CANDIDATE'S ANSWER

C, EQE 2018

Effective dates of claims

Claims 1-4

These claims were present in the priority document, so are entitled to the priority claim

Therefore effective date = 16 December 2013 (i.e. priority application filing date)

For claim 6, please see specific claim 6 section

Claim 5

Claim 5 contains two alternatives:

a) Applying conditioning composition to teats ("Claim 5a" herein)
b) Applying conditioning composition to teats and udder ("Claim 5b" herein)

Claim 5a has basis in paragraphs [0021]-[0023] of the description. The description is identical to that of the priority document, so claim 5a was clearly and unambiguously disclosed in the priority document.

Therefore effective date of claim 5a = 16 December 2013

Claim 5b adds matter, as described below. Claim 5b therefore has no effective date.

<u>List of Evidence</u>

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- Documents A2-A4 are patent documents, each of which was published before the priority date (i.e. the effective date of claims 1-4, 5a, 6). These documents were thus available to the public at the effective date of the claims, and so are full prior art documents under A54(2) EPC, available for novelty and inventive step considerations.

- Document A5 is a journal article published in February 2013 - i.e. before the effective date of claims 1-4, 5a, 6. Thus this article was available to the public before the effective date, and so A5 is full prior art under A54(2) EPC, available for novelty and inventive step considerations.

- Document A6 is a PCT application, designating the EP states , which was filed before but published after the effective date of claims 1-4, 5a. However, the European filing fee has not been paid, and so A6 is <u>not</u> available as prior art under A54(3) EPC for claims 1-4, 5a. But see section on claim 6 for discussion relating to claim 6.

<u>Claim 1</u>

<u>Lack of novelty over A2 (A100(a) EPC, A54 EPC)</u>

Claim 1 lacks novelty over A2, because A2 discloses all the features of claim 1:

A2 discloses:

- A device for soaking and cleaning the teats of a dairy animal outside a milking robot. Note for is interpreted as merely "suitable for" - Guidelines F IV 4.13. A2 discloses a cleaner (= a device - a device is a very broad term) for cleaning the teats of cows (A2, [0001]). A cow is a diary animal (A1, [0001]). The cleaning is performed by soaking, as described below. The cleaning may be performed outside the milking robot (A2, [0010]).

Therefore this feature is disclosed

- Soaking means for (=suitable for) applying a soaking fluid.
According to A1, "soaking" is applying a fluid onto a surface of the relevant part of the animal (A1, [0005]). The nozzle 4 of A2 applies water to the teat (A2, [0008]). Water is a fluid. Thus the nozzle of A2 is a soaking means as defined by claim 1 - this feature is disclosed.

- at least one rotating brush
The cleaner of A2 comprises a rotating hair roller 5 (A2, [0007]). A hair roller is well known to be a brush (A5, p1, l15). A2 thus disclosed a rotating brush.

- the brush arranged to rotate and simultaneously contact the teats during application of the soaking fluid (= the water from the nozzle)
The hair roller 5 (=brush) rotates and contacts the teat (A2, [0007]). The rotation starts as soon as liquid (=water) is supplied (A2, [0007]). The water is sprayed for a few seconds at least (A2, [0008]). Thus there must be a time where the brush rotates, contacting the teat, whilst the soaking fluid is applied.
Therefore this feature is disclosed

<u>A2 thus disclose all features of claim 1. Claim 1 lacks novelty over A2.</u>

Claim 2

Lack of inventive step over A4 in combination with A2 (A100(a), A56 EPC)

The technical field of claim 2 is a device for soaking and cleaning the teats of dairy animals outside a milking robot (preamble of claim 1, on which claim 2 is dependent, A1 [0001]).

The purpose of claim 2 is the provide a device for soaking and cleaning robots which is provided with a means to autonomously reach dairy animals wherever they are, rather than performing cleaning in the milking robot.

A4 is the closest prior art.
A4 is directed to a device for cleaning and soaking the teats of dairy animals (A4, [0001]) before milking in a milking robot (A4, [0005]). It is thus in the same technical field as claim 2. The purpose of A4 is to provide a cleaning device which can autonomously reach and clean animals wherever they are found (A4, [0004]). The technical purpose of A4 is thus the same as that of claim 2. Further, as described below, 4 has many features in common with claim 2. Thus A4 is the closest prior art.

