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D E C I S I O N
of 23 July 2002

Case Number: T 0281/99 - 3.3.5

Application Number: 93106161.8

Publication Number: 0567860

IPC: C02F 1/78

Language of the proceedings: EN

Title of invention:

Microorganism removing method

Applicant/Patentee:

mitsubishi denki kabushiki kaisha

Opponent:

L'AIR LIQUIDE, Société Anonyme pour L'étude et L'exploitation
des procédés Georges Claude

Headword:

Removing microorganisms/MITSUBISHI

Relevant legal provisions:

EPC Art. 56, 114(2), 112(1)(a)
EPC R. 67

Keyword:

"Procedural violation by Opposition Division to admit new
claims during oral proceedings - no"
"Referral of questions to Enlarged Board of Appeal - no"
"Reimbursement of appeal fee - no"
"Inventive step - yes - not obvious without hindsight"

Decisions cited:

T 0926/93, T 0301/87, G 0010/91

Catchword:

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Case Number: T 0281/99 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 23 July 2002

Appellant:
(Opponent)

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Decision under appeal:

Interlocutory decision of the Opposition Division
of the European Patent Office posted 20 January
1999 concerning maintenance of European patent
No. 0 567 860 in amended form.

Composition of the Board:

Chairman: R. K. Spangenberg
Members: G. J. Wassenaar
M. B. Günzel

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division to maintain European patent No. 0 567 860 in amended form with two independent claims 1 and 6 which read as follows:

Claim 1:

"An organism deposition preventing system for removing organisms propagated in water conducted through a water line (10), comprising:

an ozonizer (1) for generating ozone;

an ozone adsorber (4) in fluid communication with the ozonizer (1) and having an ozone adsorbent for storing ozone generated by the ozonizer (1), the ozone stored in said ozone adsorbent being able to be desorbed by heating the ozone adsorbent;

a carbon dioxide source (31) for providing carbon dioxide to the water;

a branch water line (9) branched from said cooling water line (10); and

mixing means (7) in fluid communication with the ozone adsorber for mixing an ozonous gas, produced by desorbing ozone from the ozone adsorbent of the ozone adsorber (4), with the carbon dioxide provided by the carbon dioxide source (31), said carbon dioxide source (31) being in fluid communication with the branch water line (9), characterized in that the ozone adsorber (4) is connected to the carbon dioxide source (31) to produce a mixed gas by supplying carbon dioxide gas from the carbon dioxide gas source (31) into the ozone adsorber (4) when desorbing ozone from the ozone adsorbent of the ozone adsorber (4)."

Claim 6:

"A microorganism removing method comprising causing water to flow through a water line; causing water to flow through a branch water line branched from the water line; periodically injecting an ozonous gas of a high ozone concentration produced by an ozonizer into the water caused to flow in the branch water line by an ozone mixing device to remove microorganisms propagated in the water line, wherein carbon dioxide gas is injected into the water conducted through the branch water line in synchronism with the injection of the ozonous gas into the water, wherein the step of periodically injecting takes place during only a part of the step of causing water to flow through the water line, and wherein the method further includes the steps of desorbing the ozonous gas in the ozone adsorber and adding the carbon dioxide gas to the ozone adsorber to generate the mixed gas."

II. In the decision under appeal, inter alia, the following documents were cited:

D1: WO-A-91/12209

D2: JP-A-03-296490

D3: Ozone: Science and Engineering, Vol. 2, pages 229-239, 1980, Dr. Leitzke et al.

D4: JP-A-02-144191

D6: Cooling Water Treatment with Ozone, R. Wellauer et al.

D7: US-A-5 114 576

D9: JP-B-62-10714.

III. In the statement of the grounds of appeal, the appellant(opponent) argued that the set of claims maintained by the Opposition Division was inadmissible because

- (a) it was introduced late into the proceedings,
- (b) it corresponded to an earlier request which was abandoned,
- (c) it was introduced at a moment where there was no valid pending request.

With respect to reason c) reference was made to T 926/93, according to which a patent would have to be revoked if no valid requests existed any more. Moreover, since the Opposition Division did not reply to the objections under b) and c) a substantial procedural violation took place.

In connection with these alleged procedural violations three questions to the Enlarged Board of Appeal were formulated which, translated into the language of the present proceedings, have essentially the following purport:

1. If all the requests of a patentee are considered either not admissible or not allowable by the Opposition Division are they then obliged to revoke the patent immediately or may they give the patentee the opportunity to file a new request?

2. May a patentee be allowed to reintroduce a request which was earlier abandoned during the proceedings?
3. Is it a substantial procedural violation if the Opposition Division accepts new requests under the conditions as set out in questions 1 and 2 above?

