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D E C I S I O N
of 12 October 2001

Case Number: T 0594/97 - 3.2.4

Application Number: 92202243.9

Publication Number: 0516246

IPC: A01J 7/00

Language of the proceedings: EN

Title of invention:
A milking plant

Patentee:
MAASLAND N.V.

Opponents:
Alfa Laval Agri AB
PROLION B.V.

Headword:
Milking method/MAASLAND

Relevant legal provisions:
EPC Art. 100(a), 100(c), 123, 56

Keyword:
"Inventive step (subsidiary request), yes"
"Interpretation of G 1/99"

Decisions cited:
G 0001/99; G 0004/93; G 0009/91; G 0010/91

Catchword:
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Case Number: T 0594/97 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 12 October 2001

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 10 April 1997 concerning maintenance of European patent No. 0 516 246 in amended form.**

Composition of the Board:

Chairman: C. A. J Andries
Members: P. Petti
R. E. Teschemacher

Summary of Facts and Submissions

I. The European patent No. 516 246 results from European patent application No. 92 202 243.9 filed as a divisional application (hereinafter DA) of the earlier European patent application No. 90 200 422.5 which claims the priority date of 27 February 1989 and was published under the number EP-A-385 539 (hereinafter PA, ie parent application).

Two oppositions were filed against this European patent. The opposition of opponent I (hereinafter Appellant I) was based only upon Article 100(a) EPC while the opposition of opponent II (hereinafter Appellant II) was based upon Articles 100(a) and (c) EPC.

The opposition division by its interlocutory decision dispatched on 10 April 1997 maintained the patent in an amended form based upon the amended and only Claim 1 filed during the oral proceedings on 5 March 1997.

This amended Claim 1 specified *inter alia* a feature referring to "an average value of the milk conductivity values measured over a number of days **for the other quarters** of the relevant cow" (emphasis added).

During the opposition proceedings the parties referred *inter alia* to the following documents:

D1: EP-A-277 396;

D4: EP-A-222 574;

D6: H.B. Puckett, S.L. Spahr and E.D. Rodda, "*Real-Time Measurement of Milk Conductivity",* in "*Proceedings of the Symposium AUTOMATION IN DAIRYING"*, Wageningen (NL), 20 to 22 April 1983, pages 101 to 114;

D14: S.L. Spahr, H.B. Puckett and D.E. Dill, "*An integrated system for automatic data collection and analysis on dairy farms*", in "*Agri-Mation 1, Proceedings of the Conference"*, 25 to 28 February 1985, Chicago, pages 339 to 345.

II. Appellants I and II each lodged an appeal against this decision, on 22 May 1997 and 10 June 1997 respectively and simultaneously paid the appeal fee. The statements setting out the grounds of appeal were filed on 5 and 20 August 1997 respectively.

III. With their respective statements setting out the grounds of appeal both Appellants raised objections with regard to Articles 100(c) and 123(2) EPC by arguing that the subject-matter of Claim 1 upon which the decision under appeal was based extended beyond the content of the parent application as filed.

Appellant I also referred *inter alia* to the following documents filed for the first time with the statement setting out the grounds of appeal:

D19: US-A-3 664 306;

D20: J.L. Linzell, M. Peaker and J.G. Rowell, *"Electrical conductivity of foremilk for detecting subclinical mastitis in cows"*, in *"J. agric. Sci., Camb."* (1974), 83, 309-325;

D23: *"Automatic computerized herd management: heat detection, mastitis and health monitoring",* by S. Carmi, *in "Proceedings of the third Symposium AUTOMATION IN DAIRYING",* organized by IMAG, Wageningen (NL), 9 to 11 September 1987, pages 18 to 27.

In its statement setting out the grounds of appeal Appellant II also referred to new documents, *inter alia* to document

D24: "*Practical experiences with real-time measurements of milk conductivity for detecting mastitis"* by W. Rossing et al,, in "*Proceedings of the third Symposium AUTOMATION IN DAIRYING*", organized by IMAG, Wageningen (NL), 9 to 11 September 1987, pages 138 to 146.

IV. Oral proceedings were held on 7 December 1999.

In order to take account of the objections made, the Respondent (proprietor of the patent) filed during the oral proceedings two amended independent claims upon which a main and a subsidiary request were based.