Claim 2 is dependent upon claim 1, and so comprises all the features of claim 1. Of those features, A4 discloses the following:

- A device for (=suitable for) soaking and cleaning the teats of a dairy animal outside a milking robot.
A4 discloses a mobile treatment device which soaks teats of dairy animals with disinfectant 9A4, [0004]), and cleans the teats with an ultrasonic cleaner 7 ([A4, [0011]). There is no requirement in claim 2 that the cleaning and soaking are the same process. The cleaning and soaking of A4 take place outside of the milking robot (A4, [0003], [0004]).
Thus this feature is disclosed.

- a soaking means for applying a soaking fluid.

According to A1, "soaking" is applying a fluid to a surface of the relevant part of the animal 9A1, [0005]). The nozzle 6 of A4 applies, by spraying, a disinfectant to the teat 9A4, [0007]). The disinfectant is an aqueous solution - i.e. a fluid. Thus the nozzle applies a fluid to the teat, and so is a soaking means within the meaning of claim 2.

In addition to the features of claim 1, claim 2 defines the following features, each of which is disclosed by A4:

- a reservoir for storing the soaking fluid
A 1 litre reservoir is provided for the disinfectant solution (=soaking fluid, as it is applied by the soaking means) (A4, [0014])
Therefore this feature is disclosed

- wheels - A4 provides four wheels 1 (A4 [0004])

- electronic location indicating means for supplying information about the positions of both the device and the animal.
A4 discloses a navigation antenna, ear tags and an on-board computer which allow the position of the cows (= dairy animal) and device to be found (A4, [0005]). This system thus provides the function of the electronic location indicating means. Indeed, the embodiment of the electronic location indicating means in A1 also comprises an antenna, ear tags and on-board computer (=microprocessor) - A1, [0016]. Thus A4 discloses this feature.

- an individual electric motor for each wheel
Each wheel in A4 is driven by a respective electric motor (A4, [0004], [0005] - "each respective electric motor") Thus this feature is disclosed.

- a control unit arranged such that, in response to said information about the positions of both the device and the animal, it actuates said electric motors
In A4, the on-board computer sends instructions to the respective motors which allow each motor to steer the device. thus us how the 'actuation' of the motors by the control unit is described in A1 (A1, [0015]). Thus the computer of A4 is a control unit

within the meaning of claim 2. The computer sends instructions once the position data are known - -i.e. in response to the position information. Thus this feature is disclosed.

The only feature of claim 2 which is <u>not disclosed</u> by A4 is that the device comprises at least one rotating brush arranged to rotate and simultaneously contact the teats during application of said soaking fluid.

The technical effect of the brush is to ensure that the fluid is spread over the teat in a uniform manner, independent of the spray pattern provided by the fluid applicator (A1, [0009]).

Therefore an objective technical problem to be solved is how to ensure the soaking fluid in A4 is applied uniformly across the teat.

Claim 2 solves this problem by using at least one brush which rotates and contacts the teats whilst soaking fluid is applied.

Although A4 does not disclose brushes, describe that uniformity of the application of soaking fluid is important to maintain effectiveness of the treatment. A4 therefore incentivises the skilled person to ensure uniformity.

A2 solves the problem of ensuring uniform application of a soaking fluid (A2, [0007]). As described in relation to claim 1, the hair roller of A2 matches the definition of the brush of claim 1 (and hence claim 2). A2 describes the purpose of the hair roller to be to ensure uniform wetting (A2, [0007]) - i.e. a uniform application of the soaking fluid.

A2 is in the technical field of a device for soaking and cleaning the teats of a dairy animal outside a milking robot (A2, [0001]), see also discussion above of A2 in relation to claim 1). A2 is thus in the same technical field as A4, and would be consulted by the skilled person.

The skilled person, prompted by the teaching of the importance of uniform application in A4, would consult A2 and implement the hair roller solution of A2 into the device of A4. A2 also describes a device for soaking a teat (see discussion of claim 1 above), sharing many features with the device of A4. The hair roller of A2 is thus fully compatible with the device of A4. When adding the hair roller of A2 to the device of A4, the skilled person would follow the teaching of A2 that the roller should be rotated and applied to the teat during soaking. Thus this combined device would have all the features of claim 2, without requiring any inventive thought on the part of the skilled person.

