



Industrial Calibration & Service Co., Inc.
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Report Date

TEMPERATURE PROFILE REPORT

To: Mr. John Doe
ABC COMPANY
Any Street
Anywhere

PROFILE EQUIPMENT

Detailed description of the hardware used to perform the profile.

Recording Equipment

Temperature readings are recorded using one or more of the following: Micromite I, Micromite II, Omega Temperature Scanner or PC Notebook with TempScan 1000 temperature recording unit.

Thermocouple type

Typically, (unless otherwise requested), temperature profiles are performed using J-type thermocouple wire and connections (plugs, compensators, etc.).

Profile Options

Custom Profile Grid – Designed exclusively for each oven (i.e. grid is designed to oven size) with up to 30 test points to record temperature readings in a 3 point x 3 point x 3 point grid. Used for temperature profiles and temperature rises.

Custom Profile Book - Designed to mimic a 'real' product book lay-up. Temperature test points are layered throughout the book to record various product temperatures. Used for temperature profiles and temperature rises.

Test Board - Normally, this board is used only in special situations (i.e. troubleshooting) and is used only for testing purposes.

Profile procedures are part of our Quality System Manual along with our calibration procedures.

PROCEDURE SVP001

As described in the Quality System Manual. Additional notes relevant to your profile are listed below or in the report near the related item.

A list of your equipment profiled and included in this report.

EQUIPMENT SUMMARY

<u>Description</u>	<u>Customer ID</u>	<u>Serial Number</u>	<u>Test Date</u>	<u>Certificate ID</u>
Oven	#4	112112	7/23/04	112112

RESULTS

A description of the sections included in your report for equipment results.

Oven Rise - (if applicable)

Trend of all temperature points, from start to finish.

Book Construction - (if applicable)

Book construction diagrams the book lay-up. It details the layers of the book as well as pin pointing precisely where each temperature readings was recorded.

Thermocouple Layout - (if applicable)

Thermocouple layout shows exactly where each temperature reading was taken in relation to the board layout and size.

Temperature Profile - Detail

Detail shows a chart of the temperature readings (°F) taken from each point with the layouts as follows:

Front View:

Top of page = Top of Oven
Left of page = Left of Oven *Right of page = Right of Oven*
Bottom of page = Bottom of Oven

Side (Left) View:

Top of page = Top of Oven
Left of page = Rear of Oven *Right of page = Front of Oven*
Bottom of page = Bottom of Oven

Top View:

Top of page = Rear of Oven
Left of page = Left of Oven *Right of page = Right of Oven*
Bottom of page = Front of Oven

Temperature Profile - Statistics

Statistics show the mean and standard deviation for each profile opening.

DISCLAIMER

Lawyer stuff!

This report was specifically prepared for **ABC COMPANY** on *Report Date*. The data is provided solely as an advisory function. This report may not be reproduced, disclosed, distributed or used in any form or by any means without the prior written permission of Industrial Calibration and Service Company, Inc.

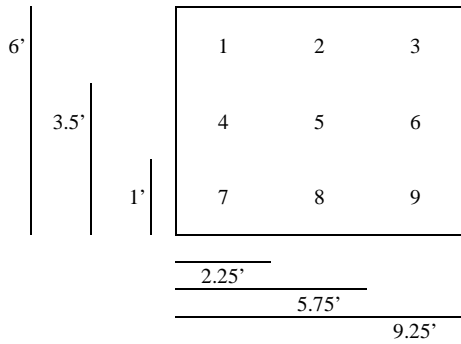
THERMOCOUPLE GRID LAYOUT - #27_030303

Grid Size = 10' x 7' x 6'

Oven Size (Inner) = 16.5' x 11.5' x 8'

Total of 27 J-type thermocouple inputs

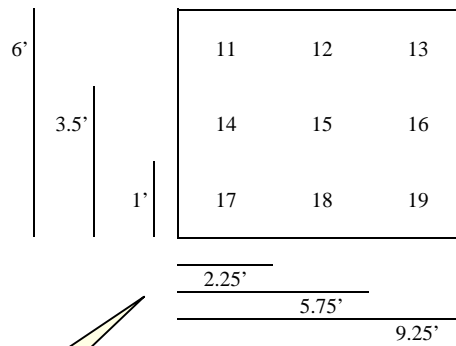
Front Plane - 3.25' from front door:



Standard 27 point profile harnesses are kept in stock. We would be happy to customize a grid specification for your equipment needs!

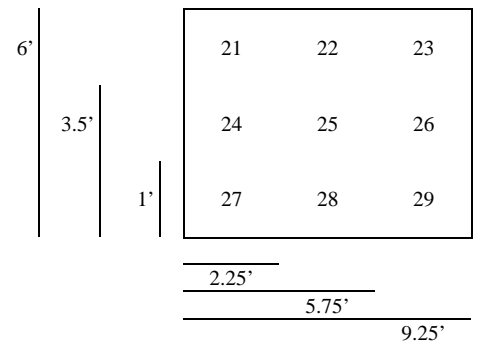
A unique number is used to track the grid layout used in each profile.

