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**Datasheet for the decision
of 8 November 2017**

Case Number: T 1142/13 - 3.2.04

Application Number: 03723566.0

Publication Number: 1501346

IPC: A01J5/007

Language of the proceedings: EN

Title of invention:
AUTOMATIC MILK SEPARATION

Patent Proprietor:
DeLaval Holding AB

Opponent:
Octrooibureau Van der Lely N.V.

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step of claims 1 and 8 of the main request (as upheld) - yes

Decisions cited:

Catchword:



Beschwerdekammern
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Case Number: T 1142/13 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 8 November 2017

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
12 March 2013 concerning maintenance of the
European Patent No. 1501346 in amended form.**

Composition of the Board:

Chairman A. de Vries
Members: E. Frank
C. Schmidt

Summary of Facts and Submissions

- I. The appeal lies from the interlocutory decision of the opposition division posted on 12 March 2013 to maintain the European patent No. 1 501 346 in amended form pursuant to Article 101(3) (a) EPC. The appellant (opponent) filed a notice of appeal on 8 May 2013, paying the appeal fee on the same day. The statement of grounds of appeal was submitted on 12 July 2013.
- II. The opposition was filed against the patent as a whole and based on Article 100(a) in conjunction with Articles 52(1), 54 and 56, Article 100 (b), and Article 100 c) EPC.

The opposition division held that the patent as amended based on claims 1 and 8 of the new (main) request as filed during the oral proceedings met the requirements of the EPC. In its decision the division considered the following prior art, amongst others:

D1 = WO 00/27183 A1

D2 = EP 0 880 888 A2

X1A = Biggadike, H.: Project Report "A practical evaluation of milk conductivity measurements (individual quarters), study 1" Reference 98/R1/08, XCAFA/1, Adas Bridgets Research Center, Winchester, UK, January 2001;

X1B = Biggadike, H.: Final Project Report "A practical evaluation of milk conductivity measurements (individual quarters), study 2," reference 98/R1/08, XCAFA/2, Adas Bridgets Research Center, Winchester, UK, September 2001;

X1C = Biggadike, H.: Project Report - Overview " A practical evaluation of milk conductivity measurements (individual quarters), review of

studies 1 and 2" Reference 98/R1/08, XCAFA1&2, Adas Bridgets Research Center, Winchester, UK, September 2001.

- III. A communication pursuant to Article 15(1) RPBA was issued after a summons to attend oral proceedings, which were duly held on 8 November 2017.
- IV. The appellant requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

The respondent (proprietor) requested that the appeal be dismissed and that the patent be maintained in the form as upheld by the appealed decision.

- V. The wording of claims 1 and 8 of the main request (as upheld) reads as follows:

"1. A method for separating, in dependence on milk quality, a first quantity of milk drawn from a milking animal in an automatic milking machine from a second quantity of milk drawn from a milking animal in said milking machine, the method comprising the steps of:

- milking an animal using said automatic milking machine,
- automatically measuring a first indicator of mastitis for said first quantity of milk and only in response to said first indicator of mastitis being above a second threshold, performing the steps of:
 - automatically collecting a small representative amount of said first quantity of milk during said milking,
 - analysing at least a part of said small representative amount of milk using an on-line cell

counter (107) for counting the number of cells in said first quantity of milk, and

- operating a valve (104) depending on the counted number of cells so that if the counted number of cells is below a first threshold said first quantity of milk is collected in a first container (105), and if said counted number of cells is equal to or above said first threshold said first quantity of milk is directed to a drain or a second container (106), thereby providing a separation of milk in dependence on milk quality."

"8. An automatic milking machine comprising means for separating a first quantity of milk drawn from a milking animal in said automatic milking machine (101) from a second quantity of milk drawn from a milking animal in said milking machine (101), the machine further comprising:

- a collecting device for automatically collecting a small representative amount of said first quantity of milk during said milking,
- a measurement device for measuring a first indicator of mastitis for said first quantity of milk,
- an on-line cell counter (107) for analysing at least a part of said small representative amount of milk for counting the number of cells in said first quantity of milk,
- at least a first valve (104) operable to direct said first quantity of milk depending on the counted number of cells, so that if the counted number of cells are [*sic*] below a first threshold said first quantity of milk is collected in a first container (105) and if said counted number of cells are [*sic*] equal to or above said threshold said first quantity of milk is directed to a drain or a second container (106), and

- wherein said on-line cell counter (107) is arranged to analyse said first quantity of milk only if said first indicator of mastitis is above a second threshold."

