
AT A GLANCE

Tech Vault Inc
South Burlington, VT

PROJECT

Next Generation Data Center

**USGBC
PROJECT CERTIFICATION**

LEED Gold

PUE

1.4

“Leading Edge Design Group’s extensive experience was instrumental to our success in all aspects of our project – from the initial development and design strategy where many months of tireless efforts were put forth by their team prior to ground breaking, to the unique design concept and the execution of our LEED Gold Certification. Their leadership and innovative ideas were critical in helping us create a next generation, world class data center where energy efficiency was of paramount importance. Simply stated, Leading Edge Design is a great group of people that know what they are doing.”

— Steve Loyer, President
Tech Vault Inc

Tech Vault’s Energy-Efficient Data Center & Colocation Facility

Background

There has been a longstanding need for high-availability commercial data center space in the Champlain Valley of Vermont, an area that is separated from major metropolitan areas yet conveniently accessible by interstate or air. As Tech Vault Inc sought to fulfill this void, they realized the significant challenges inherent in building a next-generation colocation facility in a challenging economic market. As they struggled to balance the appropriate level of investment in redundancy, efficiency, security, and capacity, Tech Vault engaged Leading Edge Design Group to help guide the development of this vision. Collectively, they developed a goal to build the most unique data center in the Northeast and an aggressive strategy to open the doors in less than a year.

Challenge

Given their intimate knowledge of the business climate in Vermont, Tech Vault knew that their data center had to be a distinct change from conventional colocation facilities that are overbuilt and inefficient. Although demand for their services pressed them to act expeditiously, they looked to Leading Edge Design Group to help them strike the critical balance between availability and energy efficiency. “We didn’t want to simply *talk* about energy-efficiency,” said Steve Loyer, President of Tech Vault Inc, “we wanted to prove our commitment to sustainability through the infrastructures and systems that we installed and operated in our data center and we need Leading Edge Design Group to determine how we could do this without sacrificing reliability or limiting capacity.”



LEADING EDGE DESIGN GROUP

"We were pleased to partner with Leading Edge Design Group on this project. They inspired a vision of how energy-efficient design can lay the foundation of a data center without sacrificing critical needs for reliability and performance. The result—Tech Vault—delivers a world-class facility with drastically reduced operating costs and environmental impacts."

— Tim Perrin
Efficiency Vermont



Project

Given the rapid evolution of server, storage, and networking infrastructure, Leading Edge Design Group knew they were tasked with not only designing a data center that was equally reliable and energy efficient, but moreover one that was able to dynamically adapt to varying densities and new technologies. In addition, they recognized that security and network infrastructure could not be sacrificed. Amidst all these challenges, Leading Edge Design Group was convinced the design could attain a LEED Gold Certification and urged Tech Vault to pursue this rare achievement in the data center market.

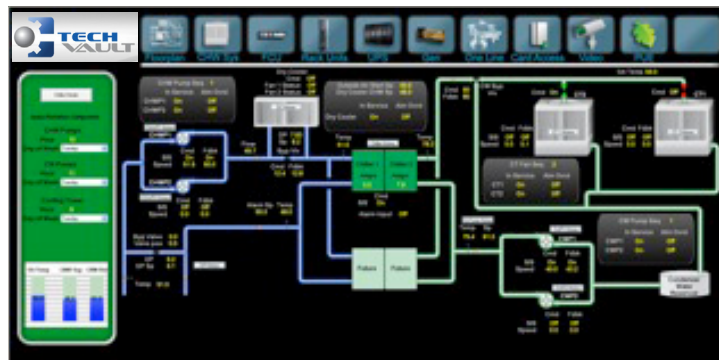
To take advantage of the geographic location of the facility, the design includes a concurrently maintainable chilled water plant with integrated water-side economizers that yield extensive kilowatt hours savings in the temperate Vermont environment. Inside the data center, the equipment racks are supported by In Row chilled water cooling units with enclosed hot aisle containment, ensuring maximum efficiency and that the cooling output of the system matches only what is actually required by the IT loads.

Efficiency was leveraged equally in the electrical design with power being delivered to the IT equipment at 415V instead of the customary 208V systems. This high voltage distribution architecture eliminated an entire layer of electrical transformation, thereby removing heat and inefficiencies found in standard data center electrical systems and freeing up critical data center whitespace for additional IT equipment. The distribution is supported by an industry-leading modular UPS system that is 96% at low load, accommodating efficiency from the facility's opening day while providing scalability to easily increase capacity as customer demand increases.

Real-Time Monitoring & Efficiency

To highlight their commitment to and investment in energy efficiency while providing the visibility and manageability required in a next-generation data center, Tech Vault's facility includes the design of a completely integrated data center monitoring platform. This unique system, run through their Network Operations Center, integrates the management, alarming, and environmental monitoring of all critical data center systems – chilled water plant to electrical distribution, physical security and surveillance to emergency power.

Instead of making assumptions about their electrical consumption and efficiency statistics, Tech Vault implemented branch circuit monitoring throughout their entire facility, allowing them to track real-time energy consumption on a microscopic level and continually modify their systems to maximize energy efficiency. In addition, Tech Vault monitors their Power Usage Effectiveness (PUE) real-time, providing empowering data as to the true impact of infrastructure changes on their efficiency and the ability to benchmark their efficiency against other industry leaders.



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About

Leading Edge Design Group is a leading national provider of energy optimization services that delivers significant energy savings to the public and private marketplaces through efficient data center designs and emerging LED lighting and wireless lighting control technologies. Founded in 2007 with the goal of pursuing, promoting, and providing the finest energy optimization solutions available, we help our customers minimize the environmental impact of their businesses while improving operational reliability and reducing costs. Leading Edge Design Group is dedicated to encouraging, challenging, and contributing to energy industry innovation with an ongoing commitment to our community and our environment. Visit us at www.ledesigngroup.com and connect with us on Twitter @ledesigngroup.