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**Datasheet for the decision
of 7 October 2011**

Case Number: T 1790/09 - 3.2.04

Application Number: 01202454.3

Publication Number: 1131997

IPC: A01J 7/00, A01K 1/12,
A01J 5/017

Language of the proceedings: EN

Title of invention:
A construction including an implement for milking animals

Patent Proprietor:
MAASLAND N.V.

Opponent:
DeLaval International AB

Headword:
Expected milk yield/MAASLAND

Relevant legal provisions:
EPC Art. 52, 56

Keyword:
"Novelty (yes)"
"Inventive step (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 1790/09 - 3.2.04

D E C I S I O N
of the Technical Board of Appeal 3.2.04
of 7 October 2011

Appellant: DeLaval International AB
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 14 July 2009
rejecting the opposition filed against European
patent No. 1131997 pursuant to Article 101(2)
EPC.

Composition of the Board:

Chairman: M. Ceyte
Members: P. Petti
C. Heath

Summary of Facts and Submissions

- I. The opposition division, by its decision dispatched on 14 July 2009, rejected the opposition filed against the European patent No. 1 131 997.
- II. The opponent (hereinafter appellant) lodged an appeal against this decision on 3 September 2009 and paid the appeal fee on 7 September 2009. A statement setting out the grounds of appeal was received on 20 November 2009.
- III. Oral proceedings before the board were held on 7 October 2011.
- IV. The appellant requested that the decision under appeal be set aside and the patent be revoked.
- V. The respondent (patent proprietor) requested that the appeal be dismissed (main request). Auxiliarily, he requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of either claims 1 to 5 filed as second auxiliary request by letter of 5 September 2011 or claims 1 to 4 filed as third auxiliary request during the oral proceedings before the board.

During the oral proceedings the respondent withdrew the first auxiliary request filed on 7 June 2010.

- VI. Granted claim 1 (main request) reads as follows:

"1. A construction including at least one implement for automatically milking animals, comprising a computer, at least one milk box arranged for milking an

animal and at least one milking robot for applying teat cups to the teats which implement includes at least one computer for identifying an animal that has arrived at the implement, **characterized in that** the computer is provided with a programme, with the aid of which the implement is suitable for

- recording the amount of milk produced by an animal during milking,
- calculating on the basis of this data the expected milk yield of the animal, by calculating the amount of milk produced between the point of time of reporting and that of a previous milking of the animal present in the milk box, and activating the milking robot on condition that the expected milk yield of said animal will exceed a base value."

Claim 1 of the second auxiliary request differs from granted claim 1 by the following additional features:

- when an animal is identified by the computer, the computer records the actual time as the point of time at which the animal reports itself in the milking implement, and
- on the basis of the relevant animal's recorded history data on the times of previous milkings, the amount of milk given in each case, and on the basis of the point of time, as determined by the computer, at which the animal present has been identified, it is then determined by the computer what is the expected amount of milk to be given by that animal,
- the value of the average milk development per unit of time of each individual animal is determined

automatically by means of a progressive average derived from the recorded data per animal."

Claim 1 of the third auxiliary request differs from claim 1 of the second auxiliary request by the following additional features:

- the computer derives from the recorded data what is the average obvious (sic) development of milk or milk yield per unit of time of the relevant animal, expressed litres/hr, and how much is the length of time between the instant of identification and the latest milking of the animal."

VII. The appellant essentially submitted that the subject-matter of claim 1 of the main request lacked novelty over either EP-A-639 327 (D1) or EP-A-91 892 (D2) and that the claimed subject-matter of the main, second and third auxiliary requests did not involve an inventive step over D1 in combination with "*A method for continuous automatic monitoring of accuracy of milk recording equipment*", by G. Wendl et al, in "*Prospects for automatic milking*", Proceedings of the International Symposium on Prospects for automatic milking, Wageningen 23-25 September 1992 (D8).

VIII. The respondent contested the appellant's arguments. With respect to the issue of inventive step, he essentially submitted the following:

- i) D1 (page 13, lines 27 to 32) discloses that the decision of whether an animal should be milked or not depends on three criteria, the animal's

particular situation, the lactation stage and the expected milk yield, without indicating which criterion should be taken and how it should be used.

