Success Story: Fred Hutchinson Cancer Research Center

Markets Served
Data Center & IT

Only 9395 boasts efficiency to meet center's stringent standards

Location:
Seattle, Wash.

Segment:
Medical Research

Problem:
Only a UPS with the highest possible efficiency rating could take its place among the equipment installed in a brand new data center constructed around energy conservation.

Solution:
Power Xpert™ 9395, ESS, eNotify, Cellwatch

Results:
Ultimate reliability and efficiency has been achieved through the deployment of the 9395 UPS and ESS.

Background

At Fred Hutchinson Cancer Research Center, scientists have the freedom to conduct creative research that leads to lifesaving discoveries. Fred Hutch's world-renowned team has made significant breakthroughs related to cancer, HIV/AIDS and other diseases, with its pioneering research credited for saving hundreds of thousands of lives worldwide.

Fred Hutch has been at the forefront of disease research since its founding in 1975. Their groundbreaking accomplishments include pioneering bone marrow transplantation as a cure for leukemia and other blood cancers; laying the groundwork for a vaccine that blocks most cervical cancers; spearheading immunotherapies against cancer; and helping to reduce the incidence of breast cancer by shedding light on the health effects of combination hormone replacement therapy.

Challenge

With the construction of a brand new, state-of-the-art data center that opened in 2012, Fred Hutchinson Cancer Research Center required a very special uninterruptible power system (UPS). Long recognized for its forward-thinking energy conservation strategies, the organization had gone to great lengths to create a highly flexible and reliable data center with unparalleled energy performance.

Only an exceptionally efficient UPS could occupy space within the unique data center, which leverages as many energy conservation measures as possible without compromising the prescribed design parameters of an ASHRAE Class 1 equipment environment. The facility's cutting-edge measures include more than 90 percent of cooling provided by an air economizer cycle or "free cooling;" secondary cooling delivered via a direct evaporative cooling approach; and an entire design featuring hot aisle pods in which dedicated pod and server fans draw cool air in from the cold aisle to cool the server racks.

"We were trying to set a new standard in energy efficiency, and we wanted an energy-efficient UPS that gave us reliability without compromising efficiency," explains Robert Cowan, director of facilities.

Indeed, high reliability was an equally essential prerequisite considering the mission-critical equipment that the new UPS would be tasked with protecting, including numerous scientific research and enterprise servers. "If the data center failed, Fred Hutch would come to a screeching halt," Cowan acknowledges.

"We have a lot of international collaboration going on between scientists," adds Todd Coburn, electrical and critical system planner for Fred Hutch. "If that is interrupted, it could be very detrimental."

The organization also sought redundancy and scalability in a new solution.

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Solution

Cowan and Coburn acknowledge that when they first started investigating power protection solutions for the new data center, neither was very familiar with the Eaton® brand of UPS. But after researching the options capable of meeting their scope of requirements, a clear frontrunner was identified: the Power Xpert 9395 UPS.

Deployed in Fred Hutchinson Cancer Research Center's data center in May 2012, the state-of-the-art 9395 raises the bar in three-phase power protection technology. Delivering an unprecedented level of power performance, reliability and energy savings, the unit offers a wide scope of superior customer-driven benefits unmatched by competitive offerings.

To begin, the innovative design offers the industry's highest efficiency rating of greater than 94 percent, which slashes utility costs, extends component life and results in cooler operating conditions. But to further bolster the unit's efficiency, Fred Hutch opted to deploy Eaton's Energy Saver System (ESS), which allows the 9395 to attain an unrivaled efficiency level of greater than 99 percent, making it the only technology on the market capable of yielding such results.

"The whole goal of this data center was to be energy efficient, so obviously the UPS played a really big role in that," Coburn says.

With ESS, the 9395 intelligently adapts to utility power conditions while supplying clean power to the connected equipment. Even more, because UPS's using ESS maintain 99 percent efficiency even when lightly loaded, the technology can deliver gains of up to 15 percentage points in efficiency over traditional models in the typical operating range.

