



PhoenixTM solution to HACCP Deep Fat Fryer Validation...to boldly go!

As part of any Food processors HACCP program, validation of cook and chill processes is a critical and significant task taking time, effort, and resources.

PhoenixTM have developed a thru-process temperature monitoring technology specifically for this task designed to meet the numerous cook challenges of the food processing market. Ideal for the validation process for any new cook regime, new product, or annual process certification.

An important innovative system in the PhoenixTM range is that designed specifically to handle the challenging monitoring demands of continuous deep fat fryers. The monitoring system has been designed specifically to travel safely through the oil bath, navigating drops and inclines and provide protection from oil impregnation, heat of the oil and allow accurate and repeatable measurement of the food core being cooked.

At the heart of the system the data logger provides multiple thermocouples (choice of 6 or 10 channels). The PhoenixTM NT data logger range has been designed specifically for the challenges of monitoring food processing applications with an IP67 case design protecting from moisture/oil. Type K or Type T data logger options allow accurate measurement of both cook and chill processes (Type T measurement range -200 °C to 400 °C). The data logger itself can operate between -40 °C to 80 °C with a data logger accuracy of ±0.3 °C operating below +50 °C. Data logger and thermocouple correction factors can be further applied to the recorded data logger data to maximise measurement accuracy. The data logger is protected from submersion in oil by the TS14-050-2 thermal barrier. The barrier is low height (50 mm) so fits safely through the low height clearance of the fryer line (Top / bottom belts) but provide



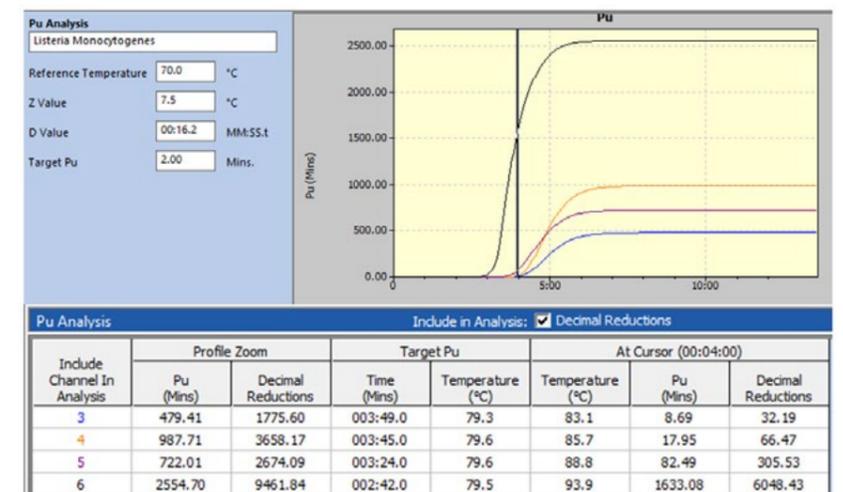
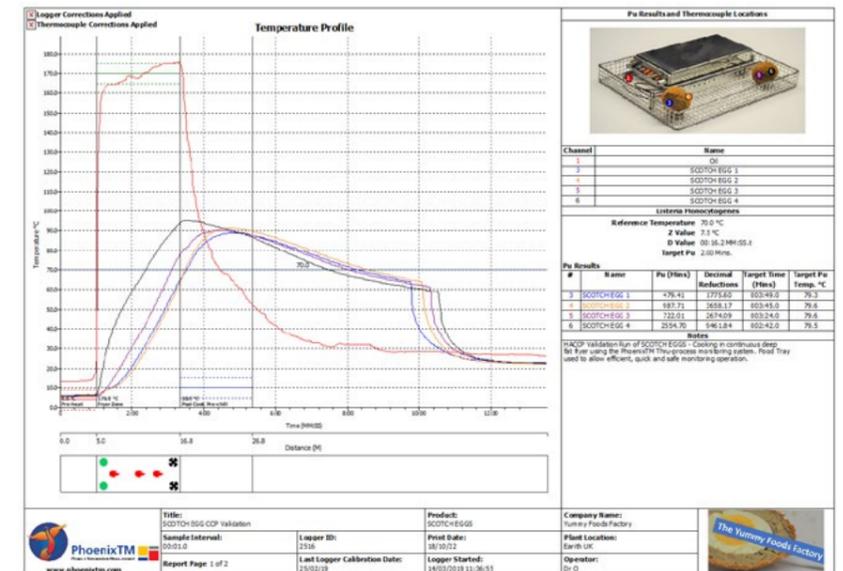
impressive protection of 25 mins @ 200 °C (Oil) or 50 mins (Air). The face plate design of the barrier allows easy access to the data logger and quick efficient exchange of thermocouple cables.

A critical component of the system is the unique food tray which not only contains the thermal barrier but allows fixed positioning of thermocouples within the product samples being measured. Probing of the product can be done away from the processing line with care and no need to rush. Custom designed thermocouples allow accurate / repeatable measurement at the core (cold spot) of the product. The customized thermocouple positions are fixed so that probe or product movement during the run is minimized. Test conditions are maintained also from run to run across the fryer width.

Employing the tray principle, the whole monitoring system can be placed on the fryer line by a single operative safely and efficiently during a production run. Thermocouple cables are retained in the tray so tangling risks are eliminated. The unique saw tooth guide rails fitted to the tray allow efficient true transfer (no rotation) through the whole process. Both entrance decline and demanding exit incline can be negotiated without slipping/stalling which could leave the system stuck/stranded in process. The same system can further pass through any chill process to complete the monitoring task.

Employing the thru-process temperature monitoring principle provides the food technologist with a complete temperature profile of the cook process from start to finish. This information is like the Cook DNA giving full details of the product and or process temperature which is invaluable to allowing validation of the Cook CCP.

From a temperature profile it is possible to accurately quantify product safety (pasteurisation) knowing



both the temperature, and time at temperature, of the product.

From the profile graph you can see instantaneously the variation in product temperature at any point in the process either at different locations on the product or different product positions within the fryer.

The PhoenixTM Thermal View Food Software provides a comprehensive suite of analysis tools to convert the raw profile temperature data into useful process information. The analysis tools include the ability to calculate Fo/Pu values for the process against target micro-organisms.

For most typical cooks Listeria Monocytogenes is often used as the target micro-organism to quantify lethality. The Fo/Pu parameters

(Tref 70 °C, Dt 16.2 s and Z value 7.5 °C) can be input to calculate for each monitoring point the number of decimal reductions of the pathogen achieved during cook to meet CCP limits.

The information gathered, further to process validation, can be used to allow informed process problem solving and optimisation to maximise product quality, yield, process productivity and efficiency.



Contact PhoenixTM to help Find, Fix and Forget your Food Cook Problems!

Further Information
www.phoenixtm.com