

Problem:

Virtua Health needed a reliable backup power solution to help keep their data center up and running.

Solution:

To assure the highest level of power backup and save on space, weight and UPS battery maintenance costs, Chas Thawley, Virtua's Network Services Manager chose VYCON's VDC clean energy flywheel systems to provide continuous ride-through power.

"This technology will save Virtua money by providing clean, reliable power for 15 to 20 years compared to the typical battery-driven technology life cycle of three to four years."

- Chas Thawley



**Clean Energy Storage
Saves Virtua Health
Money by Providing
Clean Reliable Power**

Virtua Health's Data Center Depends on VYCON Flywheel Backup System

Virtua Health, headquartered in Marlton, NJ, knows firsthand the damaging effects of power outages. Virtua employs 7,450 clinical and administrative personnel and 2,100 physicians that serve as medical staff members. Virtua is one of the first Six Sigma organizations in healthcare and has been honored twice with the New Jersey Governor's Award for Clinical Excellence and recognized with the Leadership Award for Outstanding Achievement by Voluntary Hospitals of America.

With excellence in healthcare as its highest priority, Virtua doesn't take any chances with losing power – especially in its data center. Virtua's facility in Gibbsboro, NJ, is equipped with UPSs and VYCON's (VDC) Direct Connect flywheel system to protect its servers against any kind of power interruptions.

Powering Through Storms

In the spring of 2007, the Northeast experienced a slate of power outages due to storms. Over two and half-hours, the VDC system discharged eight times, providing continuous ride-through power in lieu of using the UPS batteries. "We were relieved," said Chas Thawley, Virtua's network services manager. Every time the UPS batteries are used (cycled), even for a split second, the more likely it is that they will fail the next time they are called upon. The flywheel mitigates the constant cycling of the batteries, taking the short duration hits and in Virtua's case – prolonging the life of the batteries.

The cause was a typical thunderstorm, something that actually happens quite frequently in the area. The flywheel compensated for the sags in the incoming power and provided backup during the events.

Benefits of VYCON's Clean Energy Storage Solution:

- 20x reliability vs. VRLA batteries
- High-power density, small footprint
- Parallel capability that allows for future expansion
- Fast recharge (under 150 seconds)
- Full monitoring for predictive performance
- No hazmat requirements
- Low maintenance
- 20-year useful life
- Simple installation
- N+1 redundancy options
- Quiet operation
- Wide temperature tolerance
- High efficiency

The flywheel responded instantly, holding the power up until the facility's generator started. "An unexpected power outage can cause a number of issues and problems, but VYCON's flywheel system kicked in just as expected and maintained the power for our systems," explained Thawley. "We are satisfied with how the situation played out and have total confidence in our flywheel UPS solution."

Once the generator starts, it provides power to keep operations online. Virtua's engine-generators are designed to provide power for nearly an hour after the power is restored, just in case the power from the grid continues to be unstable. Virtua's power protection infrastructure meets the NFPA 99 regulations for Emergency Power Systems that stipulate that gen-sets must be able to assume the load within 10 seconds.

The latest flywheel designs sold by world leaders in three-phase UPS systems take advantage of higher speeds and full magnetic levitation, packing more green energy storage into a much smaller footprint and removing any kind of bearing maintenance requirements. Over a 20-year design lifespan, cost savings from a hazmat-free flywheel versus a five-minute valve regulated lead-acid (VRLA) battery bank are in the range of \$100,000 to \$200,000 per flywheel deployed.

Return on Investment

"This technology will save Virtua money by providing clean, reliable power for 15 to 20 years compared to the typical battery-driven technology life cycle of three to four years," said Thawley.

Throughout the U.S. and around the world, hospitals and other critical applications are hardening their battery strings or eliminating them altogether, by applying on-demand flywheel energy storage to their UPS systems. While the use of batteries for energy storage won't entirely go away, the flywheel gives data center and facility managers a green choice in protecting their critical operations.

About the VDC Flywheel System

VYCON's VDC and VDC-XE Direct Connect UPS backup systems bring unprecedented power capacity for instantaneous and reliable backup power for today's mission-critical applications. Compatible with most major brands of

three-phase UPSs, the systems interface with the DC bus of the UPS just like a bank of batteries, receiving charging current from the UPS and providing DC current to the UPS inverter during discharge.



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