The appellant further objected to the claims under consideration on the grounds of lack of clarity (Article 84 EPC) and lack of inventive step (Article 56 EPC). In conformity with decision T 165/84 the Opposition Division should have refused the claims for lack of clarity as explicitly requested by the appellant during the oral proceedings before the Opposition Division. By refusing this request the Opposition Division committed another substantial procedural violation.

With respect to lack of inventive step the appellant argued essentially as follows:

In view of the closest prior art (D9) the problem underlying the invention was considered to be to overcome the disadvantages of using acids and to avoid the decomposition of ozone by metal ions in the water. In order to reduce decomposition of ozone and to improve the solution of ozone in water D2 taught to mix the ozone with carbon dioxide gas. It was thus obvious to replace the source of acid in D9 by a source of carbon dioxide and to introduce the carbon dioxide gas in the ozone adsorber. All the documents D1, D3, D4, D6 and D7 clearly show that it was common in the art to introduce gases into a branch line. The solution as claimed in claims 1 and 6 followed thus in an obvious

way from a combination of D9 and D2 together with the common general knowledge in the art.

- IV. The respondent denied that during oral proceedings before the Opposition Division the earlier auxiliary request was abandoned before the present request was submitted. With respect to inventive step, the respondent argued essentially as follows:

In view of D2 it might be obvious to a skilled person to replace the source of acid in D9 by a source of carbon dioxide but that would mean injection of the carbon dioxide gas into the cooling water line and not into the branch water line. The teaching in D2 to mix ozone and carbon dioxide before injecting into the water would only suggest to mix the gases immediately before injection in the water. There was no suggestion to mix the carbon dioxide with ozone already in the ozone adsorber. The prior art did not treat the problem of enhancing the yield of the ozone stored in the adsorber for the injection. A diagram illustrating experimental results of the desorption of ozone with and without carbon dioxide introduction was filed.

- V. In reply to the respondent's letter dated 25 August 1999 the appellant requested that said letter of the respondent should be deemed not having been received because the person responsible for the submissions in this letter could not be identified since the name of the patent attorney signing the letter was illegible (Article 133 EPC).

The appellant maintained that the present claims were submitted after the Opposition Division decided to reject the only request then on file. In this

connection the appellant formulated a fourth question to the Enlarged Board of Appeal, which, translated, essentially reads as follows:

4. If during oral proceedings a situation relevant for the final decision was created, which was neither noted in the minutes nor in the final written decision, what possibilities are left to a party adversely affected by the decision to prove that the situation actually took place, in particular if the other party pretend the contrary.

With respect to the issue of inventive step the appellant further put forward that there were only two possibilities to mix carbon dioxide with ozone, either in a mixer between the ozone adsorber and the water line or directly in the ozone adsorber, whereby the latter option was the most simple solution and thus the obvious one because no separate gas mixer was necessary. The improved desorption had nothing to do with the technical problem as stated in the patent in suit and could therefore not be an argument in favour of inventive step.

The appellant further argued that the introduction of carbon dioxide in the ozone adsorber was only represented by the embodiment according to Figure 4, and that, in agreement with T 284/94, the introduction of such an isolated feature in a claim was inadmissible in view of Article 123(2) EPC if it was not evident from the original application that the subject-matter of such an amended claim would completely solve a technical problem, which could be identified in the application as originally filed.

VI. The appellant requested that the decision under appeal be set aside and that the European patent No. 567 860 be revoked and that the appeal fee be reimbursed.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. *Admissibility of the present claims*

1.1 The present claims were filed during the oral proceedings before the Opposition Division, ie after the final date for the filing of written submissions and/or amendments indicated in the communication under Rule 71a EPC. According to said Rule new facts and evidence presented after that date need not be considered, unless admitted on the grounds that the subject of the proceedings has changed. It follows therefrom that the subject of the proceedings may be changed during the oral proceedings so that the Opposition Division has the discretion to accept amended claims during the oral proceedings. The Board is not aware of any article or rule under the EPC nor of any case law which would oblige the Opposition Division to refuse new claims submitted during the proceedings irrespective of their contents and the reasons for their late filing. Article 114(2) EPC does not relate to the submission of amended claims, but even this article does not affect the Opposition Division's discretion to accept new facts and evidence which are not submitted in due time. In these circumstances, the Board has only to decide whether or not the Opposition Division exceeded its discretionary power, thereby adversely affecting the appellant. The

present amended claims can be considered as a response to clarity and novelty objections raised during the oral proceedings against earlier sets of claims. The changes are minor with respect to the set of claims according to the auxiliary request filed with the respondent's letter dated 13 October 1998, ie more than one month before the oral proceedings took place (2 December 1998). In view of this, the Board is satisfied that the Opposition Division did not exercise its discretion unduly.

