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Datasheet for the decision of 13 February 2026

Case Number: T 0163/24 - 3.3.08

Application Number: 16780726.2

Publication Number: 3283639

IPC: C12Q1/04, C12Q1/68

Language of the proceedings: EN

Title of invention:
A method for determination of diversity and viability thresholds used to assess microorganisms in process samples

Patent Proprietor:
Ecolab USA Inc.

Opponent:
Kemira Oyj

Headword:
A method for determining and treating a microbial contamination in a water process system/ECOLAB USA

Relevant legal provisions:
EPC Art. 56

Keyword:
Main request and auxiliary requests 1 to 4 - inventive step - (no)

Decisions cited:

Catchword:

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Beschwerdekammern

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Case Number: T 0163/24 - 3.3.08

D E C I S I O N
of Technical Board of Appeal 3.3.08
of 13 February 2026

Appellant I: (Patent Proprietor)	Ecolab USA Inc. 1 Ecolab Place St. Paul, MN 55102 (US)
Representative:	Godemeyer Thomas Godemeyer Blum Lenze Patentanwälte Partnerschaft mbB - werkpatent An den Gärten 7 51491 Overath (DE)
Appellant II: (Opponent)	Kemira Oyj Energiakatu 4 00180 Helsinki (FI)
Representative:	Stephens Clare Page White Farrer Bedford House 21a John Street London WC1N 2BF (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 30 November 2023 concerning maintenance of the European Patent No. 3283639 in amended form.**

Composition of the Board:

Chair	D. Pilat
Members:	M. Montrone
	D. Rogers

Summary of Facts and Submissions

I. European patent No. 3 283 639 B1 ("the patent") was granted for European patent application No. 16 780 726.2 which has been filed as International patent application published as WO 2016/168430.

II. An opposition was filed against the granted patent. The patent was opposed under Article 100(a) EPC (in conjunction with Articles 54 and 56 EPC) and Article 100(b) EPC.

III. By an interlocutory decision, the opposition division decided that Article 100(a) EPC, in conjunction with Article 56 EPC, prejudiced the maintenance of the patent as granted; but that the patent could be maintained in amended form on the basis of the claims of auxiliary request 1 filed at the oral proceedings before the opposition division.

IV. The patent proprietor and the opponent ("appellants I and II", respectively) appealed this decision.

V. With their statement of grounds of appeal, appellant I submitted arguments as to why the claims as granted were based on an inventive step.

VI. With their statement of grounds of appeal, appellant II submitted *inter alia* objections under lack of an inventive step against the subject-matter of auxiliary request 1 (i.e. the request maintained in opposition proceedings).

VII. Both appellants replied to each others' appeals. Appellant I re-submitted auxiliary request 1 as

maintained by the opposition division and submitted new auxiliary requests 1 to 3 that were later re-named as auxiliary requests 2 to 4.

VIII. Claim 1 as granted (main request) reads:

"1. A method of anticipating a microorganism caused problem in a water process system ("Feature A"), the method comprising:

measuring the overall microorganism population in at least a portion of the system ("Feature B(i)");

measuring the amount of at least one subgroup of microorganism population relative to the overall microorganism population ("Feature B(ii)");

determining if the amount of at least one subgroup of microorganisms exceeds a threshold, the threshold being at least one of a pre-determined: absolute amount of the subgroup of microorganisms, a relative amount of the subgroup of microorganisms, and any combination thereof ("Feature B(iii)");

wherein the process further comprises identifying an input source that is the cause of the at least one subgroup of microorganism population ("Feature C"),

and further comprising identifying the water source the subgroup of microorganisms comes from ("Feature D")

and enacting a biocontrol procedure to remediate the presence of the at least one subgroup of microorganisms only subsequent to and no later than 1 week of the introduction of water from the water source the subgroup of microorganisms comes from ("Feature E");

wherein the water process system comprises feed water from one source selected from the group consisting of: municipal water, tap water, pond water, sea water, lake water, filtered water, desalinated water, recirculated water, wastewater, distilled water, condensed boiler water, cooling water, and any combination thereof" ("Feature F").

The feature designations in claim 1 have been added by the board for ease of reference.

IX. Claim 1 of auxiliary request 1 differs from claim 1 as granted in that the feature "*to the contaminated input source*" has been added to Feature E.

