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Datasheet for the decision of 17 March 2009

Case Number: T 1371/06 - 3.2.04

Application Number: 00900964.8

Publication Number: 1059839

IPC: A01J 5/007

Language of the proceedings: EN

Title of invention:
A vacuum control system

Patentee:
Lely Enterprises AG

Opponent:
DeLaval International AB

Headword:
Vacuum/LELY

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1371/06 - 3.2.04

D E C I S I O N
of the Technical Board of Appeal 3.2.04
of 17 March 2009

Appellant: (Opponent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 7 July 2006 rejecting the opposition filed against European patent No. 1059839 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: M. Ceyte
Members: P. Petti
T. Bokor

Summary of Facts and Submissions

I. The opposition division by its decision dated 7 July 2006 rejected the opposition filed against the European patent No. 1 059 839.

Granted claim 1 reads as follows:

"1. A vacuum control system for controlling the vacuum during milking an animal, which vacuum control system is provided with a vacuum pump (2) with a milk line (3), with a pulse line (4) and at least one teat cup (7) connected thereto, with a regulator (8) by means of which the vacuum in the system (1) is controlled at a desired vacuum level, said regulator (8) comprising an electronic valve (12) by means of which air can be admitted to the system (1), said electronic valve (12) being connected to the regulator (8), and with a vacuum sensor (10) which is connected to the regulator (8), characterized in that the regulator (8) comprises a speed regulator, preferably a frequency regulator (9), by means of which the number of revolutions of the vacuum pump (2) is controlled.".

II. On 31 August 2006 the opponent (hereinafter appellant) lodged an appeal against this decision and simultaneously paid the appeal fee. A statement setting out the grounds of appeal was received on 13 November 2006.

III. Oral proceedings before the board were held on 17 March 2009.

IV. The appellant requested that the decision under appeal be set aside and the patent be revoked. He further requested that the documents referred to as D8, D9, D10, D11 in the statement of grounds of appeal and document US-A-5 624 394 (D12), filed by letter dated 28 February 2007, be admitted into the proceedings and that a witness be heard.

The patent proprietor (hereinafter respondent) requested that the appeal be dismissed. The respondent further requested that documents D8 to D12 not be admitted into the proceedings and the case be remitted to the department of first instance, if document D12 were to be admitted.

V. The appellant submitted *inter alia* that the skilled person, starting from document D5, would arrive without exercising any inventive skill at the claimed subject-matter in view of its common general knowledge or the teaching of document D6.

The respondent essentially submitted that the skilled person, starting from the vacuum control system according to document D5 would have no reasons to combine it with D6.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step*

2.1 *The closest prior art*

2.1.1 Document WO-A-98/46068 (D5) represents the closest prior art since it is directed to a similar purpose or effect as the claimed invention, that is to reduce electric energy consumption relative to a conventional vacuum milking system in which the vacuum pump runs at full speed all the time as well as to ensure stability of the vacuum level. This citation discloses a vacuum control system for controlling the vacuum during milking an animal, which is provided with a vacuum pump 40, a milk line 18, with a pulse line 14 and at least one teat cup connected thereto. The vacuum control system further comprises a regulator ("vacuum level control") 8 by means of which the vacuum in the system is controlled at a desired vacuum level, a vacuum sensor 66 which is connected to the regulator 8, and an air inlet valve ("conventional vacuum regulator") 46 by means of which air can be admitted to the system. The regulator 8 comprises a speed regulator ("variable frequency drive") 54 by means of which the number of revolutions of the vacuum pump is controlled.

2.1.2 During the milking phase, the speed regulator 54 - on the basis of the difference between the vacuum level measured by the vacuum sensor and the desired vacuum level - controls the speed of the vacuum pump motor so as to maintain the desired vacuum level. Thus, during

milking the speed regulator 54 makes it possible to reduce the number of revolutions of the vacuum pump when the air consumption is very low so that energy may be saved, while maintaining the stability of the vacuum level (see page 5, lines 29 to 34).

The "conventional vacuum regulator" 46 is associated to the speed regulator in order to further limit the vacuum level to a maximum value which is above the desired setting for the system. In normal circumstances the "conventional vacuum regulator" 46 is closed (i.e. it does not admit air into the system) and variations in the vacuum level are compensated for by means of the speed regulator. However, if the vacuum level exceeds the maximum value, air is admitted into the system by the conventional vacuum regulator 46 (see page 6, lines 21 to page 7, line 2; page 14, lines 3 to 15).

2.2 *The problem to be solved*

2.2.1 The subject-matter of claim 1 differs from the vacuum control system of D5 in that

the valve by means of which air can be admitted to the system is **an electronic valve (12) connected to the regulator** (8).

