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## Ozone Installation for Hotel Laundry Saves \$100,000 in Annual Energy Costs, While Supporting Green Initiative

*Also Cuts Operating Costs, and Improves Guest Service Scores*



During 90-day trial for first installation, 344-room hotel saved \$60,000 on gas vs. the same period in the previous year, despite a 500-room occupancy increase, and no other changes.

Indianapolis, IN — The VP of Operations for a 10-hotel group based here reports annual savings of \$100,000 in a 344-room, 50,000 sq. ft. unit's natural gas costs since installation of an ozone system for its laundry wash water. He simultaneously recognizes the elimination of heating for the wash water, as well as reducing laundry chemical usage, as part of the company's pro-active green initiative.

In addition, he notes a 15% reduction in labor costs realized by gaining 10 extra loads per 16-hr. day and cutting reclaim loads by two-thirds, while brighter and softer finished goods have been correlated with improved Guest Service Scores.

With subsequent ozone installations for 272- and 275-room units, at the end of 2009, energy savings have amounted to \$14,000 and \$12,000 respectively for the first two months of this year, despite a 200-room occupancy increase for the latter property. Installation at the same time for a 118-room unit saved \$5,000 during the same period.

Table #1:  
Key Results

344-room unit:	\$100,000 annual savings on gas costs; 15% reduction in labor costs via 10 extra loads per 16-hr. day; reclaim loads cut by two-thirds; improved Guest Service Scores via brighter linens and softer terry; shorter wash and rinse cycles via reduced soap use
272- room unit to date:	\$14,000 gas savings first two months of 2010
275-room unit to date:	\$12,000 gas savings first two months of 2010 despite 200-room occupancy increase
118-room unit to date:	\$5,000 gas savings first two months of 2010

"During a 90-day evaluation period for the first installation in late 2007, we saved \$60,000 on gas vs. the same period in the previous year, despite a 500-room occupancy increase, and no other changes," recalled Chuck Summers, vice president of operations for General Hotels Corporation. "That taught us that a much bigger percentage of our gas use than we had thought was going into the laundry water holding tanks, and that the hotel's gas use for laundry was 25-30%."

"Then, by the fifth month, we were realizing 2 extra cycles per day for each of the five, various-sized front-loading washers. That meant 10 extra loads per 16-hour day, while we were also cutting reclaim loads by two-thirds, allowing us to gain 15% savings in monthly labor cost."

Summers noted decreased laundry chemicals consumption as a contributing factor, while providing another benefit.

"We didn't find the \$3-4000 annual savings on soap costs to be especially significant, but it gave us shorter wash and rinse cycles, and within a couple of days after startup, both brighter linens and softer terry," he said. "That contributed to a perception of the room being fresher and cleaner, which we could see correlated in Guest Service Scores, and was especially important to the road warriors who lodge 100+ days a year."

The company's use of ozone systems had its origins in 2006, when it began seeking cost cutting measures for energy use, as well simultaneously establishing a green committee.

"We considered various proposals that promised energy savings through new equipment installation, but that didn't bear out in the P&L's," Summers recalled. "For example, there were attachments to electrical panels that were supposed to provide net savings on electricity costs, but there was no evidence to support the claim, and the conversations would end when we brought up guarantees."

"With ozone, we had seen a lot about it both in the hotel trade press and the green journals, and were being solicited by the generator manufacturers," he continued, "but again, no real evidence of energy savings in our industry, nor



Installation for 275-room unit at the end of 2009 has resulted in energy savings of \$12,000 for the first two months of 2010, despite a 200-room occupancy increase.

any references from our peers. The vendors were saying things like the savings were obscured by the gas price going up.”

“Then our local laundry equipment rep told us they were choosing to represent Guardian Manufacturing’s ozone systems because that vendor had a great record for not failing. Guardian also had a leasing option that was the most attractive among the few vendors that did, and they also offered the 90-day program to prove savings that would show up in our P&L’s. That was very important to us when we were looking at laying out \$18-25,000 for equipment that we were not sure was going to save us money.”

