

INDUCTION UNITS RENOVATION



250 S. WACKER- CHICAGO, IL. -CONVERSION TO ACB'S

FEEL THE DIFFERENCE

250 South Wacker in Chicago is a multi-tenant 15 story office tower with retail space on the first floor. The first and top floors had dedicated HVAC systems separate from the system serving the 2nd through 14th floors. These intermediate floors had a floor-mounted induction perimeter system and a constant volume-variable temperature interior system. Each of the floors had approximately 14,300 sq. ft. of rentable floor area (215,000 sq. ft. total).

PROJECT CHALLENGES

The developer was changing the building's exterior envelope to 100% E-glass which significantly reduced the building's heating and cooling loads. The heat losses along the perimeter were reduced to less than 200 Btuh/

lineal foot, which made possible the option of distributing the heat from the ceiling overhead. The current perimeter induction units weren't sufficient enough to handle the building envelope and there was also a desire to free floor space for more tenant room.

PROJECT SOLUTIONS

The building was undergoing a major renovation when DADANCO met the developer, RCN Associates in Chicago. At that time they had removed the building's exterior walls and glass and had gutted the building down to the concrete.

The developer had concluded that the existing induction units and enclosures would have to be replaced as they were at the end of their useful life, and they had requested a quotation for replacement units.

PROJECT REFERENCES



CREDITS

- Dadanco Rep: Windy City
- Total: 750 ACB50 Active Chilled Beams
- Owner: AEW Capital Management
- Consulting Engineer: Tom Posko Associates, WI
- Mechanical Contractor: AT Mechanical, IL
- General Contractor: Turner Construction, IL



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During inspection of the building it was discovered that there was sufficient ceiling space for ceiling-mounted units which would free floor space by overall eliminating the replacement of induction units. While DADANCO provided a quotation for floor-mounted induction units, they suggested that a ceiling-mounted active chilled beam would be a better solution because:

- Downdraft or cold drafts would be eliminated as the heat losses along the perimeter would lower and would result in optimal thermal comfort for tenants.
- Floor space would be gained and the building's appearance would be improved
- Costs would be avoided as there is no need to purchase new custom enclosures that were needed.
- Fan energy and noise levels would be significantly reduced through the performance of DADANCO's patented nozzle technology and

the lower static pressures and primary airflows required by the active chilled beams.

- Heat losses would be reduced along the windows by using ACB50 active chilled beams mounted at the ceiling above the window with the air being discharged into the room. With this arrangement, the window would be wiped with relatively cooler (i.e.70°F) room air as opposed to warmer (i.e.110°F) air if the window was wiped with the heated air, reducing the temperature difference across the glass.

Dadanco was asked if they could provide an analysis comparing the use of active chilled beams and fan-powered VAV perimeter systems for this project and the summarized energy consumption analysis revealed that the active chilled beam system consumes only 30% of the

fan and pump power for the fan-powered VAV system if one assumes that the average cooling loads will be 70% of the full design cooling load. Additionally, the active chilled beam system could use the existing vertical duct risers while the fan-powered VAV system would have required much larger risers.

Since the renovation completed,

“AN INNOVATIVE, ENERGY-EFFICIENT HVAC SYSTEM CALLED THE “CHILL BEAM SYSTEM” WAS INSTALLED THROUGHOUT THE BUILDING. COMBINED WITH THE INSTALLATION OF LOW-E GLASS, 250 SOUTH WACKER HAS BECOME AN EXEMPLAR OF NEXT GENERATION “GREEN” BUILDING”. -250 SOUTH WACKER.COM

250 South Wacker describes themselves as an "exemplar of the next generation "green" building". With the help of DADANCO's energy efficient Active Chilled Beam system, the building was successful in achieving LEED Silver Certification. 250 South Wacker has since partnered with EPA, U.S. Green Building Council in promoting energy and resource efficiency.

PHOTO DESCRIPTION



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