
Tru-Test electronic Milk Meter – practical field use by AgSource/CRI

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Slide 1

AgSource started working with the Tru-Test Electronic Milk Meter in summer of 2005 on trial basis. I was the lead person in field trials, training and working with Tru-Test.

The goals of the trial were, from Tru-Test's side, to see what software changes were needed to get the electronic meters established in the United States. At AgSource our goals were to see how well they worked in different types of parlors and sizes of dairies for durability, ease of use and acceptance by employees and dairymen. In the trial period we also included work with the Wisconsin Livestock Identification Consortium on using RFID tags with the EMMs.



Slide 2

Another one of our main goals was to see if the Tru-Test Data Handler would be able to work with the EMMs and mechanical meters to replace the computer during testing. The Data Handler is very durable, water tight, the menus are very easy to use and the battery lasts for up to 20 hours. It can be used with mechanical meters where the field tech records milk weights, sample numbers and pen numbers or it can be setup to record just samples and pen numbers as with electronic parlor

meters. The Tru-Test Data Handler comes in either a bluetooth model to work with an RFID tag reader or the model which works with the Tru-Test Electronic Milk Meters.

Slide 3



EMMs and Data Handler transfer data to each other via radio frequency. They record the meter id and stall position in the parlor, the milk weights and reads the barcode on the sample vial. They record the pen numbers and CAR codes of any sick cows. The Data Handler alerts you and asks you to verify any duplicate or new cows and allows you to change a previous number if the second cow is the correct number.

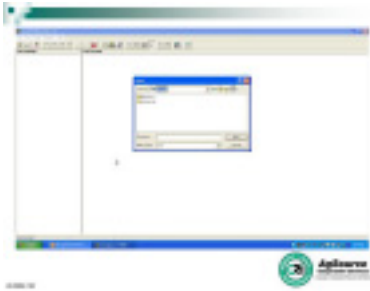
The time each cow was milked and how long she took to milk is also recorded along with milk rates per minute to allow you to graph the flow rates of the cows and analyze the wash cycle to make sure each stall is washing properly.

Slide 4



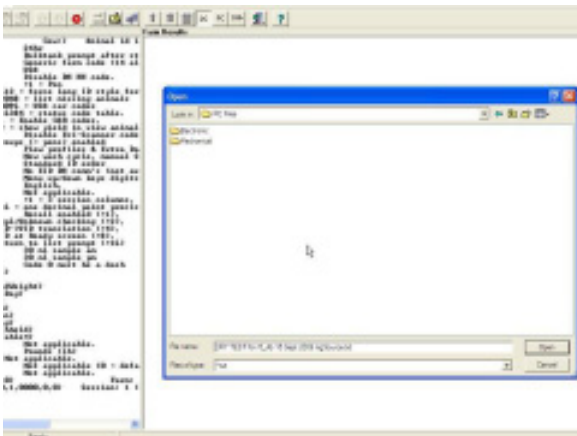
Cow numbers get matched to the meter by entering the cow into the Data Handler and then pressing the Select button on the EMM. Cow numbers can be entered by the whole side of the parlor and then use the Recall menu item to match to the meter or one meter at a time either by stall number or in order cow is milked. When the cow is finished milking the tech presses the Finished Milking button and the cow information is recorded automatically.

CAR codes can be entered cow side. And the field tech and lab save time as the barcoded vials can get placed anywhere in the tray, do not need to have a number on the cap and the lab can run trays in any order. All the information is matched thru the barcode.



Slide 5

The Link program is Tru-Test's program to transfer information between the Data Handler and computer. Information recorded in the Data Handler can also be viewed using the Link program and be sorted either by cow number or sample number. It is very easy to switch between EMMs and mechanical meters by switching the RC file.



Slide 6

RC files tell the Data Handler and EMMs what to do. With mechanical meters if weights and samples are to be recorded or samples only. With the EMMs the RC file tells the meter if you are recording weights only or weights and samples and if you want to store flow profiles and wash information. The RC file also sets the amount of milk put into the vial and can be set for proportionate sampling in 2x herds.



Slide 7

The Select button is used to transfer information between the meter and Data Handler. When the Select light is flashing it means a cow number is needed to be entered or there was an error reading the barcode. Action needs to be taken before taking a sample. If the light is on steady there is a problem with meter, most times this is

Slide 8

when starting the meter before milking or there is problem taking a sample. Action needs to be taken care of right away. The tech just presses the Select button and views the message on the Data Handler.



The Finished milking Release sample button is used to take the sample. When this light is flashing it means the milk flow has stopped or just about stopped. If it is on steady it means the meter is in the process of taking a sample.

Slide 9

Low Battery light comes on when battery is down to 2 hours left on the charge. At full charge the battery lasts for 30 hours.



Slide 10

When the Finished Milking button is pressed the meter agitates the milk and takes the sample.



The meter then fills the vial, empties the flask and is ready for the next cow. This process takes about 10 seconds.



Slide 11

The batteries on the EMM last for 29 hours on a full charge. Each time the meter is turned on the Data Handler will display how much time is left on battery. Up to 10 meters can be charged on one power pack.