“We had no problems implementing their systems; the savings have been realized; and their service has been excellent. For example, when we had a staining episode, their senior laundry systems specialist was there within 48 hours, working with our soap vendor to adjust the soap levels, and the problem was quickly solved.”

Guardian Manufacturing regards its success in ozone applications like General Hotels as deriving from long-term research and development for its products, and an integrated, customized approach to manufacturing and installing them.

Tom Allen, Guardian’s senior applications specialist for laundry operations, noted additional factors.

“It’s been very helpful for us to gain hands-on experience with front-load, side-load, and tunnel washers of varying manufacturers, models, sizes and complexities, operating within different plant heating and cooling conditions,” he said. “Laundry installations are not one size fits all, even when two laundries have the same type of washers.”

“Most previous ozone laundry processes were designed and operated under the assumption that a single system setup could satisfy the ozone demands of varied sizes and numbers of washers, without any real installation or system variability.”

Allen explains Guardian’s success across multiple laundry platforms, from simple hospitality OPL’s, to complex post-sort hospital OPL’s, to central tunnel system plants, as deriving especially from the company’s advanced controls technology.

“The need has always been there for an ozone laundry process that contained not only quality ozone generators and oxygen systems, but the combined monitoring and control systems, with self-diagnostic software packages, to run them,” he said.

“We have seen the challenges that were created for laundry operators, with simple on/off ozone laundry systems,” he continued. “When an operator asked how they would know if a system was working properly or not, the most common answers were that you wouldn’t smell the ozone, or that the laundry wouldn’t be clean.”

“This was not good enough for Guardian’s product line. We have gone to great lengths to engineer a complete system that can be as self-sufficient as any particular application may dictate.”

“As a result of our long-term, diversified experience, we’re now able to routinely provide a preliminary savings analysis, and also offer a 90-day money-back guarantee for any laundry operation,” Allen noted. “We are confident that our customers will not experience hidden production problems that would negate overall savings, by having to process periodically increased stain loads.”

“We’ve also learned not only to carefully consider the chemistry of the wash water, but the derivation of the soiled goods, and consequent organic and inorganic introductions to the wash process.”

Thoram Charanda, senior scientist for Guardian and manager of its research and development laboratory, noted the importance of a reliable, energy-efficient ozone generator.

“We saw from the laundry industry’s unhappy prior experience with ozone that without a reliable generator that provides consistent production, great challenges would occur,” he said. “If the ozone is not there, you’re not going to have good linens.”

“We also strive to maximize the amount of oxygen converted to ozone, using the least amount of energy,” he continued. “Ozone is converted at the rate of 5 to 10% by weight, aided significantly by an oxygen concentrator that provides a source of oxygen that is consistent at 94%. And the very high frequency is also well above the audible range, so there is no high-pitched whine, which we had learned was an additional complaint about ozone.”

For laundry applications, in addition to generator reliability and efficiency, Charanda also noted the critical need for efficient delivery of the ozone into laundry wash water, and the importance of knowing ahead of time the chemistry of that water, including chemicals added to it during the wash process.

“We are injecting ozonated water directly into the wash wheel using a premium Venturi-type system that consistently provides mass transfer efficiency at the level of 90% or more,” he said. “Meanwhile, we never assume the water is okay in the first place.”

“The key issues are the presence of inorganics like iron and manganese that could react with the ozone and cause problems. In addition, detergents can introduce very complex issues, as can surfactants, brighteners, bleach, and other additives. Our applications experience with the water chemistry, as well as the different types of washing machines, has helped us greatly in our ability to deliver our high level of performance.”

Guardian has integrated almost 1000 ozone generators into systems manufactured by the company since 2003. For further information on its Ensure-LCR™ ozone systems for laundry applications, featuring PlasmaBlock® advanced oxidation generators, and opportunities for preliminary site analysis, contact Guardian Integrated Services, 2971-A Oxbow Circle, Cocoa, FL 32926, Tel. 321-631-4580, Fax 321-631-4517, laundry@guardianmfg.com, www.guardianisd.com.



Installation at the end of 2009 for a 118-room unit has saved \$5,000 for the first two months of 2010.