

Crown Heights Charter School

A Case Study by ECSI

The Challenge

The neighborhood of Crown Heights, located in Brooklyn, NY, is one of the last places you would expect to find energy recovery ventilation. ASHRAE ventilation codes require at least 15 CFM of fresh air per student. In addition, local ordinances limit noise pollution produced by fans and condensers. Is it possible to provide efficient energy recovery while limiting noise levels? A closer look reveals a state-of-the-art ventilation system provided by ECSI. (Right: A bird's eye view of the school roof.)



The Solution

To address the school's ventilation needs, ECSI designed eleven roof top units with energy recovery wheels to precondition fresh outside air. This design reduced the total heating load from 20,102 to 6,144 MBH, a savings of 69%. Likewise, the total cooling load was reduced from 1,070 to 520 tons compared to non-energy recovery options, resulting in 51% savings.* To tackle the noise problem, ECSI worked with Tandem Chillers and DNT Enterprises to develop a



sound attenuated condensing unit. Not only did the condensers comply with New York City noise codes, but a new generation of sound-abating condensers was born. They are now available through ECSI. (Left: An installed unit with the New York skyline in the background.)

*Our designs feature energy recovery and mixing of recirculation air. Outside design conditions: winter 11/8.6°F, summer 92/74°F.

The Results

The school opened just in time for the academic year in fall of 2009. The school received national attention, opening with rave reviews and even segments on *The Today Show*. ECSI provided state of the art, custom designed energy ventilation equipment to provide the school with fresh, comfortable air. (Right: School during the final stages of construction.)



Unique Features

- Molecular sieve energy recovery wheels
- Sound attenuated fan sections
- DX cooling coils
- Hot gas reheat coils
- Indirect fired gas heaters
- Digital compressor staging
- Integral, multiple stage air cooled condensing units, fully piped and charged
- Smoke evacuation fans
- Automated temperature and humidity controls
- Full economizer controls
- 100% outside air to full recirculation for unoccupied hours
- Variable air volume controls
- Lighted vestibules with GFI electrical circuits

“Achievement First believes that all children, regardless of race or economic status, can succeed if they have access to a great education. We run 20 public, high-performing, college-preparatory academics in Brooklyn and Connecticut that provide students with the academic and character skills they need to achieve at high levels, graduate from college and become leaders in our communities.”

Project Summary

- Location.....Brooklyn, NY
- Units.....Eleven (11) roof top units
- Ventilation.....198,525 CFM
- Heating Load.....6,144 MBH
- Cooling Load.....520 tons
- Energy Savings.....12,384 MBH