The independent claim of the main request reads as follows:

"Method of milking cows by means of a milking plant comprising teat cups (2), wherein the milk obtained from a quarter of an udder is collected through a separate line (3) into a milk measuring device (4) including four milk meters (7), each milk meter (7) including a milk receptacle (10) and a measuring chamber (11), in which connection the milk flows under

a vacuum from the milk receptacle (10) into the measuring chamber (11) and is pumped in defined quantities by means of compressed air from the measuring chamber (11) into a relevant, separate discharge line (8) coupled to a common discharge line (9) terminating in a cooling tank (6) and the milk conductivity of a respective udder quarter is measured by a milk conductivity sensor (27) provided in a respective milk meter (7) whereupon a control signal (S4) representing the measured milk conductivity value is supplied to a computer and compared therein with a signal representing a progressive average value of the milk conductivity values measured over a number of days for the relevant cow, and wherein the measured milk conductivity value, exceeding said average value with a certain degree, effects the discharge of said milk from said quarter via a three-way valve (28) provided in said separate discharge line (8) under the control of a signal (S5) from the computer to a receptacle (29) for collecting and storing milk unsuitable for human consumption."

The independent claim of the subsidiary request reads as follows:

"Method of milking cows by means of a milking plant comprising teat cups (2), wherein the milk obtained from a quarter of an udder is collected through a separate line (3) into a milk measuring device (4) including four milk meters (7), each milk meter (7) including a milk receptacle (10) and a measuring chamber (11), in which connection the milk flows under a vacuum from the milk receptacle (10) into the measuring chamber (11) and is pumped in defined quantities by means of compressed air from the

measuring chamber (11) into a relevant, separate discharge line (8) coupled to a common discharge line (9) terminating in a cooling tank (6) and the milk conductivity of the collected milk of a respective udder quarter is measured by a milk conductivity sensor (27) provided in the measuring chamber (11) of a respective milk meter (7) whereupon a control signal (S4) representing the measured milk conductivity value is supplied to a computer and compared therein with a signal representing a progressive average value of the milk conductivity values measured over a number of days for the relevant cow, and wherein the measured milk conductivity value, exceeding said average value with a certain degree, effects the discharge of said milk from said quarter via a three-way valve (28) provided in said separate discharge line (8) under the control of a signal (S5) from the computer to a receptacle (29) for collecting and storing milk unsuitable for human consumption."

At the end of the oral proceedings of 7 December 1999, the appeal proceedings were suspended until issue of the decision of the Enlarged Board of Appeal in case G 1/99.

V. Further oral proceedings were held on 12 October 2001.

Appellant II, although duly summoned, did not appear. According to Rule 71(2) EPC, the proceedings were continued without this party.

VI. The arguments of Appellant I can be summarized as follows:

(i) Each of the independent claims filed during the

oral proceedings on 7 December 1999 cannot form the basis for an allowable request in the sense of the decision G 1/99, because these claims were not filed in order to either meet an objection put forward by the Appellant or to delete an inadmissible amendment.

(ii) The feature in the independent claim of the main request according to which "the milk conductivity of a respective udder quarter is measured" has no basis either in the PA as filed or in the DA as filed.

(iii) The subject-matter of the independent claim of either the main request or the subsidiary request does not involve an inventive step.

VII. Both Appellants requested that the impugned decision be set aside and that the patent be revoked.

VIII. The Respondent requested that the impugned decision be set aside and that the patent be maintained on the basis of the independent claim according to either the main request or the subsidiary request.

Reasons for the Decision

1. *The appeal is admissible*.