2.2.2 Having regard to the considerations in section 2.1.2 above (first sentence), the vacuum control system of D5 - due to the presence of the speed regulator - already solves the technical problem of saving energy and ensuring stability of the vacuum level as referred to in paragraph [0004] of the patent specification.

2.2.3 Starting from D5 as closest prior art, the objective technical problem to be solved by the claimed invention may be seen in improving the controllability or adjustability of the air inlet valve and thus of the vacuum control in a system of the kind disclosed in D5 in which the regulator comprises a speed regulator to control the number of revolutions of the vacuum pump.

2.3 *Inventive step*

2.3.1 In the present case the invention essentially consists in replacing the air inlet valve ("conventional vacuum regulator") of D5 by an electronic valve and connecting this electronically controlled air inlet valve to the regulator.

2.3.2 Electronically controlled valves are known, as acknowledged in the patent specification (see paragraph [0008]; column 1, lines 54 to 58). Thus, the skilled person, starting from the vacuum control system of D5, which is provided with a vacuum sensor connected to the regulator (i.e. the "vacuum level control" 8), and seeking to improve the controllability or adjustability of the conventional air inlet valve, would replace it by an electronically controlled air inlet valve connected to the regulator. In doing so the electronic valve will be activated by the regulator on the basis of the signals supplied by the vacuum sensor.

2.3.3 Furthermore, document D6 (see Figure 1) discloses a vacuum control system provided with a regulator ("electronic control unit") 24 having a first control loop comprising a throttle valve 22 controlling the vacuum in the system at a desired vacuum level and a

second control loop comprising an electronically controlled valve 25 connected to the regulator 24.

In normal circumstances the electronic valve 25 is closed and fluctuations in the vacuum level are compensated for by means of the throttle valve 22, i.e. by the first loop. However, in particular circumstances - for instance when vacuum fluctuations cannot be compensated for by the first loop because the throttle valve 22 is already adjusted to its minimum opening rate - air is admitted into the system by the electronic valve 25 if the vacuum level exceeds the desired level value (see page 7, lines 7 to 11 and 21 to 25).

Thus, D6 teaches to associate with the main control loop controlling the vacuum by means of the throttle valve a second control loop comprising an electronically controlled valve connected to the regulator in order to improve the controllability or adjustability of the vacuum control. It would be obvious for the skilled person in view of this teaching to provide the known vacuum control system of D5 with a second control loop comprising an electronically controlled valve connected to the regulator, thereby ensuring improved vacuum control.

2.3.4 It has to be noted that the skilled person is familiar with the advantages of electronically controlled valves, such as a better regulation or the possibility of adjusting the response of the control. Thus, the choice of an electronically controlled valve instead of a conventional valve cannot justify the presence of an inventive step.

2.3.5 The respondent essentially submitted the following arguments:

(a) Starting from document D5, the technical problem to be solved by the claimed invention would consist in saving more energy in an automatic milking plant comprising a milking robot, given that in such an automatic milking plant the vacuum system has to be operated for a longer period of time (compared with a conventional milking apparatus in which the teat cups are manually connected to the teat of the animal) and compensating for vacuum alterations which occur suddenly due to the falling down of a teat cup (which falling down occurs more frequently when the teat cups are automatically connected to the teats of the animals by a milking robot). Since document D6 does not address this problem, the skilled person would have no reason to combine D6 with D5.

(b) The skilled person would not change the control system of D5, because there is no need to make the "conventional vacuum regulator" 46 controllable by means of the "vacuum level control" 8.

The board cannot accept these arguments for the following reasons:

(a') Claim 1 does not refer to a milking robot for automatically connecting teat cups to an animal to be milked, this feature being specified in claim 7 which refers to the vacuum system of claim 1.

Therefore, the technical problem referred to by the respondent is not the problem resulting from the distinguishing features between the invention defined in claim 1 and the closest prior art.

(b') The provision in D5 of an air inlet valve represents a known solution to the problem of preventing vacuum level overshoot in a vacuum control system in which the vacuum is maintained at a desired level by controlling the number of revolutions of the pump. However, as has been explained, it would have been obvious for the skilled person seeking to improve the controllability or adjustability of this known air inlet valve to replace it by an electronically controlled air inlet valve. In turn, it would also have been obvious to connect this latter and to form a control loop including a vacuum sensor, in which vacuum is continuously monitored and fed back to the regulator which adjusts the opening of the electronically controlled air inlet valve accordingly.

2.3.6 Therefore, the subject-matter of claim 1 does not involve an inventive step (Article 56 EPC, 1973).

3. *Procedural matter*

The further requests of the parties concerning the admissibility of further evidence (see section IV, third paragraph) do not need to be considered in so far the present decision is not based upon this evidence.

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