



2021 CASE STUDY

HERNDON DATA CENTER UPGRADE

This client in Herndon, VA sought to improve the energy efficiency for their data center. Enabled Energy proposed a solution package that would provide increased efficiency, energy savings, and lower maintenance costs.

ENABLED ENERGY'S SOLUTION

Retrofit Existing CRAC with EC Fan and Controllers

The inefficient fixed speed induction motor fans were replaced on 10 units with variable speed electronically commutated (EC) fans. The results were increased efficiency and energy savings by significantly reducing the required maintenance, providing built-in fan redundancy, and extending the life of the air handler by several years. The existing CRAH controllers were replaced with Alerton controllers.

Installation of Airflow Containment

Containment was installed across the data center white space floor to isolate the supply air which was previously mixed together with hot exhaust air, causing inefficient cooling. This allowed for lower cooling unit fan speeds on the retrofitted units, the opportunity to increase chilled water temperatures and thereby improving the opportunity for "free cooling."

Installation of Return Plenums

To increase the efficiency of airflow, CRAC return hoods were installed on all 10 units.

Recommissioning (RCx)

The air distribution systems was recommissioned to ensure the air supply matched the needs of the IT equipment. The CRACs fans were reduced to an average of 65% speed for optimum energy conservation while providing satisfactory and reliable cooling.

THE RESULTS

The estimated **average savings for the project is 46kW, or 405,120 kWh annually**. This equates to an **annual savings of \$44,563** at a utility rate of \$0.11/kWh. Given the estimated savings which do not include any rebate incentives, the total **project payback is 2.11 years**.

Enabled Energy performed this project over a 3-week period in March 2021. Rosenberg provided the EC Fans for the project, Trax Industries provided the containment.

PROJECT SUMMARY

- ✓ SCOPE:
Retrofit 10 downflow CRACs with new ECM fans and controls; Install airflow containment and return plenum
- ✓ EST. ANNUAL ENERGY SAVINGS:
\$44,563
- ✓ EST. PROJECT PAYBACK:
2.11 years
- ✓ EST. GREENHOUSE GAS REDUCTION:
287 metric tons*

* Estimated greenhouse gas emissions reduction calculated with www.epa.gov/energy/greenhouse-gas-equivalencies-calculator