

Summary and Conclusions

By switching from PCE to dedicated wet cleaning, Silver Hanger Cleaners decreased their electricity use by 20%, natural gas use by 14%, and their water use by almost 3%. For this facility, equipment costs were reduced by \$500 over 12 months, performance costs (claims) were reduced by \$1,000 over 12 months, operational costs (mainly due to costs of detergents) increased by \$1,069 over 12 months, and costs associated with resource use (calculated using normalized rates) were reduced by \$2,318 over 12 months, totaling \$2,749 in savings over the 12 months of the study. The facility spent approximately \$12,000 (in actual costs, but not factoring in discounts and grant monies received) more than it would have to simply replace their solvent machine. This equates to a return on investment realized in just under 4.5 years.

Item	Annual Costs	Annual Savings
Equipment		\$500
Performance (Claims)		\$1,000
Operations	\$1,069	
Resource Use		
• Electricity		\$1,180
• Natural Gas		\$1,090
• Water		\$20
• Sewer		\$28
Total Cost/Savings in 12 months	\$1,069	\$3,818
Total Savings		\$2,749/year

For More Information

For more information about the Institute's wet cleaning program, please visit www.turi.org/community/wet_cleaning. The full Bellingham case study is pending publication in a future issue of the Journal of Cleaner Production.

About the Toxics Use Reduction Institute

The Toxics Use Reduction Institute (TURI) at the University of Massachusetts Lowell provides the resources and tools to help Massachusetts businesses and communities make the Commonwealth a safer place to live and work. Established by the state's Toxics Use Reduction Act of 1989, TURI provides research, training, technical support, laboratory services and grant programs to reduce the use of toxic chemicals while enhancing the economic competitiveness of local businesses. Learn more at www.turi.org.

"I was anxious to get rid of the perc machine because of the health and waste issues but I wanted to replace it with something that I wouldn't find out later caused other problems. Wet cleaning was the logical solution for me and I couldn't be happier with the results. It works much better than I imagined, my workers are grateful, and my customers are happy."

— Mark Isabelle



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Eliminating the use of Toxic Chemicals in Dry Cleaning

A Feasibility and Cost Comparison of Perchloroethylene Dry Cleaning to Professional Wet Cleaning:

Case Study of Silver Hanger Cleaners Bellingham, Massachusetts



Dedicated Wet Cleaning Shows Conservation of Resources and Overall Cost Savings at Facility in Massachusetts

Overview

The Toxics Use Reduction Institute has been working with the dry cleaning sector for over ten years — focusing on the ultimate goal of replacing the use of perchloroethylene (PCE) in this sector with safer and feasible alternatives, particularly professional wet cleaning. In 2008, the Institute provided a matching grant to Silver Hanger Cleaners in Bellingham, Massachusetts to convert their operations from perchloroethylene-based to water-based processes. Two years of data have been collected from the facility, reflecting one year of solvent use and one year of dedicated professional wet cleaning. The analysis of the data is presented here, including capital costs, performance metrics, operational costs, and resource use and associated costs.

The Institute awarded Silver Hanger Cleaners a \$17,000 matching grant to switch to dedicated wet cleaning technology. Mark Isabelle, owner of Silver Hanger Cleaners for 14 years, renovated his existing store, removed the third generation PCE machine, and installed wet cleaning equipment consisting of a washer, dryer, and tensioning equipment. With only a few days of down time for the conversion, he opened his facility as a dedicated wet cleaning facility in November of 2008.

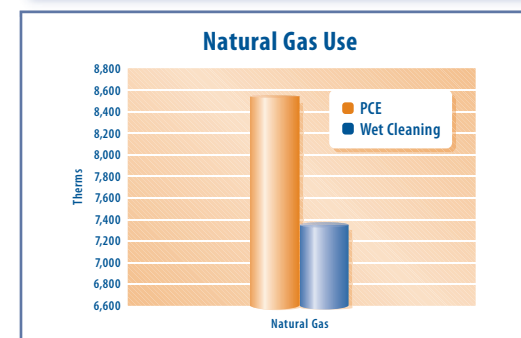
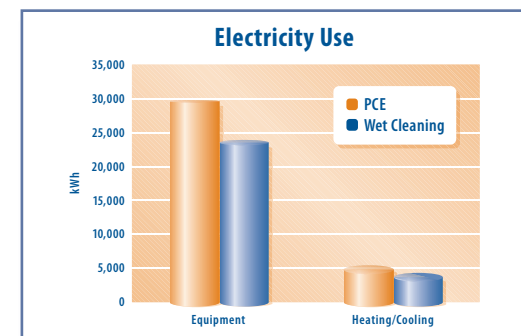
Silver Hanger Cleaners now conducts wet cleaning and laundry operations in about 1300 square feet of renovated space. Isabelle hopes to expand soon to accommodate another wet cleaning machine. The facility operates with about 7 full-time equivalent employees and cleans an average of 110 items per day.