X. Claim 1 of auxiliary request 2 differs from claim 1 of auxiliary request 1 in that the feature "*and in which the threshold is the subgroup of microorganisms in an amount of at least 5-90% of the overall microorganism population;*" has been added at the end of Feature B(iii).

XI. Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that the feature "*and in which the subgroup of microorganisms comprises filamentous bacteria;*" has been added at the end of Feature B(iii).

XII. Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 2 in that the feature "*and in which the subgroup of microorganisms comprises Spirogyra, Cladophora, Pithophora, O. Siphonocladales pithophora, Ulvibacter litoralis, Vetellibacter vladivostokensis, Weeksella virosa, Fucobacter, Gelidbacter, Ornithobacterium rhinotracheale, Riemerella cohambina, Flavobacterium psychrofilum, Herpetosiphon,*

Haliscomenobacter, Sphaerotilus, Ctyophaga succinicans, Vladibacter, Pfeifferella, Bacillus aquatilllis, Flexibacter marinus, Flavobacterium odoratum, Microscilla, Flexithrix, Capnocytophaga, Taxeobacter, Sporocytophaga, Saprospira, Chryseobacterium, Hymenobacter, and any combination thereof;" has been added at the end of Feature B(iii).

XIII. Both parties filed further submissions with arguments and counter-arguments to their cases.

XIV. In a communication pursuant to Article 15(1) RPBA, the board provided its preliminary assessment on some of the issues at stake including claim construction and inventive step for all claim requests on file.

XV. In reply, appellant I submitted further arguments.

XVI. Oral proceedings were held in the presence of both appellants.

XVII. The documents cited in this decision are:

D1: WO 2014/015044 A1

D3: Blanco MA *et al.*, Applied Microbiol. Biotechnol., 1996, Vol 46: 203-208

XVIII. The arguments of the parties relevant for the decision are dealt with in detail in the Reasons for the Decision.

XIX. The relevant requests of the parties for the decision are the following (for the complete list of the parties' requests, see the minutes of the oral proceedings):

Appellant I requested:

- that the decision under appeal be set aside and amended such that the patent be maintained as granted (main request),
- alternatively that appellant II's appeal be dismissed (auxiliary request 1, patent as maintained by the opposition division) and
- alternatively that the patent be maintained on the basis of one of auxiliary requests 2 to 4 (filed as auxiliary requests 1 to 3 with their reply to appellant II's appeal).

Appellant II requested:

- that the decision under appeal be set aside and amended such that the patent be revoked, and
- that none of auxiliary requests 1 to 4 be admitted into the proceedings.

Reasons for the Decision

Claims as granted (main request)

Claim construction - claim 1

1. Claim 1 is directed to a method of anticipating a microorganism caused problem in a water process system (feature A, section VIII above), i.e. to a method that reacts on potential microbial caused problems in a water process system at an early stage before problems actually arise. The claimed method comprises several process steps for achieving this purpose, while the use

of further steps is not excluded therefrom due to the use of the "*comprising*" language.

2. Appellant I submitted that claim 1 was directed to a complete water process system only, i.e. a closed system wherein the terms "*source*", "*input*" and "*feed*" in the context of water necessarily implied that the water entered the system from the outside, i.e. an external source.

2.1 The board for the reasons submitted by appellant II does not agree. Claim 1 does not specify the term "*water process system*" and hence encompasses any such system including whole systems or parts thereof. This is evident from the subject-matter of dependent claim 6 which explicitly mentions exemplary water process systems encompassed by claim 1, including for example, a paper making process system as a whole but also "*one or more stages*" thereof.

2.2 The board further agrees with appellant II that no conclusions on the origin of the water can be drawn from the terms "*input source*" (feature C), "*water source*" (feature D), or "*feed water*" (feature F) in claim 1, in particular not that these terms limit the claimed method to the use of water coming from external sources only. Such a claim construction contradicts the wording of claim 1 which *inter alia* mentions "*recirculated water*" as a feed water source. The term "*recirculated*" according to its ordinary meaning in the art relates to water that initially originated from an external source but is reused one or more times in the system. This includes, for example, the use of recycled water that has been treated externally and re-enters the system, or the use of water that circulates internally between different process stages all having

their own input sources and combinations thereof. An exemplary internal water that recirculates between different stages in a paper making process is commonly known as "*white-water*" (e.g. document D3, Figure 1; "*white-water*" indicates water that recirculates between the "*Pressing*" and the "*Wet-end*" stages of a paper making process). Claim 1 encompasses thus the use of internal "process" water and water from external sources.

