From Design to Living with Sustainable Technology:

Ozone Generation at the Santa Barbara County Jail Laundry

By Richard Whirty, Facilities Project Manager
What is Ozone?

- $O_2$ = Oxygen we breathe.
- $O_3$ = Ozone.
- Ozone is created naturally by ultraviolet radiation (UV) or electrical discharge passing through air.
- Ozone discovered in 1839 by Christian Schönbein in Germany.
- First commercial use of Ozone in 1893 for water purification.
- Ozone used today to sterilize biological contamination with no chemical by products.
Modern Applications for Ozone:

- **Cooling Towers**: Replaces chlorine and other chemicals used to sanitize processed chilled water system.

- **Bottled Drinks**: Ozone is used to disinfect both the water and the bottle. Also is used to disinfect storage and transfer piping in beer brewing.

- **Commercial Food Storage**: Ozone saturated water used to wash vegetables, fruits and meats to kill bacteria and extend shelf life. Ozone sterilized ice used to pack seafood also.

- **Ozone in your life**: Most new Hot Tubs and Spas have built in Ozone generators for water purification. All major amusement parks in California use ozone to treat their water rides and aquatic habitats.
• Ozone used to replace 160 degree hot water and bleach for sanitization of soiled garments and bedding.

• Elimination of wash chemicals such as “Bleach” used for sanitation and “Sour “ to adjust PH, extends fiber lifetime of garments and bedding.

• Elimination of additional rinse cycles needed to remove chemicals in laundry cycle.

• Elimination of “Sour” in the wash cycle is critical to cutting drying times.
Integration of Ozone generator:

- Method of Ozone injection and modifications to washers.
- Changes to wash chemicals mix.
- Changes to washer and dryer laundry cycle programming.
- Safety monitoring and testing.
- Precautions for Ozone use with existing laundry equipment.
Project cost savings:

- The Jail Laundry washes an average of 2,000 lbs. of Laundry every day to service an average of 1,200 inmates.

- Baseline average cost for washing 1 load of Laundry (Water, Wash Chemicals, Electricity, Natural Gas, and Sewer) = $ 5.07

- Cost for washing 1 load of Laundry with Ozone and appropriate adjustments to wash process = $ 1.60

- Savings of $3.47 per load. x 624 loads per month = $2,165.28

- Overall savings of $ 25,983.36 yearly.

- Installation of the Ozone System reduced natural gas use by 88.1%, Water use by 18.8%, Chemical, Electrical and Sewer by 12-18%
Living with the installation:

• Changes in laundry and the end user feedback

• Chemical vendor supply issues.

• Existing equipment failures and Vendor support for Ozone equipment.

• Recommendations to peers on use of Ozone.
Thank you for your contributions:

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