



Food Service Technology Center Appliance Test Summary Report

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Manufacturer	SouthBend
Model	StratoSteam STRE-3D
Appliance	Single Compartment 3-Pan Steamer - Electric

Report Number	5012.09.49
Test Date	November, 2009
Tested By	A.Spitz

Purpose of Testing

This testing determined the energy input rate, preheat time and energy, idle energy rate, uniformity and heavy/light-load cooking-energy efficiency of the steamer by applying ASTM F1484-05.

Energy Input Rate

Test Voltage (V)	208
Rated Energy Input Rate (kW)	9.0
Measured Energy Input Rate (kW)	8.5
Difference (%)	5.6

Preheat to 210°F

Duration (min)	8.25
Energy Consumption (kWh)	1.18

Idle at 212°F

Average Cavity Temperature (°F)	212
Idle Energy Rate (kW)	8.50



Red Potato Cooking Energy Efficiency and Production Capacity Test Results

Load ^a	Heavy Load	Light Load
Number of Pans	3	1
Cook Time (min)	22.72	18.77
Total Energy Consumed (kWh)	3.15	2.61
Energy to Food (Btu/lb)	106	106
Energy to Steamer (Btu/lb)	449	1,111
Cooking Energy Rate (kW)	8.33	8.30
Cooking Energy Efficiency (%)	24.5 ± 0.9	9.9 ± 0.9
Production Capacity (lb/h)	63.4 ± 2.2	25.7 ± 2.5
Water Consumption Rate (gph)	32.6	32.5

^a Each Load is based on a minimum average of three test replicates.

Southbend

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Frozen Green Pea Cooking Energy Efficiency and Production Capacity Test Results

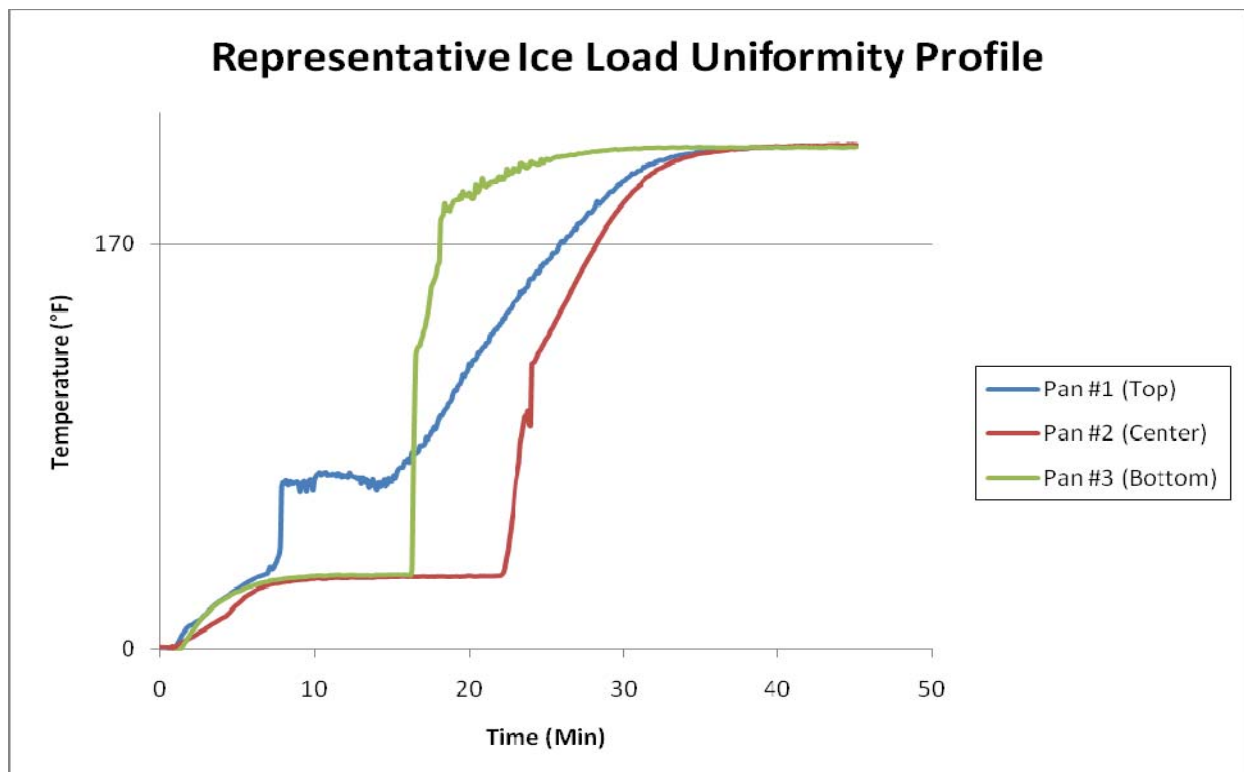
Load ^a	Heavy Load	Light Load
Number of Pans	3	1
Cook Time (min)	21.25	9.92
Total Energy Consumed (kWh)	2.98	1.38
Energy to Food (Btu/lb)	257	257
Energy to Steamer (Btu/lb)	424	589
Cooking Energy Rate (kW)	8.41	8.35
Cooking Energy Efficiency (%)	62.2 ± 0.8	44.9 ± 0.7
Production Capacity (lb/h)	67.8 ± 2.3	48.4 ± 0.0
Water Consumption Rate (gph)	32.7	32.8

