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MEMS Sensor Enabled RFID System And Method

Tech ID: 20717 / UC Case 2010-405-0

BRIEF DESCRIPTION

The present invention relates to a system and method to provide item-level monitoring of environmental quantities including, but not limited to, temperature, humidity, air gas components, radiation.

FULL DESCRIPTION

University researchers have developed a method in which RFID tags are combined with MEMS bi-material cantilevers to provide item-level environmental monitoring. The MEMS cantilevers can be fabricated directly on a flexible printed circuit board for temperature, humidity, acceleration and orientation sensing. Additionally, the cantilever acts as a power switch for a control circuitry of an RFID chip that functions as zero-power memory elements. A specific tag can be interrogated for any past event that a set environmental conditions has been exceeded. This system uses zero power to monitor temperature, and zero power to store memory. Power is only used to change the memory element. Tags are applicable to, but not limited to, biological and medical inventory monitoring, and distribution of blood, organs and other biologicals.

SUGGESTED USES

This invention is applicable to any item level environmental monitoring needs. It is especially useful for transportation of high value items of which the quality is subject to environmental conditions. The sensor enabled RFID tag is first applied to individual items and then activated for monitoring before the shipment. At the recipient's end, an RFID interrogator device is used to screen individual items. Items that have experienced extensive hostile conditions are reported by the RFID chip and rejected for further usage.

Any and all medical, biological company that handles manufacturing, storing and shipping of environmental sensitive commodities of high medical/monetary value (e.g. blood bags, transplantable organs).

ADVANTAGES

The invention described herein provides an economic solution to monitor environmental history of individual, perishable items over a prolonged time during transportation and distribution. Any item experiencing hostile environment for an extensive period of time can be rejected through an RFID screening conducted by the recipients. The identification of usable and unusable items can be done with high accuracy through this method.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,618,914	12/31/2013	2010-405

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OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
 - » Delivery Systems
 - » Diagnostics
- » **Sensors & Instrumentation**
 - » Environmental Sensors
 - » Medical

RELATED CASES

2010-405-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Micro-electromagnetically Actuated Latched Switches
- ▶ Manometer for Monitoring and Assessing Upper Extremity Rehabilitation
- ▶ Magnetic Recovery Method Of Magnetically Responsive High-Aspect Ratio Photoresist Microstructures
- ▶ Web-Enabled Devices
- ▶ Use Of Micro-Structured Plate For Controlling Capacitance Of Mechanical Capacitor Switches
- ▶ Magnetically Actuated Micro-Electro-Mechanical Capacitor Switches In Laminate
- ▶ Hearing device that amplifies sound using a tympanostomy tube

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