Moreover, D1 refers to additional data stored in the memory of the processor without disclosing how to use the necessary data in order to decide whether an animal should be milked and without defining a "base value", i.e. a reference value to which the expected milk yield has to be compared.

- ii) Since in D8 the calculation of the expected milk yield is not made in order to decide whether an animal should be milked but for monitoring the accuracy of a milk meter, the skilled person would not take this document in consideration.

- iii) The invention as claimed in the auxiliary requests consists in using the expected milk yield as animal-dependent parameter which is continuously updated during the lactation period in so far as it is calculated by using a running average on the basis of the most recent historical data and in comparing it with a constant base value, so as to obtain the advantage that the milking frequency of animals can be decreased in the final stage of the lactation while remaining higher in the beginning stage.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty (main request)*

2.1 *Document D1*

2.1.1 It is not disputed that D1 discloses a construction according to the features specified in the pre-characterising portion of claim 1, i.e. a construction including at least one implement for automatically milking animals, comprising a computer, at least one milking box (1) arranged for milking an animal and at least one milking robot (20) for applying teat cups (26) to the teats, the implement including at least one computer for identifying an animal that has arrived at the implement.

Moreover, in the construction of D1 the computer is provided with a program, with the aid of which the implement is suitable for

- recording the amount of milk produced by an animal during milking ("registration of the milk quantity delivered, see page 12, lines 21 to 25),
- deciding that an animal should be milked depending on the expected milk yield ("quantity of milk to be expected"; page 13, lines 27 to 32), the implement being also suitable for activating the milk robot on condition that the expected milk yield of the animal exceeds a base value.

D1 does not disclose the feature of calculating on the basis of the recorded data the expected milk yield, by calculating the amount of milk produced between the

point of time of reporting and that of a previous milking of the animal present in the milking box.

- 2.1.2 In this respect the appellant submitted that the skilled person, on the basis of his basic knowledge, on reading D1 would be in no doubt that in deciding whether an animal should be milked or not the computer of D1 would calculate the expected milk yield from the time since the immediately previous milking and the rate at which the animal develops milk, which can be obtained from the recorded data concerning the amount of milk produced by the animal during milking.

The board does not find this argument convincing because D1 is completely silent as to how the expected milk yield of an animal is determined. Therefore, the feature concerning the calculation of the expected milk yield cannot be directly and unambiguously derived from D1.

2.2 *Document D2*

- 2.2.1 It is not disputed that D2 discloses a construction according to the features specified in the pre-characterising portion of claim 1.

Moreover, in D2 the computer is provided with a program, with the aid of which the implement is suitable for

- recording the amount of milk produced by an animal during milking (see page 3, lines 20 to 24; it has to be assumed that the recording of the amount of

milk is made in order to monitor the animals of the herd),

- recording the point of time at which an animal is milked and the point of time at which the animal reports itself at the milking box,
- determining on the basis of the recorded points of time the period of time elapsed between the point of reporting and that of a previous milking of the animal present in the milking box,
- and activating the milking robot on condition that the elapsed period of time will exceed a base value.

D2 does not disclose the determination of the expected milk yield of an animal reporting itself in the milking implement.

2.2.2 The board does not find the appellant's arguments convincing that in D2 the determination of the time elapsed since a previous milking necessarily implies a calculation of the expected milk yield in so far as the elapsed time is directly proportional to the quantity of milk developed and the predetermined period of time is a "base value" corresponding to an acceptable minimum expected milk yield for that animal, for the following reasons:

- i) Since the milk secretion rate of a dairy animal, i.e. the milk secreted by its mammary glands per unit of time, varies during the lactation stage, the time elapsed from the previous last milking is not necessarily indicative of the expected milk yield.

ii) D2 discloses a purely time-based criterion which does take into consideration the fact that the milk secretion rate of an animals may be different from that of other animals, while the expected milk yield represents an animal-dependent criterion for deciding whether an animal should be milked, so that high-yield animals can be milked more frequently than low-yield animals.

