



Growing operational costs and lower-than-average occupancy rates spurred Apple Farm Inn and Suites, San Luis Obispo, Calif., to explore economic and facility-efficiency benefits obtained through the installation of an ozone laundry system. At the Apple Farm Inn laundry facility, an evaluation lasting several months was conducted in late 2006 into 2007, comparing the costs of laundering by traditional methods versus ozone laundering.

facility is to determine the appropriate cycle configurations. Among other factors, these wash cycles are designed based on the type of linen being laundered, the soil content of the linen and the capacity of the washer.

Chemical signals used at the Apple Farm Inn are as follows:

- S1: break (alkali, pH increase chemical);
- S2: detergent and suds;
- S3: bleach;
- S4: sour/soft; and
- S9: ozone.

The ozone cycle uses two fewer steps with the removal of an extract and combining detergent and bleaching into one step. Removing these two steps while also reducing the amount of water and time in each of the steps allows for 22 fewer gal of

water to be used (an 18% savings) and 11 minutes less overall time of laundering—time which not only saves labor but also electrical consumption.

An analysis also broke down the amount of hot, warm and cold water used in the laundering cycles. The ozone cycle has shown to reduce the volume of elevated temperature water by 37 gal (27%) per wash load. Additional savings in natural gas also result from the use of less hot water. A portion of the savings shown in the test case cycles comes from chemicals, which have been reduced in the ozone cycle by 1.6 ounces—a 21% savings.

The ozone system resulted in annual cost savings in all categories—water, chemicals, electrical (with ozone considered as electrical), natural gas and labor—of \$13,248, a 38% total annual savings.

Figure 1 represents the annual costs of the traditional versus ozone laundering systems at Apple Farm Inn.

Labor & Production Savings

One of the most interesting benefits found in the Apple Farm Inn

Hotels Put Ozone to Use

By Marc DeBrum

Facilities & Equipment

The Apple Farm Inn is a hospitality hotel with 104 occupancy rooms. Laundry processed includes bedding (sheets, blankets, pillow cases), towels from rooms and the swimming pool area, bath mats and robes. The laundry room consists of two 80-lb Unimac commercial washers and two 120-lb Unimac commercial dryers. Twenty loads per day were laundered on average for a total of 1,600 lb of laundry per day. Traditional laundering was conducted for one month, followed by ozone laundering for a second month.

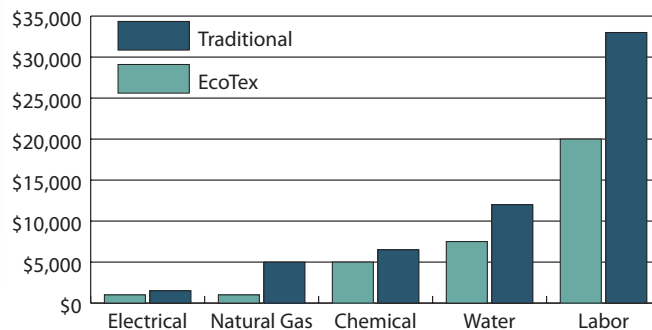
The ozone system installed for this study was a ClearWater Tech EcoTex system consisting of an ECO₂ ozone generator with a maximum ozone output rating of 8 gal per hour (gph) at 3% concentration by weight, a Sequal Technologies Workhorse 8c oxygen concentrator, an AeroQual 100 ambient air ozone monitor and an EcoTex diffuser installed in the sump of the clothes washer.

Traditional Versus Ozone

A key step in the application of ozone use in a commercial laundry

An eco-friendly, cost-saving laundry system for hotels

Figure 1. Apple Farm Annual Costs - Traditional vs. EcoTex



case study is that of labor and production savings, which also can be quantified as facility efficiency. This efficiency was equated to the overall reduction of cycle time saved by the ozone laundry system. This does not necessarily mean that the facility paid less in staff labor, but rather that the staff was available to perform other housekeeping duties. The efficiencies of less water and fewer rinsing cycles resulting from ozone laundering allowed Apple Farm Inn to launder nearly 60 more loads per month than with their traditional wash cycles.

Ozone laundry systems not only provide microbiological benefits, but through reduced cycle times, water, energy and chemicals they can also pay for themselves—typically within short time periods. The ozone laundry system has saved Apple Farm Inn nearly 40% of the annual overall costs related to the washing of linens in its laundry facility. This savings paid for the ozone laundering system in less than eight months.

The rate of return on a system such as this may increase dramatically through state and local energy providers and water companies that provide grants, rebates and other incentives to facilities that install energy- and water-saving technologies and equipment.

There was an estimated payback time of 7.7 months resulting from the ozone laundering system, including the labor savings of \$1,756 per month or \$22,517 annually.

Although wash formula design and results may vary from facility to facility, ozone-laundering formulas and processes can provide a higher level of cleanliness and disinfection while increasing a facility's energy and labor efficiencies. For nearly three years, Apple Farm Inn has benefited financially as a result of the lower consumption of water (especially hot water), energy and labor. *wqp*

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