



26 | SMART2FRY: A DOUBLE ECO-PROJECT

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CONTEXT

Alpsens is a spin-off of the Swiss Federal Institute of Technologies (EPFL). PERL Prize award winner in 2005 and certified by the CTI start-up label in 2007, Alpsens is developing innovative technologies for food safety in QSR (quick service restaurant) and restaurants especially in food oil, energy and human resources monitoring.

Today Alpsens is a key player in the world of food oil quality monitoring thanks to the agreement of one of the big three deep fryer manufacturers in 2014 and approval of the fast food worldwide leader in 2016.

INNOVATION: SMART2FRY THE DEEP FRYER REVOLUTION

Today, a deep fryer is more or less a tank with a heating element controlled by a thermostat. In this context, Alpsens has detected the unmet customer needs: create an “automatic” and smart deep fryer.

The product we developed is rethinking the fried-food industry towards ecology, food safety and financial savings and transforms a deep fryer into a smart production unit which optimizes the cost of food oil, energy and human resources. This innovation will mark a breakthrough in the field of the deep fryer industry passing from a deep fryer to a real self-learning production unit.

FOOD OIL MANAGEMENT

The Smart2fry is able to measure in real time the Total Polar Compounds (% TPC). In Europe, most countries have a regulation indicating a maximum TPC percentage not to be reached in a deep fryer. In Switzerland, the Swiss Food Act controls frying oils and fats in restaurants and catering facilities and gives guidelines on food preparation and sale. The Swiss Office of Public Health has issued that frying oils must not contain more than 27% of polar compounds. With the help of the Smart2fry deep fryer, the food oil monitoring will happen in real time or by samples from the filter system. Thanks to this technology, the deep fryer will monitor food oil, optimizing its life duration, reducing cost and carbon footprint. Compared to a usual human monitoring system, the Smart2fry deep fryer can measure 8600 times more than a human in one day.

ECOLOGY AND SAVINGS

The Smart2fry system analyses its heating curves, its ignition (the turn-on and -off guidelines) and modifies the fryer management in order to reduce energy costs, oil consumption and carbon footprint. In terms of electricity saving, the main problem in kitchen is the human training and flexibility: in order not to forget to switch on a deep fryer or another kitchen equipment, people switch them on too early. The Smart2fry deep fryer will be able to analyse in real time different curves and guidelines to propose the customer when to switch the deep fryer on and off. Heating elements are very power consuming and optimizing their management is the best way to reduce electricity consumption and carbon footprint.



IN TERMS OF GAMIFICATION

To the best of our knowledge, food industry is not yet aware of serious games or, in this particular project, gamification [1] potentials which is another reason to study and develop opportunities in this very large market.

Our central idea is to hide gamification processes in the ‘smart’ user interface (based on emotional model) of the employee directly involved with the fryer: the cook. The GUI should not propose a fancy graphic with blinking patches and colours. It has to keep a friendly but professional appearance with a real serious efficiency and efficacy. Nevertheless, we plan to indirectly add an entertainment side to motivate cooks to pay extra attention, especially to oil quality and ratio between frying-product time and fryer-in-use.

We use a specific chart to show how the moment of changing the oil can credit different points depending on the oil quality: if it is changed before 15% TPC, the oil is wasted; between 15 and 25% the score is credited by minor positive points; after 27% the oil is potentially harmful for the customers. High scores can only occur within a short range, between 25 and 27%. The information about scoring could easily be transmitted to the manager and a pecuniary advantage could be an obvious and direct motivation. For large companies, another motivation could be to become the “greener cook”, which could be a proof of quality of the restaurant, and also an incentive for the cook who could get a bonus.

Even better than personal reward, we believe that with such a gamified fryer, restaurants would be able to promote the quality of their menus with “economy and ecology” labels, for instance: eat healthy food and simultaneously protect the planet!



REFERENCES

- [1] Huotari, K., & Hamari, J. (2012). *Defining Gamification – A Service Marketing Perspective* (PDF). Proceedings of the 16th International Academic MindTrek Conference 2012, Tampere, Finland, October 3–5.