2.3 Therefore, the subject-matter of granted claim 1 is novel over each of documents D1 and D2.

3. *Inventive step (main request)*

3.1 The closest prior art is reflected by document D1 (see section 2.1). As already explained above, in D1 the decision of milking an animal is based upon an animal-dependent criterion. Thus, the construction of D1 already solves the technical problem which can be derived from paragraph [0003] of the patent specification, i.e. to provide a construction in which the animals are in a better position to pursue a milking frequency on their own, allowing a high-yield animal to be milked once again earlier than another one having a lower yield. However, D1 is silent as to how the expected milk yield is determined.

3.2 The subject-matter of claim 1 according to the main request differs from the construction of D1 in that

A) with the aid of a programme, the implement is suitable for calculating on the basis of the recorded amount of milk produced by an animal during milking the expected milk yield of the

animal, by calculating the amount of milk produced between the point of reporting and that of a previous milking of the animal present in the milk box.

- 3.3 This distinguishing feature defines how the expected milk yield is calculated, namely as a function of a recorded amount of milk produced by an animal during a previous milking and the period of time between the point of reporting and that of a previous milking. Thus, starting from D1 as closest prior art, the problem solved by the invention is how to determine the milk yield to be expected.

In order to solve this technical problem, the skilled person would consider document D8 concerning a software aided method for continuous automatic monitoring of the accuracy of milk recording equipment which can be adapted to automatic milking (see page 345, "Conclusion", last paragraph). This citation teaches how to determine the expected milk yield: "an expected milk yield per hour must be calculated and multiplied by the number of hours that have elapsed since the last milking".

- 3.4 Thus, the skilled person confronted with the above technical problem, would - with the aid of D8 - provide the construction of D1 with a computer program by means of which the expected milk yield is calculated on the basis of the relevant recorded animal's history data concerning the amounts of milk produced during previous milkings by calculating the amount of milk produced between the point of time of reporting and that of a previous milking of the animal present in the milk box

the latest previous milking of the animal present in the milk box. Therefore, the skilled person would provide the construction of D1 with feature A without exercising any inventive skill. Thus, this feature does not justify an inventive step.

3.4.1 The board does not find convincing the arguments submitted by the respondent (see points i) to ii) in section VIII above) for the following reasons:

- i) The skilled person reading D1 would immediately understand that the expected milk yield is one of three proposed criteria that could have been chosen when deciding whether an animal should be milked, the choice of this criterion providing no unexpected advantage and being thus obvious.

The fact that D1 does not disclose how the historical data have to be used is irrelevant, because D8 suggests the use of historical data concerning the actual amounts of milk produced by the animals in order to calculate the expected milk yield. The skilled person would therefore use the historical data concerning the actual amounts of milk which are recorded in the memory of the processor of D1 to calculate the expected milk yield.

The processor in D1 decides whether an animal should be milked or not depending on the milk yield to be expected. This necessarily implies not only the determination of the expected value of this parameter but also its comparison with a reference value.

ii) The method for determining the expected milk yield in D8 is not dependent on its particular use. This article published in "Proceedings of the International Symposium on Prospects for automatic milking", held in Wageningen, 23-25 September 1992 illustrates a relevant part of the available technical knowledge at the priority of the patent in suit.

3.5 Therefore, the subject-matter of claim 1 of the main request lacks an inventive step (Article 56 EPC).

4. *Inventive step (second auxiliary request)*

4.1 The subject-matter of claim 1 according to the second auxiliary request differs from the construction of D1 by feature A (see section 3.2 above) and the following additional features:

A1) on the basis of the relevant animal's recorded history data on the times of previous milkings, the amount of milk given in each case, and on the basis of the point of time, as determined by the computer, at which the animal present has been identified, it is determined by the computer what is the expected amount of milk to be given by that animal,

A11) the value of the average milk development per unit of time of each individual animal is determined automatically by means of a progressive average derived from the recorded data per animal,

- B) when an animal is identified by the computer, the computer records the actual time as the point of time at which the animal reports herself in the milking implement.
- 4.2 Feature A1 represents a refinement of the method for calculating the milk yield to be expected according to feature A as far as the calculation is made on the basis of a plurality of recorded data relating to a plurality of previous milkings. Feature A11 represents a further refinement of the method for calculating the milk yield to be expected according to feature A1, in so far as the expected milk yield is calculated on the basis of the progressive average of the development of milk per unit of time. These features provide the additional advantage of reducing the influence of (short-term) fluctuations and taking into account (long-term) variations in the measured milk yields on the calculation of the expected milk yield.

