DWC Thermal Analyser - Professional

DWC Thermal Analyser – Professional is a software package that has been developed specifically for the thermal processing sector. The software, which is suitable for use across a wide range of heat-processed packaged foods and beverages, incorporates user-friendly features that transform complex data into easy to interpret tables and graphs for reporting and process filing. DWC Thermal Analyser has been purchased by food manufacturers and research establishments throughout Australia, New Zealand, Malaysia and Thailand. We have used the system in temperature distribution analysis and process filing applications in Australia, New Zealand, United States, China, Asia and the Middle East.

DWC Thermal Analyser – Professional enables evaluation and validation of process adequacy for shelf-stable, refrigerator stable and pasteurised acid foods. The software has a powerful "predictive capacity" that enables the heating parameters, essential for process prediction, to be fine-tuned to suit the retorts in which they are produced, the product's heating characteristics and the packaging format and the mode of retort operation. This enables determination of process adequacy in scheduled thermal processes, alternate scheduled thermal processes and/or in non-scheduled processes.

In addition, DWC Thermal Analyser – Professional incorporates a range of analytical tools that provides an objective and standardised method for evaluation of temperature distribution data in all brands of retorts whether they are static, rotary or continuous, and whether they operate as steam, water spray, cascading water or water immersion systems.

DWC Thermal Analyser – Professional can:

- Simultaneously retrieve and analyse data from up to 32 channels, in Excel, text, csv or tab file format.

- Display and print linear and semi-log plots of temperature versus elapsed time for all, or selected, channels.

- Calculate, via the General (or Reference) Method, F values, at the end of retort come-up time, at the end of heating and at the end of cooling. Lowest F values for the end of heating and end of cooling are individually highlighted for ease of location.

- Calculate F values f_h and j values, process times B and P_t via DWC's Method. Also it may be used to calculate alternate processes times or alternate F values, using data derived from trials, or by using heating parameters and processing conditions that can be entered manually.

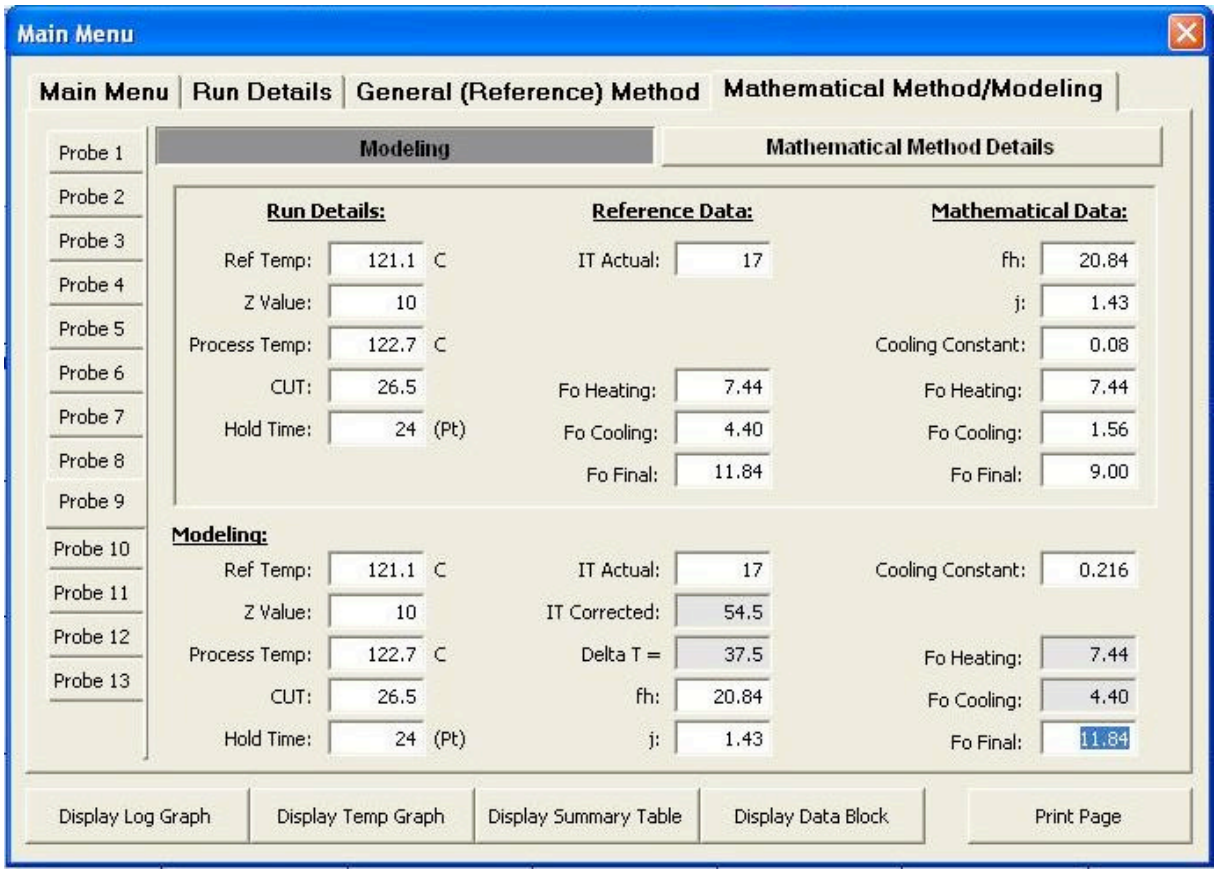
- Display and print tables summarising derived characteristics such as lag time, compliance coefficient and temperature range across all thermocouples as part of retort temperature distribution analyses.