^a Each Load is based on a minimum average of three test replicates.

Ice Load Uniformity Test Results

Load ^a	Heavy Load
Number of Pans	3
Cook Time (min)	27.67
Average Initial Ice-Load Temperature (°F)	-0.7
Average Final Ice Load Temperatures (°F)	186.8
Pan #1 (Top)	193.1
Pan #2 (Middle)	170.4
Pan #3 (Bottom)	198.4

^a Each Load is based on a minimum average of three test replicates.



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Heavy-Load Red Potato Data

	Run #1	Run #2	Run #3
Measured Values			
Number of Pans	3	3	3
Cook Time (min)	22.50	22.67	23.00
Electric Energy Consumed (kWh)	3.12	3.14	3.20
Temperature of Uncooked Potatoes (°F)	74.2	73.6	73.9
Temperature of Cooked Potatoes (°F)	195.1	195.2	195.2
Weight of Stainless Steel Pans (lbs)	7.63	7.63	8.04
Weight of Potatoes (lbs)	24.05	24.00	23.91
Total Potato Count	150	150	150
Moisture Content (%)	84	84	84
Condensate Temperature (°F)	119.0	115.6	114.7
Water Consumption (gal)	12.2	12.3	12.5
Calculated Values			
Moisture Weight in Potatoes (lbs)	20.20	20.20	20.10
Average Weight of Each Potato (lbs)	0.16	0.16	0.16
Energy Consumed by Potatoes (Btu)	2,530	2,539	2,522
Energy to Food (Btu/lb)	105	106	106
Energy Consumed by Pans (Btu)	102	102	107
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	10,646	10,714	10,919
Energy to Steamer (Btu/lb of food cooked)	443	446	457
Cooking Energy Rate (kW)	8.32	8.31	8.35
Production Capacity (lb/h)	64.1	63.5	62.4
Energy Efficiency (%)	24.7	24.7	24.1

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Light-Load Red Potato Data

	Run #1	Run #2	Run #3	Run #4
Measured Values				
Number of Pans	1	1	1	1
Cook Time (min)	19.50	18.17	17.58	19.83
Electric Energy Consumed (kWh)	2.70	2.54	2.44	2.74
Temperature of Uncooked Potatoes (°F)	73.8	73.7	74.2	73.8
Temperature of Cooked Potatoes (°F)	195.2	195.2	195.0	195.1
Weight of Stainless Steel Pans (lbs)	2.82	2.40	2.42	2.42
Weight of Potatoes (lbs)	7.97	8.00	8.05	7.99
Total Potato Count	50	50	50	50
Moisture Content (%)	84	84	84	84
Condensate Temperature (°F)	131.0	130.8	130.9	131.1
Water Consumption (gal)	10.6	9.9	9.5	10.7
Calculated Values				
Moisture Weight in Potatoes (lbs)	6.70	6.72	6.77	6.71
Average Weight of Each Potato (lbs)	0.16	0.16	0.16	0.16
Energy Consumed by Potatoes (Btu)	842	845	846	843
Energy to Food (Btu/lb)	106	106	105	106
Energy Consumed by Pans (Btu)	38	32	32	32
Energy of Boiler re-init (Btu)	n/a	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	9,213	8,667	8,326	9,349
Energy to Steamer (Btu/lb of food cooked)	1,156	1,084	1,034	1,170
Cooking Energy Rate (kW)	8.31	8.39	8.33	8.29
Production Rate (lb/h)	24.5	26.4	27.5	24.2
Energy Efficiency (%)	9.6	10.1	10.6	9.4