Thus, starting from D1 as closest prior art, the problem to be solved is how to determine the expected milk yield while reducing the influence of fluctuations in the measured milk yields on the calculation of the expected milk yield.

- 4.3 In fully automated milking arrangements which operate without any supervisory personnel being present, animals are always identified by an identification device before being milked. It would be perfectly obvious to a skilled person to record as point of time at which the animal reports itself at the milking box the point of time at which the animal is identified by the identification system (feature B). With respect

this feature, the respondent did not contest the appellant's argument that it is standard practice in the field of robot milking to record the time at which an animal reports itself at the milk box as time at which the animal is identified by the computer controlling the milking process.

The skilled person would also consider document D8 which not only teaches that an expected milk yield per hour should be calculated and multiplied by the number of hours elapsed since the last milking but also refers (see pages 349 and 340) to the use of a progressive running average for calculating the expected milk yield in so far it indicates that the expected milk yield (M_{ik}) of a cow k on day i may be calculated across the previous 7 days by dividing the sum of the recorded actual milk yields (m_{i-7} to m_{i-1}) delivered from cow k during the previous 7 days by the number (u_{ik}) of amounts of milk delivered from the cow k during the previous 7 days.

Therefore, D8 teaches to use a progressive average based on the most recent historical data for determining the expected milk yield (according to feature A11). The skilled person reading D8 would immediately understand that the moving average is used to smooth out short-term fluctuations and to take into account longer-term trends.

The skilled person starting from D1, in which data concerning the actual milk yield of each individual animal is recorded in the memory of a processor and in which the program of processor - on the basis of data stored in the memory - decides whether an animal should

be milked or not depending on the expected milk yield, would provide the processor with a program, with the aid of which the expected milk yield is calculated on the basis of the relevant recorded animal's history data concerning the amounts of milk produced during previous milkings by calculating the amount of milk produced between the point of time of reporting and that of the latest previous milking of the animal present in the milk box (features A and A1), while applying a progressive average in the milk development of milk per unit (feature A11).

Therefore, the skilled person would provide the construction of D1 with features A, A1 and A11 without exercising any inventive skill. Thus, these features do not justify an inventive step.

- 4.4 The board does not find the arguments submitted by the respondent (see point iii) in section VII above) convincing, for the following reasons:

The advantage referred to by the respondent is an additional advantage which can be obtained if the "base value" remains constant during the lactation stage and the expected milk yield is calculated by a *running* progressive average on the basis of only *n* most recent historical data points, i.e. by a non-cumulative progressive average which does not all historical data points. However, since claim 1 of the appellant's request does not specify either that the base value is a constant value over the whole lactation stage or that the progressive average is a running or a non-cumulative progressive average, the advantage referred to by the appellant is not causally related to the

claimed subject-matter. In any case, a running or non-cumulative progressive average based only on the most recent historical data points is known from D8.

4.5 Therefore, the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step (Article 56 EPC).

5. *Inventive step (third auxiliary request)*

Compared with claim 1 of the second auxiliary request, claim 1 of the third auxiliary request contains the additional feature that the computer derives from the recorded data what is the average obvious (sic) development of milk or milk yield per unit of time, expressed in litres/hr, and how much is the length of time between the instant of identification and the latest milking of the animal.

Averaging for calculation of the expected milk yield as well the time that has elapsed since the latest milking are relied upon in D8 (page 339, first paragraph). As has been explained, since in fully automated milking arrangements animals are always identified by an identification device before being milked, it would have been obvious to the skilled person to determine the length of time between the latest milking of the animal and the point of time at which the animal is identified.

Therefore this additional feature cannot impart an inventive step to the claimed subject-matter.

It follows that the subject-matter of claim 1 of the third auxiliary request does not involve an inventive step either.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

G. Magouliotis

M. Ceyte