- 1.2 The parties disagree whether the present set of claims was filed before or after the Opposition Division indicated that the main request then on file was not acceptable because the subject-matter of claim 11 thereof lacked novelty. Also the minutes are not entirely unambiguous in this respect. In the Board's view, however, it is immaterial for the Opposition Division's discretion to accept the new set of claims whether they were submitted before or after the rejection of the main request then on file. The appellant's position that if during the oral proceedings all the requests on file are considered not admissible or not allowable the Opposition Division has no discretion to allow further requests and is obliged to revoke the patent is not supported by any article or rule of the EPC nor by any case law of the Boards of Appeal. The fact that a patentee no longer maintains an earlier request does not mean that he wanted to surrender the patent even if at some moment in the discussion it may perhaps not have been perfectly clear which text the patentee actually wanted to defend. The conclusion that a patent is surrendered may not be drawn without explicit statement from the side of the patentee to this effect. As long as the proceedings are

not terminated by a formal decision after deliberation, the Opposition Division is entitled to ask the parties if they have any further request. It belongs, in fact, to the duties of an opposition division to establish before interrupting the oral proceedings for deliberation what the parties final requests are. The Board is not aware of any decision supporting the appellant's position in this respect. According to T 926/93 (OJ EPO, 1997, 447), relied on by the appellant, a second auxiliary request filed towards the end of the oral proceedings was refused on the grounds that it would create a fresh case in the sense that its subject-matter had not previously been considered during the opposition proceedings as providing a possible basis for inventive step (point 3 of the reasons). The second auxiliary request was not refused because the earlier requests on file were not allowable. The obiter dictum in paragraph 4 of point 3 of the reasons, "that an opponent may only substantiate a ground of opposition against a single claim of each request on file, and if he succeeds in establishing that a claim of each request on file is not allowable, the patent will be revoked" simply means that if only one claim of each of the requests on file is not allowable the patent should be revoked. The Board does not conclude from this statement that an Opposition Division or a Board of Appeal may not allow any further request once they have indicated that the requests on file are not allowable.

- 1.3 The present set of claims corresponds largely to the set of claims according to the auxiliary request filed with the letter dated 30 October 1998 but is not identical therewith. The wording of claims 3 to 5 has been amended because of objections raised by the

appellant under Articles 84 and 123 EPC; see point 3 of the minutes of the oral proceedings before the Opposition Division. Thus even if the earlier auxiliary request had been abandoned before the present set of claims was filed, which was disputed by the respondent, the new set of claims could not be regarded as reintroducing a request which was earlier explicitly abandoned.

- 1.4 For the reasons given above, the Board cannot detect any procedural violation committed by the Opposition Division in accepting the present set of claims. On the contrary, under the circumstances of the case it would have been unreasonable to refuse any further requests. It follows from the above also that the appellant's questions of law are not relevant to the outcome of the present appeal since they either do not relate to a point of law where the Board intends to deviate from established case law (question 1) or to a situation which actually took place (question 2). Question 3 is dependent upon questions 1 and 2 and cannot stand on its own. There is no need to answer Question 4 because the above conclusions of the Board were reached taking into account the appellant's version of the facts and submissions during the oral proceedings before the Opposition Division. The appellant's request to refer the above questions to the Enlarged Board of Appeal is therefore rejected (Article 112(1)(a)EPC).

2. *Clarity and admissibility of the amendments*

Present claims 1 to 10 correspond to claims 2, 8, 9, 7, 5, 18, 17, 19, 20 and 21 of the patent in suit respectively; they fulfil therefore the requirements of Article 123(3) EPC. Since no objections under

Article 100(c) EPC have been raised against the claims as granted in the notice of opposition and since lack of clarity is not a ground for opposition the Board, following the reasoning in T 301/87 (OJ EPO 1990, 325) and G 10/91 (OJ EPO 1993,420), considers that it has no power to investigate whether the present independent claims fulfil the requirements of Articles 84 and 123(2) EPC. The appellant's observations with respect to Article 123(2) EPC and the references to T 165/84 and T 284/94, therefore, cannot be taken into account.

3. *Novelty and inventive step of the subject-matter of claim 1*

3.1 The subject-matter of claim 1 is novel. In this respect the Board agrees with the uncontested finding on novelty in the decision under appeal, so that there is no need to give further reasons.

3.2 It is undisputed that the process according to D9, as described in the patent in suit in column 2, line 27 to column 4, line 17 and illustrated by Figure 1 represents the closest prior art and that the process according to present claim 1 differs therefrom by the characterizing features of claim 1. According to the said description of D9 the ozone in the adsorber is desorbed by periodically heating the adsorber at a low internal pressure produced by a water-jet ejector (column 3, lines 28-46). By this method it is not possible to desorb the ozone completely in a short time and thus difficult to obtain periodically a high ozone concentration in the cooling water.

