Article 56 EPC).

10. Further documents as the closest prior art

10.1 The appellant further argued in writing that the subject-matter of claim 1 also lacked an inventive step in view of documents D1 to D3 taken as the closest prior art. The arguments were the same as those used when starting from D4.

10.2 The board notes that, in the same way as D4, all of D1 to D3 (D1: page 1, lines 4 to 6; D2: paragraph [0011]; D3: column 1, lines 8 to 10) disclose lubricating oil compositions to be used as cylinder oil in conventional gasoline and diesel engines. The use of the disclosed compositions as system oil in crosshead-type diesel engines is not disclosed.

- 10.2.1 Examples 1 to 5 of D1 (pages 21 to 23, table 1 on page 23) disclose SAE 15W40 lubricating oils comprising a base oil and an ethylene-propylene copolymer (component (a-2) in claim 1) in an amount falling within the range in claim 1 at issue. The base number of the compositions is not disclosed. The 100°C kinematic viscosity ranges from 12.6 (example 4) to 14.0 (examples 2 and 5), i.e. above the range in claim 1. Example 6 (pages 24 to 25) discloses an SAE 10W40 lubricating oil comprising a base oil and a hydrogenated polyisoprene star polymer (component (a-1) in claim 1) in an amount (7.0% by mass) falling within the range in claim 1 at issue. The base number of the composition is not disclosed. The 100°C kinematic viscosity is 14.3 mm²/s, i.e. above the range in claim 1.
- 10.2.2 D2 (paragraphs [0011], [0042], [0107] and [0108]) discloses lubricating oils including a viscosity modifier, which can be selected to correspond to components (a-1) or (a-2) in claim 1; however, none of the examples in D2 (see paragraph [0130] and ff.) discloses oils comprising these claimed components. The oils are said to have a viscosity grade of 10W40 (paragraphs [0134] and [0135]), while the base number of the oils is not disclosed.
- 10.2.3 D3 (column 8, line 30 to column 9, line 24) discloses lubricating oils including a viscosity modifier, which can be selected to correspond to components (a-1) or (a-2) from claim 1. The examples in D3 (columns 13 to 15) disclose oils having a 100°C kinematic viscosity from 13.55 to 18.98, i.e. above the range in claim 1, while the base number is not disclosed.
- 10.3 The information set out above demonstrates that documents D1 to D3 are less relevant than D4, i.e. that there are more features distinguishing the subject-

matter of claim 1 from the lubricating oils in D1 to D3.

- 10.4 For the sake of argument only and in the appellant's favour, even assuming that the skilled person would have recognised the oils from D1 to D3 as being suitable as system oils in crosshead-type diesel engines, and that the objective technical problem was to provide an alternative system oil, the same considerations as mentioned above with respect to D4 apply. The skilled person would have replaced the oils from D1 to D3 with any of the oils as disclosed in D5, D7 and D9 to D12; however, in so doing, they would not have arrived at the claimed subject-matter.
- 10.5 Therefore, the board concludes that the subject-matter of claim 1 involves an inventive step when starting from any of D1 to D3 as the closest prior art (Article 56 EPC).
- 10.6 For the sake of completeness, the board further observes that, with regard to claim 7, an analogous reasoning as mentioned above when considering D4 as the closest prior art (points 9.5.1 to 9.5.4 above) also applies when considering any of D1 to D3 as the starting point. The skilled person would not have arrived at the subject-matter of claim 7, particularly because the use of the disclosed oil compositions as system oil in crosshead-type diesel engines is neither disclosed nor suggested in D1 to D3 and because of the further features distinguishing the claimed oil composition from the oil compositions in D1 to D3 (points 10.2 and 10.3 above).
11. No other inventive-step attacks were submitted by the appellant. Therefore, the board concludes that the subject-matter of independent claims 1 and 7, and of claims 2 to 6 and 8 to 12, which are dependent on these

claims, involves an inventive step within the meaning of Article 56 EPC.

Conclusions

12. The respondent's main request is allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



N. Maslin

M. O. Müller

Decision electronically authenticated