

Potential of on-line SCC in udder health management and herd improvement

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Mastitis detection in automatic milking systems (AMS) has traditionally relied on deviations in electrical conductivity and behavioural indicators presented to farmers through user interfaces or alert lists. Emerging online somatic cell count (oSCC) technologies, such as the DeLaval Online Cell Counter (OCC), offer quantitative, high-resolution monitoring of udder health at cow and herd level and are receiving increasing attention. Reliable and frequent information on udder health is essential for timely decision making that supports animal health, welfare, and milk production. Our aim is to present and discuss new research and implications for application in and beyond herd management.

Scientific evaluations of the DeLaval OCC demonstrate high performance within ICAR defined ranges, and several applications have been explored in a recent industrial PhD project. Mastitis cases identified by OCC typically resolve within three weeks, whereas prolonged elevations indicate chronicity. Furthermore, the relationship between oSCC and milk loss is nonlinear and varies by parity and between herds, suggesting using herd and parity specific thresholds to pinpoint cases where intervention is required. Compared to monthly sampling, frequent oSCC measurements capture daily dynamics, improving the classification of chronic inflammation and thus supporting earlier treatment and culling decisions. These findings highlight the value of consistent, high frequency monitoring and the implementation of farm specific SOPs to reduce the economic impact of mastitis. DeLaval integrates scientific insights and international recommendations — such as the IDF guidelines for sensor-based udder health management from 2021 — into its innovation strategy. This approach guided the development of our next generation oSCC technology, the DeLaval BioSensors Milk Cell Analysis MCA. Newest research and use cases will be discussed. Our results show that oSCC systems are of high value for udder health farm management and beyond, such as for benchmarking, welfare assessment, genetic evaluations and herd improvement. ICAR and IDF are crucial in unlocking the potential of on-farm data through guidelines for technical validation and use of data. Strengthening partnerships among academia, industry, milk recording organizations, and other stakeholders on oSCC and other data will further advance animal welfare and sustainability in the dairy sector.