Claim 2 therefore lacks an inventive step over A4 in combination with A2

It is noted that the only feature of claim 2 missing from A4 is actually a feature of claim 1. As such, claim 1 also lacks an inventive step over A4 in combination with A2 for the same reasons as described above.

Claim 3

Lack of inventive step over A2 in combination with A4 (A100(a), A56 EPC)

The technical field of claim 3 is a device for soaking and cleaning the teats of dairy animals outside the milking robot (claim 1 preamble, claim 3 dependent on claim 1).

The technical purpose of claim 3 is to provide a device which verifies, before the milking robot, that the soaking fluid has been correctly applied and thus that the teat has been correctly cleaned (A1, [0010]).

A2 is the closest prior art to claim 3
As described above, the field of A2 matches that of claims 1 and 2, and hence also that of A3. The purpose of A2 is to provide a device which soaks and cleans the teats of cows (=dairy animals), and follows this up with a check to verify that the teat has been correctly cleaned (A2, [0011]). The technical purpose of A2 is therefore closely related to that of claim 3. Moreover, A2 discloses many features of claim 3, as discussed below, and so is the most promising starting point for considering inventive step.

Claim 3 is dependent upon claim 1, and so comprises all features of claim 1. As discussed above, A2 discloses all the features of claim 1.

Claim 3 further discloses the following feature, which is disclosed in A2:

- The device comprises means to apply at least two litres of soaking fluid per dairy animal per application.

A2 discloses that the minimum volume of water applied per cow (=dairy animal) is 3 litres - i.e. more than two litres (A2, [0009]). The nozzle 7 and connecting point 8 of A2 thus provide the means for supplying at least 2 litres per animal. It is implicit that when A2 says "per cow" it means "per cow per application" - no other interpretation makes sense. Thus this feature is disclosed.

Claim 3 further defines the following feature, which is not disclosed by A2:

- the device comprises checking means for (=suitable for) verifying outside the milking robot that the soaking means has actually been applied to the teats.

A2 does not disclose that the device itself provides checking means, instead this function is performed by a human operator (A2, [0011])

The technical effect of this difference is to provide automatic checking of the teat to verify correct cleaning [A1, [0010])

A technical problem to be solved is thus how to automate the manual checking step of A2.

Claim 3 solves this problem using checking means for verifying that the soaking fluid has been applied to the teat. The checking means is preferably a sensor, such as a humidity sensor (A1, [0011]).

A4 also solves the problem of checking (=verifying) the correct application of disinfectant on the skin of teats of dairy animals 9A4, [0012]). A4 uses an IR sensor 4 for this purpose - so A4 also uses a sensor as a checking means, just as A1 does.

As described above in relation to claim 2, A4 and A2 are in the same technical field, and disclose compatible devices - so A4 would be considered.

Starting from A2, the skilled person would be prompted by the teaching in A2 that the manual checking puts a strain on the back of the operator (A2, [0011]) to consider automation to avoid injury to the operator. Automation is a well known aim in all technical fields. The skilled person would use the IR sensor of A4, which is disclosed as being for the same checking purpose, in the device of A2. No further modification to the device of A2 would be required. The result of such an obvious combination would be a device having all the features of claim 3.

Claim 3 therefore lacks an inventive step over A2 in combination with A4

<u>Claim 4</u>

<u>Lack of novelty over A5 (A100(a), A54 EPC)</u>

Claim 4 lacks novelty over A5 because A5 discloses all the features of claim 4:

A5 discloses:

- A method for milking a diary animal
(note here for is interpreted as a required feature - Guidelines F IV 4.13)
A5 provides a method of milking cows (= diary animals, A2 [0001]) - see e.g. A5 p1,
l9 - a milking robot is provided. A milking robot is a cabin in which cows are milked
(A1, [0012]). Thus a method of milking a dairy animal is provided.

- the method comprising, in the following order

- soaking the teats of the animal outside a milking robot
Soaking means applying a liquid on the surface of the relevant part of the animal (A1,
[0005]). In A5, cows must cross a river to reach the milking robot 9A5, p1, l10-11;
figure 2). The river is deep enough to reach the belly of the animal (A5, p2, l18) so
the water must cover the teat. The river comprises very clean water 9A5, p2, l24-26),
so by covering the teats as the cows cross the river, clean water is applied. Water is
a fluid. Thus the teats of the cows are soaked before the milking robot, and so this
feature is disclosed.

