A Hotel in Atlanta Reduces Electrical Use by 583,000 kWh and Water Use by 2.6 Million Gallons

NALCO Water
An Ecolab Company

CASE STUDY – INSTITUTIONAL
CH-1348

INTRODUCTION

The Southeast region of the United States experienced a severe drought in the recent past that highlighted the need for Atlanta businesses to implement sustainability measures to reduce water consumption.

The Hotel Engineering Team proactively initiated a plan to identify areas for improvement in HVAC operations that would lead to reduced water and electrical consumption. The team engaged Nalco Water in the process.

PROGRAM

Two projects were identified as having fast payback and immediate positive effects.

The cooling tower project included installing new water treatment program control equipment, and Nalco Water 3D TRASAR™ technology was chosen. 3D TRASAR technology improves program control, data capture and brings 24/7 monitoring, alarm and communication capability with the Nalco Water 360 Service option.

RESULTS

Improved control allowed the tower blowdown to be reduced to save water. Tower cycles increased from an average of four cycles of concentration to nine. This improvement reduced tower blowdown by 2.6 million gallons annually on the main HVAC tower system, which is a $26,200 savings in water costs based on local costs of $10.00 per thousand gallons.

Customer Impact	eROI℠	Economic Results
Annual reduction of 1,157 kWh per year per coil	ENERGY	Annual savings of $23,325
Increase cooling tower cycles from 4 to 9 which reduced tower blowdown by 2.6 million gallons of water annually	WATER	Annual savings is $26,200

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

The second project was to clean the AHU coils in the guestrooms and install high-efficiency filters. The Nalco Water COIL-FLO™ program was chosen for its simple, safe and sustainable approach. The COIL-FLO program uses patented self-contained technology to effectively clean coils using a minimal amount of water for cleaning. This reduces clean up time and allows fast turn-around per room.

Performance metrics both before and after cleaning were measured, and new high-efficiency air filters were installed in the AHU's. Results of the cleaning showed significant improvements in cfm throughput and temperature drop across the coil, which results in faster response to guest temperature needs. In addition the power needed to run the unit dropped by an average of 1,157 kWh per year per coil, for a $23,325 reduction in electrical cost.

Coil Cleaning Data

AHU Name		
Measured items	Before	After
Wind Velocity (ft/min)	629	669
Pressure Drop Across Coil	1	1
Air Temp Return (Before)	62	62
Air Temp Supply (After)	59	57.4
Temperature Drop	3	4.6
Calculated Air Flow (cfm)	5032	5352
Duct Surface Area/Coil Area	8	
Fan Efficiency	85	
Cost of Electricity	0.04	
Hours of Operation	1800	
Refrigerant Valve Pos'n	ON	
VFD Fan (Supply)	100%	
VFD Fan (Return)	n/a	

Calculations	
BTU's before	**16304**
BTU's after	**26589**
Energy Eff Gain %	**63.1**
Energy Saved in BTU's (hr)	**10285**
Overall Savings (kW/yr)	**1157**
Costs Savings/year/AHU	**$ 46.28**

Annual greenhouse gas emissions from 78.8 passenger vehicles
CO_2 emissions from 45,068 gallons of gasoline consumed
CO_2 emissions from 935 barrels of oil consumed
CO_2 emissions from 5.3 tanker trucks' worth of gasoline
CO_2 emissions from the electricity use of 50.1 homes for one year
CO_2 emissions from the energy use of 34.8 homes for one year
Carbon sequestered by 10,308 tree seedlings grown for 10 years
Carbon sequestered annually by 85.7 acres of pine or fir forests
Carbon sequestered annually by 4 acres of forest preserved from deforestation
CO_2 emissions from 16,750 propane cylinders used for home barbeques
CO_2 emissions from burning 2.2 railcars' worth of coal
Greenhouse gas emissions avoided by recycling 140 tons of waste instead of sending to landfill

Calculations from EPS's Carbon Footprint Reduction Calculator
http://www.epa.gov/cleanenergy/energy-resources/calculator.html

Nalco Water, an Ecolab Company
North America: 1601 West Diehl Road • Naperville, Illinois 60563 • USA
Europe: Richtistrasse 7 • 8304 Wallisellen • Switzerland
Asia Pacific: 2 International Business Park • #02-20 The Strategy Tower 2 • Singapore 609930
Greater China: 18G • Lane 168 • Da Du He Road • Shanghai China • 200062
Latin America: Av. Francisco Matarazzo • nº 1350 • Sao Paulo – SP Brazil • CEP: 05001-100
nalco.ecolab.com

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