2. *The claimed subject-matter*

2.1 The single independent claim of the **main request** is directed to

(A) a method of milking cows

(A1) by means of a milking plant comprising teat cups (2),

(B) wherein the milk obtained from a quarter of an udder is collected

(B1) through a separate line (3) into a milk measuring device (4),

(B11) the milk measuring device including four milk meters (7),

(B111) each milk meter being coupled to a common discharge line (9) terminating in a cooling tank (6),

(B112) each milk meter (7) including a milk receptacle (10) and a measuring chamber (11),

(B1121) in which connection the milk flows under a vacuum from the milk receptcle (10) into the measuring chamber (11)

(B1122) and is pumped in defined quantities by means of compressed air from the measuring chamber (11) into a relevant, separate discharge line (8),

(C) wherein the milk conductivity of a respective udder quarter is measured

(C1) by a milk conductivity sensor (27) provided in a

respective milk meter (7),

(D) whereupon a control signal (S4) representing the measured milk conductivity value is supplied to a computer

(E) and compared therein with a signal representing a progressive average value of the milk conductivity values measured over a number of days for the relevant cow,

(F) wherein the measured milk conductivity value exceeding said average value with a certain degree, effects the discharge of said milk from said quarter via a three-way valve (28) provided in said separate discharge line (8) under the control of a signal (S5) from the computer to a receptacle (29) for collecting and storing milk unsuitable for human consumption.

2.2 The single independent claim of the subsidiary request differs from that of the main request in that features C and C1 have been replaced by the following features:

(C') wherein the milk conductivity of the collected milk of a respective udder quarter is measured

(C'1) by a milk conductivity sensor (27) provided in the measuring chamber (11)of a respective milk meter (7).

2.2.1 Features C' and C'1, read in conjunction with feature B1122, imply that the conductivity sensor measures the conductivity of defined quantities of milk

collected in the measuring chamber of the milk meter.

2.2.2 The expression "progressive average value of the milk conductivity values measured over a number of days for the relevant cow" (in feature E) has to be interpreted having regard to the general meaning of the term "progressive average" and to a passage in the description of the patent as granted which refers to milk conductivity values which "can easily be measured and stored in the memory of the computer" and to a measured milk conductivity which "is compared in the computer with a progressive average of the milk conductivity values measures over a number of days regarding an animal" (column 2, lines 15 to 24).

Therefore, on the subject of feature E, the Board understands

(1) that conductivity values (each value relating to a defined quantity of milk collected in the measuring chamber of one of the four milk meters) are measured for the relevant animal,

(2) that these values are stored in the computer,

(3) that a number of days is predetermined so that a certain number of conductivity values measured during said predetermined number of days is defined,

(4) that the average value of said certain number of conductivity values is calculated, and

(5) that the term "progressive" indicates that the average takes account of the most recent

conductivity values disregarding the oldest ones, said predetermined number of days and thus said certain number of conductivity values remaining the same.

3. The admissibility of the amendments in respect of decision G 1/99 (OJ EPO 2001, 381)

3.1 The amended Claim 1 of the patent as maintained in amended form by the opposition division derives from Claim 5 of the patent as granted which contained the expression "an average value of the milk conductivity values measured over a number of days".

During the proceedings before the opposition division this expression was amended into "an average value of the milk conductivity values measured over a number of days **for the other quarters of the relevant cow**" (emphasis added) and this amendment was considered as being allowable by the opposition division in its interlocutory decision.

However, this expression was objected to with respect to Article 100(c) EPC by Appellant II in its statement setting out the grounds of appeal in so far as in both the PA and the DA as filed there is no indication to an average value for the other quarters of the relevant cow. Moreover, this expression was also objected to by the Board during the oral proceedings of 7 December 1999 in so far as it has no clear and unequivocal basis either in the PA as filed or in the DA as filed.

Thus, the patent as maintained in amended form could have been revoked as a direct consequence of this amendment.

The independent claim of either the main request or the subsidiary request (see particularly feature E) does not refer any longer to "the milk conductivity values measured over a number of days **for the other quarters of the relevant cow**" but to "the milk conductivity values measured over a number of days for the relevant cow". Therefore, these independent claims represent an attempt of the Respondent to overcome a deficiency and to avoid the revocation of the patent on this basis. The amendments made are therefore considered by the Board as being appropriate and necessary.

3.2 On the subject of the admissibility of the independent claim of either the main or the subsidiary request, Appellant I asserted that decision G 1/99 does not apply in the present case and that therefore the Respondent had not to be allowed to file requests based on these claims.

