

# RADIOMETRIC SYSTEM IN THE TECHNOLOGICAL PROCESSES OF ANIMAL HUSBANDRY

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Systematic monitoring of animal health status is a necessary requirement for the optimal functioning of livestock complexes. Its improvement is one of the most important tasks of veterinary science.

Analysis of the main approaches and trends in the development of modern methods of temperature measurement shows that most attention should be paid to the usage of contactless methods for remote measurement of thermal electromagnetic radiation (temperature) of objects based on radiometric equipment in the millimeter wavelength range.

It is assumed that the mechanism of EMF cell generation is caused by the vibrations of charged cell membranes, the microstructure of which ensures the appearance of a dipole component with a radiation frequency of 40...80 GHz. Thus the kinetics of biological reactions occur in the millimeter wavelength range, the power level of which determines the temperature of the cell and the organ as a whole.

In order to develop a radiometric receiver in the millimeter wavelength range an analysis of their circuit solutions was carried out. It was necessary to find the structure of a radiometric receiver, which with all the advantages of a compensating receiver, would be insensitive to the fluctuations of the gain factor and to the effect of the most probable narrow-band noise. Thus, it was concluded that the system in millimeter range exceeds the analogue systems in the long-wave range in terms of noise immunity.

Noise immunity can be increased by means of special circuits preventing the receiver from overloading and using differences in the characteristics of useful signals and interference to suppress the latter.

As a result of theoretical and experimental studies a radiometric receiver was developed. This receiver was used for remote diagnosis of the condition of farm animals.

Basic medical and technical parameters:

- depth of detection of temperature anomalies is 3...4 cm;
- measuring time 2...4 s;
- power consumption 220 V 15 W;
- weight of the device is less than 10 kg;
- input signal 10-13...10-17 W;

The usage of a radiometric system in the technological processes of animal husbandry will increase the productivity of animals by 20...25%, reduce the cost of medicines by 15...20% and develop an approach for rationing and maintaining animals.

## References

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