- Apply required calibration offsets to the main data block for any individual probe readings. This function also records any individual offsets applied to the data block.

Attribute/probe	1	2	3	4	5	6	7	8	9	10	11	12	13
Location	L2C	L2C	L2C	L2C	L2C	L2C	L2C	L2C	L2C	L2C	L2C-free	Weir	MIG
Fo at start of hold time (min)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	8.5	10.0
Fo at end of hold time (min)	10.5	9.2	8.9	9.4	12.4	11.3	8.4	9.0	7.4	7.8	45.3	44.3	45.7
Final Fo (min)	14.2	13.8	12.8	12.2	17.4	15.6	12.8	13.6	11.8	13.1	46.7	46.7	47.2
Target Fo during hold (min)											34.7	34.7	34.7
Compliance coefficient											1.0	1.0	1.0
Range Final Fo value (min)	35.3												
Time to SV - 0C	***	***	***	***	***	***	***	***	***	***	23.5	24.0	23.0
Lag time (min)	***	***	***	***	***	***	***	***	***	***	-3.0	-2.5	-3.5
Temp at end of CUT (C)	102.4	100.3	100.2	102.3	101.2	103.1	97.1	97.8	93.7	95.7	123.4	123.4	123.4
Min. temp during hold (C)	***	***	***	***	***	***	***	***	***	***	122.6	122.6	122.6
Max. temp during hold (C)	***	***	***	***	***	***	***	***	***	***	123.4	123.4	123.4
Temp range during hold (C)	***	***	***	***	***	***	***	***	***	***	0.8	0.8	0.8
Temp at 5 min into hold (C)	110.5	109.3	109.1	110.1	111.1	111.5	107.6	108.1	105.3	106.4	122.7	122.7	122.8
Temp range at 5 min into hold (C)	17.5												

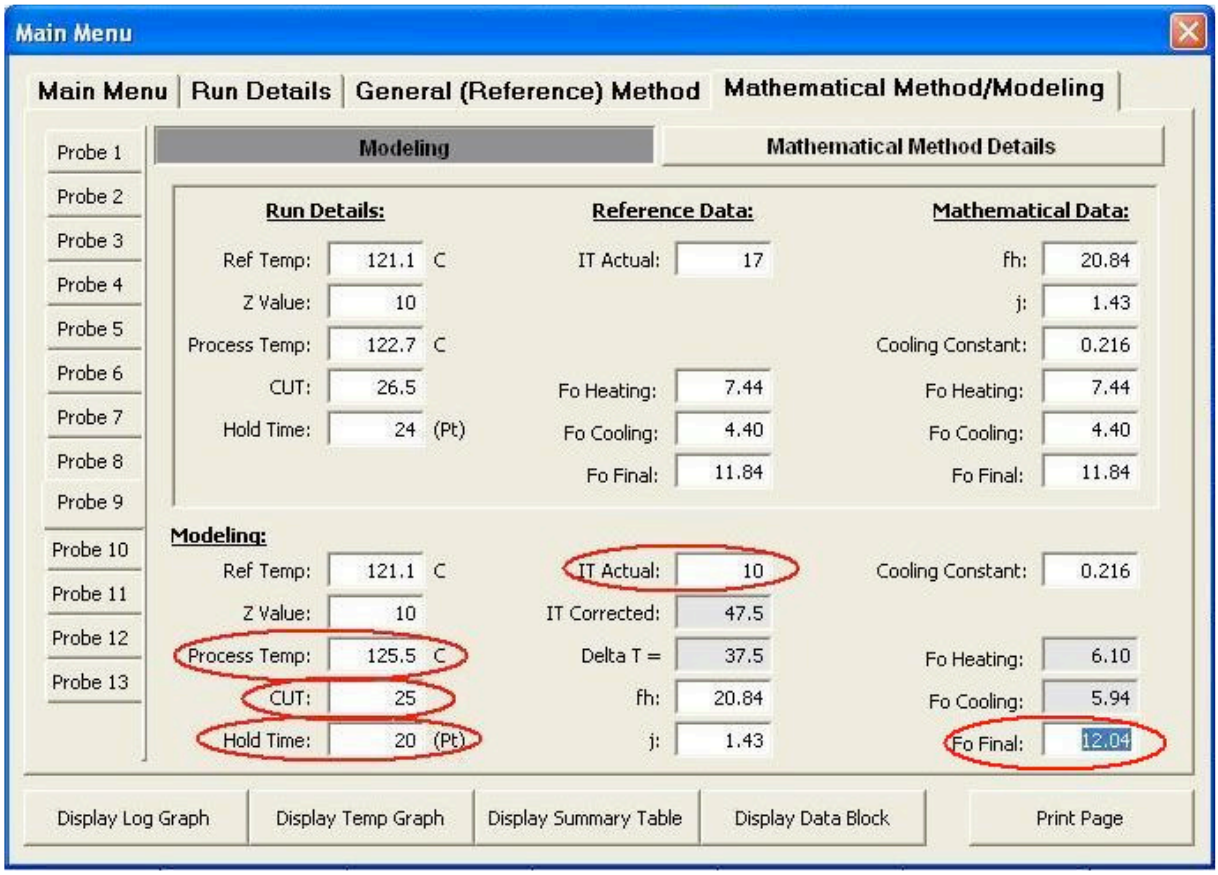
Summary table produced by DWC Thermal Analyser – Professional for ten replicate containers and three retort probes (in various positions) during process validation trials, automatically highlighting the lowest F_o value at the end of hold time and final F_o value.

