



Ozonated Laundry Systems in Hospitality Facilities



Pacific Gas and Electric Company (PG&E) recommends hospitality owners and operators consider the benefits of adding ozone to their laundering operations. PG&E has partnered with several hospitality facilities, providing technical assistance and paying incentives on projects that incorporated ozone into laundering operations. Installing an ozone generator into your facility's plumbing system may help lower the consumption of natural gas, electricity and water, and decrease sewage costs. The use of ozone is an obvious choice for reducing energy use and saving money.

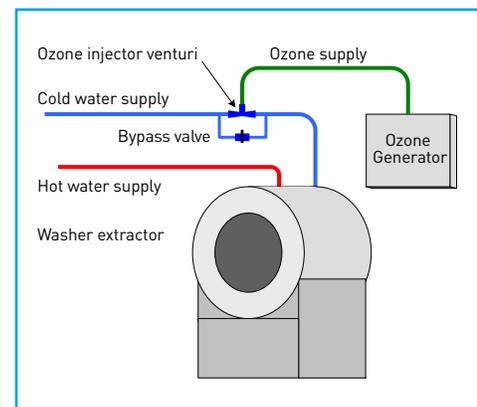
What is Ozone?

Ozone is a form of oxygen found naturally in the Earth's atmosphere. It has strong oxidizing properties and reacts quickly with a wide range of substances. In addition, ozone is one of the most effective cleaning agents, better even than chlorine and other commonly used disinfectants. Ozone has found a safe and useful application in commercial laundering systems.

Ozone can be generated easily from dry air, removes soils effectively, and works in cold water. It cleans fabrics by removing electrons from the soils, breaking down the molecules so that they are released from the linens. After a wash cycle, excess ozone breaks down into oxygen gas and mixes harmlessly with the atmosphere. For hotel owners and operators, the use of ozone can mean less energy consumption and lower costs.

Applying Ozone to a Laundry System

Ozone generators are integrated into the building's plumbing system. They generate ozone as needed and introduce it into the water during the wash cycle.



Benefits of Ozone in Laundry Operations

Reduced Energy Costs

Using ozone can lower energy costs through:

Reduced Hot Water Consumption

Sanitizing is typically accomplished with hot water. Ozone works best with cold water. Using less hot water can significantly reduce your use of natural gas.

Reduced Drying Time

Adding ozone reduces the need for fabric softener, thereby decreasing drying time. Shorter drying times may lower your electricity usage.

Reduced Chemical and Detergent Costs

Using ozone may decrease the need for rewashing heavily soiled items which may save money on chemicals and detergents. It also reduces the need for bleach in many applications—white and colored linens can often be washed together.



Reduced Labor Costs

Shorter laundering cycles and less time spent sorting and rewashing can mean lower staff costs.

Reduced Water and Sewer Costs

Fewer rinse cycles are needed because not as many chemicals are used in the laundry process. This means reduced water consumption and sewer discharge.

Increased Life of Linens

Cleaning fabrics in laundry systems that use ozone decreases their exposure to chemicals and heat. This may mean they last longer.

Increased Fabric Softness, Fluffiness, Brightness and Improved Fabric Smell

Washing linens in ozone may improve the guest experience by keeping linens fresher.

Case Study: The Hilton Garden Inn–Emeryville

The Hilton Garden Inn–Emeryville installed an ozone generator and associated plumbing at a total cost of \$14,000. Minimal modifications to the existing plumbing were required, which kept labor costs down. Incentives and rebates from PG&E and East Bay Municipal Utility District (EBMUD) covered part of the project cost.

Water and Sewage Savings

The flow of hot and cold water into each of the three washer-extractors was monitored for 30 days prior to installation of the ozone system and for 30 days after installation. During that time, hot water consumption decreased by over 91%, while cold water use increased by only about 41%. Total water consumption for laundry operations decreased by an average of 2,432 gallons per day or over 35%. This is equivalent to consuming 863,000 fewer gallons of water per year—and much less water going down the sewer.