Middle Plane - 8.25' from front door:



A detailed layout of the thermocouple positions as they relate to their positions in the oven oven.

Rear Plane - 13.25' from front door:



EQUIPMENT DETAIL

The equipment detail section includes all the information relevant to the profile and the standards that were used to perform the profile.

Oven Data

<i>Description:</i>	Oven	<i>Manufacturer:</i>	Blue M
<i>Model Number:</i>	300-1	<i>Serial Number:</i>	112112
<i>Oven Size – ft (L x W x H):</i>	16.5' x 11.5' x 8'	<i>Customer ID:</i>	#4
<i>Heating Type:</i>	Gas	<i>Control Type:</i>	Bulb & Capillary
<i>Load Type:</i>	Rack	<i>Control Mfr:</i>	Webb

Profile Data

<i>Certificate ID:</i>	10250	<i>Frequency:</i>	Semi-Annual
<i>Profile Date:</i>	Date	<i>Due Date:</i>	Date
<i>Test Point:</i>	325°F	<i>Unit of Measure:</i>	Fahrenheit
<i>Temperature:</i>	73.9°F	<i>Humidity:</i>	42.1% RH

Standard Data

<i>Description:</i>	TempScan 1000	<i>Asset Number:</i>	849-2-763
<i>Calibrated:</i>	Date	<i>Due Date:</i>	Date
<i>Thermocouple:</i>	K-Type	<i>Error:</i>	0.1°F

ADDITIONAL DATA & TRANSPARENCIES

<i>Description</i>	<i>Location</i>
Data	Excel – Data sheet
Oven Rise	Excel – Chart 1
	Transparency – p13
Process at Set Point	Excel – Chart 2
	Transparency – p14
Cycle at Set Point	Excel – Chart 3
	Transparency – p15
Statistics	Excel – Chart 4
	Transparency – p16

Some data is best viewed in the file or even on a transparency (for easy comparison purposes). This grid provides a quick reference to the data that is included in the profile, but not printed.

TEMPERATURE PROFILE - *DETAIL*

The detail section includes data and graphs for the equipment being tested.

1.0 Cycle - Min. (time = 36.00 minutes)

1.1 Front Plane, unit = degrees Fahrenheit

Process cycle time is recorded...

Description	Type	Set Point	Actual
Oven Controller	Cal 9900	325	323

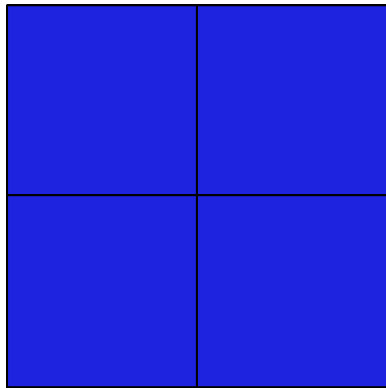
Data:

	top		
	303	304	306
left	303	304	303
	305	305	304

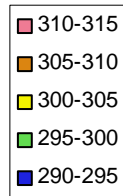
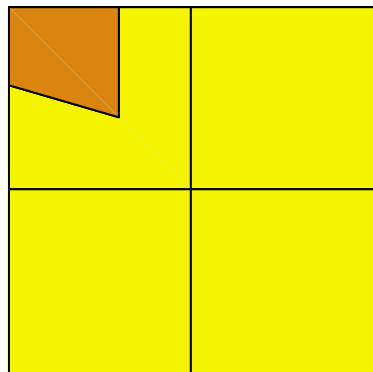
...as well as the controller set point, and actual readings.

Graph:

around Oven Set Point



around Oven Ave Temp



1.2 Middle Plane, unit = degrees Fahrenheit

<u>Description</u>	<u>Type</u>	<u>Set Point</u>	<u>Actual</u>
Oven Controller	Cal 9900	325	322

Data:

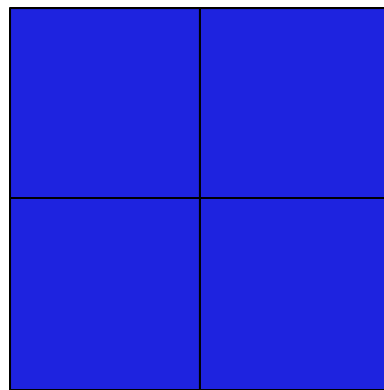
	top		
	309	306	305
left	306	306	302
	307	302	296

Data is a display of the actual temperature readings that were recorded.

