Global Pharmaceutical saves $233,000 in annual energy costs while improving sustainability

Overview

This Global Pharmaceutical company (GP)* is a leader in the discovery and the advancement in the treatment of some of the most difficult to treat diseases. GP employs more than 20,000 people globally, and its products are sold in more than 100 countries.

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

The Challenge

GP has set long-term emissions reduction targets and expects to meet the goals through short term and long-term energy efficiency projects and operational improvements. GP also expects to incorporate energy efficient design into new buildings and renovations, and to implement renewable energy projects.

GP's portfolio of buildings includes energy intensive research and development buildings, administrative offices, central plants, manufacturing, and distribution facilities across the globe.

GP's goals include efficiency and sustainability through a 20% reduction of CO_2 emissions by 2020. To this end, GP was interested in implementing targeted energy conservation measures and technologies at one of its campuses.

Results Achieved

- Financial summary
  - Total energy savings: $233,000 (annual)
  - Simple payback: 0.4 years
  - Net present value: $561,000
- Operational benefits
  - Sustainability and environmental stewardship: Achieved 1,700+ metric tons in annual CO_2 emissions reduction, which is the equivalent of taking 358 cars off the road.
  - Predictive maintenance: Initiated inspection and reprogramming of equipment prior to failure.
  - Vendor management: Verified optimum sequence of operations that were programmed into the building automation system (BAS) by outsourced facilities management vendors, and maintained 24/7 operations.

Cimetrics' Solution

Cimetrics was selected to provide its Analytika Pro solution for 5 buildings comprising over 860,000 square feet including R&D and office buildings. Cimetrics collaborated with Siemens, GP's building automation system provider, to connect to and collect sensor and actuator data from over 7,900 physical points. Data was collected every 15 minutes, 24 hours a day, 365 days a year, totaling more than 750,000 data samples per day. The following systems were monitored: 44 hot water and chilled water distribution pumps, 4 boilers, 8 heat exchangers, 51 fume hoods, 42 air handling units, 4 heat recovery units, over 500 terminal units and exhaust fans.

Over 1,000 Analytika software algorithms then analyzed the data to identify opportunities to reduce energy consumption, improve comfort and reduce operations and maintenance costs. Analytika also uncovered potential equipment problems, and provided opportunities for profitable retrofit projects.

Experienced Cimetrics engineers leveraged Analytika software to identify opportunities, determine root cause, and calculate annual savings impact. Actionable recommendations were documented and provided to the client both through online and offline channels. Cimetrics' role did not end with providing recommendations; Cimetrics engineers engaged with the client team on a regular basis to help answer questions, coordinate implementation, and provide regular feedback on progress.

Example of fault detection and diagnostics: Heat Recovery Performance Verification

Four (4) large air handling units (AHUs) in one of the buildings have heat recovery; however, only two (2) were operating efficiently.

The heat recovery system supplies a 50% glycol solution to the four (4) heat recovery coils in AHU-1A, AHU-1B, AHU-1C, and AHU-1D. The system utilizes a single 100 HP constant flow pump which operates when the outside air temperature decreases below 54°F and is disabled when the outside air temperature rises above 55°F. The exhaust side of the heat recovery system is comprised of nine (9) coils located in the fume exhaust system.

The heat recovery was operating as follows:

AHU-1A: There was less heat recovery occurring. The heat recovery return water temperature was higher than in AHU-1B and AHU-1C.

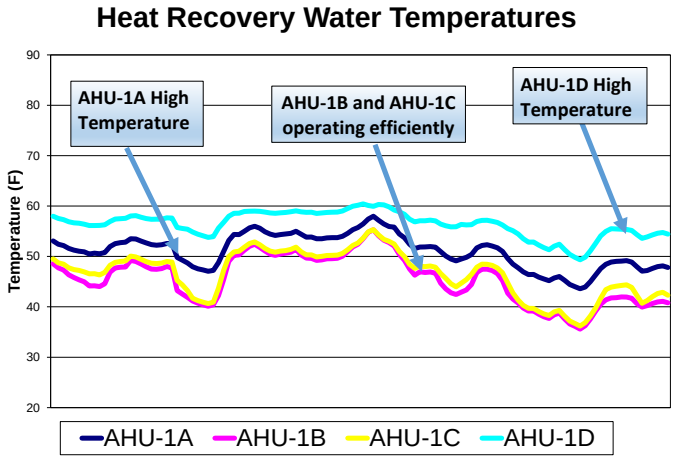
AHU-1B: The heat recovery system was operating efficiently.

AHU-1C: The heat recovery system was operating efficiently.

AHU-1D: There was less heat recovery occurring. The heat recovery return water temperature was higher than in AHU-1A, AHU-1B, and AHU-1C.

This issue was not detected on-site because there was partial heat recovery occurring from the exhaust side. In addition, the AHUs were able to maintain discharge temperature utilizing the preheat coils so there were no low temperature alarms.

However, the issue was identified with Analytika. The root cause of the fault was that the heat recovery valves were not opening completely and the water was bypassing the coils.



Solution

Cimetrics worked with GP staff and their controls vendor to fix the valves that were not opening completely, and to maximize heat recovery for all four (4) AHUs.

Annual energy savings achieved: $34,852

Annual carbon emissions reduction: 605 metric tons

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