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FSM 122
3/3/15

Equipment Capital Budget Justification

Gas Steamer: American Cook Systems Single Compartment 6-pan Steamer–Gas

Electric Steamer: SteamTek ST-208-6-A Electric Steamer

	American Cook Systems Gas Steamer	**SteamTek Electric Steamer**
# of Pans	6	6
Preheat Energy Consumption (kWh)	0.008 kWh	1.79 kWh
Idle Energy Rate (kW)	0.29 kW @ 211.4 F	0.88 kW @ 212 F
Heavy-load Potato Energy Efficiency (avg %)	43.37%	71.1%
Potato Production Capacity (avg lbs/hr)	141.4 lbs/hr	193.67 lbs/hr
Average Water Consumption Rate (avg gal/hr)	2.17 gal/hr	<1 gal/hr

American Cook Systems SG-6 is Energy Star rated and can serve 100 4-8 oz servings of food/hour. It can prepare 141.4 lbs of potatoes/hour, which equates to 2262.4 oz. 2262.4 oz is 377.1 6 oz serving sizes.

SteamTek Electric Steamer is not Energy Star rated and can serve 100 4-8 oz servings of food/hour. It can prepare 193.67 lbs of potatoes/hour, which equates to 3098.72 oz. 3098.72 oz is 516.45 6 oz serving sizes.

Proposal

The food service needs a new steamer because the food service has grown a larger customer base. I would choose the SteamTek ST-208-6-A Electric Steamer (ST-208-6-A) out of the 6 steamers that were evaluated. For the most part, the low efficiency steamers (both gas and electric) were out of the question because they were not cost-effective nor efficient; therefore, I will not be using their numbers in most comparisons. The cooking-energy efficiency of the ST-208-6-A is the best when looking at the energy to the food with the energy to the steamer, and the inputs and the outputs. The preheat energy is 17,509 btu compared to the energy efficient steamer (2,921 btu) and the average water consumption rate is >1 gal/hour compared to the 36 gal/hour low efficiency steamers and 12 gal/hour energy efficienct steamers. The annual energy consumption is greater (802 therms vs. 235 therms), but the output of the ST-208-6-A is also much greater (193.7 lbs of potato production/hr vs. 125 lbs/hr).

I ruled out the gas steamers over the electric steamers (ST-208-6-A) after comparing the total lifetime costs as well as the heavy-load potato energy efficiency. The gas steamers (specifically comparing the numbers of the American Cook Systems SG-6) were overall less efficient, (45% vs. 71.1%), produced less potatoes (141 lbs/hr vs. 193.7 lbs/hr), and had a higher initial and total lifetime cost ($8773, $26137 vs. $6575, $17387). There are overall more savings for the electric steamers as well as more food production compared to the gas steamers.

The ST-208-6-A is the most cost-effective choice with the **initial cost** of $6,575 and the **total lifetime cost** of $17,387. It is able to produce 193.7 lbs of potatoes/hr and utilizes the most reasonable amount of energy and water (8226 btu for preheat, 17,509 btu/hr for idle, and <1 gal/hour of water). Compared to the low energy efficiency steamer, the ST-208-6-A's numbers blows theirs out of the water. The low efficiency steamer has an initial cost of $7,735 and the total lifetime cost of it is $17,719, which are both slightly less expensive than the ST-208-6-A initial cost. However, the production rate of the ST-208-6-A is much better than the other electric steamers. The energy efficiency is 71.1% and the potato production capacity is 193.7 lbs/hr (compared to 45% and 125 lbs/hr). The ST-208-6-A is my recommendation for a new steamer to be able to cook more food in the most cost-effective way.

