



## Case Study - Atlantic City Resort Casino Tests AerisGuard™ HVAC Performance Solutions Evaporator Coil Restoration & 3M Filters

The facility manager concluded that AerisGuard HVAC Performance Solutions greatly improved airflow and should be implemented for the entire resort.



### Background

In early 2007, the Casino gambling floor was experiencing poor air flow. After detailed discussions with the client, Aeris Atlantic was asked to perform a controlled test on two air handling units to demonstrate the effectiveness of AerisGuard Evaporator Coil Restoration and 3M Filters. Both units were

relatively new, having been commissioned in late 2006, and provide supply air to newly renovated retail and dining space within the resort. Return air is circulated back to these units through the same plenum. Construction was ongoing in the area.

### Methodology

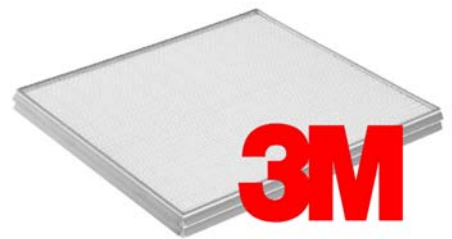
Cooling coil 1, a 116-ton unit, was cleaned according to the in-house procedure of power washing. Cooling coil 2, a 203-ton unit was restored with AerisGuard. Data from both units was obtained before and after the restoration with additional measurements six (6) months following the restoration.

All pre-restoration measurements were taken with the pre-filters removed and the VFDs manually set at the pre-restoration set



points, in an effort to provide an appropriate comparison at baseline conditions.

Upon completion of the AerisGuard Coil Restoration the 3M Filtrete High Performance HVAC Filters were placed in Cooling Unit 2 and the casino's conventional paper pre-filters and 90% efficiency box filters were placed in Cooling Unit 1.

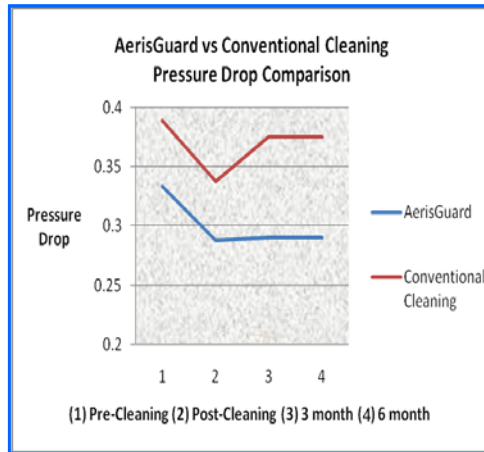


### Results – Conventional Power Wash Cleaning and Filters

For Unit 1, there was an initial improvement in airflow of approximately 14% from 31,700 to 36,100 CFM. After two (2) months, the airflow began to decline and at the six (6) month timeframe the airflow returned to near pre-cleaning conditions of 32,786 CFM reflecting only a 3% improvement. The pressure drop across the coil prior to cleaning was recorded at .389 in WC and after an initial decrease similar to

airflow, the pressure drop at the six (6) month timeframe had returned to .375 in WC reflecting a 3.6% improvement.

Upon inspection, although the prefilters had been replaced at three months, it was found that the pressure differential across the prefilters had become great enough to cause collapse of the support cardboard causing the filters to pull through the rack and lodge against the box filters. The pressure drop across both filters was 1.3 inches WG. after 6 months.



WC, an improvement of 13%. Additional data was collected on the AerisGuard restored units after eight (8) months that showed similar results, further indicating the coil has remained free of fouling.

Under the same operating conditions, every 3M filter was in place within the two inch rail structure and showed a pressure drop of only 0.44 inches WG. after 6 months.

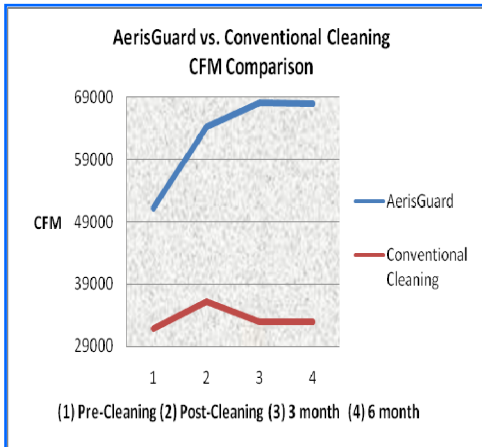
### Conclusion

The air handling unit undergoing AerisGuard HVAC Restoration and 3M Filter installation demonstrates a sustainable improvement in operating conditions as shown by over a 50% improvement in airflow and pressure drop over the unit cleaned with the conventional method and using conventional filters. The initial improvement recorded by conventional cleaning started to rapidly dissipate within two (2) months and at six (6) months the AHU was operating at near

pre-cleaning conditions with only marginal improvements. All conventional filters needed to be discarded and replaced.

The initial improvements in the AerisGuard restored AHU have been sustained with improvement over this time period. The 3M Filtrete filters continued to function efficiently and did not need replacement. This improvement in operating conditions correlates to greater efficiency associated with the AHU cooling coil, which translates into continuing reduced energy costs and, reduced overall maintenance costs.

Based on the results, casino management has authorized all common areas to undergo the AerisGuard HVAC Coil Restoration and 3M Filter installation. The casino has cancelled their existing filter contract and contracted with Aeris Atlantic to provide 3M filters throughout the casino.



### Results – AerisGuard HVAC Coil Restoration & 3M Filters

For Unit 2, there was an initial 25% increase in airflow, from 51,200 to 64,200 CFM with additional improvement recorded at the six (6) month time frame of 68,093 CFM yielding an airflow increase of 33%. A similar improvement of pressure drop was recorded from 0.334 in. WC and after six (6) months the measured results were .29 in



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