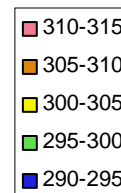
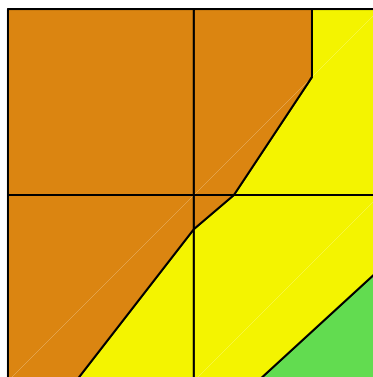
Graph:

Graphs provide the color visual representation of the data.

around Oven Set Point



around Oven Ave Temp



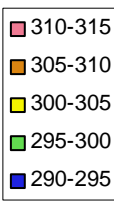
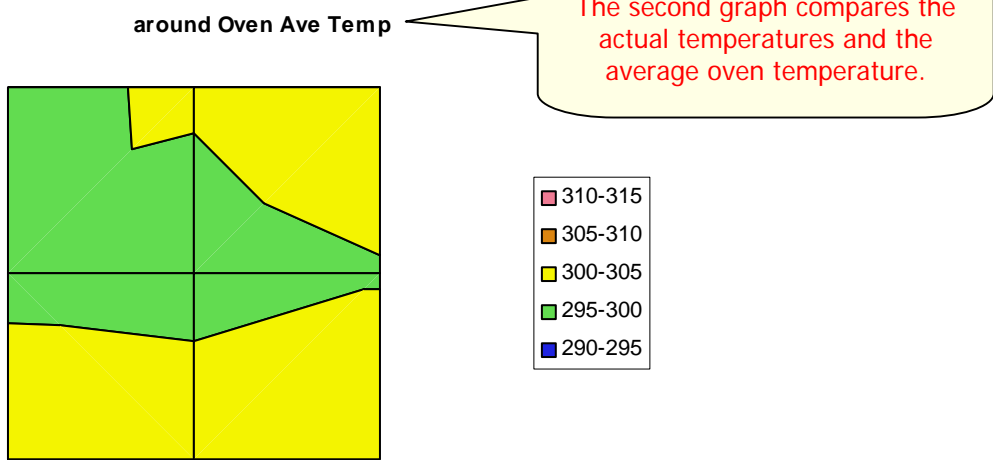
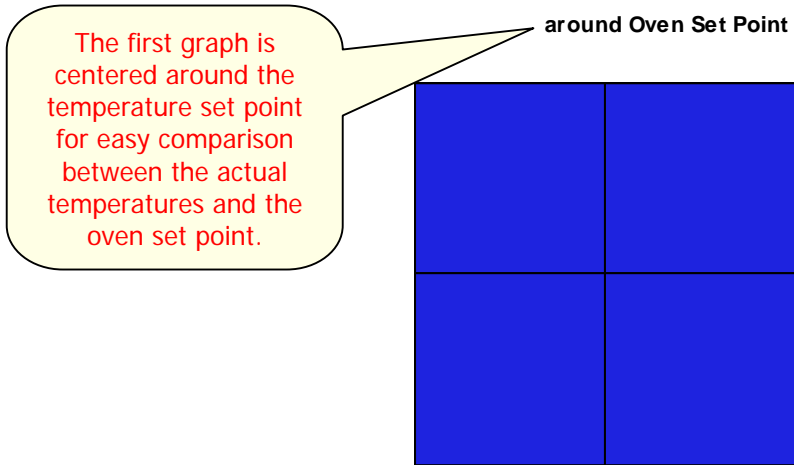
1.3 Rear Plane, unit = degrees Fahrenheit

<u>Description</u>	<u>Type</u>	<u>Set Point</u>	<u>Actual</u>
Oven Controller	Cal 9900	325	323

Data:

		<i>top</i>		
		298	301	304
<i>left</i>		298	297	300
		305	304	304

Graph:



2.0 Cycle – Heat On (time = 36.25 minutes)

2.4 Left Plane, unit = degrees Fahrenheit

Typically, additional information is provided for the oven when set point has been reached and the oven calls for heat. This can help identify poor air circulation in the oven.

Description
Oven Controller

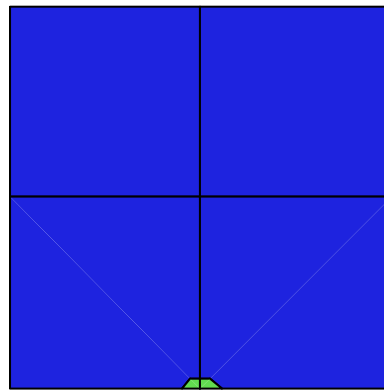
T
Cal

Data:

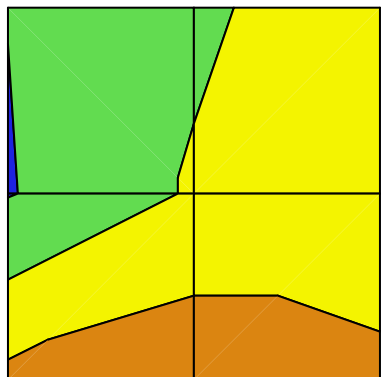
		<i>top</i>		
		304	308	312
<i>rear</i>		304	309	309
		315	318	316

Graph:

around Oven Set Point



around Oven Ave Temp



Actual oven temperatures are generally much less than the set point. Therefore, the graph around the average temperature is provided to see the temperature differences.

