

Research University saves \$787,547 in annual energy costs while improving comfort, sustainability and capital asset reliability.

Overview

This university (RU)* is composed of more than a dozen academic schools with a goal to preserve and spread information. The campus includes labs, libraries, museums, and administrative offices. More than ten thousands students are currently enrolled. In an effort to improve sustainability, focus is placed on innovation to improve operational efficiency. RU plans to continually advance its environmentally friendly mission while expanding their campus.

**Due to confidentiality agreements, we are not able to provide the client name. We will refer to the firm as RU throughout this case study.*

The Challenge

RU has a goal to reduce its greenhouse gas emissions by forty percent below 2005 levels by 2020. RU was interested in implementing energy conservation measures, installing new technologies, using cleaner fuels, encouraging behavioral changes, and adhering to sustainable construction and renovation standards.

Cimetrics' Solution

Cimetrics was selected to provide its Analytika Pro solution for nine buildings at RU's campus in the Northeastern United States. The buildings included research laboratories, studio art space, classrooms, and library facilities. Cimetrics collaborated with RU and their building automation system provider to connect to and collect sensor and actuator data from over 11,425 physical points. Data was collected every 15 minutes, 24 hours a day, 365 days a year, for a total of approximately 1.1 million data samples per day from the following systems: 3 boilers, 51 air handling units, 201 laboratory fume hoods, 206 zones, 41 pumps and motors, and other miscellaneous equipment.

Over 900 Analytika software algorithms then analyzed the data to identify opportunities to reduce energy, environmental,

maintenance, operations and regulatory costs. Analytika also uncovered potential equipment problems, opportunities for profitable retrofit projects, occupant comfort improvement, and operational uptime improvements.

Experienced Cimetrics engineers leveraged Analytika software to identify opportunities, determine root cause and calculate annual impact. Actionable recommendations were documented and provided to the client both through online and offline channels. Cimetrics' role didn't end at recommendations. Cimetrics engineers engaged with the client team on a regular basis to help answer questions, to coordinate implementation and to provide regular feedback on progress towards targeted results. This business process helped achieve over 85% implementation of recommended actions.

Results achieved

- Energy savings financial summary
 - Energy savings: \$788,000
 - Simple payback: 0.23 years
 - Net present value: \$1,364,482
- Other operational benefits
 - Implementation rate of recommendations: 85%
 - Each closed fume hood saves 50,000 lbs of CO₂ in a year or 60% on energy.
 - Artwork maintained under tight space condition requirements such as temperature and relative humidity.
 - Resource management: Utilized impact analysis to prioritize workload for internal maintenance and contract controls personnel to maximize progress towards reduced emissions goals.
 - Commissioning: Warranty work on heat recovery systems
 - Reduction of energy intensity

Examples Of Implemented Opportunities

Fume hood issue

Sashes were identified open more hours than necessary. An open fume hood wastes over \$500 per month.

Fume Hood	Average Sash Position (% open)	Average Discharge Airflow (CFM)
FH-352	50	766
FH-350	71	1,423
FH-154	0	594
FH-152	33	934
FH-172	75	1,896
FH-156	63	1,647
FH-078	17	466
FH-098	33	741
FH-354	29	541
FH-150	75	620
FH-308	54	1,420

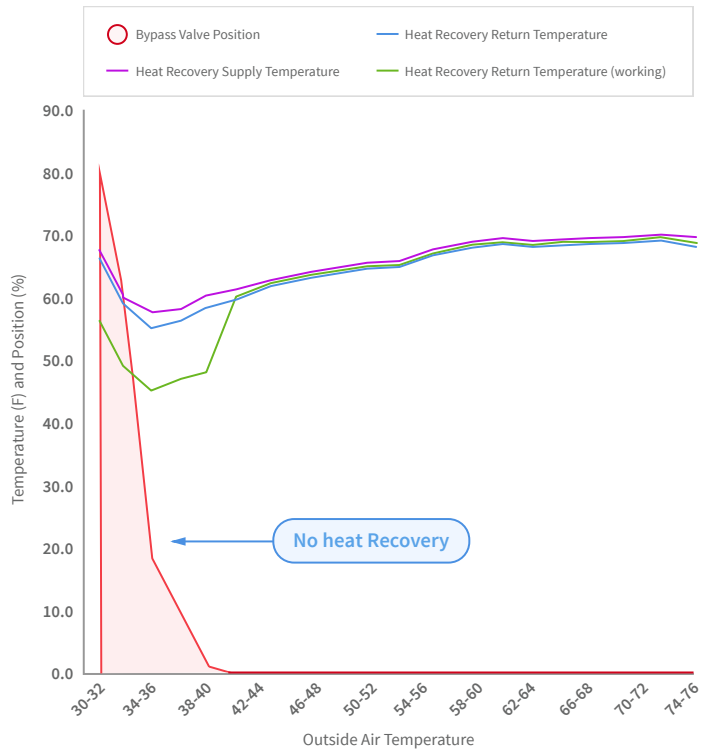
Solution

Implemented a “shut the sash” program with continuous monitoring. By shutting the sashes, significant amounts of electricity, heating, and cooling were saved in addition to thousands of pounds of CO2.

Energy savings for solution: **\$19,806**

Heat recovery issue

The heat recovery was not working below an OAT of 38 ° F. No heat recovery occurred when it would provide the most value; this resulted in over \$1,000 per day in additional steam consumption. In addition, without heat recovery, the AHU was barely able to maintain DAT setpoint.



Solution

To resolve this issue, the sequence of operations in the building automation system was reprogrammed to provide maximum heat recovery at all appropriate outside air temperatures. This reduced overall load on the heating system.

Energy savings for solution: **\$109,612**

Learn how the powerful Analytika technology can translate your system data into meaningful, actionable insight today!

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