In this respect, Appellant I argued as follows:

(i) According to the Order of G 1/99, the first condition for the admissibility of amendments filed by the proprietor/respondent which would put the opponent/appellant in a worse situation than if it had not appealed, is the existence of an objection put forward by the opponent/appellant during the appeal proceedings. In the present case, at the end of the oral proceedings of 7 December 1999, Appellant II withdrew its objection concerning the expression "... for the other quarters of the relevant cow". Thus, it has to be assumed that there are no objections by the opponents/appellants with respect to this issue. Having regard to the decision G 4/93

(OJ EPO 1994, 875), the absence of objections by the appealing parties restricts the application of the principle of *ex officio* examination so that the Board has no right to object to this expression of its own motion. Thus, the first condition for the admissibility of amendments is not met.

(ii) According to G 1/99, the second condition for the admissibility of amendments is that "the patent as maintained in amended form would otherwise have to be revoked as a direct consequence of an inadmissible amendment...". In the present case, the amendment is not inadmissible, since it represents a mere limitation having no technical contribution. Thus, also the second condition for the admissibility of amendments is not met.

3.2.1 The Board cannot accept the interpretation of the order of the decision G 1/99 made by Appellant I for the following reasons:

(i) The feature containing the expression "... for the other quarters of the relevant cow" which was added during the opposition proceedings is a limiting feature having a clear technical meaning. Furthermore, it modifies the comparison made, since another reference value is taken, so that the modification cannot be considered as being solely the addition of a technically superfluous feature.

(ii) The Order of G 1/99 refers to "an objection put forward by the opponent/appellant **or the Board** during the appeal proceedings" (emphasis added),

without distinguishing between the objections raised by the opponents/appellants and those raised by the Board.

(iii) Moreover, the interpretation of the Order of G 1/99 as submitted by Appellant I is not consistent with the reasoning of the decision, in particular with section 14, in which it is stated the following: "In order to decide on the request of the appellant/opponent, the Board of Appeal has to decide whether or not the amended set of claims as maintained by the Opposition Division is patentable. This means in particular that **the Board has to consider whether or not a limiting feature added during the opposition proceedings fulfils the requirements of the EPC**" (emphasis added).

(iv) Decision G 4/93 analyses in sections 1 to 13 of the Reasons for the Decision the procedural principles and the binding effect of the Appellant's request and deals *inter alia* with the issue of how the Appellant's request restricts the extent to which the Board may act *ex officio*. However, this decision does not indicate a restriction of the application of the principle of *ex officio* examination in respect of amendments proposed during the opposition proceedings.

(v) Decision G 4/93 clearly refers to a restricted application of the principle of *ex officio* examination in respect of "the **extent to which the patent is opposed** in the notice of opposition" (see section 3) and to "the extent of examination

of **grounds** for opposition" (see section 4). These issues were dealt with in the decision G 9/91 (OJ EPO 1993, 408) and the opinion G 10/91 (OJ EPO 1993, 420). In this respect, it has to be noted that the interpretation of the Order of G 1/99 as submitted by Appellant I is inconsistent both with the decision G 9/91 and with the opinion G 10/91 in so far as there it is stated that "... in case of amendments of the claims ... in the course of opposition or appeal proceedings, such amendments are to be fully examined as to their compatibility with the requirements of the EPC (e.g. with regard to the provisions of Article 123(2) and (3) EPC)".

(vi) Moreover, even if it were to be assumed that Appellant II withdrew its objection in respect of this issue, although in a letter dated 27 September 2001 it asked the Board to take a decision on the basis of the documents presented by the opponents, this would not be relevant, because the Order of G 1/99 refers only to "an objection put forward by the opponent/appellant ... during the appeal proceedings". In other words, the fact that Appellant II has raised an objection during the appeal proceedings implies that the first condition of G 1/99 is met. The later withdrawal of the objection would not change this situation.

3.3 Having regard to the comments above, the amendment resulting in the deletion of the expression "**for the other quarters of the relevant cow**" was clearly

proposed by the Respondent in order to overcome a deficiency and to avoid a revocation. Since this amendment does not result in the extension of the scope of the granted patent (Article 123(3) EPC), it is admissible in the sense of the G 1/99.

4. *The independent claim of the main request and the ground for opposition according to Article 100(c) EPC*

The independent claim of the main request specifies the feature that "the milk conductivity of a respective udder quarter is measured" (feature C), this feature being also specified in Claim 1 of the patent as granted according to which "the milk conductivity of the milk obtained from a quarter of an udder is measured" (see column 10, lines 1 to 3).

