



Total Performance Oriented Retrofit (TPOR)

Facility: Citigroup Las Colinas Campus, Las Colinas, TX



Building Information

- Year built: 1996, newer building added in 2006
- Total floor area: 660,604 ft²
- Function: office building/data center

System Information

- 33 Single Duct VAV/Single Zone AHU
- Total 646 terminal units with combination of VAV and FPU w/ electrical reheat
- Two central plants with total 3,450 ton installed cooling capacity.
- Combination of Trane Tracer with antique Barber-Coleman controls and pneumatic actuators.

Project Date

- Finished Investment Grade Audit in 2009
- Implementation from October 2010 to July 2011

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- Control upgrade: Demolished all Barber-Coleman and pneumatic controls
- Expand air-side economizer capacity and installed heat exchanger for data center as water-side economizer.
- Installed VFDs chilled water, condenser water pump motors
- Installed Bes-Tech patent flow meters on AHU and central plant chilled water pumps.
- Full scale system re-commissioning and optimization for whole campus HVAC system

Benefits

- Reduced comfort complaints: cold call/hot call drops from 5-6/day to 1-2/week
- Energy savings: Electricity: 4.8M kWh/year (**24.5%**)
- Demand reduction: 474 kW (**18%**)
- Cost savings: \$400,000/year utility cost reduction, another \$35,000/year operating cost
- Simple payback: 4.2 years