Energy Savings at Silver Hanger Cleaners

The equipment used for wet cleaning is less energy intensive than a PCE machine and associated equipment, particularly the solvent recovery system. Energy and gas use are reduced as a result.

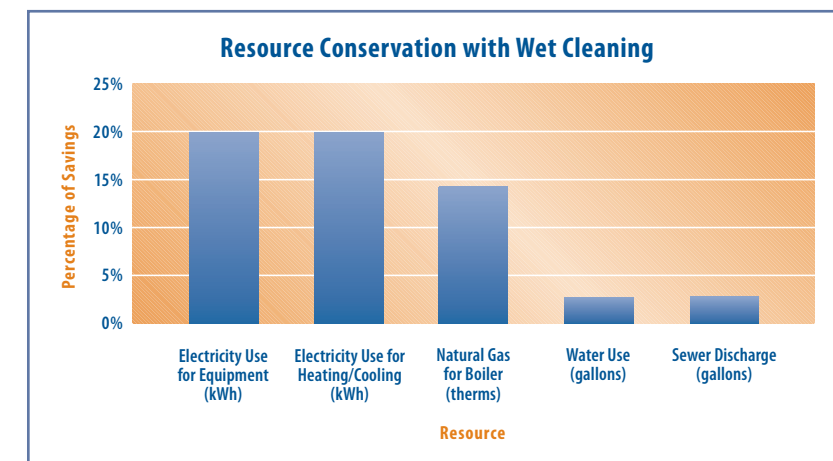
Electricity Use. Electricity provided by National Grid is used to power the garment cleaning equipment in the facility as well as the general heating and cooling equipment. The electricity use for wet cleaning and laundry equipment dropped an average of 487 kWh/month, or a monthly decline in electricity use of 20%. The electricity used to power the heating and cooling system also declined after the conversion to wet cleaning, dropping an average of 92 kWh/month or a monthly decline in electricity use of 20%.

Natural Gas Use. Natural gas is used at the facility to provide steam for equipment and hot water for equipment and the facility. After the conversion to wet cleaning, the natural gas decreased from 8,547 therms to 7,367 therms for the entire facility, or an average of 98 therms/month. This is an average decrease in the use of natural gas at the facility of 14%.



Resource Conservation Savings

Overall reduction in resource use is summarized below:



Operating Costs/Savings

In the first 12 months of operation as a dedicated wet cleaning facility, detergent and spotting agent costs increased on a monthly basis. Others costs, however, were completely eliminated. As noted in the summary table below, the use of wet cleaning has increased operating costs in the first 12 months \$89/month on average.

Item	Average Costs/month (areas where costs are higher with wet cleaning)	Average Savings/month (areas where costs are lower with wet cleaning)	Average Costs/Savings per year
Maintenance	—	\$227	-\$2,721
Filters	—	\$26	-\$316
Solvent	—	\$130	-\$1,560
Detergent	\$631	—	+\$7,572
Spotting Agents	\$41	—	+\$492
Hazardous Waste Disposal	—	\$179	-\$2,148
Regulatory fees	—	\$21	-\$250
Totals	\$672	\$583	
Total Costs	+\$89		+\$1,069

However, savings associated with equipment, performance and resource conservation, yields an overall positive return as detailed in the Summary and Conclusions on the back.

“The writing is on the wall that perc is on its way out. But rather than see it as a negative, I see it as an opportunity to grow my business by marketing a green cleaning solution to my customers who are concerned about the environment.”

*Mark Isabelle
Silver Hanger Cleaners
Bellingham, MA*

**Savings totalled
\$2,749/year.
See details on back.**