It is clear from the PA as filed (see particularly Claims 1, 2 and 12 to 14), that the milk is pumped in defined quantities from the measuring chamber of each milk meter 7 into a separate discharge line 8 and that each milk meter 7 is provided with a milk conductivity sensor 27, wherein defined quantities of milk - with the measured conductivity - are discharged via a three-way valve 28 provided in the separate discharge line 8 either into a common discharge line 9 terminating in the cooling tank 6 or into a receptacle 29 for collecting and storing unsuitable milk. Thus, it is clear from the PA as filed that the milk conductivity measurement relates to the milk **collected** in the measuring chamber of the milk meter, ie it relates to the defined quantity of milk collected into the milk meter which is pumped by means of compressed air from the measuring chamber of each milk meter into the separate discharge line.

However, since feature C does not make it clear that the conductivity **of the collected milk** of a respective udder quarter is measured, it could also be interpreted as defining a through-flow conductivity measurement. Having regard to the above comments, this interpretation would be inconsistent with the PA as filed.

Thus, the subject-matter of the independent claim of the main request extends beyond the content of the PA as filed.

Therefore, since the ground for opposition according to Article 100c) EPC prejudices the maintenance of the patent on the basis of the independent claim of the main request, the main request of the Respondent has to be rejected.

5. *The admissibility of the amendment concerning the subsidiary request with respect to Articles 100(c) and 123 EPC*

5.1 The subject-matter of the independent claim can be derived from the combination of features specified in claims 1 to 9 of the DA as filed by addition of features from the description of the DA as filed. In particular: for features A, A1 and B: see Claim 1; for features B1: see Claim 7, and description, column 3, lines 35 to 38 and column 4, lines 14 to 23; for feature B11, C' and C'1: see Claim 8; for feature B111: see Claim 9; for feature D: see Claim 5; for feature E: see Claim 6; or feature F: see Claims 1, 3 and 6; for features B112, B1121 and B1122: see the description, column 3, lines 31 to 38.

5.2 The subject-matter of the independent claim can be derived from the combination of features specified in Claims 1, 2 and 12 to 14 of the PA as filed by addition of features from the description of the PA as filed. In particular: for features A, A1, B, B1, B11 and B111: see Claim 1 and description, column 8, lines 22 to 41; for features B112, B1121 and B1122: see Claim 2; for features C', C'1, D and part of feature F: see Claims 12 to 14; for feature E and part of feature F: see description: column 4, lines 14 to 22 and column 9, line 52 to column 10, line 3.

5.2.1 Appellant II in its letter dated 20 August 1997 argued that the terms "with a certain degree" in the expression "exceeding said average value with a certain degree" (feature F) has no basis in the PA as filed. The Board cannot accept this argument, because these terms - although they are not explicitly mentioned in the PA as filed - can be implicitly derived from the description of the PA as filed in so far as they refer to a measured conductivity value "which exceeds a preset value" (column 10, lines 2 and 3). It is clear for the skilled reader of the PA as filed that the measured value has to exceed the reference value to a certain extent in order to trigger the discharge of milk into the receptacle for collecting milk unsuitable for human consumption. Otherwise also insignificant variations not indicating inferior quality of the milk could result in loss of milk.

5.3 The amendments to the description only represent its adaptation to the amended claim.

5.4 The amendments do not contravene Articles 100(c) and 123 EPC.

6. Novelty (the independent claim of the subsidiary request)

The claimed subject-matter, whose novelty was not disputed, is novel within the meaning of Article 54(2) EPC.

