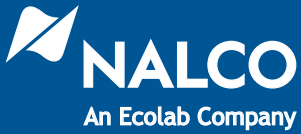


# Hospital Reduces Green House Gas Emissions by 104 Metric tons per year while reducing energy costs (natural gas) by \$84,000



## CASE STUDY - INSTITUTIONAL

CH-1365



### BACKGROUND

A subject site is a 455-bed hospital in the Midwest with a large laundry operation servicing three ancillary long-term care sites in addition to the main hospital and physician buildings. The main hospital building was built in 1965.

### SITUATION

The Engineering staff was challenged to help the site (and IDN) meet overall budget reduction goals in energy use cost reduction driven by National Healthcare Legislation reimbursement reductions. The Engineering staff also wanted to implement a set of solutions that drove long-term cost reductions that contributed to improving the overall operating efficiency of the central plant.

Engineering approached Nalco, their current utilities water treatment

program provider, for assistance and INSTITUTIONAL for their ideas. The team identified the steam generation system as the primary area to improve. The boiler system already was utilizing Nalco 3D TRASAR® Technology for Boilers. Performance data from the 3D TRASAR system confirmed that improvements could be made to help drive cost reductions. The action plan included:

- A steam trap and heat exchanger audit of the entire facility. Steam trap maintenance was a problem area for engineering as staff levels did not allow a consistent trap monitoring program.
- A Reverse Osmosis feasibility study to improve boiler feed water quality.

### AUDIT RESULTS

The audit team found 14 faulty steam traps and one leaking heat exchanger. Replacing the traps and heat

#### ENVIRONMENTAL INDICATORS

Reduction 216,000 btu's per hour

Reduction of 104 metric tons of CO<sub>2</sub> per year



#### ECONOMIC RESULTS

Savings of \$84,000

*Nalco reports eROI values to customers to account for contributions in delivering both environmental performance and financial payback.*

*(Continued on Reverse Side)*

exchanger resulted in a drop in steam demand of 2,000 pounds per hour, a savings of \$76,000 annually in natural gas cost.

The feasibility study for reverse osmosis for boiler feedwater identified significant improvements in boiler

cycles (reduced boiler blowdown), condensate recovery and reduction in condensate amine feed. The hospital accepted Nalco's proposal to supply the reverse osmosis system.

**VOICE OF THE CUSTOMER:**

“We value our partnership with Nalco,” said the director of facility services. “They were a big contributor to the success of this initiative, helping us audit the site, helping to drive the decision to install the reverse osmosis system, and identifying the cost-reduction opportunities that we expect will be repeatable and sustainable.”

**SUMMARY:**

	Conditions before	Conditions after	Comments	Financial Impact
<b>Steaming rate/hour</b>	30,000	28,000	Replaced leaking traps and heat exchanger	\$76,000 natural gas cost saving by reducing steam load
<b>Boiler Cycles</b>	20	50	5% blowdown reduced to 2% blowdown	
<b>Btu's lost/hr to blowdown</b>	318,000	101,760	74.3% reduction	\$8,168 annal reduction in btus sent to sewer
<b>Condensate Return</b>	70%	90%	29% improvement	Reduces make up water demand
<b>Condensate iron return</b>	0.2 ppm	0.4 ppb	90% reduction	Improved boiler cleanliness & efficiency
<b>Amine feed/</b>	2.5 gallons	32 oz	90% reduction	Reduced chemical cost
<b>FW alkalinity</b>	85	5	Before caustic supplementation	Reduced amine demand to maintain condensate pH

**GREENHOUSE GAS EMISSION REDUCTION AND EQUIVALENTS**

**Amount**      **Unit**      **Gas**

           CO<sub>2</sub> - Carbon Dioxide or CO<sub>2</sub> Equivalent\*

Annual greenhouse gas emissions from  passenger vehicles ?

CO<sub>2</sub> emissions from  gallons of gasoline consumed ?

CO<sub>2</sub> emissions from  barrels of oil consumed ?

CO<sub>2</sub> emissions from  tanker trucks' worth of gasoline ?

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