- at least two litres of soaking fluid are used per animal
It is implicit that during the crossing, more than 2l of water would be applied to the
teat, disclosing this feature.

- marking the animal outside the milking robot
After crossing the river, but before the cow enters the milking robot, a green stripe is
applied to the cow (A5, p1, l17-19). The green stripe comprises a colourant. The
marking in A1 is also performed by applying a colourant to the cow (A1, [0018]).
Thus A5 discloses marking within the meaning of claim 4.

- letting the animal enter the milking robot

After the mark is applied, the cow is allowed to enter the milking robot (implicit from applying mark before it enters the robot - A5, p1, l19; see also cow in robot in figure 3).

- milking the animal - implicit from the definition and purpose of the milking robot. The milking can only happen after the cow has been let into the milking robot, so the order of the method steps matches that of claim 4.

Thus A5 discloses all the steps of claim 4, in the correct order.

Therefore claim 4 lacks novelty over A5

Claim 5a (the 'teat only' alternative)

Lack of inventive step over A3 in combination with A2 and A4 (partial problems) (A100(a) EPO and A56 EPC)

The technical field of claim 5a is a method for milking dairy animals.

The technical purpose of claim 5a is to provide a method of milking dairy animals (e.g. cows - A1, [0001]) which cleans the teat of the animal and then guides the cow directly to milking 9A1, [0020])

A3 is the closest prior art

The field of A3 is a method of milking cows (A3, [0001], [0002]) - i.e. the same field as claim 5a. The purpose of A3 is to provide a method in which the teats of cows are cleaned before milking (e.g. A3, [0002]), a similar purpose to that of claim 5a. Moreover, A3 discloses many of the features of claim 5a, as discussed below.

Claim 5a is dependent upon claim 4, and so comprises all the features of claim 4. Of those features, A3 discloses the following:

- A method for milking a dairy animal, comprising the following steps in the following order:
A3 provides a milking robot, which milks cows (A1, [0012]), so describes a method of milking dairy animals - A3 [0002])

-soaking teats outside the robot
A fluid is applied (=soaking - A1 [0005]) to the teats of the cows outside the robot (in one embodiment) - A3, [0007], thus the teats are soaked.

- marking the animal outside the milking robot
Marking the animal means associating information to it by appropriate means which reveals that soaking took place (A1, [0018]). A3 discloses recording information concerning cleaning on an ear tag of the animal (A3, [0012]). This meets the

definition of marking. This marking takes places as soon as the nozzles finish projecting fluid, i.e. outside the milking robot when cleaning takes place outside, therefore this feature is disclosed.

- letting the animal enter the milking robot and milking the animal
Implicit from e.g. last sentence of paragraph [0003] of A3 and from the purpose of the milking robot.

Claim 5a further defines the following feature, also disclosed in A3:

- using heated nozzles for applying the soaking fluid
Electrically heated nozzles are used in A3 [A3, [0008]).

Claim 5a further defines the following features which are not disclosed in A3:

a) at least 2 litres of soaking fluid are used per animal
b) after soaking, applying conditioning composition to the teats, said composition comprising 30-45% by volume of a lower alcohol.

The technical effect of feature a) is to provide enough soaking fluid to ensure adequate softening of the dirt 9A1, [0007]).

The technical effect of feature b) is to stimulate the cows to proceed immediately to milking after cleaning using conditioning, so that the closed animals do not get dirty again 9A1, [0020]).

Thus the technical effects of features a) and b) are entirely separate. There is no synergistic effect between them. The two features can be treated separately as partial problems.

<u>Feature a)</u>

The problem solved by feature a) is how to ensure adequate softening of the dirt when cleaning the teat of a dairy animal with soaking fluid.

Claim 5a solves this problem by using at least 2l of soaking fluid.

A2 also solves this problem. A2 teaches that 3 litres of soaking fluid should be used (i.e. more than 2l) as a minimum amount to soften dirt.

A2 is in the same technical field of methods milking dairy animals 9A2, [0001]) as A3. A2 would therefore be consulted by the skilled person.

The skilled person, seeking to ensure sufficient soaking, would use the teaching of A2 that 3l should be used in the method of A3. A3 already provides a large reservoir of 50l of fluid (A3, [0008]), so using 3l per animal is entirely compatible with A3. No further modifications would be necessary. Thus the obvious combination of A2 with A3 would lead to feature (a).

