



## Resort Fan Coil Units Evaluated For Energy Savings—Achieved 50% ROI

Results Show Estimated Annual Savings of **\$62,543** Across 650 Guest Rooms for Resort Hotel

### Benefits:

- **6,566,369** BTU/year savings
- Annual energy savings of **\$96.22** per Fan Coil Unit
- **\$62,543** annual savings for 650 guest rooms from steam cleaning the coils
- Simple payback of **1.97 years**
- **Return On Investment (ROI) 50%**

### The Project:

A prominent, AAA Four-Diamond, resort hotel built in the 70's reported declines in HVAC capacity across the chilled water fan coil units in its 650 rooms. In addition to performance degradation, increased maintenance call back requests and musty odors were impacting guest experience. Both corporate and facility management weighed the costs/benefits of either replacing the aging units or restoring the equipment with the most effective process to improve operating efficiency and indoor air quality. The proprietary PURE-Steam HVAC cleaning method was chosen based upon its efficacy of past performance.



Pure Air technician implements PURE-Steam



Recording of Ambient Conditions in mixing plenum



Face velocity verification

Before PURE-Steam



After PURE-Steam



# The Survey:

To demonstrate energy savings a survey was designed to take measurements on fan coil units in randomly selected rooms before and after cleaning. Readings were taken in the discharge of the supply air plenum. Performance factors and differential outcomes that were evaluated consisted of real-time readings in Temperature (°F), Relative Humidity (%), Enthalpy (BTU/lb), and Volume (CFM) as well as Specific Volume (f3/lb). Energy consumption data\* was also estimated utilizing seasonal conditions in central Florida, 8 cumulative operating hours per day, regional costs of \$0.10 KWh and a Coefficient of Performance (COP) of 2, which is characteristic of average age and condition. Marked improvements were recorded in every category after the PURE-Steam cleaning.

# The Result:

Data collected from the survey was entered into an efficiency calculation formula developed by the Building Sciences division at Pure Air Controls Services and reviewed by a third party professional engineer. Based on the COP=2 an estimated annual savings was reported of \$96.22 per unit per year. When extrapolated across all 650 units the estimated potential savings to the resort was \$62,543 annually. Finally, taking into account the cost per cleaning of each unit based on time and labor the estimated simple payback was 1.97 years or 50% ROI.

*“potential savings to the resort was \$62,543 annually”*

EMPIRICAL DATA	Parameters	Before PURE-Steam			After PURE-Steam		
		Up Stream	Down Stream	Δ	Up Stream	Down Stream	Δ
	<b>CFM</b>	448.00			630.00		
	<b>Temperature (°F)</b>	69.80	67.80	2.00	70.70	64.60	6.10
	<b>Relative Humidity (%)</b>	76.20	70.80	-5.40	73.90	83.80	9.90
	<b>Specific Volume (f³/lb)</b>	13.57	13.51	0.06	13.59	13.44	0.15
	<b>Enthalpy (BTU/lb)</b>	29.28	27.47	1.81	29.43	27.35	2.08
	Energy Consumption	Before PURE-Steam			After PURE-Steam		
		BTU	KW	COP=2	BTU	KW	COP=2
	<b>BTU/hr=Δh(CFMc X 60min) / SVC )</b>	3,601.24	1.06	0.05	5,850.00	1.71	0.09
<b>BTU/Year (365 Day)</b>	10,515,631.09	3,081.83	154.09	17,082,000.00	5,006.24	250.31	

\*The survey and result do not include energy consumed by the fan motor.

## Benefits of the PURE-Steam

- Sanitizes the coils/blower assembly
- Removes latent debris from deep within the coils
- Creates improved air flow
- Creates better cooling capacity
- Saves Energy (typically .16 – .22 cents per sq ft)
- Improves indoor air quality
- Reduces HVAC related work orders
- Extends HVAC equipment



PURE-Steam is a valuable service to ensure optimal IAQ and HVAC performance for improved building health and energy savings!

**Call today to find out more!**  
**1-800-422-7873**