

A row of industrial washing machines in a laundry facility. The machines are dark-colored with large circular doors. The background shows a concrete wall and some equipment. The text is overlaid on the image.

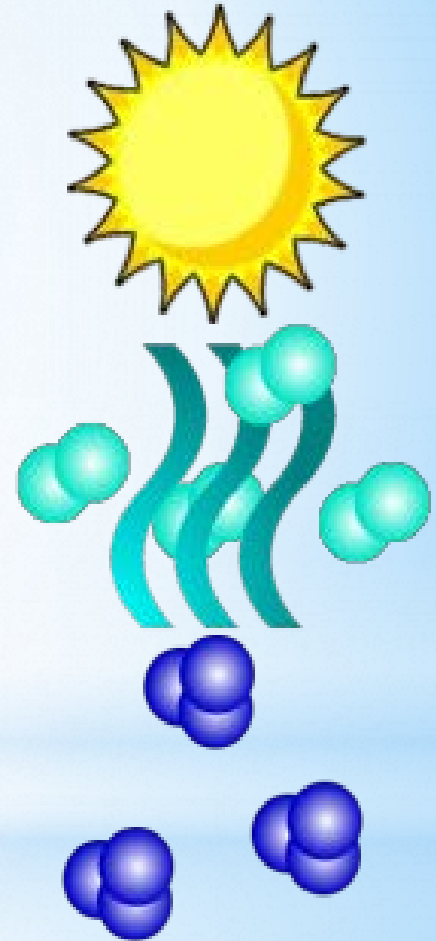
# From Design to Living with Sustainable Technology:

## 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 Schonbein 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 contributions to Laundry:

- 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 feed back
- 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:

- **Santa Barbara County General Services Department:**  
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- **Santa Barbara County Sheriff Department:**  
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