3. It is common ground between the parties that the terms "*input source*" (feature C) and "*water source*" (feature D) in claim 1 do not have the same meaning since the former term is more generic and may encompass the later term. Likewise it is common ground that the term "*bio-control procedure*" in feature E of claim 1 is not limited to the use of biocides, such as chemicals, but encompasses physical treatments too, for example, heating and filtration.

4. Feature E forms the second half sentence of feature D in claim 1 (section VIII above) and defines a time frame, i.e. the earliest ("*subsequent to*") and latest start points ("*no later than 1 week of the introduction of water from the water source the subgroup of microorganisms comes from*") (hereafter the "within a week" feature) of a biocontrol procedure aimed at eradicating a microbial contamination from the system.

4.1 It is contested between the parties whether the biocontrol procedure of feature E in claim 1 is limited in that it is applied solely to a water source the subgroup of microorganisms comes from.

4.2 The board agrees with the opposition division (decision under appeal, section 6.6.6.1.1) and appellant II that

claim 1 is not restricted to the application of a biocontrol procedure solely to the water source from which the microbes come from but encompasses a treatment of the whole system too. The biocontrol procedure of claim 1 (feature E) does not specify its target. Nor is the target of this treatment derivable from the other features in claim 1 (section VIII above): features D (water source) and E (biocontrol procedure) are neither linguistically nor functionally linked; feature B(i) in claim 1 mentions explicitly a measuring of microbes "*in at least a portion of the system*" without specifying this portion further; feature C in claim 1 requires that an input source is identified that "*is the cause of the at least one subgroup of microorganism*"; and it is uncontested that features C (input source) and D (water source) are not the same. In these circumstances claim 1 encompasses as embodiment a biocontrol procedure that treats the contaminated input or water source(s) separately or in combination, or that treats the entire water process system.

4.3 Also the patent as a whole does not support an application of the biocontrol procedure to the contaminated water source only. Paragraph [0011], lines 41 to 47 of the patent discloses a sentence that is very similar to features D and E of claim 1. Consequently, the same reason applies (point 4.2 above). This does not change by reading the whole sentence together as suggested by appellant I. Also paragraph [0044], lines 42 to 50 of the patent does not restrict the treatment to a contaminated water source. The whole paragraph refers to several "*process inputs*" that include "*but are not limited to water sources, material sources, and specific pieces of equipment*" (column 10, lines 28 and 29). It is

explicitly stated that "*only one or some of these process inputs*" (column 10, line 43) may be treated by the biocontrol procedure, i.e. either alone or in combination with an additional treatment. There is also no technical reason that excludes the application of a biocontrol procedure on the entire system, or to any of the other contaminated portions of the system either alone or in any combination. Nor has this been argued by appellant I.

4.4 An application of the biocontrol procedure to the entire system is, for example, derivable from paragraph [0060] of the patent which states that biocidal compounds may be "*added to one or more locations within a water process system*" (emphasis added). The working example of the patent (in particular paragraphs [0067] to [0070]), contrary to appellant I's submission, does not disclose that the biocontrol procedure treats solely the contaminated water source. Paragraph [0070] reports in this respect that a second chemical has been added to a "*felt washing protocol*". While this protocol is certainly water-based, the addition of a second chemical compound to this protocol does not necessarily imply that the wash protocol is the source of the microbial contamination, it may as well be the felt. Paragraph [0070] of the patent therefore solely shows that the addition of a second chemical compound to a wash protocol solves the problem, while the source of contamination remains unknown.

Inventive step - claim 1

5. It is uncontested that document D1 represents the closest prior art. The board has no reason to disagree.

6. The number of distinguishing features between the claimed method and that of document D1 is contentious between the parties. The board agrees with the opposition division (decision under appeal, section 6.3.2.1) that the claimed method is distinguished from that in document D1 by two features only:
(i) a time frame ("within a week", feature E) for initiating the biocontrol procedure and
(ii) by specifying the sources of the "feed water" (feature F).

