

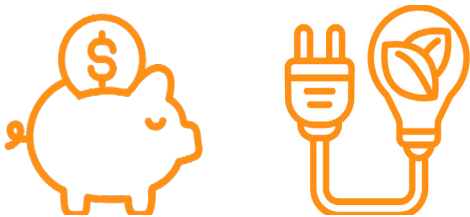


UTILIZING KAIZEN'S CUSTOM RULE CAPABILITY TO OPTIMIZE AIRFLOW CONTROL AROUND UNIVERSITY BUILDINGS

CLIENT OVERVIEW

A private research university in New York, USA was looking for ways to optimize the performance of 3 of their buildings. The client hired CopperTree to perform Fault Detection and Diagnosis (FDD) in a hope to reduce energy consumption and to improve maintenance approaches.

BENEFITS



After only 6 months of FDD, the following results were achieved:

- Energy consumption in June 2022 compared to November 2022 decreased by 16,345 kWh.
- A total annual savings of \$50,240
- The implementation of custom airflow rules to cater specifically to the client's needs meant they can be more effective in operating their facilities in the future.



THE PROJECT

To perform our analysis, a connector was installed to initiate data flow into Kaizen from the existing building systems. Once points of interest were discovered, data was grouped and tagged with a robust ontology. Analysis was then performed on the data, then insights and reports were generated based on the findings.

THE CHALLENGE

Some of the notable issues found were the following:

- Chilled water system supply temperature and differential pressure were found out of setpoint. Chilled water pump speeds were excessively changing.
- Heat wheel was running at full speed with minimal energy transfer
- Upon further investigation, it was also found that heating occurs in some VAVs when the airflow is at its minimum setting, wasting reheat energy.

THE SOLUTION

CopperTree's team discovered that the chilled water system supply temperature and differential pressure were out of setpoint after a reset in August that was unknown to the client. Custom rules were suggested to monitor the airflow activity on a continuous basis. The rule monitors when the airflow is equal to the max or min setpoint and communicates how much time each unit is spending at these extremes.