
Routine check and installation of milk meters with ICAR approved calibration software module from DeLaval - experience from practice

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Using software instead of time consuming bucket milking makes this new method efficient and data continuously available for monitoring. This is a completely new and fast way of working with milk meter accuracy in terms of calibration, installation test and routine check. It has the potential to long term revolutionize the organization of milk recording in many regions.

The method which was ICAR approved in December 2013 is based on a calculation in the Herd Management software of milk meter accuracy per milking point by using yield data statistics per cow and milking session as well as bulk tank receipt information. A minimum number of cow milk recordings should be registered in the software to get good statistical data before calibration. A well functioning ID system is also a prerequisite.

Every farm that wants to live up to any accuracy standard regarding official milk recording need methods for milk meter calibration, installation test and routine check which are all simplified by the new method.

This case study emphasizes on the evaluation of potential benefits of using this new method. In eight cases (farm studies) in four countries (Sweden, Netherlands, France, Germany) the following benefits were assessed: labor savings, increased profitability, positive effect on animal welfare, reduced impact on resources, environment and energy, positive impacts on work-facilitating and work safety. The methods used were analysis of registered calibration data as well as a survey with representatives in contact with the farmers as well as workers performing milk meter calibration, installation test and routine check.

The result shows that the new method gives real benefits in all areas. By all respondents the new method was regarded as a very positive development in the field of milk meter calibration and test. One comment from the survey was: Perfect combination of labor saving calibration and milk meter accuracy.

The experiences from this study can be used to improve future organization of milk meter calibration with ICAR approved calibration software module from DeLaval.

Abstract

Introduction

DeLaval has developed a new calibration method for milk meters in conventional milking systems based on data present in the Herd Management system.

Briefly the method is based on that the system over a number of milking sessions compares the yield measured by the milk meter to the expected yield of the cows. The system also compares the total bulk tank volume according to the receipt with the total yield in the system. The BIAS of each milk meter is then calculated automatically and must be entered by the service technician into the milk meters (Olsson T, 2011)

The main advantage of using this calibration procedure instead of other traditional procedures is that it is much faster and saves labor as bucket milking is eliminated, or at least significantly reduced. Beyond the obvious labor savings there are potential benefits of increased profitability, positive effect on animal welfare, reduced impact on resources, environment and energy and positive impacts on work-facilitating and work safety.

ICAR approved this new method (Idensjö H, 2013) in December 2013 under the name Milk meter calibration software module, present in DeLaval Herd Management system ALPRO 7.2, to be used for initial calibration, installation test as well as routine test. The ICAR approval is at this time valid for the 'Free flow' based milk meters in the MM25- and MM27-series including MM27BC (ICAR, 2013).

The purpose of this study was to assess the real benefits of using this new calibration software about one year after the approval by studying some cases of farms in Europe where this method has been used.

Material and methods

A survey was sent out to DeLaval representatives experienced in milk meter calibration in SE, NL, DE and FR. The focus was to assess benefits of cases from specific farms however assessment of systematic benefits by using the new software calibration method was also desired (Table 1).

In total eight people responded to the survey of nine people asked. Additional contact was taken in cases of unclear data from the respondents. Eight farms were assessed and two assessments were made of systematic benefits. Quantitative calibration data from four of the farms were analyzed.

Results

Type of farms

For the eight farms number of milking cows ranged from 80 to 1100 and number of milk meters from 16 to 60 pieces. Systems represented were parallel parlour, rotaries and MidiLine with swing over arms. In addition one of the farms were an AMR (DeLaval Automatic Milking Rotary) with 24 milking points and 96 milk meters for which ICAR approval of the calibration method is pending.

Type of action

Most of the cases reported concerned initial calibration and installation test. In only one case the new method had been used for routine check. However in the descriptions of systematic benefits routine check was included. In two cases initial calibration was not possible due to low identification rate at the time and the traditional method was used instead. In the other cases the new calibration method was used and the result was good.

Table 1. Survey as sent out to respondents.