Gas Steamer Life-Cycle Cost Calculation

Courtesy of Pacific Gas and Electric Company
Food Service Technology Center
www.fishnick.com

American Cook Systems SG-6

	User Input Steamer	Low Efficiency Steamer	Energy Efficient Steamer
Performance:			
Number of Pans:	6	6	6
Preheat Energy: (Btu)	8226	20000	9000
Idle Energy Rate: (Btu/h)	1266	15000	2921
Heavy-Load Potato Energy Efficiency: (%)	45	15.0	45.0
Potato Production Capacity: (lbs/h)	141	140.0	125.0
Average Water Consumption Rate: (gal/h)	3	36	12
Usage:			
Operating Hours per Day: (h/day)	12.0	12.0	12.0
Operating Days per Year: (d/year)	365	365	365
Number of Preheats per Day: (#/day)	1	1	1
Time in Manual Mode: (%)	90	90	0
Pounds of Food Cooked: (lbs/day)	100.0	100.0	100.0
Utility Cost and Lifespan:			
Gas Cost per Therm: ($/therm)	$0.916	$0.916	$0.916
Water Cost: ($/CCF)	$7.00	$7.00	$7.00
Lifespan of Steamer: (years)	12.0	12.0	12.0
Discount Rate: (%/year)	0.00	0.00	0.00
Other:			
Maintenance Costs per Year:	$120.00	$120.00	$120.00
Initial Cost of Steamer:	$8773.00	$6679.00	$10065.00
Results:			
Annual Energy Consumption: (Therms)	1314	3942	235
Average Energy Consumption Rate: (Btu/h)	29990	89992	5360
Annual Water Consumption: (gal)	13140	157680	52560
Annual Energy Cost:	$1204	$3611	$215
Annual Water Cost:	$123	$1476	$492
Total Annual Utility Cost:	$1327	$5087	$707
Lifetime Energy Cost:	$14448	$43332	$2580
Lifetime Water Cost:	$1476	$17712	$5904
Lifetime Maintenance Cost:	$1440	$1440	$1440
Initial Cost of Steamer:	$8773.00	$6679.00	$10065.00
Total Lifetime Cost:	**$26137**	**$69163**	**$19989**

Gas Steamer Life-Cycle Cost Calculation

Courtesy of Pacific Gas and Electric Company
Food Service Technology Center
www.fishnick.com

SteamTek ST-208-6-A Electric Steamer

	User Input Steamer	Low Efficiency Steamer	Energy Efficient Steamer
Performance:			
Number of Pans:	6	6	6
Preheat Energy: (Btu)	8226	20000	9000
Idle Energy Rate: (Btu/h)	17509	15000	2921
Heavy-Load Potato Energy Efficiency: (%)	71.1	15.0	45.0
Potato Production Capacity: (lbs/h)	193.7	140.0	125.0
Average Water Consumption Rate: (gal/h)	1.0	36.0	12.0
Usage:			
Operating Hours per Day: (h/day)	12.0	12.0	12.0
Operating Days per Year: (d/year)	365	365	365
Number of Preheats per Day: (#/day)	1	1	1
Time in Manual Mode: (%)	0	90	0
Pounds of Food Cooked: (lbs/day)	100.0	100.0	100.0
Utility Cost and Lifespan:			
Gas Cost per Therm: ($/therm)	$0.916	$0.916	$0.916
Water Cost: ($/CCF)	$7.00	$7.00	$7.00
Lifespan of Steamer: (years)	12.0	12.0	12.0
Discount Rate: (%/year)	0.00	0.00	0.00
Other:			
Maintenance Costs per Year:	$125	$125	$125
Initial Cost of Steamer:	$6575.00	$5225.00	$7735.00
Results:			
Annual Energy Consumption: (Therms)	802	3942	235
Average Energy Consumption Rate: (Btu/h)	18307	89992	5360
Annual Water Consumption: (gal)	4380	157680	52560
Annual Energy Cost:	$735	$3611	$215
Annual Water Cost:	$41	$1476	$492
Total Annual Utility Cost:	$776	$5087	$707
Lifetime Energy Cost:	$8820	$43332	$2580
Lifetime Water Cost:	$492	$17712	$5904
Lifetime Maintenance Cost:	$1500	$1500	$1500
Initial Cost of Steamer:	$6575.00	$5225.00	$7735.00
Total Lifetime Cost:	**$17387**	**$67769**	**$17719**