DeLaval Herd Navigator® Proactive Herd Management

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Introduction

Dairy farming is changing rapidly. Larger herds are more difficult to control and manage. In order to keep achieving high efficiencies with growing herd sizes, dairy farmers need top performing surveillance tools. Herd Navigator® is a product developed by Danish Lattec A/S, a jointure venture company of Delaval International and FOSS Analytical, is currently being introduced into different European farms.
Herd Navigator is the expression of the Proactive Herd Management concept. The system automatically takes representative milk samples from specific cows of the herd and analyses parameters that help farmers to monitor reproduction, mastitis, and energy and protein balance of the animals. The system contains unique biological models, which take in consideration the measured parameters, cow information and additional risk factors to keep the herd healthy. In this way it prevents costly treatments and large production losses. Significant improvement results on reproduction, mastitis, and ketosis have been proved on the farms that are running the system.

Description of the Solution

The solution automatically takes a representative milk sample of individual cows during milking. The milk is taken at the milk samplers connected at each individual milking point. Before the milking session, the biological modes have decided which cows should be sampled for each individual parameter when they arrive to the milking parlour or VMS (DeLaval robotic milking system).
When a row of cows have been milked the samplers deliver their respective milk samples to the sample intake unit (SI) located at the end of the milking pit. This device holds the samples and sends them one by one to the Analyzer Instrument (AI) located in the milk room.

The temperature and humidity controlled device is a fully automated analytical laboratory, which uses dry stick technology to perform the analysis. Each parameter has its own specific stick, which are stored in cartridges inside the AI. The parameters measured are shown in the Table.

The techniques used for LDH, Urea and BHB are based on a colorimetric principle while the Progesterone determination is based on an immuno assay.The measured values are fed into the biological models. The models process all available data and provide risk values of any of the above pathologies and physiological statuses and at the same time decide when each parameter will be measured again for each individual cow. The risks can be anywhere between 0 and 100 %, and the user can set his own thresholds for alarms in the system. The output from the biological models can be presented in tables and graphs in the user interface, and it is possible to filter away alarms that are not relevant at present, e.g. heat alarms in early lactation.

Focus area	Parameter analyzed in milk	Early/on time detection
Reproduction	Progesterone	Heat Silent heat Pregnancy confirmation Abortion Cysts Anestrus
Udder health	LDH – Lactate Dehydrogenase	Mastitis Subclinical mastitis
Feeding and energy balance	Urea BHB – Beta Hydroxy Butyrate	Feed ration – protein Ketosis Subclinical ketosis Secondary metabolic disorders

Performance

Herd Navigator impacts on the most important factors on milk production, i.e., reproduction, feeding and the most significant disease of dairy farming, mastitis.

Reproduction

Herd Navigator detects consistently above 95% of all heats of the herd (including silent ones) and with the fact that the system is able to pin point the time of the heat and the likelihood of a prospective insemination, the pregnancy rates achieved on the farms using the system improved considerably.The system is able to detect anoestrus post partum, pregnancy and both types of ovarian cysts. Farms running Herd Navigator show significant reduction in Days Open, and improvements in pregnancy rates. In particular, by using the system the farmer will be able to time the insemination according to a Standard Operations Procedure tailored to the specific herd.

Mastitis

Herd Navigator is able to detect clinical and subclinical mastitis up to 3 to 4 days before clinical signs are visible in the animals affected. The sensitivity of the system reaches more than 80%. The time from the mastitis alarm can be used for additional diagnostic confirmation of the mastitis case, e.g. cell counting and bacteriological culture.

Feeding and Energy balance

Herd Navigator is able to detect all cases of clinical and subclinical ketosis, and normally it reaches 50% more diagnostics that the one done by the farmers or herd managers. The detection of hitherto unobserved cases of ketosis has a considerable effect on milk production, when these cows receive targeted treatments.

For an average European herd the data shows that Herd Navigator can bring profit improvement potentials for farmers from 250 to 350€ per cow per year.