3.0 Cycle – Max. (time = 36.50 minutes)

Profiles are displayed for each of the nine planes: Front, Middle & Rear, Top, Middle & Bottom, and Left, Middle & Right

3.7 Top Plane, unit = degrees Fahrenheit

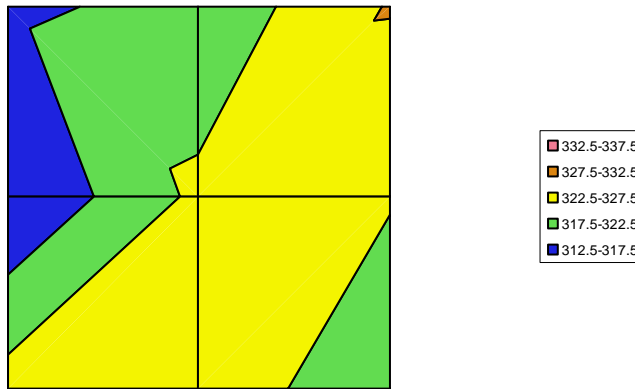
<u>Description</u>	<u>Type</u>	<u>Set Point</u>	<u>Actual</u>
Oven Controller	Cal 9900	325	324

Data:

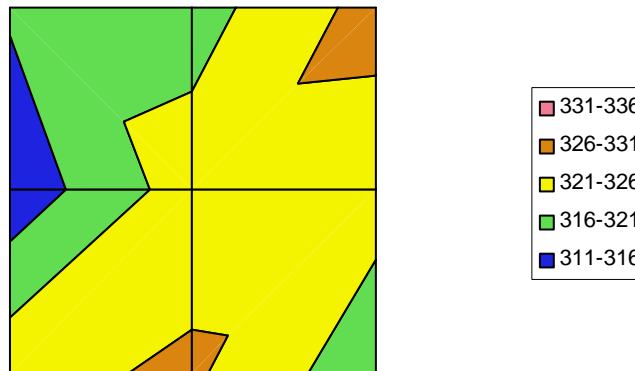
	<i>rear</i>		
<i>left</i>	317	319	328
	313	324	323
	325	327	318

Graph:

around Oven Set Point



around Oven Ave Temp



TEMPERATURE PROFILE - STATISTICS

1.0 Cycle - Min. (time = 36.00 minutes)

This section provides a quick comparison between the different planes, allowing you to identify variations.

1.1a Front Plane

min:	302.6	Ave:	304.2
max:	306.4	StDev:	1.1
Spread:	3.8		

Identifies the minimum and maximum readings of the profile on this particular plane. The spread is the difference between the two.

1.2a Middle Plane

min:	296.3	Ave:	304.3
max:	308.6	StDev:	3.6
Spread:	12.2		

Ave is the average temperature for all the readings on this plane.

1.3a Rear Plane

min:	297.4	Ave:	301.4
max:	304.6	StDev:	3.0
Spread:	7.2		

StDev is the standard deviation and is used to quantify the variation in temperature over the plane.

TEMPERATURE PROFILE – SUMMARY STATISTICS

1.0 Cycle - Min. (time = 36.00 minutes)

This section summarizes the data for the various cycle times. This allows quick comparison of the oven temperatures during different cycles.

Summary Statistics	Time =	36.00	
Cycle Min	Min. Reading:	296.3	Ave. Reading: 303.3
	Max. Reading:	308.6	StDev: 3.0
	Spread:	12.2	

2.0 Cycle – Heat On (time = 36.25 minutes)

Summary Statistics	Time =	36.25	
Cycle Heat On	Min. Reading:	302.8	Ave. Reading: 311.7
	Max. Reading:	318.5	StDev: 4.3
	Spread:	15.7	

Formulas are provided for those needing to know how results were obtained.

where $\bar{x} = \frac{\sum_{i=1}^n x_i}{n}$, and standard deviation = $\sqrt{\frac{\sum_{i=1}^n x_i^2 - \left[\left(\sum_{i=1}^n x_i \right)^2 / n \right]}{n - 1}}$



Just a final thank you for taking the time to view our "Temperature Profile Report."

If you have any questions or are interested in additional report samples, please contact our office (603-883-5558) or visit us on-line at www.in-cal.com.

Thank you!