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

NALCO Water
An Ecolab Company

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 Water, their current utilities water treatment program provider, for assistance and ideas. The team identified the steam generation system as the primary area to improve. The boiler system already was utilizing Nalco Water 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.

PRACTICE Greenhealth MEMBER

CUSTOMER IMPACT	eROI℠	ECONOMIC RESULTS
Reduction 216,000 btu's per hour	ENERGY	Savings of $84,000
Reduction of 104 metric tons of CO_2 per year	AIR	

eROI is our exponential value: the combined outcomes of improved performance, operational efficiency and sustainable impact delivered through our services and programs.

AUDIT RESULTS

The audit team found 14 faulty steam traps and one leaking heat exchanger. Replacing the traps and heat 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 Water's proposal to supply the reverse osmosis system.

VOICE OF THE CUSTOMER:

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

GREENHOUSE GAS EMISSION REDUCTION AND EQUIVALENTS

Amount	Unit	Gas
104	Metric Tons	CO_2 - Carbon Dioxide or CO_2 Equivalent*

Annual greenhouse gas emissions from 20.5 passenger vehicles **?**

CO_2 emissions from 11,707 gallons of gasoline consumed **?**

CO_2 emissions from 243 barrels of oil consumed **?**

CO_2 emissions from 1.4 tanker trucks' worth of gasoline **?**

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