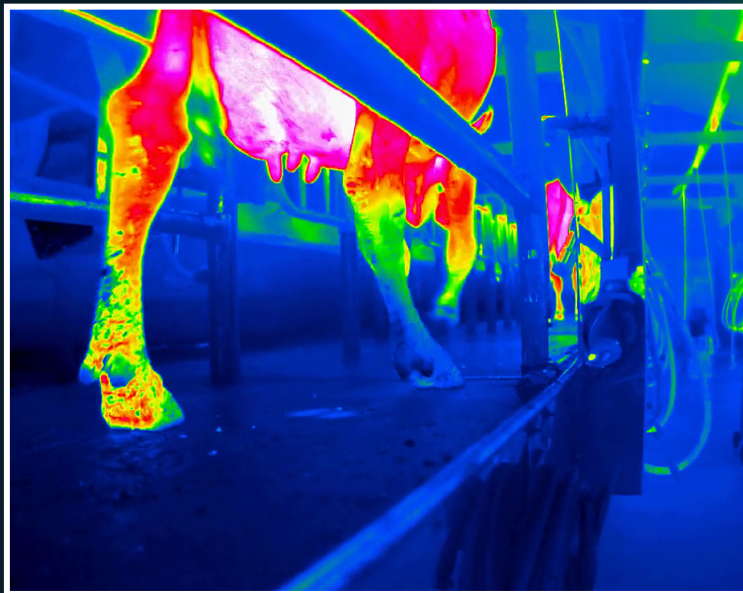




TMV SS Veterinary Monitoring System

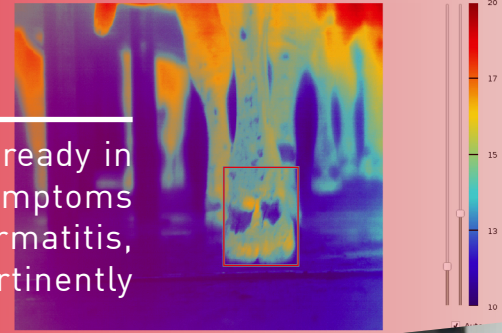
Automated, thermographic monitoring system identifying symptoms of sick cattle.



www.thermo-veterinary.eu

TMV SS VETERINARY

TMV SS Veterinary Monitoring System detects symptoms already in a preclinical phase of leg diseases. The system detects symptoms of diseases such as interdigital necrobacillosis, digital dermatitis, Specific Traumatic ulcer of the sole (Rusterholz Ulcer), pertinently another diseases detectable via leg temperature changes.



Key Product Features

- Fully autonomous, continuous monitoring
- Detection of sick cattle in early stages prevents production losses
- Decreases treatment expenses of identified lame cattle
- The system is fully automated; no data analysis is required from the operator
- Non-invasive, non-restrictive monitoring technique
- Integrable into existing infrastructure
- Made in EU with English language interface
- Guaranteed follow-up service and accredited calibration provided by TMV SS engineering team
- Time cost and incorrect results reduction in comparison to manual process or simple pseudo-automatic systems
- Automated locomotion scoring

Product Benefits

TMV SS Veterinary Monitoring System is an implementation of innovative approaches. The system uses quantitative thermal imaging principles for prompt identification of any changes in a locomotion score.

All that is thanks to a phenomenon in which a temperature changes are observable early compared to visual changes of skin colour, lesions or visible limp.

TMVSS Veterinary Monitoring System detects preclinical phase of dairy cattle leg diseases, before any symptoms appear.

Early detection of the disease shortens treatment time and cost.

Prompt diagnosis allows an elimination of negative impacts of locomotor system illnesses, lower intakes, reduced efficiency, higher susceptibility to mastitis, metabolic diseases, which leads to higher demands for care, related to a treatment.

The system consists of a thermal camera and a visible light camera which are permanently located at the entry race of the milking parlour. Other parts of the system are the operating system and extendable modules, such as cow identification or a cow sorting gate.

Thermal imaging system is placed in a fully water-resistant housing with a protection against mechanical impacts.

All other parts of the monitoring system are built in a similar way.

The temperature of individual parts of the cow leg is evaluated automatically as well as apparent temperature fields for designated parts of the leg.

Temperature measurements are saved and compared with stored trends automatically. The system is fully automated. There is no need for the operator to manually analyse data, manually examine thermal images, and manually evaluate temperature values.