7. *Inventive step (the independent claim of the subsidiary request*)

7.1 In a first approach, Appellant I asserted that there is no single document among the many documents cited by the Appellants which can be said to come closer to the claimed subject-matter than the other documents and therefore essentially argued as follows:

The claimed method is essentially based on the idea of separating infected milk from good milk, this idea being known from many years. The milking technique of separating the milk coming from the different quarters of the udder of the cow (quarter milking) is well known. Moreover, the information that mastitis can concern only a quarter of the udder of the cow is also known. The idea of using the conductivity as an indicator of the milk quality is known. In order to arrive at the features defining the method of measuring the milk conductivity, the skilled person has to decide **where** and **how** to measure. The idea of arranging the conductivity sensor in the milk meter is known from document D23 in so far as it is stated on page 22, 3rd paragraph that "conductivity is measured each time the meter advances". The idea of measuring the conductivity of the collected milk, ie of a defined quantity of milk can be derived from document D19, in so far as it refers to a milk conductivity measuring cell "made in

the form of a U-tube with the entry for the milk in one leg of the tube" (column 2, lines 59 to 63). The idea of using a progressive average of the conductivity values measured over a number of days as a reference value with which the measured conductivity value is compared is well known e.g. either from document D6 (page 107) or from document D14 (page 343) or from document D20 or from document D24 (having regard to the sentence on page 144 which refers to a running mean). Thus, the independent claim defines a combination of features without there being either any new technical effect or an additional synergy or a contribution to the state of the art, this combination of features being therefore obvious.

7.1.1 The Board cannot accept this argumentation firstly because it is not based upon the so called "problem and solution approach", ie a method according to which a closest prior art is identified and the problem to be solved is defined having regard to the comparative analysis between the claimed subject-matter and the identified closest prior art. The appellant however - in its argumentation - simply put together features starting from scratch, being guided by the wording of the opposed claim instead of being guided by a problem to be solved and without being bound to the technical reality of a closest prior art embodiment. Such a theoretical abstract approach is considered by the Board as being the result of an *ex-post-facto* analysis. Even if every feature were to be known *per se*, this would not result automatically in the obviousness of the combination.

7.1.2 In any case, the claimed subject-matter cannot be considered as consisting in the combination of **known**

features. The Board cannot accept the allegations of Appellant I that the ideas

(a) of measuring the **conductivity of a defined quantity** of milk **collected in the measuring chamber** of each milk meter (see features C, C1, B, B1, B11 and B111), and

(b) of using the **progressive average** value of the milk conductivity values measured over a number of days for the relevant cow as a reference signal (feature E)

are disclosed in a clear and unequivocal way in the documents cited.

With respect to item (a), the following has to be noted:

(a_1) The fact that document D19 refers to a conductivity measuring cell in form of a U-tube does not imply that the conductivity of a collected quantity of milk is measured. The purpose of this measurement as described in document D19 (see column 2, lines 59 to 71) is that of measuring the conductivity in a side of the U-tube through which the foam-free milk is passing so that inaccuracies in the conductivity measurement can be overcome. It is however clear from document D19 (see claim 3; column 2, lines 13 to 16) that the conductivity of a milk flow is **continuously** measured.

(a_2) The sentence in document D23 according to which "conductivity is measured each time the meter

advances" as well the Figure on page 21 indicating that the milk meter provides the controller with data concerning the milk yield and the milk conductivity do not necessarily imply either that the conductivity sensor is arranged **in the measuring chamber** of the milk meter or that the conductivity of a defined quantity collected in the milk meter is measured.

With respect to item (b), the following has to be considered:

(b_1) Document D6 does not refer to a progressive average measured over a number of days as a reference value but to "a mean of the five highest values for the quarter" (MHV-value: page 107, 1st paragraph), which is used in a system calculating ratios of MHV values for the four quarters relative to the mean of the four MHV values.

(b_2) Document D14 refers to the comparison between "current values from each quarter of the udder with a threshold which considers the lactation number of the cow, conductivity of milk from her other quarters, and conductivity of the same quarter during the immediate past e.g. 4 or 6 recent milkings" (page 343, 2nd paragraph) . This document does not contain further information concerning how the threshold is calculated. In any case, it is clear that the threshold is not a simple progressive average as defined in feature E.

(b_3) Document D20 (see particularly pages 314 to 319)

refers to a test for parallelism based on the fact that milk conductivities of uninfected udder quarters of an animal tend to vary in parallel from day to day. The test refers to the so called "interaction mean square" ("I.M.S."), a parameter measuring in a quantitative way the departure from parallelism and thus allowing to detect mastitis of a quarter of the udder. The "I.M.S." is essentially a running mean square of the difference between successive differences between the conductivity values of the different quarters of the udder. In other words, the "I.M.S." test is based upon the comparison of the milk conductivity from individual quarters with each other. This procedure cannot be compared with the comparison procedure as defined by feature E.

