



An innovation based on sensors aims to fix the problem of food waste

Sensor technology could help both consumers and the food industry reduce unnecessary waste, benefitting the environment and creating cost efficiencies. The PASTEUR research project is a case in point.

'Studies consistently report that between 30% and 50% of food is thrown out, most of the time, before it reaches the consumer,' says Romano Hoofman, principal scientist at NXP Semiconductors and coordinator of the PASTEUR research project. For this specialist in micro-electronics the cost, economic and environmental, of such waste is largely avoidable.

With a team of scientists from Austria, Belgium, Netherlands and Spain, including experts from the agro-alimentary industry, Hoofman set out to address the problem by developing an accurate means of measuring food quality throughout the supply chain and capable of giving a continuously updated estimate of how long food will stay fresh. By combining radio frequency identification (RFID) with multiple sensors – for pH, temperature and humidity – a tag was developed using the latest advancements in flexible electronics, a technology that allows electronic products such as printed circuits to bend. The tag can be glued on a box of strawberries, and readings downloaded when within range of a reader, thanks to an RFID chip. A red flag on the reading device indicates if something has gone wrong in transit.

Pushing for a new approach

'We are happy with the outcome,' says Hoofman, whose project was supported by CATRENE, a programme allowing major European companies, SMEs and research institutes in the field of electronics to collaborate. 'We have proven that this system can work and bring added value to the cold chain'. For the meat sector, sensory tags were applied to beef cuts immediately after slaughter, with pH sensors capable of identifying tenderness and carrying out measurements in cold rooms, where the environment is unsuitable for humans.'

While the application of new sensor technology has the potential to dramatically cut food waste, such

in the sector, for example identified food as an area where resource efficiency could be improved. 'The question is: who will benefit financially and who will lose?' says Dr Hoofman. 'The problem we have is that food waste is currently integrated into business models. It is accepted. We therefore need a change of mentality.'

NXP Semiconductors is now at the stage of exploring interest from external companies in acquiring the technology. 'Currently many companies try to enter the market of the monitoring of perishables,' says Dr Hoofman, 'however the food sector remains highly fragmented, making the launch of the new product difficult.'

Each year, perishables suppliers ship over five billion pallets valued at 1.9 trillion euros of chilled meats, seafood, cheese, as well as temperature sensitive pharmaceutical products.

innovation must be accompanied by industry's willingness to adapt. Hoofman points out that the EU government is increasingly talking about food waste: the 2011 Roadmap to a resource-efficient Europe, a key document mapping future investments

The technology developed could also be used by the pharmaceutical industry, which has similar issues when it comes to monitoring temperature. As in the food sector, more accurate monitoring of shipments could preserve stocks, and ultimately save businesses money.

Project participants
The Netherlands, Austria,
Belgium, Spain

Duration 36 months

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