

Greenheck Project Profile

Renaissance Boston Hotel & Spa at Patriot Place Foxborough, MA

- **Engineering Firm**

Zade Associates, LLC
Boston, MA

- **Mechanical Contractor**

PH Mechanical Corporation
Boston, MA

- **Greenheck Representative**

Buckley Associates
Hanover, MA



*Renaissance Boston Hotel & Spa at
Patriot Place in Foxborough, MA*

The Challenge

- **Provide a comprehensive energy efficient ventilation system with self sustaining controls to monitor and adjust fan speed based on occupancy from a 150 room luxury hotel.**
- **Reduce heating and cooling costs related to exhausting excessive amounts of conditioned air.**

In January of 2009, construction began on a new, upscale Renaissance Boston Hotel & Spa at Patriot Place in Boston, MA. The building's owner wanted a top performing, energy efficient HVAC system

that had the capability to adjust airflow based on demand and operate quieter than traditional systems. Typical bathroom exhaust systems use oversized rooftop fans running 24 hours a day to assist in exhausting air from a common riser that multiple bathroom fans exhaust into. Unfortunately, these fans often run continuously, tend to be louder, use more energy and exhaust excessive amounts of the conditioned air from the building.

The main challenge of this project was to design a cost effective fan and control system that could reduce energy



A luxurious bathroom at the new Renaissance hotel.

consumption and provide a variable exhaust flow based on the number of bathroom exhaust fans that were in use and still properly ventilate the guest bathrooms.

Greenheck's Solution

- **Greenheck's GreenVent System for constant pressure controls including:**
 - **22 Centrifugal direct drive roof exhaust fans, Model CUE-085-VG and CUE-095-VG, with Vari-Green motor**
 - **22 GreenVent constant pressure control systems**

The Greenheck representative, Buckley Associates, proposed the Greenheck GreenVent system with the Vari-Green motor to the

design team at Zade Associates, over the traditional fan with a VFD and pressure sensing system. The GreenVent system monitors the pressure in the duct work and adjusts fan speed from 300-1750 RPM to compensate for the number of hotel bathrooms in use, which significantly reduces unnecessary tempered air from being exhausted. All fans are powered by Greenheck's proprietary high efficiency Vari-Green motors. The Vari-Green motor is a brushless DC (electronically commutated)

high-efficiency motor that runs off a 115 volt single-phase input that runs quieter, cooler and offers higher efficiencies with improved speed control capabilities as compared to standard motors. Vari-Green motors are capable of operating from 20% to 100% (80% turndown) of full speed versus 70% to 100% (30% turndown) for PSC motors, which are commonly used on direct drive fans.

The Results

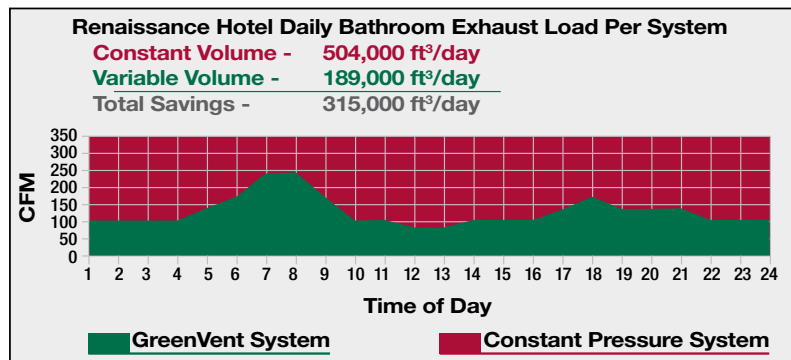
- The hotel opened in June of 2009, and the system has been a tremendous success according to Mark Jeffery, general manager of the Renaissance. "Because the fans run at a minimum speed most of the time, they operate more efficiently and are much quieter than our other systems."

The installing contractor, Brad Cady, (PH Mechanical Corporation, Boston, MA) was pleased as well, stating "The Greenheck GreenVent system was delivered on time with clear, easy-to-understand instructions. It made the entire installation process a breeze."

The GreenVent System allows for a variable volume system based on demand versus a 350

cfm constant volume system that would be found if using a standard direct drive fan. Based on actual operating data, varying the speed of the fan can help save 315,000 ft³ of air from being exhausted from the building every day, which allows the hotel to save over \$630 per year

with each GreenVent System. With the 22 systems installed, the hotel can expect to save almost \$14,000 per year in heating and cooling costs by reducing the amount of conditioned air that is exhausted from the building with the Greenheck GreenVent System.



Yearly energy savings were calculated based on actual fan rpm data and using the average heating and cooling costs for this location. Savings were calculated based on the actual rpm of the Vari-Green motor vs. a direct drive fan running at a constant 100% speed.

