CHASE REALIZES SAVINGS with COMBINED HUMIDIFICATION & LIGHTING SYSTEMS

Relighting for Energy Conservation

THE CHASE MANHATTAN BANK
New Jersey Data Center
Somerset, NJ

FACILITY DESCRIPTION
Data Center & Offices

HOURS OF OPERATION
8,760 per year

TOTAL KWH REDUCTION
837,920 per year

ANNUAL ENERGY SAVINGS
$63,000.00

RETROFIT DESCRIPTION
Ballasts, lamps and humidification units.

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HUMIDIFICATION

Maintaining a relative humidity environment of 40-50% is critical to a data center in order to prevent the discharge of static electricity. Chase Manhattan's New Jersey Data Center undertook a project to retrofit humidifiers located in (24) Liebert computer room air conditioners. Each humidifier used six 1,600 watt, 277 volt, infrared incandescent lamps for a total of 9.6 Kw per unit. The infrared system was retrofitted in the same cabinet, using the existing humidistat, with a highly efficient Humonics ultrasonic humidifier rated at 175 watts. A 9.4 Kw reduction was realized per unit. The total reduction granted by PSE&G, for all units was 213.565 Kw. The peak time for humidification is during the winter period when moisture must be added to heated air. It is estimated that there will be annual reduction of 510,000 Kwh. Ultrasonic humidification works differently from infrared humidification. With the latter, the lamps rely on the heat produced from its inefficient operation to be absorbed by the water. Once the water temperature has reached the boiling point it will begin to emit vapor. Ultrasonic, on the other hand, through the dynamics of high frequency vibration, will form mist that will be disbursed into the air stream and vaporized while absorbing heat from surrounding air in the process.

Benefits from ultrasonic humidification include:

1) Ultrasonic does not contribute any heat to the room since it is not necessary to preheat or maintain a high water temperature.
2) With the infrared system, as much as 50% of the heated water is lost when the automatic flush of the pans takes place. By switching to ultrasonic, it is possible the air conditioner compressors can be down sized due to the elimination of heat from the infrared humidification process.

LIGHTING

The lighting retrofit entailed modifying approximately (750) 15 year old 2x4 fixtures using (3) F40 watt miser lamps along with two Advance Mark I magnetic coil ballasts. These fixtures' components were replaced with GE's low wattage, less than 10% THD, electronic ballasts, Philips F32T8TL841 fluorescent lamps and Harris silver reflector with 94% reflectivity. All fixtures, with few exceptions were able to be configured in a master slave (tandum) configuration. There were a number of 2x2 fixtures utilizing two standard U-bend T12 lamps along with the same Advance ballast indicated above. These, and the small quantity of two lamp, four foot strips and industrial fixtures were converted to electronic ballasts and F32T8 lamps. The approximately (42) recessed high hats, using 75 watt R30 lamps, were retrofitted with R40 15 watt compact fluorescents. Total energy reduction from lighting was 42 Kw. With most of the facility operating t 8,760 annual hours, the lighting retrofit provided savings of 327,920 Kwh. O.K. Electric coordinated efforts to have this combined project accepted by PSE&G. While the lighting portion was very straight forward, in order to obtain the utility subsidy, Energy Solutions had to design a monitoring and verification plan for humidification that would be acceptable to the NJ Board of Public Utilities. Patrick Comunale of Energy Solutions designed a protocol predicated on hours of operation, which required that the existing units were pre-monitored to establish arun time (RT) baseline. A BMI measurement was taken to establish the pre and post wattage load. Using this date along with the RT of each ultrasonic unit, a sequence of formulae was set up to calculate the Kwh reduction.

THE BOTTOM LINE

The combined Kwh reduction for this project is 837,920. With the facilities average Kwh rate of $0.75, the monetary saving per year will be $63,000.00.