Estimated water and sewer cost savings: \$18.72 per day or \$6,835 per year.

Electricity Savings

Shorter washer extractor operating cycles and shorter drying times mean shorter operating times for the motors within laundry equipment. The estimated annual washer extractor and dryer electricity savings due to the ozone system is 8,651 kWh.

Estimated electricity savings: \$779 per year, 3.5% of overall energy savings.

Natural Gas Savings

The decrease in hot water consumption by 1.32 million gallons annually is estimated to decrease gas usage by 28.4 therms per day or 10,383 therms per year.

Estimated natural gas savings from reduced hot water consumption: \$12,397, or nearly 89% of the cost to install the ozone system.

Shorter dryer run times reduce natural gas use by an additional 0.133 therms per load. Based on 40 dryer loads per day, daily savings are 5.34 therms or 1,948 therms per year.

Estimated natural gas savings from reduced dryer time: \$2,326 per year.

The total annual natural gas savings due to the ozone system are 12,331 therms, having a value of \$14,723 to the Hilton Garden Inn–Emeryville. The natural gas savings represent two-thirds of the savings resulting from the ozone system and more than cover the cost of the ozone system.

Short Payback

The ozone system has a simple payback of 7.5 months from quantifiable energy savings. With available rebates and incentives, the payback is significantly shorter. The Hilton Garden Inn–Emeryville received incentives from EBMUD for \$1,740 and from PG&E for \$7,086, for a total of \$8,826. These incentives reduced the payback period to just 83 days.



Summary of Savings for 11 Hotels

Several additional hotels have installed ozone generators in their laundry facilities and realized water, gas, and electrical savings, as shown in the chart below.

	Location	Guest Rooms	Savings	Savings/ Guest Room	Total Water Savings	Hot Water Savings	Water Savings/ Guest Room/ Year	Project Cost	PG&E Paid Incentive
Hotel		#	Therms	Therms	Gallons	Gallons	Gallons		
Hilton Garden Inn	Mountain View	160	2,944	18.40	465,950	473,828	2,912	\$15,140	\$2,159
The Toll House Hotel	Los Gatos	115	4143	36.03	238,296	523,022	2,072	\$13,500	\$3,314
AG Inn at the Mall	Pleasanton	170	6698	39.40	1,150,488	1,606,852	6,768	\$14,165	\$5,358
El Rancho Motel Inc.	Milbrea	306	13,126	42.90	529,630	1,166,099	1,731	\$23,165	\$10,501
Renaissance Club Sport	Walnut Creek	175	12,816	73.23	4,475	1,220,474	26	\$14,165	\$7,083
Vintner's Inn/ John Ash & Company	Santa Rosa	44	3,411	77.52	157,375	296,740	3,577	\$13,000	\$2,729
Hilton Garden Inn/APF Emeryville Lease Co.	Emeryville	278	9,948	35.78	654,896	1,401,742	2,356	\$14,171	\$7,086
Wyndham Hotel	San Jose	126	15,006	119.10	857,867	1,281,875	6,808	\$15,669	\$7,835
Hotel Valencia	San Jose	213	10,530	49.44	1,418,304	2,066,792	6,659	\$15,662	\$7,831
Woodfin Suites	Emeryville	202	9744	48.24	459,313	936,288	2,274	\$14,636	\$7,795
Napa Valley Marriott Hotel & Spa	Napa	273	14,117	51.71	1,839,500	1,684,030	6,738	\$21,000	\$10,500

Your Next Steps with PG&E

The energy- and money-savings benefits of ozone make its adoption in the laundering process an obvious choice for hospitality facilities. For additional information, contact your local PG&E account manager, call the Business Customer Service Center at [1-800-468-4743](tel:1-800-468-4743), or visit www.pge.com/hospitality to find out how your business can reap the benefits of using ozone and other energy efficiency measures.





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October 2009 CTM-1009-0166