AMERICAN FAMILY INSURANCE UPGRADES DATA CENTER COOLING

A Vertiv™ Case Study

VERTIV.

AMERICAN FAMILY INSURANCE®

All your protection under one roof®

ABOUT THE COMPANY

For more than 80 years, American Family Insurance has given its customers peace of mind by making their insurance experience easy and convenient. Located throughout 19 operating states, American Family's independent contractor agents serve as local, expert and trusted advisors to their customers.

www.amfam.com

"This upgrade improved our data center efficiency, freed up stranded capacity and improved the manageability and visibility of our equipment"

Sean Hyland,
American Family Insurance,
Facilities Program Administrator.

Background

American Family Insurance was founded in Madison, WI in 1927 and is now the nation's third largest mutual insurance company. The company operates in 19 states and had $88.3 billion life insurance in force in 2012. The company operates mirrored data centers at two locations in the Madison, WI area. These data centers are cooled by chilled water loops with redundant Computer Room Air Conditioners (CRACs) to eliminate single points of failure. American Family Insurance has a partnership with Vertiv and engaged Vertiv's local business partner, CDP, Inc., to put together a plan to upgrade its cooling systems for energy efficiency and to estimate the attainable savings.

Case Summary

Location: Madison, WI

Vertiv Solutions:

- Liebert® Deluxe System 3™ cooling units, with Level 0, 10 and Advanced Microprocessor Controls
- Liebert CRV™ row-based cooling units
- Liebert Challenger™ 3000 cooling units
- Liebert Series 600, 610, and NXL UPS systems
- Liebert STS2™ static transfer switches
- Liebert PPC™ power distribution systems
- Liebert SiteLink™ Monitoring

New Products/Services from Vertiv

- New Liebert VSDs (variable speed drives) for fans for Deluxe System / 3 cooling units
- Liebert iCOM™ controls with Liebert IntelliSlot for Deluxe System / 3 cooling units

Challenges: American Family Insurance's leaders wanted to reduce energy usage in their two Madison, WI area data centers – in particular from the cooling systems. The data centers had Liebert Deluxe System /3 chilled water cooling units in operation, with redundant units for backup. All of the cooling units had single-speed fans that ran continuously. While physical space and uptime were not issues, the company wanted to find ways to reduce the energy used to cool these data centers without introducing new points of failure or taking down the data center during the upgrade.

Critical Need: Implement cooling system cost saving measures without compromising uptime, both during the implementation process and upon completion.

AMERICAN FAMILY INSURANCE UPGRADES DATA CENTER COOLING

Results

- Upgrades reduced the overall energy consumption of the CRAC fans by 74%.
- Standardized all the Liebert® Deluxe System/3 units on the same control board version, the Liebert iCOM™ unit controls, for enhanced efficiency, protection and insight, including simpler maintenance and monitoring
- Liebert iCOM unit controls automatically put the CRACs not needed to maintain the temperature in the rooms into standby on a rotation.
- Upgraded the monitoring capabilities of the CRACs at the Building Management System level for improved system visibility.
- Achieved a Return on Investment of 2.02 years, including the incentive received by the local utility program, Focus on Energy.
- Focus on Energy confirmed a significant savings for the two locations and worked with American Family Insurance during the project.

The energy readings show a decrease in energy use by 74% and produce a calculated ROI of 2.02 years - much lower than the original estimate of 2.68 years.

The Situation

In order to optimize business operating costs, American Family Insurance wanted to reduce energy consumption in the two Madison-area data centers. The fixed speed fans of the data center cooling systems were identified as a large energy consumer, and the CRAC units were running with older and varied controls. In addition, each data center had cooling redundancy built-in to minimize the risk of any downtime, but, redundancy comes at a price and the company wanted to ensure that they were operating optimally for efficiency.

Each data center is segregated into rooms by function. All of these rooms use raised floors for air delivery and most of these rooms have CRACs along the perimeter for cooling. Each room had at least one extra CRAC in continuous operation for redundancy. When American Family Insurance learned of Vertiv™'s Liebert variable speed drive (VSD) and Liebert iCOM control upgrade from the local Vertiv rep, CDP, Inc., the insurance company requested information and a payback analysis.

The Solution

With American Family Insurance's approval, Nathan Hansen, the representative with Wisconsin-based CDP, Inc., took the lead and worked with the local energy advisor from the Focus on Energy program to estimate the energy savings attainable by installing VSDs and Liebert® iCOM™ controls. Nathan visited the sites, examined each of the Liebert Deluxe System™/3 units with an expert from the American Family Insurance facilities team, and noted their operational status and approximate cooling capacity. He then estimated which CRACs could be put in standby and what the fan speed would be for the operational CRACs.

The energy advisor from Focus on Energy reviewed these estimations and came up with a projected cost savings and a monetary incentive to perform this work. The estimated ROI was 2.68 years. American Family Insurance agreed that not only was this an environmentally responsible project to pursue, but it also made financial sense.

The next step was to come up with a project plan that avoided any business interruption and minimized inconvenience to the staff. The work on each Liebert Deluxe System/3 involved installing a VSD drive package and new motor, replacing most of the low voltage section, and wiring in a new Liebert® iCOM™ control board. CDP agreed to make sure that all CRACs were operational prior to leaving each day, even if the CRAC was only a standby unit. Hansen served as the project manager and Dustin Romans, one of CDP's in-house technicians, did the installation and programming, along with an electrical subcontractor that had done other work for American Family Insurance.

As the VSDs and Liebert iCOM controls were installed, the Liebert Deluxe System/3™ units in each room were networked together. This allowed CRACs to be put in standby if they were not needed to maintain room setpoint. They were set up on a weekly rotation schedule to maintain even use.

Prior to the start of the project, the electrical contractor took point-in-time energy readings for all the Liebert Deluxe System/3 units. Since each CRAC had single-speed fans, used chilled water as the cooling source, and didn't have humidifiers or electric reheats, the power draw was primarily from the fan, and thus consistent. These energy readings were used as a baseline measurement to compare to the energy usage of the upgraded systems.

The Results

The majority of the Liebert® Deluxe System/3 units are now either operating the fans at less than 100% or simply in standby. The electrical contractor took energy readings over at least a 24-hour period to account for the changing fan speed made possible by the VSDs and Liebert iCOM controls, and to ensure that everyday business demand fluctuations were captured. The energy readings show a decrease in energy use by 74% and produce a calculated ROI of 2.02 years - much lower than the original estimate of 2.68 years.

Prior to this project, the systems used different vintage controllers, some with limited reporting. The facilities teams can now monitor more parameters via the Liebert iCOM controls, and only need to be familiar with the operation of those controls. They also have standardized on parts and need to stock a smaller variety for normal maintenance and repairs. And as American Family Insurance's needs change in the data centers, the Liebert iCOM controls enable the systems to adjust accordingly, and these changes can be easily monitored.

"This upgrade improved our data center efficiency, freed up stranded capacity and improved the manageability and visibility of our equipment," stated Sean Hyland, Facilities Program Administrator for American Family Insurance.

After the initial realized savings, American Family Insurance asked the Liebert team to upgrade additional Liebert Deluxe System/3 units in the facilities that were unrelated to the data center, allowing for even more energy savings for the business.

VertivCo.com | **Vertiv Headquarters,** 1050 Dearborn Drive, Columbus, OH, 43085, USA