

Ozone systems an energy-efficient laundry option

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If you took chemistry in high school, you might remember that ozone is a gaseous molecule that contains three oxygen atoms. Ozone thrives either high in the atmosphere, where it shields the Earth against harmful ultraviolet rays from the sun, or close to the ground, where it is the main component of smog.

With that strike against it, ozone has, quite literally, a dirty reputation. It might be surprising to some to learn that water treated with ozone can do an effective, energy-efficient job cleaning dirty linens and clothes.

"The difference ... between laundries that have ozone systems and those that do not are a major reduction in both hot water consumption and chemical consumption," said Bill Blumel, hospitality specialist at laundry equipment manufacturer G. A. Braun, which is based in Syracuse, N.Y. "The results are primarily the reduction in both the consumption of the energy source for heating water and the reduction in the consumption of the bleaching agent provided by the chemical vendor to the laundry facility. Results are focused primarily on the resulting return on investment for the washroom entity of the laundry system."

In most ozone laundry system solutions, the set-up is similar to a conventional hot water industrial laundry. The main difference is the addition of the ozone-generating equipment and the use of cold water.

To simplify the installation of the system, it has a modular design. Each module consists

of a washing machine, a dryer and the ozone-generation equipment. The main difference between a conventional washing machine and an ozone washing machine is the addition of a pump and piping loop. Water from the washer drum is circulated through this loop. The ozone is generated in a three-step process: first, air is compressed in an air compressor; next, the resulting compressed air is passed through a pressure swing absorption oxygen generator; and finally, the oxygen is fed to corona discharge ozone generators. Upland, Calif. based Green Suites International, maker of the O-Tech Direct Injection Ozone Laundry System, estimates that for a hotel, typical return on investment for one of its systems is between one to two years. The 1,192 room Chicago Marriott, which processes more than 7 million pounds of laundry per year and uses the O-Tech System, saved more than \$66,000 in chemicals, water and energy last year, according to the company.

Jack J. Reiff, president of Worcester, Mass.-based J. Reiff Consulting, which also is known as Wet-Tech, The Ozone People, said ozone laundering extends linen life by two to three times.

How does ozone-treated water find dirt and grime?

"Ozone is O₃ which is a higher level of oxygen. Hydrogen peroxide is O₂. You can see that the O₃ would be able to provide a brighter whiter wash just by using it," said Reiff, who noted that many laundries use hydrogen peroxide as bleach.

Reiff also said that ozone and peroxide are natural chlorine neutralizers.

"Chlorine is retentive by synthetic fibers and the chlorine in the fiber discolors the fabric if not neutralized, that's why [people are] warned against using chlorine bleach on synthetic fabric," he said. "The greater performance of the chemicals provides a better cleaning performance." For ozone laundry technology, a process called oxidation, which is the chemical process of oxygen combining with another element or substance, makes things happen.

Better cleaning through chemistry is not a given, though. There are a number of best practices, including:

- Know what items to expose to ozone and what not to. Generally, food service related linens and towels are a no-no. The items that typically are not appropriate for processing using the entire philosophy around the ozone application in the washer/extractor are the food-and-beverage textiles," Blumel said.
- Use ozone-laundry systems only in larger washers.

"Raw ozone in the water is very corrosive, and 50 pound washers are just not built for that," said Bernard Milch, CEO and chairman of laundry equipment manufacturer Wascomat, which is based in Inwood, N.Y. "You run the risk of [corrosive ozone] penetrating the outer casing of the machine."

- Premix rather than directly inject the ozone into the water. "With direct injection, some of the ozone gets in the solution, and there's just not enough contact time for the ozone to stay in contact with the dirty fabrics or linens," said Bill Brantley, president of Dallas-based PuroTek Corp.

Breaking it down:

- Train employees to use the system properly.
- Use ozone in cold water. Brantley said cold water and cold-water detergent are more effective "activators" of ozone.

Using an ozone laundry system helps hotels save money annually in these categories:

- Water: 20 percent to 25 percent
- Fuel to heat water: 70 percent to 80 percent
- Chemical reduction: 20 percent to 30 percent
- Saved production time: 15 percent
- Maintenance of wash equipment: 25 percent

For more information about ozone laundry contact ClearWater Tech at 805-549-9724 or visit our web site at www.ecotexlaundry.com.