This feature does not provide an inventive step.

It is noted that feature a) is also the only feature of claim 4 missing from A3, and so claim 4 lacks an inventive step over A3 in combination with A2 for the same reasons as described above.

<u>Feature b)</u>

The problem solved by feature b) is how to ensure cleaned animals do not get dirty again after cleaning.

Claim 5a solves this problem by applying a conditioning composition to the teat after cleaning.

Although A3 does not disclose such a conditioning composition, it does teach that it is necessary to ensure cows move immediately after cleaning to the milking robot in order to prevent the teat getting dirty again. A3 thus incentivises the skilled person to seek a way of ensuring the cow moves directly to the milking robot.

A4 discloses a method of directing cows using conditioning by applying a solution comprising 20-40% ethanol to the teat 9A4, [0014]). The purpose of this composition is to provide a gentle conditioning stimulus to direct cows - exactly the same purpose as the conditioning composition in A1 (A1, [0020]-[0022]). The solution of A4 is thus a conditioning composition. Ethanol is a lower alcohol (A5, p1, l21-22), and the disclosed range of ethanol of 20-40% overlaps with the range in claim 5a. As 40%, an explicitly mentioned end point, falls within the range of 30-45% of claim 5a, the solution of A3 falls within the scope of claim 5a (Guidelines, G VI 8 (iii).

A4 is in the technical field of disinfecting teats of dairy animals prior to milking (A4, [0001], [0003]) - a related field to that of A3. The skilled person would therefore be aware of A4.

Thus the skilled person, incentivised to find a solution to directing cows by A3, would use the conditioning method of A4. The conditioning method of A4 is described as being able to direct cows to any location, and as being entirely separable from the remaining features of A4 (A4, [0015]) - "can be used independently"). The method is thus fully compatible with A3. Thus the skilled person would apply the aqueous solution of A4 to the teat of the cow after soaking in the method of A3. The skilled person would use the aqueous solution described in A4 without any deviation - so would apply a conditioning composition falling within the scope of claim 5a. Thus this combination would inevitable result in a method with feature b) of claim 5a.

Therefore feature b) does not provide an inventive step.

Neither distinguishing feature of claim 5a provides an inventive step, and so claim 5a lacks an inventive step over A3 in combination with A2 and A4.

Claim 5b - Added matter (A100(c) and A123(2) EPC)
(the 'teat and udder' alternative)

Claim 5 was added during examination of A1; it was not present on filing. Although the as filed description discusses applying conditioning composition to teats (A1, [0021]-[0023]), there is no disclosure in the application as filed of also applying the composition to the udder.

A1 generally draws a distinction between the teats and udder (e.g. A1 [0008], where the separate options of "teat" and "teat and udder" are given), and so the absence of the mention of udder with respect to the conditioning composition would be taken by a skilled person to mean that the composition is not applied to the udder.

The subject-matter of claim 5b was thus not clearly and unambiguously disclosed in the application as filed.

Therefore claim 5b adds matter

Claim 6 (and A6 discussion)

Lack of novelty over A6

A6 was filed by the same applicant as A1. A6 has a filing date before the filing date of the A1 priority application. As discussed below, A6 discloses all the features of claim 6. Thus the priority document of A1 was not the first application filed by the applicant for the subject-matter of claim 6. As such, the priority claim of claim 6 is invalid.

The effective date of claim 6 is thus the filing date of A1 = 15 December 2014

A6 was published before this date, so is full A54(2) prior art for claim 6 alone (i.e. available for novelty and inventive step attack).

A6 discloses a fluid comprising water ("water-based solution"), ethanol, soap (A6, [0003]), and a colourant with a concentration of 0.4% by volume (A6, [0006]).

A6 thus discloses all the features of claim 6. Claim 6 therefore lacks novelty over A6.

Examination Committee II: Paper C - Marking Details - Candidate No

Category		Max. possible	Marks Marker 1	Marker 2
General	General	15	13	12
Claim 1	Claim 1	13	13	12
Claim 2	Claim 2	20	18	18
Claim 3	Claim 3	15	10	10
Claim 4	Claim 4	10	10	9
Claim 5	Claim 5	22	21	22
Claim 6	Claim 6	5	5	5
Total			**90**	**88**

Examination Committee II agrees on 89 points and recommends the grade PASS