VI. The appellant argued as follows:

The milk separation process of D1 comprises SCC (somatic cell count) and EC (electric conductivity) tests as an indicator for mastitis. Starting from D1 and looking for an alternative test for milk quality, X1A teaches how the SCC test of D1 can be combined in line with the EC test. The EC test of X1A is used to predict mastitis in the presence of a conductivity trigger, and based on that, a further test is suggested. Thus, the two-step test of method claim 1, where the SCC-test is performed only in response to a first indicator of mastitis, is obvious in the light of D1 and X1A. This holds also true for D2 in the light of X1A. Therefore method claim 1 lacks an inventive step.

VII. The respondent argued as follows:

D1 cannot motivate to apply the SCC test in dependence on another test, much less on an EC test, since in D1 the latter is described as unreliable as regards indication of mastitis. The study of X1A concerns treatment of sick cows, but not milk separation as in D1. Even if considered, X1A merely states that EC tests identified many increases in milk conductivity which were unrelated to mastitis regardless of the conductivity trigger threshold selected. Moreover, the SCC in X1A is performed weekly, and the EC measurements of collected milk samples are then compared. Further investigation by means of enzyme tests are suggested, but no immediate two-step test. Cf. also X1C, which is

the summary of X1A (first study) and X1B (second study). D2 relates to germ tests, but not to SCC-tests, and thus is less relevant than D1. Therefore, method claim 1 is inventive over D1 (or D2) and X1A. The above considerations apply to apparatus claim 8 *mutatis mutandis*.

Reasons for the Decision

1. The appeal is admissible.
2. Inventive step of claim 1
 - 2.1 Claim 1 concerns a method to automatically separate milk in dependence of milk quality. More particularly, claim 1 requires that a first quantity of milk with high cell counts which is affected by mastitis in a negative way shall be separated from a second quantity of milk.

To this end, claim 1 comprises a two-step test, viz.: only if a first indicator of mastitis is measured as being above a second threshold, the number of cells are counted in the first quantity of milk (wherein the latter result may eventually cause milk separation). A conductivity measurement may be used as a first indication of mastitis, cf. patent, paragraph 0027.

- 2.2 Novelty of claim 1 is not in dispute. As for the assessment of inventive step of claim 1, document D1 forms a suitable starting point.

D1 (cf. page 1, lines 5-10; page 21, line 12 to page 22, line 27; and figure 1) relates to a method for regulating the handling of milk, which results in a

separation of good quality milk from milk of poor quality due to the presence of a contaminant such as cells resulting from mastitis. In order to gather information about the quality of the milk, D1 suggests determining somatic cell count (SCC) and other parameters. In addition, one or several chemical or physical properties of the milk can be assessed.

- 2.3 It is common ground that the subject-matter of method claim 1 differs from D1's disclosure in that a first indicator of mastitis for said first quantity of milk is automatically measured, and only in response to said first indicator of mastitis being above a second threshold, said first quantity of milk is automatically collected and analysed by use of an online cell counter, and based on that, the separation of milk is finally provided.

The underlying problem of these distinguishing milk separation process steps is seen as how to automatically determine the milk quality such as cells resulting from mastitis in an alternative manner. Cf. also the patent, paragraphs 0009 and 0011.

- 2.4 The appellant argues that claim 1 lacks an inventive step over D1 and X1A:

- 2.4.1 In particular, D1 would suggest SSC as a direct indication of mastitis, but many other parameters related to mastitis were also measured in D1 to separate milk of a good quality from milk that was regarded as not suitable for human consumption, *inter alia* the electric conductance (EC) of the milk.

Therefore, in order to provide an alternative method for milk separation, starting from D1 the skilled

person would try to find one way or another to realize the described SCC test in line with the EC test, i.e. to find a way of how to combine these two test parameters advantageously for an indication of mastitis.

- 2.4.2 Since milk from sick cows may not be sold for human consumption, the skilled person would have turned to document X1A, which dealt with SCC in conjunction with EC measurements to identify individual quarters with raised somatic cell count arising from mastitis. Moreover, X1A described that the absence of a conductivity trigger was a very accurate indication that the quarter had low SCC and thus no mastitis, see X1A, point 5 "Discussion", page 12, 1st paragraph, 2nd last sentence. Otherwise, when using e.g. a 10% trigger, raised conductivity required additional evidence suggesting infection.

Consequently, in order to predict mastitis for milk separation in D1, X1A taught the skilled person that, if there was no EC, nothing had to be done in D1. On the other hand, if there was an EC trigger, i.e., EC above a certain threshold, a further more conclusive test was necessary.

- 2.4.3 Thus, starting from D1 and applying X1A to combine SCC and EC tests as one of a possible milk separation criterion embodied by D1, the skilled person would obviously arrive at a two-step test according to method claim 1.

- 2.5 However, the above line of argument of the appellant cannot be followed by the Board.

