

Application in Veterinary Medicine

Veterinary infrared orientated online analysis system
„VIONA“





VIONA – A veterinary infrared orientated online analysis system



Milk cows in milk carousel

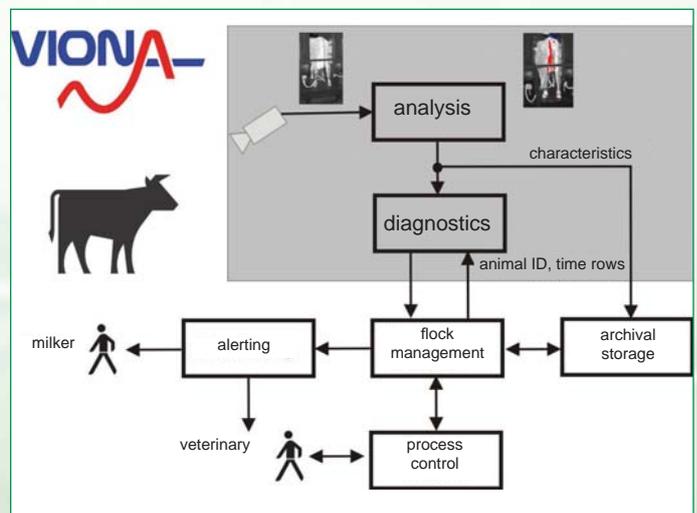
Due to modern sensor technologies the non-contact temperature measurement has found its way into almost every part of our lives. Whether pyrometer for point-shaped measurements in different spectral ranges or infrared cameras for thermographic images under the harshest environmental conditions – the DIAS Infrared GmbH from Dresden (Germany) develops and produces a large device range for infrared measurement technology. But often, even a sophisticated measurement technology is not enough to successfully solve an application, like the following example shows.

Economic interests but also tightened legal prescriptions regarding animal protection and food production demand efficient techniques for the automatic control of animal health. To sound the potential of the animal control with the aid of infrared cameras, a cooperative project has been organized that is supported by the Federal Ministry for Education and Research.

VIONA: a veterinary infrared based online analysis system

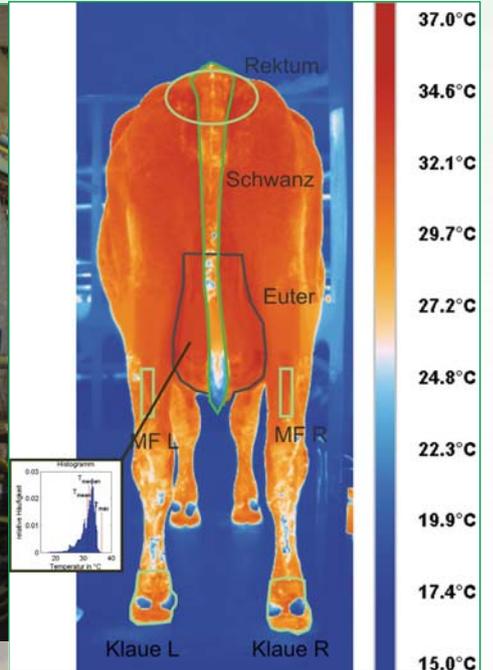
A body temperature rise is often an important indicator for the diagnostics of diseases. It becomes apparent using the example of a milk cow flock with 500 animals that it is not possible with conventional fever measurement, that takes just a few seconds, to check and observe the animal health covering a large area.

This task poses also a challenge to the thermography though the measurement certainty of the absolute temperature has to be improved of one order magnitude compared to the conventional infrared cameras. As a solution DIAS Infrared GmbH has developed a referenced thermography system that meets extensively the necessary measurement certainty under barn conditions.





Left: cows in milking parlor, Right: infrared image of a cow with image processing areas

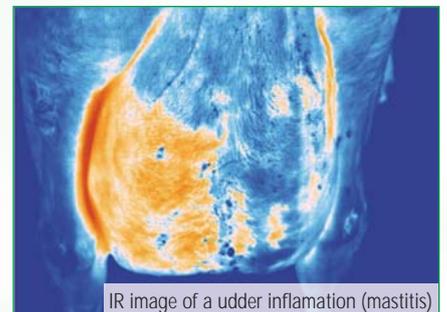


The automatic evaluation of the infrared images to the point of diagnostics has proven itself as a even bigger challenge. A complicating factor is that the infrared camera can only detect surface temperatures. Temperatures rises caused by illness are superimposed by temperature changes influenced by ambient conditions (barn temperature, draft, humidity, dirt) that can lead to a complete overlap with the searched measured value. In addition there are influences caused by individual animal characteristics.

For the solution of this complex tasks using the example of milk cows a interdisciplinary team has been founded that works together for the VIONA project:

Next to the DIAS Infrared GmbH who develops a barn-capable thermography system with respective high absolute measurement certainty, the Fraunhofer Institut FhG IVI works algorithms for the automatic image detection and evaluation of infrared images. The University Of Applied Sciene Dresden (faculty Agriculture/Landscape Management) develops algorithms for the diagnostics of the most important diseases for milk cows (mastitis – inflammation of udder, inflammation of claws and joints) out of infrared thermography data and accompanies the measurements from the biological and veterinary view. At the same time the important connection to the flock management is made. The company Ralle GmbH assures the technical realization of the thermography inspections with modern milking parlors and the company Yoo GmbH works solutions for the complex data management of the online analysis system.

First analyses of the thermography data (partially with manual aid) are promising and show that a diagnostics of mastitis and inflammation of claws is possible. Further full-scale tests are planned to optimize the automatic detection of ill animals.



IR image of a udder inflammation (mastitis)



IR image of a claw inflammation, red coloring above 32 °C

Technische Änderungen vorbehalten. Technical details are subject to change.

Picture credits: „Cows feeding in large cowshed“ Copyright by nulnikas 2013, used with licence of shutterstock.de



We are certified
for many years
according to
ISO 9001

Phone: +49 351 896 74-0
Fax: +49 351 896 74-99
E-Mail: info@dias-infrared.de
Web: www.dias-infrared.com

DIAS Infrared GmbH
Pforzheimer Straße 21
01189 Dresden
Germany