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Heavy-Load Frozen Green Peas Data

	Run #1	Run #2	Run #3
Measured Values			
Number of Pans	3	3	3
Cook Time (min)	20.92	21.42	21.42
Electric Energy Consumed (kWh)	2.94	3.00	3.00
Initial Water Temperature (°F)	40.4	41.0	41.2
Final Water Temperature (°F)	95.9	98.1	98.3
Frozen Food Temperature (°F)	2.9	1.1	4.5
Weight of Empty Calorimeter (lbs)	40.08	40.08	40.08
Weight of Full Calorimeter (lbs)	95.07	94.99	94.77
Weight of Calorimeter Water (lbs)	30.00	30.00	30.00
Weight of Cooked Food (lbs)	24.99	24.91	24.69
Weight of Frozen Food (lbs)	24.00	24.00	24.00
Weight of Stainless Steel Pans (lbs)	8.03	8.03	8.03
Moisture Content (%)	81	81	81
Condensate Temperature (°F)	96.0	96.0	98.2
Water Consumption (gal)	11.4	11.7	11.7
Calculated Values			
Moisture Weight in Green Peas (lbs)	19.4	19.4	19.4
Final Food Temperature (°F)	175.2	180.0	180.9
Energy Consumed by Green Peas (Btu)	6,113	6,222	6,178
Energy to Food (Btu/lb)	255	259	257
Energy Consumed by Pans (Btu)	152	158	156
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	10,032	10,236	10,239
Energy to Steamer (Btu/lb of food cooked)	418	427	427
Cooking Energy Rate (kW)	8.43	8.40	8.40
Productivity (lb/h)	68.8	67.2	67.2
Energy Efficiency (%)	62.5	62.3	61.9

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Light-Load Frozen Green Peas Data

	Run #1	Run #2	Run #3
Measured Values			
Number of Pans	1	1	1
Cook Time (min)	9.92	9.92	9.92
Electric Energy Consumed (kWh)	1.38	1.38	1.38
Initial Water Temperature (°F)	48.3	50.8	50.4
Final Water Temperature (°F)	100.7	103.0	102.7
Frozen Food Temperature (°F)	0.1	-0.7	-2.8
Weight of Empty Calorimeter (lbs)	40.08	40.08	40.08
Weight of Full Calorimeter (lbs)	58.29	58.31	58.32
Weight of Calorimeter Water (lbs)	10.00	10.00	10.00
Weight of Cooked Food (lbs)	8.21	8.23	8.24
Weight of Frozen Food (lbs)	8.00	8.00	8.00
Weight of Stainless Steel Pans (lbs)	2.81	2.81	2.81
Moisture Content (%)	81	81	81
Condensate Temperature (°F)	103.3	103.3	103.8
Water Consumption (gal)	5.4	5.4	5.4
Calculated Values			
Moisture Weight in Green Peas (lbs)	6.48	6.48	6.48
Final Food Temperature (°F)	176.7	178.5	178.3
Energy Consumed by Green Peas (Btu)	2,043	2,061	2,068
Energy to Food (Btu/lb)	255	258	259
Energy Consumed by Pans (Btu)	55	55	56
Energy of Boiler re-init (Btu)	n/a	n/a	n/a
Energy Consumed by the Steamer (Btu)	4,710	4,709	4,710
Energy to Steamer (Btu/lb of food cooked)	589	589	589
Cooking Energy Rate (kW)	8.35	8.35	8.35
Production Rate (lb/h)	48.4	48.4	48.4
Energy Efficiency (%)	44.5	45.0	45.1

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