In fact, the energy savings from Eaton's ESS typically recovers 100 percent of the cost of the UPS cost over just a three- to five-year time period. At a 250 kW load, for example, the savings represents $4,000 per year per point of efficiency gain.

While the team at Fred Hutchinson Cancer Research Center has not tallied any exact numbers, "We can see that the UPS is operating very efficiently with a very high power factor around .98," Coburn reveals. "And we can also see that even though the UPS is lightly loaded, it is losing less than half of a kilowatt through conversion, as well as generating much less heat than other models. We're using free cooling —not even mechanical cooling — to keep it cool."

The 9395 also answered the data center's call for high reliability with its ability to be configured with inherent redundantly. Traditional UPS manufacturers, on the other hand, cannot deliver this additional availability without adding a more costly second UPS module.

"One of the beauties of the data center is that it helps us to attract world-class scientists to our campus," Cowan says. "If we couldn't provide a reliable, redundant, responsive data center, then we would jeopardize our ability to attract that caliber of researcher."

In addition to the reliability and efficiency afforded by the 9395, Fred Hutch values the unit's multi-module, scalable architecture, which can adapt to future changes in load demands and new requirements for high reliability without requiring the purchase of an additional UPS. "The 9395 being modular really helped," Coburn emphasizes, noting that the data center was intentionally constructed to allow for future growth. "Over the next five years, we anticipate filling it up, so we really appreciate the scalability of the UPS."

Another boon for Fred Hutchinson Cancer Research Center was the 9395's small footprint, which is up to 60 percent less than competitive units. Unlike some larger and heavier systems, there is no need to dismantle the 9395 in order to fit it on elevators or through doorways, which can cause significant delays while increasing costs. Even more impressive, the 9395 packs a redundant design into the same footprint as a traditional non-redundant UPS.

"We didn't have a lot of extra room, so the UPS definitely had to fit within a certain parameter," Coburn says.

To ensure its UPS is performing optimally, Fred Hutchinson Cancer Research Center relies on Eaton's eNotify remote monitoring service, which provides real-time monitoring of more than 100 UPS and battery alarms. eNotify delivers monthly reports detailing the status of the 9395, including information on voltages, loads, temperature and humidity. The report also summarizes the top 10 performance and environmental parameters, battery events, availability percentage, and comparative status against recommended specification. Even more, if any type of power anomaly is detected, the data center would be immediately notified via email.

Furthermore, with eNotify, Eaton service technicians remotely monitor both the UPS and batteries at all times, enabling many issues to be resolved remotely – often before a customer even knows a potential problem exists. If an issue does arise, a technician is automatically dispatched to the site.

"eNotify has caught things in a couple of instances," Coburn reveals. "It's done a good job."

To monitor the ongoing health of its UPS batteries, the data center uses Eaton's Cellwatch technology, which combines a very light test load with superior electrical noise filtering techniques to identify potential problems before they affect the system and enabling timely battery replacement or other preventive action.

"I also like the ability to go in over the web and see how the unit is performing," Cowan says. "That's a very nice feature."

Results

Fred Hutchinson Cancer Research Center has confidence that the 9395 will perform as expected. A couple of months after installing the unit, the facility experienced an hour-long outage. "The UPS did a great job of holding the load," Coburn confirms.

With the 9395 in place, Fred Hutchinson Cancer Research Center is now able to:

- Complement its energy conservation-focused data center with the most highly efficient UPS available
- Gain exceptional reliability and availability for its critical equipment
- Easily expand its power protection solution with the unit's scalability
- Achieve added reliability with the unit's inherent redundancy
- Monitor the ongoing health and performance of the UPS and its batteries with Eaton eNotify and Cellwatch

Learn how the Power Xpert 9395 can help you at **Eaton.com/9395**.

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