

Case Study – SUMA oven cleaner vs SteamKing steam cleaner

Procedure

This study was performed cleaning a quick service bakery oven. Labour hours and supplies used data was supplied by operator of quick service bakery. The cleaning in both scenarios was performed by the same staff member of the quick service bakery, at two locations on the same model of oven.

Cleaning product is applied to warm oven (preheated and kept warm throughout the cleaning).

Steam Cleaner takes up to 7 minutes to heat up.

Wage calculated at current Ontario minimum wage x 1.3 employee costs

Introduction

Initially designed as a cost/benefit study, the impact on the environment of consumable waste, introduction of chemical into wastewater, water usage and electricity usage is also studied in this revision.

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Required Inputs

Cleaning One Oven, Weekly with a SteamKing Steam Cleaner – required inputs

Description	SteamKing (Classic with Cart)
Labour	52 minutes
Electricity	1750watts x 1 hr
Water	2 L
Other: Microfibre Cloth Steam Cleaner	1 – can be reused – assume 4 uses per cloth Assume estimated useful life of 5 years

Quick Summary: This method uses 2 L of water, 1750 watts of electricity and ¼ of the useful life of a microfibre cloth.

The residual water using this method has no toxic additives (assuming no chemical residue on surface cleaned).

Cleaning One Oven, Weekly with Suma Oven Cleaner – required inputs (as mandated by quick service bakery operator policy)

Description	Suma Oven Cleaner
Labour	2 hours
Electricity	5000watts x 2.5 hours
Water	4 L
Other: JCloths Scrub Pads Gloves Goggles PVC Gown Mask Cleaning Product (Suma 1L)	4 2 1 pair 1 – can be reused provided same staff member is doing the task 1 – can be reused – assume 4 times 1 ¼ of 1L bottle of product

Quick Summary: This method uses 4L of water, 12,500 watts of electricity, 4 Jcloths, 2 scrub pads, 1 pair of gloves and 1 mask, ¼ of the useful life of goggles and gloves and ¼ L of cleaning chemical.

This method creates a minimum of 2 L of dirty wastewater (minimum required to remove cleaning product from surface and achieve a clean rinse), and significant consumable trash (gloves, masks, cloths, scrub pads etc.)

This method uses 7 times the electricity (SOP suggests the oven is preheated and warm while cleaning).

Cost Summary

Weekly Cost Summary- Cleaning One Oven, Weekly with SteamKing Steam Cleaner (assuming amortizing the cost of the equipment into the weekly expense calculation)

Description	SteamKing (Classic with Cart)	Cost Per Week
Labour	52 minutes	=16.55*1.3 = \$21.51
Electricity	1750watts x 1 hr	=1.75*\$.13=\$.23
Water	2 L	
Other: Microfibre Cloth	1 – can be reused – assume 4 uses per cloth	=2.75*.25=\$.69
Steam Cleaner	Assume estimated useful life of 5 years	=(3195/5)/12 = \$53.25

Weekly Total = \$75.68

Weekly Cost Summary – Cleaning One Oven, Weekly with Suma Oven Cleaner

Description	Suma Oven Cleaner	Cost Per Week
Labour	2 hours	=2*(\$16.55*1.3) = \$43.03
Electricity	5000watts x 2.5 hours	=12.5kwh*.13 = \$1.63
Water	4 L	
Other: JCloths	4	=4*.4 = \$1.6
Scrub Pads	2	= 2*3 = \$6
Gloves	1 pair	=\$12 (rated for cleaner)
Goggles	1 – can be reused provided same staff member is doing the task	=16*.25 = \$4
PVC Gown	1 – can be reused – assume 4 times	=\$22*.25=\$5.50
Mask	1	\$4
Cleaning Product (Suma 1L)	¼ of 1L bottle of product	=\$27.42*.25 = \$6.85

Weekly Total = \$84.61

Waste Summary

(Waste calculated in areas of consumable trash, electricity, water and wastewater)

Weekly Waste Summary – Cleaning One Oven, Weekly with SteamKing Steam Cleaner

Description	SteamKing (Classic with Cart)	Consumption
Electricity	1750watts x 1 hr	1.75 kwh
Water	2 L	2L
Other: Microfibre Cloth	1 – can be reused – assume 4 uses per cloth	.25 of reusable cloth
Steam Cleaner	Assume estimated useful life of 5 years	

Weekly Waste Summary – Cleaning one Oven, Weekly with Suma Oven Cleaner

Description	Suma Oven Cleaner	Consumption
Electricity	5000watts x 2.5 hours	12.5kwh
Water	4 L	4L
Other: JCloths	4	4 thrown away
Scrub Pads	2	2 thrown away
Gloves	1 pair	1 pair thrown away
Goggles	1 – can be reused provided same staff member is doing the task	.25 of reusable goggle
PVC Gown	1 – can be reused – assume 4 times	.25 of reusable gown
Mask	1	1 thrown away
Cleaning Product (Suma 1L)	¼ of 1L bottle of product	¼ Litre of product rinsed into water supply, .25 of plastic bottle waste

Comparison of Data (converting input data into an annual calculation over a 52 week period)

Description	Suma Oven Cleaner	SteamKing Classic
Labour	96 hours	42 hours
Electricity	650 kwh	91 kwh
Water (clean, input)	208L	104L
Water (dirty, chemical contamination)	116-220L (water used plus chemical – assuming min 2 L until clean rinsing)	0
Other:		
JCloths	208 dirty (with chemical contamination) cloths thrown away	
Scrub Pads	104 scrub pads (with chemical contamination) thrown away	
Gloves	52 dirty pair thrown away	
Goggles	12 thrown away	
PVC Gown	12 thrown away	
Mask	52 thrown away	
Cleaning Product (Suma 1L)	12 1L bottle of product	
Microfibre Cloth	0	12 used annually, can be rewashed or will be thrown away when heavily soiled
Steam Cleaner	0	Even at the end of the steam cleaner’s useful life, we are able to recycle it into scrap and reduce the amount thrown away.

Summary

If you choose to amortize the expense of the Steam Cleaner over the useful life of the machine – you save \$8.93 a month.

You will also save 104L of water, 559kwh of electricity, keep 440 additional items out of the garbage and prevent up to 220 litres of contaminated wastewater from going down the drain.

Conclusion

This data is FOR ONE OVEN, in one kitchen in one facility – the significant impact of this on any cleaning operation of scale is astronomical.

Cost savings - if you use the machine for more than just a dedicated oven cleaning tool, the costs savings increase. If you clean 5 items with your steam cleaner, your cost savings jump to \$51.53 per month. If you don't include equipment expense in your calculation you save \$62.18 per month – having one person, cleaning one oven. This task only represents 2 hours per week – if similar results are achieved across a 40 hour period of cleaning tasks – you would save over \$1200 per month in time, product and wage related expense – for each person you have cleaning.

Waste Prevention - If you extrapolate the water saved cleaning one thing to 10 tasks in 2500 facilities – you have just filled an Olympic Sized Swimming Pool! And most importantly – you have not had a negative impact on the quality of remaining water in the eco system by keeping 12L of cleaning chemical per oven, per task, per facility from going down the drain. You have kept 440 items per oven, per task, per facility from going in a landfill.

It can be said that Steam Cleaning is an extremely viable way to increase sustainability efforts, with the benefit of also being a cost saving initiative.

References

Intersteam Technologies – Suma VS SteamKing Cost Benefit Analysis Prepared for TDL rev 1 2009

Intersteam Technologies – Suma VS SteamKing Cost Benefit Analysis Prepared for RBI rev 2 2014

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