Slide 12

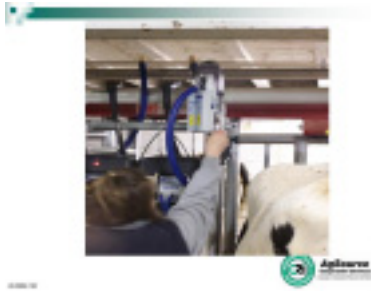
Tru-Test also has portable style chargers. The meters have 2 rivets on the back which are the contact points for charging the battery. Transportation was our biggest obstacle as they are not as easily transported between farms and field techs as other Tru-Test meters. We use plastic tubs deep enough for two layers of meters with 1/8" plywood between and non-slip padding.



Slide 13

The Tru-Test EMMs work very well in flat barn parlors, there is less walking through gates and no passing milk flasks back and forth. We have a 16 stall parlor with 3-4 people milking and they do reattach units on some cows. The field tech with other meters had problems knowing if it was a new cow in the stall or the unit was reattached. With the EMMs the milkers press the End of Milking button when cow is released.

Slide 14



The field tech then just looks for a cow milking and a meter with a full sample vial. The tech then changes the vial and enters the next cow number.

Slide 15



This herd is a 2 sided, 10 stall parlor which samples two milkings. This is the only time you need to make sure the samples are placed in order in the tray as the Data Handler will tell you where the sample is in the tray for the 2nd milking. The meter can also be setup to take a proportionate sample if needed.

Slide 16

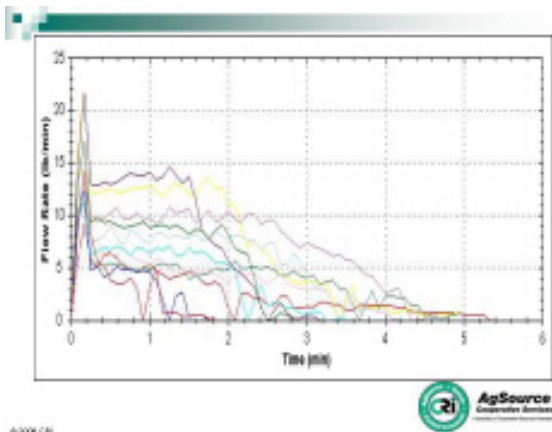


When using these meters in a basement parlor we listen for side to be released then go down the whole side and press finished milking buttons. This parlor we have a problem where the equipment dealer did not mount one pipe tight and it keeps turning on us. These meters will compensate for being a bit out of level.



When this herd expanded the parlor the vacuum shutoffs were going to be mounted right on the milking line. When we told the dairyman we needed vacuum 100% of time to agitate the samples and would need to go back to using the pull out meters the dairyman made the dealer mount the vacuum shutoffs on the wall.

In the fall of 2007 Tru-Test came out with new software which changed this. The meters can now be setup to agitate the sample when milk flow slows to 2.2 pounds per minute. They stir the milk for 3 seconds the first time and then 1 second every 10 seconds until the finished milking button is pressed. The meter then fills sample vial and waits for the unit to be put on next cow to empty flask. When the tech hears the side go out they go down the line pressing the finished milking button, changes the vials, go upstairs and enter the cow numbers. Back downstairs, the Data Handler recalls cow numbers in the order they were entered and are matched to the meter by pressing select. The meters empty flasks when vacuum on each unit is turned on.



Flow profiles can be graphed for each cow, for all the cows on each meter, or all the cows in each switch of the parlor. These are used to analyze how well the people milking are prepping cows, how many reattachments are made during the milking, and can be used to check for problems with meters or stalls either during milking or the wash cycle.

We also developed a report in Dairy Comp305 showing milk weights and how many minutes the cow took to milk which is used to speed up milking by marking or segregating slower cows.

Slide 20

Summer 2005

- Trial Program with Tru-Test
 - Get meters established in US
 - Develop software
 - Dairy One, Dairy Comp, DRPCs
- Performance and Durability
 - Different types of dairies
 - Transportation



4-2008-08


In summary the trial was very successful for both Tru-Test and AgSource. Tru-Test was able to have the Electronic Milk Meter established in the US. When developing the software they worked with AgSource, Dairy One, Dairy Comp305 and all DRPCs. So the Data Handler files compatible with everyone.

On AgSource’s side the meters performed and adapted very well to many different styles of dairies. Our biggest issue to overcome was transportation.

Slide 21

Purchase of Meters

- Repayment
 - Gain Herds
 - Save Labor – sometimes intangible amount
 - Largest Herd – 2x44 Parallel Parlor
 - Smallest Herd – 100 Cow Tie Stall Barn
- 2006 – 50 Meters and 20 Data Handlers
- 2007 – 25 Meters
- 2008 – 100 Meters



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When we decided to purchase the meters we looked at repayment of the cost. This came in the form of gain of herds on test and saving labor. We did gain herds and are still continuing to start new herds on test. While also keeping herds from quitting or switching to competition by saving them time and assuring them a higher degree of accuracy.

Saving labor is sometimes an intangible amount. In some parlors we have maintained the same high degree of accuracy with fewer techs while other parlors we have greatly lessened the stress on the techs in the large fast parlors. Tired techs have higher chance of misreading numbers on tags and samples and in our largest parlor we still use 3 techs, but there is the long term benefit of less stress making a happier and healthier employee.