(b_4) Document D24 contains on page 144 the following sentence: "Determining the running mean of the conductivity of each quarter gives a stable picture (Fig. 8) (New mean = .8 old mean + .2 measured value)". Thus, the running mean is defined as a weight mean and cannot be compared with the progressive average as defined in feature E. Moreover, it is clear from page 139 of document D24 that the procedure used for detecting mastitis is based on the calculation of "the differences between the conductivity of the quarter with the lowest conductivity and that of the other three quarters". Therefore, also this procedure cannot be compared with the comparison procedure as defined by feature E.

7.1.3 Furthermore, there is no document suggesting the idea of using **compressed air** in order to pump each defined

quantity of milk from the measuring chamber of the milk meter to a discharge line associated with the relevant milk meter (feature B1122).

7.2 In a second approach, Appellant I considered document D4 as the primary source of information, ie as the document disclosing the prior art which has to be compared with the claimed subject-matter in order to establish the differences and define the problem to be solved. In these respects, Appellant I essentially argued as follows:

(i) The prior art described in document D4 by referring to Figure 4 concerns a "mixed-milking" system, ie a system in which the teat cups are connected to a common bowl of a milking claw. A conductivity sensor is arranged in the common bowl to sense a determined volume of milk, in particular to differentiate the presence of liquid milk from foam. This milking system is also provided with a valve (namely the valve 59 in Figure 4) interposed in the milk tube to allow the milk from the individual cow to be transferred to a separate milk delivery line for the waste milk.

(ii) The claimed subject-matter differs from this prior art substantially by the features concerning the "quarter milking" (ie features B, B1, B11, B111, B112, B1121 and B1122) and by the features concerning the control of the three-way valve (ie features E and F). The technical problem to be solved has two different aspects, the first aspect being how to program the computer to decide whether the milk is

unsuitable for human consumption and the second aspect being how to adapt the milking method known from document D4 to "quarter milking".

(iii) Each of documents D6, D14 and D20 would give the skilled person information about the relationship between conductivity and mastitis and thus suggest to him the idea of using the milk conductivity as a parameter for deciding on the quality of the milk. Therefore, features E and F do not involve any inventive step. "Quarter milking" is also a well known technique whose application to the method known from document D4 would not involve any inventive step. Therefore, features B, B1, B11, B111, B112, B1121 and B1122 do not involve any inventive step.

7.2.1 The Board cannot accept this second argumentation of Appellant I for the following reasons:

- With respect to item 7.2.(i) above, it has to be noted that document D4 appears to be a rather artificial starting point. Namely, it is not credible that a skilled person who knows the "quarter milking" concept as well as the relationship Mastitis/Conductivity and who wants to arrive at a device working according the "quarter milking" concept starts from a document which does not relate to "quarter milking" and which does not give any information to this relationship, ie starts from a different concept and than decides to adapt the chosen different concept to the "quarter milking" concept. Such an approach is based on *ex-post facto* analysis.

- With respect to item 7.2. (ii) above, it has to be noted that the argumentation of the Appellant I disregards feature B1122 as a distinguishing feature (see in this respect section 7.1.3 above).

- With respect to item 7.2. (iii) above, it has to be noted that - having regard to the comments in section 7.1.2 above (items 7.1.2.b_1 to 7.1.2.b_3) - none of documents D6, D14 and D20 (as well as D23) suggests feature E.

7.3 In a third approach, Appellant I considered document D1 as the starting point and essentially argued as follows:

(i) Document D1 discloses a milking system in which a milk quality meter 40 is associated to each teat cup 16, the milk quality meter 40 measuring the conductivity of milk or washing agent in order to establish the difference between milk and washing agent, the quality meter being connected to a regulating member which determines when a control member must switch a four-way valve. According to the description of document D1 it is possible to incorporate in the system a milk quality meter which also measures the difference between milk suitable for human consumption and mastitis infected milk.

(ii) The claimed subject-matter differs from the prior art according to document D1 by the features concerning the measurement of the milk quantity (features B1, B11, B111, B112 and B1121), by the features concerning the decision of whether the milk is unsuitable for human

consumption (features E and F) and by the feature concerning the use of compressed air (feature B1122).