7. Appellant I submitted that there were two additional distinguishing features (i.e. four in total) between the claimed method and that of document D1. These two additional features were:
(i) the purpose of the claimed method (a method of anticipating a microbial-caused problem vs a method that addresses a microbial infestation "*which takes place at later point of time*") and
(ii) that the "*biocontrol procedure is enacted on the input source*".

8. The board in agreement with the opposition division (decision under appeal, section 6.3.2) and appellant II is not convinced thereof.

9. As regards feature (i) of point 7 above, there is no difference between anticipating a microbial-caused problem by a treatment as indicated in claim 1 and addressing a microbial infection which takes place at a later point in time by a treatment which likewise prevents a (future) microbial-caused problem as shown in D1.

9.1 Irrespective thereof, the abstract, page 11, lines 1 and 2 and page 12, lines 3 to 11 of document D1 mention

that the disclosed method allows the "*prediction*" of microbial-caused problems, "*preemptively avoid a harmful microbiological effect before it occurs*" and "*can moot a potential problem before its effects manifest*". Even if page 12, lines 3 to 11 of D1 mentions a "*change in diversity index*" and not an exceeded "*threshold*" as claim 1, the board concurs with appellant II that in light of the disclosure of page 5, lines 5 to 14, page 10, lines 11 to 14 and the subject-matter of claim 1 of D1 these two terms have the same meaning.

9.2 Also the patent uses the term "*change in the diversity index*" in various locations in the same context, for example, in paragraphs [0039], [0040], [0044] and [0063]. Accordingly, document D1 discloses a method that is used for anticipating microbial-caused problems. Appellant I submitted further that the mentioning of a "*prediction of problems without previously knowing that a particular organism will cause a particular problem*" in the abstract of D1 was erroneous. The board does not agree, the mentioning of this sentence in the abstract of D1 represents a fact which does not contravene the remaining teaching of D1 (point 9.1 above). The skilled person would take this information thus at face value.

10. As regards feature (ii) of point 7 above, for the reasons set out above (points 4.2 and 4.3), the enaction of a biocontrol procedure as indicated in claim 1 is not limited to the input source.

11. As regards the technical effects ascribable to the two remaining distinguishing features indicated above (point 6), the board agrees with the opposition division (decision under appeal, section 6.6.4) and

appellant II that two partial technical problems have to be formulated since there is no technical relationship between these two features causing a synergistic or combined technical effect. Moreover, the patent does not provide any experimental data in support of a technical effect caused by these two features across the whole breadth of the claim. The sole working example of the patent is not even encompassed by the method of claim 1, because this example lacks, for example, the "within a week" feature (point 4 above).

12. As regards the technical effects of the "within a week" feature, appellant I submitted that this feature allowed an efficient eradication of the microbial contamination because the treatment started fast after identifying the source of contamination. This had the effect that less biocides were needed which resulted in a cheaper and simpler process.

12.1 The board does not agree.

12.2 As set out above (points 9.1 and 9.2), document D1 discloses a method that allows the "*prediction*" of microbial-caused problems and uses of the method to "*preemptively avoid a harmful microbiological effect before it occurs*" which "*can moot a potential problem before its effects manifest*" by adding, for example, a biocide (e.g. page 5, lines 19 to 25, page 6, lines 1 to 4, and 17 to 24, page 10, lines 22 to 25, claims 4, 6, 12 and 13). The technical effect achieved by adding a biocide in D1 is thus the prevention of a microbial contamination before it manifests. The same is achieved by the claimed method when initiating the biocontrol procedure within a week after identifying the water source the microbes come from.

12.3 Further as set out above (point 11), the working example of the patent is silent on the within a week feature of claim 1. In the absence of evidence that the time period indicated in claim 1 eradicates a microbial contamination faster than the method of D1, appellant I's submission remains speculative. In particular, since also D1 uses a method that administers a biocide pre-emptively to prevent a microbial problem before it manifests.