2.5.1 As argued by the respondent, document D1 describes to invariably measure SCC and indicates that in addition other parameters may be measured, cf. D1, page 5, lines 23ff.; and page 21, line 22 to page 22, line 1. More particularly, D1 describes to use the other parameters simultaneously or optionally, cf. D1, for example page 7, lines 7-9; and page 21, lines 30-32. It is also stated on page 2, lines 16-20, that alterations in electrical conductance (EC) may have many causes and often include factors that are not related to mastitis.

However, as further argued by the respondent, D1 nowhere suggests any two-step dependency of a first test on the other. Moreover, even if the SCC test were found to be complicated or cumbersome, D1 does not give any clue as to how to simplify testing and reduce effort. Thus, D1 in any case cannot lead or motivate the skilled person to apply the SCC test selectively or contingent on another test, let alone dependent on an unreliable EC test as the sole (pre-) indication of mastitis.

2.5.2 Nor would the skilled person consider tests of document X1A for the purpose of milk separation prior to being collected in a dairy's bulk milk tank. The study X1A relates to tests to reduce the overall use of antibiotics by earlier identification and treatment of subclinical or impending clinical mastitis. As advanced by the respondent, milk separation is nowhere addressed by X1A, cf. X1A, points 1 and 2 on page 5, first two paragraphs. Cf. also X1C (summary of studies X1A and X1B), point 3 on page 6, 1st paragraph, and on page 7, last paragraph, last sentence.

Moreover, it is common ground that generally known EU-directives relate to somatic cell count (SSC) of milk

already collected in the bulk tank of the dairy. They do not, however, require milk separation based on clinical or subclinical detection of mastitis beforehand. These EU-directives, therefore, also cannot lead the skilled person to consider document X1A in developing suitable criteria for milk separation.

- 2.5.3 Even if the study described by X1A was taken into consideration, its teaching would not lead the skilled person to a SSC test conditional upon a first milk conductivity threshold.

As argued by the respondent, the main body and conclusion of X1A is that electric conductivity (EC) of milk *per se* is not a reliable measure for indicating mastitis, since many increases in conductivity are unrelated to mastitis regardless of the conductivity trigger threshold selected. Cf. X1A, point 6 "conclusions" on page 13; X1C (summary of studies X1A and X1B), point 1 "recommendations to farmers" on page 4, first bullet point; point 2 "recommendations to the industry" on page 5, first bullet point; and point 3 "executive summary" on page 7, last sentence.

Furthermore, as also argued by the respondent, the methodology adopted in X1A (and X1B, X1C) is to correlate the results of two different mastitis tests, by measuring conductivity on line, and in *parallel* sampling the milk on a weekly basis for SCC testing, cf. page 5, point 3.3. The two batches of different measurements are thus collected independently of one another for subsequent comparison. The passage on page 12 of X1A, 1st paragraph, is to be understood in this broader context. Thus, where quarters with a raised conductivity are measured, it concludes that additional evidence for infection, such as NAGas or

ATPase tests is necessary. Apart from the fact that this further investigation has to be done by means of enzyme tests and thus not SCC, there is no suggestion that these should be carried out subsequent to and dependent on the first as part of a two-step test. Thus, X1A does not present or otherwise consider the EC test as a suitable trigger point of mastitis on which a subsequent somatic cell count (SCC) test should be contingent.

- 2.6 To conclude, starting from the milk separation method of D1 and looking for alternative process steps to determine the milk quality, the skilled person would not consider the remote technical field of antibiotic treatment of subclinical mastitis studied in X1A (or X1B, X1C). Even if the teachings of D1 and X1A (or X1B, X1C) were combined, the skilled person would not arrive at the two-step test according to method claim 1.
- 2.7 The appellant also argues that claim 1 lacks an inventive step in the light of D2 and X1A. However, although milk quality sensors of D2 comprise conductivity sensors, otherwise only sensors for determining the fat and protein content and the germ count of the milk are mentioned. Thus, since no somatic cell count (SCC) is disclosed or hinted at in D2, D2 is considered less relevant than D1 as argued by the respondent. In any case the same reasoning as above starting from D1 applies also if the skilled person were to start from D2.
- 2.8 Summing up, the Board holds that the skilled person would not arrive at the subject-matter of method claim 1 in the light of documents D1 or D2 and X1A (or X1B, X1C) in an obvious manner. Finally, the Board is also convinced that the remaining documents referred to in

the written procedure when starting from D1 or D2 are not more relevant than those discussed before the Board.

Therefore, the subject-matter of claim 1 of the main request involves an inventive step.

2.9 The above considerations with respect to method claim 1 likewise apply to the apparatus claim 8 as upheld.

2.10 In conclusion the Board finds that the appellant's contentions against the patent as upheld in amended form corresponding to the main request are without merit. The Board thus confirms the decision under appeal.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



G. Magouliotis

A. de Vries

Decision electronically authenticated