Software interface is split into an operator workstation and a diagnostic workstation. User interface was internationalized for English language users. (other languages on request).

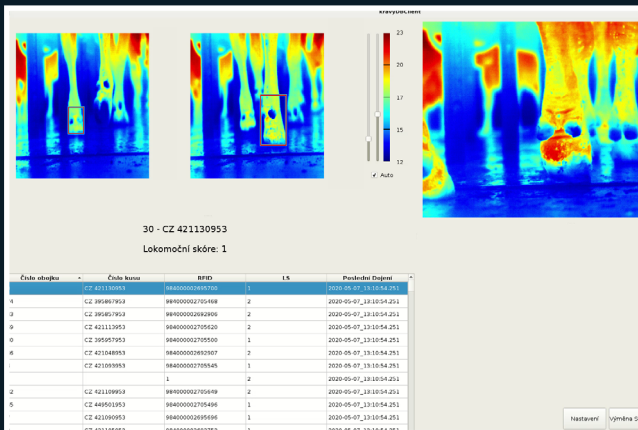
System can be integrated into existing infrastructure and import identification data from existing data systems.



Product Description

Cameras located at the entry race of the milking parlour are monitoring individual cows entering. Those cows are identified and their walk through recorded.

System selects suitable part of the recording to create temperature fields. Using image segmentation the system identifies hind legs to record temperature of selected parts of those legs.



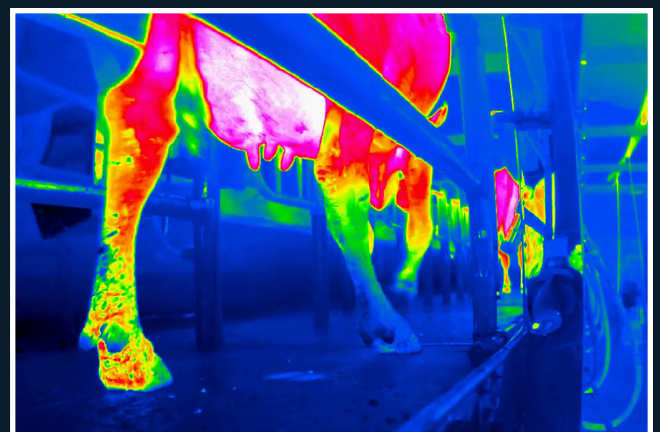
Recorded values are saved in an internal database of the system. The system also process data to a user friendly version.

The system generates a list of suspected lame cows with locomotion score included. Presented list is sortable by locomotion score and also by symptoms trend.

Furthermore, identified individual data details are expandable.

Recorded data are evaluated automatically. The operator is presented with calculated results without need to manually review individual records, which would be time consuming.

The operator is not required to do any further data processing after receiving automatically generated list with assessed locomotion score.



Technical Specification

System range	
Inputs	1 – 8 entry races
Evaluation and visualisation interface	Combined for all entry races
Thermal camera	
Resolution	640 x 480 pixels
Refresh rate	30 Hz
NETD	< 50 mK
FOV (location dependent)	37 x 25°, 18 x 13°, 12 x 90°
Camera housing	IP67 waterproofed
Camera	
Resolution	2688 x 1520 px
Refresh rate	25 Hz
FOV (location dependent)	88°
System Specification	
Computational unit	Data server included (calculations, database, historical trends, overviews and recommendations generated, notification rules configuration, reports, data export)
Data processing	Proprietary algorithm, Machine vision
Notification configuration	Locomotion score LS 1-5, tdiff
Livestock identification database	Imported from existing database
Language internationalisation (software, documentation)	Cze (on request Eng, Ger, Fre, Ita, Spa, Rus, Jpn)
Herd Identification RFID	Existing detection gate, or installation of an individual reader
System Integration and Requirements	
Cabling	Components interconnected by cables
Power supply requirements	230V, 50Hz
System installation and start up	Provided by the supplier
Training	Part of delivery
Support / Hotline	24/7, preferred VPN data server access
Long term support	Guaranteed, Optional – after warranty service agreement

TMV SS VETERINARY

The project was created in a co-operation with:

● Mendelova
● univerzita
● v Brně
●



“TMV SS” spol. s. r. o.

Tel.: +420 272 942 720

Fax: +420 272 942 722

E-mail: info@tmvss.cz

WWW.TMVSS.CZ