13. In view of these considerations, the board in the absence of a technical effect ascribable to the "within a week" feature of claim 1 cannot agree with the opposition division's formulation of the technical problem (decision under appeal, section 6.6.4.1: "*how to improve the anticipation of a microorganism caused problem*"). Likewise appellant I's formulation of the technical problem is not convincing ("*to provide a method which more efficiently avoids a microorganism caused problem in a water process system*", or a "*more effective method of anticipating a microorganism caused problem in a water process system*").

14. Rather the technical problem to be solved resides in the provision of an alternative method for anticipating a microbial-caused problem in a water process system.

15. It is credible that the method of claim 1 solves this technical problem.

Obviousness

16. It remains to be assessed whether the skilled person starting from document D1 and faced with the problem

identified above would have arrived at the "within a week" feature of claim 1 in an obvious manner.

16.1 The board agrees with the opposition division that the solution to this problem, namely to start a biocontrol procedure "within a week", is obvious for the skilled person in light of document D1's teaching to render "*moot a potential problem before its effects manifest*" (points 9.1 and 12.2 above and decision under appeal, sections 6.6.4.1 and 6.6.6.2.1).

17. Appellant I submitted that document D1 taught away from initiating an immediate response to microbial-induced effects and from treating input water, in particular water from external sources. Even more so since document D1's teaching was limited to treat "*process water*", i.e. internal water not derived from external sources.

18. This is not convincing.

19. As regards the issue of an alleged teaching away, appellant I referred to page 13, lines 1 to 9 of D1 in support of their case. This passage reads as follows "*In at least one embodiment some microorganism induced effects are known to occur after a specific amount of time has elapsed from the moment of contamination. As a result a change in diversity index can be used to determine how long it takes for the organism to cause its associated problems. This method can be used both as a diagnostic (to find out how the organism functions) as well as a cost optimization tool. Cost optimization can be achieved by receiving advanced warning from the diversity change that a problem will occur within a given time frame using the advanced warning to purchase or use of a remedy at a time when*

it has a lower cost or higher availability than it would if it was purchased as a sudden response to an unexpected emergency".

19.1 In essence this passage in D1 teaches that due to an early detection of an upcoming microbial problem in a process the method allowed the skilled person to wait until biocides were available at lower prices or in higher quantities. However, this passage in D1 discloses a single embodiment of the method for a particular use while there is no evidence on file that this embodiment applies necessarily to all of the other embodiments disclosed in D1, in particular a use of the method which solves the microbial problems before their effects arise (point 9.1 above).

19.2 Nor is it technically sensible that this embodiment of the method disclosed on page 13 of D1 (point 19 above) applies to all other embodiments. From common general knowledge, the skilled person knows that the costs due to microbial-caused damage on a water process system exceed in general by far those saved by waiting for a biocide "price offer", which indeed may never arise. Thus in cases where a problem emerges that has to be treated urgently, for example, if the microbial organism identified is known to grow rapidly and cause harm, the skilled person initiates a biocide treatment immediately after the problem has been recognised. Such an immediate treatment falls within the "within a week" feature of claim 1.

20. As regards the issue that document D1 teaches solely the use of "internal" process water and not external water as the claimed method, as set out above (point 2.2), the claimed method is not limited in using solely water from external sources. In these circumstances the

issue of whether D1 teaches exclusively the use of internal process water can be left open, since the use of internal process water is encompassed by the claimed method too.

21. As regards the "feed water" feature of claim 1, the following is relevant.

21.1 It is uncontested that no technical effect can be ascribed to the "feed water" feature of claim 1 (feature F) either. The board agrees thus with the opposition division that the technical problem to be solved resides in the provision of an alternative feed water (decision under appeal, section 6.6.4.2).

21.2 Moreover the board agrees with the opposition division that the selection of various feed water sources as specified in claim 1 is obvious in view of document D1's teaching (page 13, lines 19 to 25, examples 1 to 3) to apply the method to water processing systems. These include, for example, a papermaking process which requires the use of large quantities of fresh water, obtained *inter alia* from a river or a lake.

22. Since the method of claim 1 lacks an inventive step over the teaching of document D1, Article 100(a) EPC prejudices the maintenance of the claims as granted (main request).

Auxiliary request 1 (claims as maintained by the opposition division)

23. As set out above (section IX), claim 1 of auxiliary request 1 has been further limited by adding the feature "*to the contaminated input source*" to feature E. This limitation excludes as embodiment from claim 1

as granted an application of the biocontrol procedure to the water process system as a whole.

