

Wireless Vaginal Temperature Sensor for Domestic Animals

Track Code: 2020-STWA-68908

Categories:

- Agriculture
- Food and Nutrition

Keywords:

- Agriculture
- Domestic livestock
- Food and Nutrition
- Internal temperature sensor
- Internet of Things
- Real-time sensing
- Vaginal probe

Researchers at Purdue University have developed a wireless sensor to determine the internal temperature of an animal. Current devices are either not continuous or require removal to access the data. Monitoring the internal body temperature of lactating sows is particularly important because heat stress is typically remedied by reducing high-energy bodily functions such as milk production. In swine, reduced milk production leads to lower piglet quality. The Purdue researchers' device transmits data at regular intervals to an external device. This allows real-time decision-making as to the care of the animal. The device also has other sensing capabilities, including: an acoustic sensor for sensing the pulse, respiration rate, blood pressure, and digestive tract activity, a light emitter and sensor to determine the blood oxygen content, and a viscosity sensor for determining the onset of estrus of the sow. Additionally, heat generated by the device is quickly dispersed. In testing, the temperature of the device was only 0.0005 °C greater than the internal temperature of the animal. Finally, the estimated battery life of the device is 26 days, 2 hours, allowing the device to be inserted soon after farrowing and remain in place throughout the duration of the 21-day lactation cycle in swine.

Related Publication:

Development of a Real Time Internal Temperature Monitoring Device for Sows
2022 ASABE Annual International Meeting
DOI: 10.13031/aim.202200204

Technology Validation: The researchers tested the signal transmission through pork cuts over distances ranging to 30 meters; reliable transmission occurred throughout all the distances.

Advantages

- &V Å×F-ÖP
- ”-çFW&æWB öb Things (IoT)
- ”×VÇF-gVæ7F-öæ À
- ”Æöær & GFW” Æ-fP
- ”FöW2 æ÷B 6 W6R æ-Ö Å F—66öÖf÷’@

Applications

- ”ÖV 7W&-ær -çFW&æ Å FV× W& GW&R öb â æ-Ö À
- ”ÖV 7W&-ær ÷F†W” 6öÖööâ €ysiological indicators, such as pulse, respiration rate, and blood oxygen level

People:

- Stwalley, Robert Merton (Project leader)
- Field, Tyler
- Johnson, Jay S.
- Neeno, Samantha
- Schinckel, Allan P

Intellectual Property:

Application Date: July 12, 2023

Type: Utility Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

Application Date: July 12, 2022

Type: Provisional-Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

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