In agreement with the objective of the invention as

stated in the patent in suit (column 6, lines 8-22) and the submissions made by the respondent (paragraph bridging pages 4 and 5 of the letter dated 25 August 1999), starting from D9, the problem underlying the invention can be seen in improving the efficiency of the organism deposition preventing or removing process.

According to the patent in suit it is proposed to solve this problem by supplying carbon dioxide gas into the ozone adsorber when desorbing ozone from the ozone adsorbent.

The respondent has shown by the diagram submitted with the letter dated 25 August 1999 that by introducing carbon dioxide into the ozone adsorber during the desorption step the desorption rate is substantially increased so that higher ozone concentrations can be produced which makes the control of microorganisms more effective. The Board is, therefore, satisfied that the method according to claim 1 actually solves the above-mentioned problem.

- 3.3 The Board cannot agree with the appellant's allegation that the improved desorption was not related to the technical problem as stated in the patent in suit but a mere consequence of solving other problems mentioned in the patent in suit such as avoiding the decomposition of ozone and reducing the amount of carbon dioxide (appellant's letter dated 26 October 1999, paragraphs bridging pages 3 and 4). In the patent in suit it is clearly stated that one of the objectives of the invention is to effectively inject all the ozone stored in the adsorber and providing ozonous water of a high ozone concentration (column 6, lines 15-16 and lines 20 to 22). Even if improving the desorption is not the

only measure to increase the ozone concentration it is certainly an important one. It can be left aside whether the other problems mentioned in the patent in suit are also solved by the introduction of carbon dioxide in the adsorber. Since there is no proof that pollution of the environment, scale formation and corrosion are actually reduced by introducing carbon dioxide gas into the adsorber, the Board has not taken them into consideration for defining the problem underlying the invention.

- 3.4 Although according to the patent in suit D9 would disclose the use of carbonic acid to acidify the cooling water in order to reduce the decomposition of the ozone injected therein (column 2, lines 14-19), D9 provides no incentive to produce the acid by introducing carbon dioxide into the adsorber. The only point of introducing the acid actually disclosed is the source (14) connected to the main water line (column 2, line 44 and Figure 1 of the patent in suit).
- 3.5 None of the other documents relied on by the appellant in the appeal stage relates to a process whereby ozone in high concentration is periodically injected into a cooling water line in order to control organism deposition.

According to D1, ozone is directly injected from an ozone generator into a branch line of a cooling circuit. It discloses that the ozone generator can be switched on and off depending on the measurement of the oxidation reduction potential (ORP meter) so that the injection may be periodical, but the production rate of ozone by an ozone generator without an adsorption unit is relatively low (page 7, lines 21-34). There is no

disclosure of how to increase the production rate. D1 provides no incentive to mix the ozone with carbon dioxide.

3.6 D2 discloses a method to enhance the concentration of ozone in water by mixing an ozone containing gas produced in an ozone generator with carbon dioxide gas and to introduce the gas mixture into an ozone dissolving tank. The ozone concentration is improved because the carbon dioxide suppresses the decomposition of ozone in the water. There is no disclosure of adding the ozonized water to a water cooling line and thus no relation with the problem of periodically producing a high ozone concentration in a cooling circuit. Thus the skilled person trying to solve the above-mentioned problem would not expect to find in D2 a solution for his problem and would therefore not seriously try to combine the teaching of D2 with that of D9. The Board does not dispute that if a skilled person combines the teachings of D9 and D2 he could have and perhaps would have come to the claimed solution but holds, that it needs the knowledge of the patent in suit to come to this combination. Thus, without hindsight, the combination of the teachings of D9 and D2 was not obvious.

3.7 The other documents cited by the appellant do not teach the use of carbon dioxide in combination with ozone and can thus not provide any incentive for the claimed solution of the above-mentioned problem. The subject-matter of claim 1, therefore, does not follow in an obvious way from the state of the art and involves an inventive step.

4. The subject-matter of the other independent claim 6

differs from that of claim 1 only in that it is directed to the removal of microorganisms from a water line instead of the prevention of deposits. The method itself remains however the same so that the inventive step arguments equally apply to claim 6. The other claims are dependent upon claims 1 or 6. The inventive step of their subject-matter follows from this dependency.

5. The signature under respondent's letter dated 25 August 1999 was the same as on all the earlier letters received from the respondent, wherein it was repeatedly indicated that it belongs to Mr J. Bergmann who has been the representative of the patentee since the filing of the application. There was thus no reason not to consider said respondent's letter. Since the appellant has had the opportunity to present his comments on the grounds and evidence presented in this letter and has withdrawn his request for oral proceedings the case was ready for a final decision (Article 113(1) EPC).

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for reimbursement of the appeal fee is rejected.

The Registrar:

The Chairman:

P. Martorana

R. Spangenberg