Title RFID smart tag for traceability and cold chain monitoring of foods: Demonstration in an intercontinental fresh fish logistic chain

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Citation Journal of Food Engineering, Volume 93, Issue 4, August 2009, Pages 394-399

Keywords RFID smart tags; Food logistics; Traceability; Cold chain; Fresh fish

Abstract

The main objective of this work was the validation of a RFID smart tag developed for real-time traceability and cold chain monitoring for food applications. This RFID based system consists of a smart tag and a commercial reader/writer. The smart tag, attached on the product to be tracked integrates light, temperature and humidity sensors, a microcontroller, a memory chip, low power electronics and an antenna for RFID communications. These sensor logged data can be stored in the memory together with traceability data. A commercial reader/writer was used for reading and writing data on the smart tag, with a wireless reading distance of 10 cm, in real-time at any time of the food chain. The results concerning a demonstration of the system along an intercontinental fresh fish logistic chain are reported here. These results proved that this system presents important advantages regarding conventional traceability tools and currently used temperature data loggers such as more memory, reusability, no human participation, no tag visibility needed for reading, possibility of reading many tags at the same time and more resistance to humidity and environmental conditions.