(iii) Features B1, B11, B111, B112 and B1121 are suggested from document D23 which refers to a milk meter provided with a conductivity sensor while features E and F are suggested from each of documents D14, D6 and D20. The application of these features to the system known from document D1 would be obvious for a skilled person. The use of compressed air is a well known procedure which does not require any inventive skill.

7.3.1 The Board considers document D1 as representing a realistic starting point in so far as it implicitly discloses a milking method in which the milk obtained from each quarter may be collected separately and the conductivity of the milk coming from each quarter may be measured and used to distinguish between milk suitable for consumption and mastitis milk.

However, the Board cannot accept the third argumentation of Appellant I for the following reasons:

(i) Firstly, document D1 refers to a milk quality meter supplying a signal representing the milk quality to a **regulating member** without referring to a computer. Furthermore, document D1 refers to the measurement of the milk conductivity but without indicating how the difference between milk suitable for consumption and mastitis milk is determined.

(ii) The claimed subject-matter differs from the prior art known from document D1 not only by features B1, B11, B111, B112, B1121, B1122, E and F but also by features C' (in so far as this feature refers to the conductivity **of the collected milk**), C'1 and D (in so far as feature D refers to a computer).

(iii) Starting from document D1, the technical problem to be solved has different aspects, a first aspect relating to the measurement of the milk quantity, a second aspect relating to the decision of whether the milk is unsuitable for human consumption, and a third aspect relating to the technique of measurement of the milk conductivity.

(iv) Features B1, B11, B111, B112 and B1121 contribute to the solution of the first aspect of the problem, while features E and F contribute to the solution of the second aspect of the problem.

Features C' and C'1, which define the location of the conductivity sensor and the measuring technique, contribute to the solution of the third aspect of the problem. In particular, the fact that the conductivity of a defined quantity of milk collected in the measuring chamber of the milk meter is measured, may result in

limiting the waste of milk to the defined quantity measured in the milk meter if a false (positive) value of the milk conductivity is measured.

(v) The skilled person confronted with the above mentioned aspects of the problem needs to carry out a plurality of steps in order to arrive at the claimed method. In particular, when confronted with the problem of measuring the quantity of milk, he has to decide to arrange four milk meters in the system disclosed in document D1. It has to be noted that it could be possible to arrange a single milk meter common to all teat cups.

(vi) If the skilled person were to arrange four milk meters in the system known from document D1, he would have no reason to change the location of the conductivity sensor (ie of the milk quality meter). In any case - having regard to the comments in section 7.1.2.a_2 above - he would not find in document D23 either the suggestion to the idea of measuring the conductivity of a collected quantity of milk (see section 2.2.1 above) or the indication of the effects which can be obtained on account of this feature (see item 7.3.1.iv above, 2nd paragraph).

(vii) Moreover, having regard to the comments in section 7.1.2. above (items 7.1.2.b_1 to 7.1.2.b_3) - none of documents D6, D14 and D20 (as well as D23) suggests the idea of using as reference signal the progressive average referred to in features E and F.

(viii) Finally, there is no document suggesting the use of compressed air (see section 7.1.3 above).

7.4 The arguments developed in writing by Appellant II (see letter dated 20 August 1997) relate to Claim 1 as maintained by the opposition division and are not relevant for the independent claim of the subsidiary request of the Respondent filed during the oral proceedings on 7 December 1999. Although this claim was extensively amended, no new arguments were brought forward by Appellant II.

7.5 Therefore, the subject-matter of the independent claim of the subsidiary request cannot be derived in an obvious way from the prior art referred to by the Appellants.

8. The patent can therefore be maintained on the basis of the subsidiary request of the Respondent.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent in the following version:

Claim: Claim 1 (single claim) of the subsidiary request as submitted during the oral proceedings before the Board on 7 December 1999,

Description: pages 1A, 2A and 3 filed during the oral proceedings before the Opposition Division on 5 March 1997, columns 5 to 8 as granted,

Drawings: Figures 1 to 4 as granted.

The Registrar: The Chairman:

G. Magouliotis C. Andries