Claim construction - claim 1

24. The board agrees with appellant II that this amendment in claim 1 does not limit the method to a treatment of the contaminated water source only. As set out above (point 3), it is uncontested that the terms "*input source*" and "*water source*" in features C and D have different meanings. An input source is more generic which encompasses water as an embodiment. Thus, a treatment of the contaminated input source as specified in feature E of claim 1 is not limited to a contaminated water source but may include the treatment of other contaminated input sources too (point 4.2 above).

Inventive step - claim 1

25. It is uncontested that document D1 remains the closest prior art.

26. It is contentious between the parties whether a limitation of treating the contaminated input source represents a further distinguishing feature between the claimed method and document D1.

27. The opposition division (decision under appeal, section 7.9.2.1) and appellant I were of the view that the application of the biocontrol procedure to the contaminated input source indicated in claim 1 represented a third distinguishing feature compared to document D1. Reasons for this were that D1 allegedly only taught (i) a treatment of "*process water*" (i.e. of "internal" water) rather than "*input water*" (i.e. water

from "external" sources) and that (ii) the treatment was directed to the whole water process system (instead of treating solely the contaminated input source).

28. This is not convincing.

29. As regards the allegedly sole use of external water in the claimed method, as set out above (point 2.2) the term "*water source*" in feature D of claim 1 is not limited to the use of water from sources being external to the system.

30. As regards D1's alleged sole treatment of the system as a whole, the following is relevant. The opposition division and appellant I based their argument on the disclosure of page 6, lines 1 to 4 of document D1, since this was in their view D1's sole disclosure of adding a biocide after the relative concentration of a bacterium exceeded a predefined threshold.

30.1 The respective passage on page 6 of D1 reads as follows: "*[R]egardless of the identity of the at least one organisms, if their relative concentrations increase relative to the prior measurement by an amount more than the threshold even if the overall biological population remains the same, a biocide treatment may be added to the system*" (emphasis added). Although here the term "*system*" is used, there is no mentioning of the system as a whole. Thus a biocide treatment of particular locations/sections within the system may be encompassed by this statement on page 6 as well.

30.2 Taking the teaching of D1 as a whole into account, the board agrees with appellant II that the statement on page 10, line 14 of D1 reading "*selecting the proper remedy and in deploying it in the optimal*

location" (emphasis added) suggests to the skilled person a biocide treatment of specific locations/ sections within the system. A further suggestion is derivable from page 10, lines 20 to 25 of D1 where in the context of a papermaking process the document states that "*[I]n contrast the treated fresh water that is used in the papermaking process is nearly organism free so a change in diversity and abundance there from a few organisms to an array of bacteria would indicate a problem. As a result sometimes noting the diversity index of a particular section affords insights that a system wide diversity index would not provide. Noting the kinds of changes in diversity and where they are located influences where the feed points for biocide should be located and how the population should be addressed*" (emphasis added).

31. Appellant I submitted that these passages on page 10 of D1 did not suggest an administration of a biocide to the contaminated input source of a water process system. This was so because it mentioned a "*treated fresh water*", i.e. a water source that had been sterilised before it entered the system.

31.1 This is not convincing. Page 10, lines 3 to 14 of D1 (point 30.2 above) mentions an "*optimal location*" (which selects this location over other locations within the system) for a "*proper remedy*" (a biocontrol procedure) to be deployed after a microbial infestation has been diagnosed (i.e. identified). Furthermore page 10, lines 23 to 25 of D1 (point 30.2 above) reports that differences exist between noting index changes system wide (indicating that the system is contaminated as such) versus noting changes "*of a particular section*" and that the knowledge of such a site "*influences where the feed points for biocide*

should be located". Thus, the addition of a biocide to a contaminated input source is likewise suggested.

31.2 This conclusion is not changed by the presence of the term "*treated fresh water*". On the contrary since the passage indicated in point 30.2 above states that treated water "*is nearly organism free so a change in diversity and abundance there from a few organisms to an array of bacteria would indicate a problem*". In other words a change notified here invites the skilled person to re-treat the water before it enters the system to eliminate the problem at the source.