When coupled with DWC FoodTech's F16 and F32 loggers, data can be generated from 16 or 32 channels simultaneously.

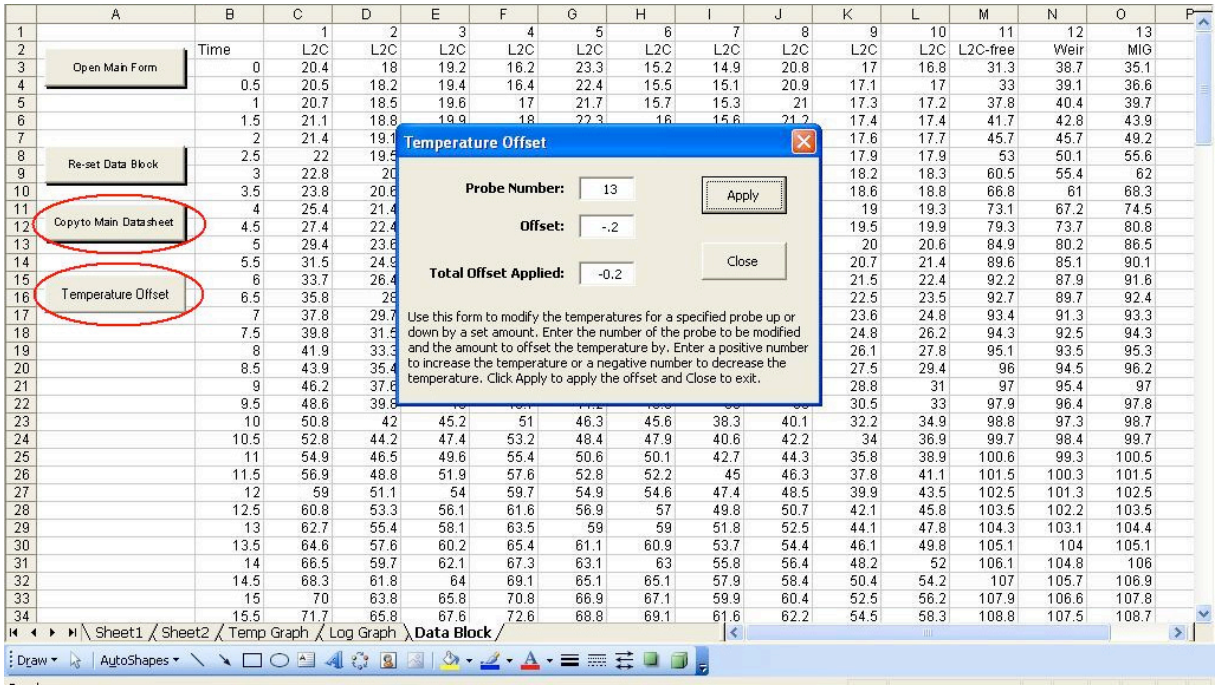


Modeling page showing probe 9 with a F_o Final value of 11.84 and 11.84 min when calculated via DWC's Method (shown under Modeling) after correcting the cooling constant to 0.216. In this example the F_o value calculated in heating (i.e. at steam-off) by DWC's Method was 7.44 min, which agrees exactly with the value determined via the General (Reference) Method of calculation (shown under Reference Data). In the same manner, the F_o value in cooling (4.4 min) agreed with the value when calculated by the General (Reference) Method of 4.4 min.

This example highlights the versatility of DWC FoodTech's Thermal Analyser – Professional and the accuracy of DWC's Method of calculation, as it demonstrates that the Final F_o value was 11.84 min when determined by DWC's Modeling Method and by the General (Reference) Method.



The Modeling section utilises the DWC's method of calculations to enable "predictive" determination of alternative processes or F_o values, by manually changing processing conditions as highlighted in this example. This example shows the results of manually changing the process temperature, come-up time, hold time, initial temperature for a target final F_o value of 12.0.



A further feature of the DWC Thermal Analyser – Professional is the ability to apply calibration offsets to the data block. Shown above is the pop-up screen activated and the required calibration offset applied to probe 13. Note that the total offset applied is recorded.