Milk Meter software calibration - benefits
<p>I would like to know your experience from using MM software calibration instead of calibration with bucket milking.</p> <p>I'm interested in your view of the benefits of using this new method.</p> <p>Please think of an example and try to fill in data for as many of the below points as possible. Quantitative data is the best, however if you can't express that your qualitative judgment and comments are also welcome. Try not to be too short.</p>
Survey
<p>Farm name (this is only for reference and will not be published)</p> <p>Type of parlour</p> <p>Number of cows</p> <p>Number of Milk Meters</p> <p>Milking sessions/day</p> <p>Type of action (initial milk meter calibration, installation test, routine check)</p> <p>Benefits:</p> <p>Labor savings</p> <p>Farm profitability</p> <p>Animal welfare</p> <p>Work-facilitating</p> <p>Work safety</p> <p>Environment and energy</p> <p>Resource need</p> <p>Other</p> <p>General comments</p>

Overall the labour associated with the new software calibration method compared with traditional methods using bucket milking only is reduced from man days to one or a few man hours. The labor saving differs depending on how the new method has been utilized in the local protocols for approval for official milk recording. From the assessment the following figures were mentioned:

NL, saving of 4-8 bucket milkings per milk meter and saving one visit to the farm

FR, saving of 6 bucket milkings for every milk meter exceeding six of the milk meters in the parlour (for which bucket milking is still required as verification during installation test)

SE, for a double 12 parlour the labor cost over a five year period including initial calibration, installation test and routine checks is calculated to be reduced with over 90%

DE, for a 60 places rotary the labor saving for initial calibration and installation test was four man days.

Labor savings

Farm profitability

With the new method the parlour is not filled up with workers disturbing the milking routine during calibration and test, like with the traditional method, thus avoiding less milk out and less total milk during calibration. For rotaries reduced capacity and downtime was improved with the new method and less waste milk during calibration. Overall the cost for the farmer of initial calibration and installation test could be reduced.

The new method also gives better overview for the farmer of the performance of the milk meters making it possible to faster detection of a deviating milk meter.

Animal welfare

The disturbances during calibration and test could lead to stress for the cows. Less risk of over milking as faulty milk meters can easier be found.

Work-facilitating and safety

Several answers in the survey witnessed about the bad ergonomics of carrying buckets with milk weighing 15-25 kg to the scale and tank as is required with the traditional calibration method. In e.g. NL it is not even allowed with manual lifting above 23 kg. The menu for the new method in the Herd Management program was said to be easy to use. As bucket milking is reduced or eliminated the new method was regarded as safer.

Environment, energy and resource need

With the new method the following environmental savings during calibration and test were mentioned in the survey:

- Shorter milking session, gives shorter vacuum pump running time - energy saving
- Less buckets to clean - hot water and detergent saving
- Less people and fewer visits - less transportation

Other considerations

For AMR (Automatic Milking Rotary) the calibration is practically not possible to do according to manual ICAR guideline due to complexity, resource need and down time.

Discussion

One could question this survey to be limited in the number of cases studied. However the coverage of different countries, herd sizes as well as different milking systems was good. At the same time the only consideration expressed about using this new method was that ID performance must be good which is also valid for using Herd Management systems in general. By all respondents the new method was regarded as a very positive development in the field of milk meter calibration and test. One comment from the survey was: Perfect combination of labor saving calibration and milk meter accuracy.

There was very little evidence from the survey of how the new calibration method can benefit routine check of milk meters. This is not surprising considering the limited time this method has been ICAR approved and the fact that routine check is usually done once a year. We should expect to have more experience of routine check with this method in the years to come.

Every farm that wants to live up to any accuracy standard regarding official milk recording need methods for milk meter calibration, installation test and routine check which are all simplified by this new method from DeLaval.

Using software instead of time consuming bucket milking makes this new method efficient and data continuously available for monitoring. This is a completely new and fast way of working with milk meter accuracy in terms of calibration, installation test and routine check. As there are many benefits with the new method as shown by this study it has the potential to long term revolutionize the organization of milk recording in many regions.

Conclusions

Olsson, T., 2011. Calibration of MM25 and MM27 in ALPRO Windows. Delaval Report.

ICAR, 2013, Certification, MM25/27 ALPRO 7.2 Calibration/Installation Module. (Page available on 20 August 2015 at: www.icar.org/pages/Sub_Committees/sc_recording_devices_approved_milkimeters.htm).

Idensjö H, 2013, Calibration instruction MM25 and MM27 in ALPRO. DeLaval Report no 80009904.

List of references
