

Wireless Temperature Sensor Using Permanent Magnets

Track Code: 66115

Categories:

- Electrical Engineering

Keywords:

- Electrical Engineering
- Sensors
- Temperature
- Wireless

A sensor is a device that receives and responds to a signal. Modern sensors measure a physical quantity, such as temperature, voltage, magnetic field, and torque, and convert it into a signal that can be read by an observer or an electronic instrument. However, the sensitivity of most sensors today is limited by the relative distance away from the desired entity and interference from external noise created by conductors of radio and electromagnetic waves, e.g., air and metal, respectively.

Researchers at Purdue University have developed a novel wireless temperature sensor that works in environments completely surrounded by metal. By incorporating a commercially available technology that detects changes in magnetic fields with temperature, this technology measures temperature remotely at long distances through thick metal plates without active components, such as transistors, in the high temperature region. Thus, this technology is useful to monitor components and areas where wired sensors are not practical due to rotating shafts, enclosed metallic environments, and the lack of maneuverable space. By obtaining temperature data remotely, the lifetime of mechanical components can be more accurately estimated and sudden failures can be detected sooner.

Advantages:

- Technology works with wireless sensors
- Flexibility for use in a variety of situations; no longer limited to wired use
- Remote access to data

Potential Applications:

- Maintenance/monitoring of mechanical components

People:

- Peroulis, Dimitrios (Project leader)
- Gupta, Lokesh Anilkumar

Intellectual Property:

Application Date: February 28, 2014

Type: CON-Patent

Country of Filing: United States

Patent Number: 9,528,885

Issue Date: December 27, 2016

Application Date: May 31, 2013

Type: Utility Patent

Country of Filing: United States

Patent Number: 9,383,267

Issue Date: July 5, 2016

Application Date: March 6, 2012

Type: Provisional-Patent

Country of Filing: United States

Patent Number: (None)

Issue Date: (None)

Contact OTC:

Purdue Office of Technology Commercialization

The Convergence Center

101 Foundry Drive, Suite 2500

West Lafayette, IN 47906

Phone: (765) 588-3475

Fax: (765) 463-3486

Email: otcip@prf.org