31.3 Based on these statements on page 10 of D1, the skilled person understands that the term "*system*" used in the passage on page 6 (point 30.1 above) is not restricted to a treatment of the whole system but includes contaminated sites/sections within the system as input sources, for example, a second treatment of an already treated fresh water source.

32. Since there is therefore no further distinguishing feature between the method of claim 1 and that of document D1 when compared to claim 1 as granted, the reasons indicated above under lack of inventive step for the main request apply to claim 1 of auxiliary request 1 as well (Article 56 EPC).

Auxiliary request 2

33. As set out above (section X), claim 1 of auxiliary request 2 has been further limited compared to auxiliary request 1 in that a threshold feature ("*an amount of at least 5-90%*") has been introduced which specifies as threshold a minimum percentage of a microbial subgroup.

Inventive step - claim 1

34. Document D1 remains the closest prior art.

35. The minimum threshold concentration of at least 5 to 90% of a microbial subgroup relative to the overall microbial population in claim 1 is not explicitly disclosed in document D1. Nevertheless document D1 indicates thresholds, for example, numbers of organisms per ml (page 5, lines 17 to 19), or relative concentrations of problem-causing microbes versus non-problem-causing microbes (page 23, lines 4 to 18 and Figure 4).

36. Appellant I has not submitted that the minimum threshold concentration indicated in claim 1 were associated with a technical effect when compared to the threshold concentrations mentioned in D1.

37. In the absence of a technical effect that can be ascribed to the claimed threshold range, the selection of this range in claim 1 represents a mere alternative to the thresholds disclosed in document D1. Moreover, it is uncontested that there is no technical relationship of this threshold feature with the two other distinguishing features of claim 1 (point 6 above) that may cause a synergistic or combined technical effect.

38. In these circumstances a further partial technical problem (point 11 above) has to be formulated: that is the provision of an alternative threshold.

39. The threshold range indicated in claim 1 solves this problem.

Obviousness

40. It remains to be assessed whether the skilled person starting from document D1 and facing the technical problem identified above would have arrived at the claimed method in an obvious manner.

41. Document D1 discloses in Figure 4 a pie chart of machine felts and pickup felts in different paper mills (see also Example 3 on page 23). Different relative concentrations of microorganisms forming biofilms indicate that a problem concerning felt plugging might arise (page 23, lines 8 to 15). Page 23, line 9 of D1 discloses that twice as many primary biofilm formers are found in Mill 1 compared to Mill 2 which indicates a harmful microbial-based biofilm formation in the felts. The skilled person trying to eradicate a microbial contamination before it manifests would thus have selected a threshold that falls within the claimed range without applying any inventive skill.

42. Claim 1 of auxiliary request 2 and hence auxiliary request 2 as a whole lacks therefore an inventive step (Article 56 EPC).

Auxiliary requests 3 and 4

43. As set out above (section XI), claim 1 of auxiliary request 3 has been further limited compared to auxiliary request 2 in that the subgroup of microorganisms comprises "*filamentous bacteria*".

44. As set out above (section XII) too, claim 1 of auxiliary request 4 has been further limited compared to auxiliary request 2 in that the subgroup of

microorganisms comprises various specific microorganisms, including "*Herpetosiphon*".

Inventive step

45. Document D1 (page 17, line 25) already mentions various bacteria including "*Herpetosiphon*". It is uncontested that this microorganism is filamentous and is to be detected by the method of D1.

46. Since document D1 discloses thus already a filamentous microorganism as indicated in claim 1 of auxiliary request 3, and *Herpetosiphon*, a microorganism that is indicated in claim 1 of auxiliary request 4, the reasons indicated above under lack of inventive step for the method of claim 1 of the main request and for auxiliary requests 1 and 2 apply likewise to the methods of claim 1 of auxiliary requests 3 and 4 (Article 56 EPC).

Admittance of auxiliary requests 1 to 4 into the appeal proceedings

47. In view of the board's finding that none of auxiliary requests 1 to 4 on file is inventive over the teaching of document D1 (Article 56 EPC), no purpose is served in discussing the admittance of these auxiliary requests into the appeal proceedings.

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The patent is revoked.

The Registrar: The Chair:

A. Vottner D. Pilat

Decision electronically authenticated