



## Case Study Fortune 100 Pharmaceutical Company AerisGuard™ HVAC Performance Solutions Evaporator Coil Restoration

Aeris performed evaporator coil restoration on 53 AHUs at two of the company's largest facilities. Due to improved system efficiency following the restoration, the site reports they were able to eliminate the use of one of their 1000 HP chillers.



### Background

In 2005, one of the top 10 US Pharmaceutical companies formed a global, corporate wide energy team with the objective of reducing energy consumption by 27% through efficiency improvements. The HVAC systems had the greatest potential for savings because the company has over 300,000T of cooling capacity spanning over 40 facilities in over 20 countries. One of the early recognized potentials for energy improvements was HVAC evaporator coil restoration, and Aeris was identified as the technology leader. Aeris was contracted to perform extensive testing at the largest facility of the pharmaceutical company to test efficiency improvements due to pressure differential ( $\Delta P$ ), temperature differential ( $\Delta T$ ) and airflow (CFM). As part of the testing a detailed health and safety review and technical evaluation was performed. Aeris then developed an energy savings model to project the energy improvements that could be obtained after the restoration process.



Upon demonstration that energy savings could be obtained with a favorable payback or ROI, the pharmaceutical company then classified AerisGuard as best practice and entered into a Global Maintenance Services Agreement.

### Full Scale Project

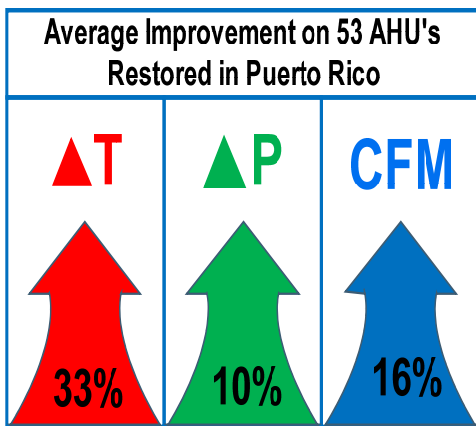
The Coil restoration program was implemented at two major facilities in Puerto Rico. The project scope included



benchmark and post-restoration testing of each AHU system. In all, 53 AHUs with a combined 3700 tons of cooling capacity were included in the project. Aeris personnel provided onsite operations supervision and technical management throughout the project. The benchmark and post-restoration testing included measurements to determine improvements to  $\Delta T$ ,  $\Delta P$ , and air flow (CFM) through the cooling coils of each AHU.

### Results

For the AHUs restored and tested at the first site, air flow rates (CFM) increased an average of 19%, the drop in air temperature across the coil improved by an average of 3.8 degrees F, and the pressure drop across the coil decreased by an average of 0.1 in. W.G. Aeris projects that this CFM,  $\Delta T$ , and  $\Delta P$  improvement yields an average ROI of approximately 6 months.



Pre & Post Readings on Ten of the Larger Units Restored							
AHU	Capacity (Tons)	PRE-Restoration			POST Restoration		
		CFM	$\Delta T$	$\Delta P$	CFM	$\Delta T$	$\Delta P$
1	79	27,967	22.8	0.706	29,925	27.9	0.671
2	86	17,462	16.8	0.488	25,328	17.3	0.476
3	92	32,522	9.9	1.049	36,750	12.0	0.306
4	109	9,020	24.1	0.348	9,875	26.9	0.303
5	112	15,000	18.8	0.933	23,700	22.9	0.806
6	139	10,887	28.4	0.617	12,738	31.0	0.490
7	166	14,191	24.8	0.942	16,461	27.4	0.903
8	213	29,725	15.9	0.426	32,400	18.3	0.200
9	236	55,000	11.9	0.870	61,500	16.7	0.617
10	418	44,040	19.0	0.782	48,000	23.8	0.566

For the AHUs restored and tested at the second site, air flow rates (CFM) increased nearly 10%, the drop in air temperature across the coils improved by an average of 2.3 degrees F, and the pressure drop across the coil decreased by 0.1 in. W.G. Aeris projects that this CFM,  $\Delta T$ , and  $\Delta P$  improvement yields an average ROI of approximately 5 months.

In addition to energy savings, there is a projected improvement to Indoor Air Quality (IAQ), equipment life and maintenance costs. Customer personnel commented on an improvement in temperature and there was a noticeable drop in humidity. Most important, the site reported that, following the coil restoration, they were able to eliminate the use of a 1000 HP chiller.

### Conclusion

Aeris was successful in completing the AerisGuard coil restoration work on all targeted AHU's at the Puerto Rico sites. The AerisGuard coil restoration cleaning and treatment process resulted in improved operational efficiency based on measurements of CFM,  $\Delta P$ , and  $\Delta T$ . Evaluations of energy cost savings projected an ROI of less than six months for the combined Puerto Rico sites.



470 Norristown Rd  
Suite 306  
Blue Bell, PA  
19422  
610.825.3401  
aerisatlantic.com




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