Milking machines control: the calibration of flussometer, pulsation curves recorder, and vacuometer instruments with traceability of measurement

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Why checking milk recording devices

- Gathering reliable data from herds is one the most important point of recording agencies in the world
- Italian Livestock Association (AIA) tests and certifies the correct functioning of milk recording devices
- In 2003, AIA established the center CPCM in order to standardize routine checks on testing devices used by AIA technician all over the country

CPCM Activity




Flowmeters
Pulsometer
Vacuometers
Balance
Weights
Thermometers

CPCM Framework

CPCM uses a framework which simulates a complete milking system

It is composed of :
• a vacuum pump with a maximum capacity of 6000 L/min regulated by inverter
• calibrated high precision sensors to measure the different parameters
• V-CONE to calibrate the flowmeter

CPCM: Framework

Control panel

Flowmeter calibration

Flowmeters are placed inside the soundproof chamber, set to a determined flow and tested by V-CONE

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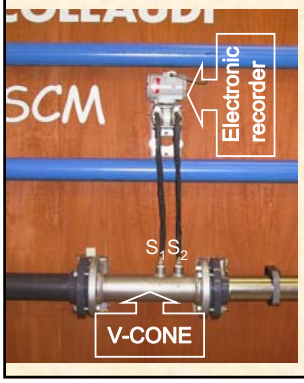
Flowmeter calibration



The flow is measured inside the V-CONE by two calibrated sensors (S_1 and S_2) at fixed T and P

The two sensors are connected to an electronic recording device

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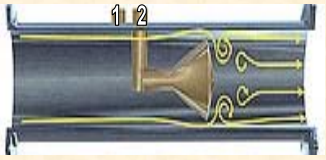
A particular of the V-cone



Two pressure sensors are placed at position 1 and 2

The measure is compared to the expected value of that particular flow according to ISO acceptance range

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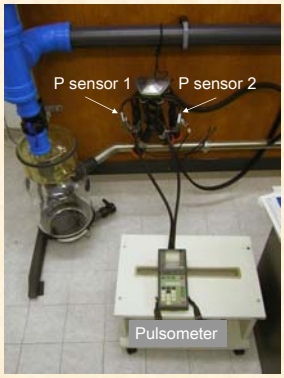
Pulsometer calibration



Pulsometers are connected to the framework by two calibrated pressure sensors

Number of pulsations are simultaneously recorded by pulsometer and calibrated pulsocomputer

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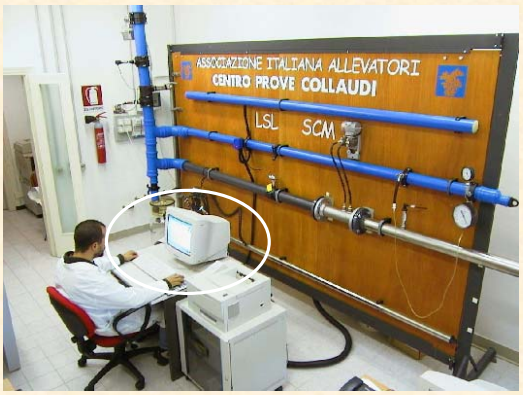

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Vacuometer calibration

Analogical and digital vacuometers are connected to a calibrated vacuometer

Measurements are directly compared

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CPCM: framework

The vacuum pump with a maximum capacity of 6000 L/min regulated by an inverter

It guarantees constant conditions of pressure during calibration checks

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All sensors and reference instruments are periodically tested in a primary reference institute

At end of test a report is released to the customer showing measurement traceability from reference institute to farmer´s devices

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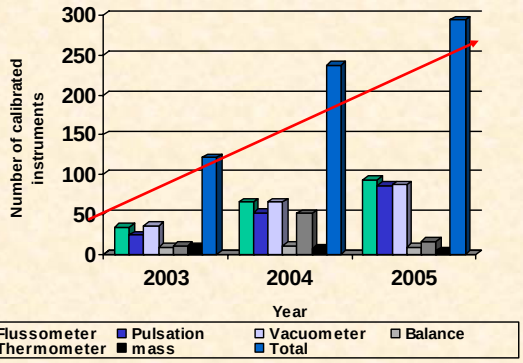
CPCM: Conclusion

Increasing interest in this service



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Conclusions

The number of calibrated instruments have increased over time

90% of the received vacuometers have been calibrated

Instrument	2004	2005	2006*
Pulsometer	48	81	30
Vacuometer	65	87	23
Flowmeter	65	93	35

*data collected until May 2006

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