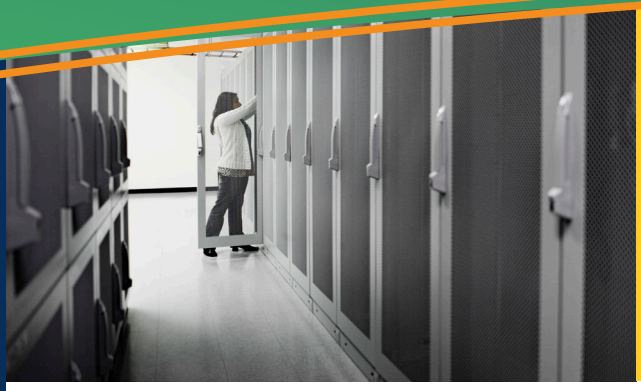
Data Centers

Success Story



EasyStreet deploys VYCON's award-winning flywheel backup power protection.

Problem:

Finding a reliable power backup system that was energy efficient, green and had low maintenance.

Solution:

EasyStreet turns to VYCON's VDC-XE flywheel system to provide reliable and cost-effective power backup for its data center.

"'The end stage is three UPSs with eighteen flywheels total. "Reliability, sustainability and having a low carbon footprint are part of the ethos of our company. This vision with actual energy savings allows us to save money which translates to saving our customers money – it's a great win-win."

Jon Crowhurst
Director of
Technical Services
EasyStreet

EasyStreet Keeps its Green Data Center Trouble-Free with VYCON Clean Energy Storage Systems

Located in the beautiful Northwest, one of the greenest locals in North America, cloud, managed services and colocation provider EasyStreet Online Services, Inc. understands the need to run its data center operations as "green" as possible. Utilizing wind power and flywheel energy storage, EasyStreet has a long-standing green commitment and seized the opportunity to be a beacon of how to build **energy efficient data centers**.

Situated in Beaverton, Oregon, EasyStreet recently built a new SAS 70 (the Statement on Auditing Standards No. 70) Type II audited data center and recently finished an energy-saving retrofit to its first data center. EasyStreet buys 100 percent renewable power offsets for both data centers as part of the Portland General Electric Clean Wind Program. "Three years ago we started buying wind offset credits for our first data center. We initially bought offsets for fifty percent of our power consumption. We gave our colocation customers the opportunity to participate in that program, pay a small up-charge to be able to put a Portland General Electric Clean Wind logo on their website, which means that we're all participating in the program together," said Jon Crowhurst, director of technical services for EasyStreet. The company has now received confirmation from the utility that **both data centers are zero carbon footprint energy consumers**. According to Crowhurst, "that's part of our plan moving forward."

Pioneering Data Center Design

Due to the energy efficiencies gained compared to conventional data center designs, this is the first data center project to qualify for funding through the Oregon Department of Energy's Small Scale Energy Loan Program (SELP). With the help of the Energy Trust of Oregon, EasyStreet played a pioneering role in developing the Oregon Department of Energy's expertise in the area of efficient data center design. Through careful planning and implementation of energy-smart technologies and systems, **EasyStreet estimates that it will be able to save 1,532,634 kilowatts a year – enough energy to power 153 average households.**

EasyStreet, which has won many accolades for its business and green initiatives – including being an **EPA Green Power Partner,** offers a wide selection of data center-based and Internet-access solutions.

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

Some customers want the flexibility and control that comes with EasyStreet's colocation services. Others prefer managed-server offerings with location services. Others prefer managed-server offerings with EasyStreet responsible for administration and monitoring of system hardware and software, backed by Service Level Agreements (SLAs). Regardless of the type of service EasyStreet provides, system uptime and availability are prime concerns. "Making sure that customers' computing systems have available power is paramount to not only keeping systems up and running at high nines (9s) of availability, but for us to keep operating as a viable company. Power outages, if not remedied, can cost organizations thousands, if not hundreds of thousands of dollars every minute computing systems go down. If EasyStreet can't maintain power integrity, customers will go elsewhere," said Crowhurst.

Greening the Power Infrastructure

The majority of data center power consumption that can be made green is the cooling system; however, Crowhurst and his team extended their green design throughout the data center including the purchase of energy efficient uninterruptible power systems (UPSs), and energy efficient transformers.

When it came to considering the UPS system, it was obvious that a battery-based UPS would not meet EasyStreet's sustainability initiatives.

"Batteries are not environmentally friendly, as you can imagine," said Crowhurst. Valve regulated lead-acid (VRLA) batteries are inherently problematic to the environment as they contain toxic chemicals and have to be frequently replaced. Another important point is that batteries require expensive cooling in order to operate per specification. If not properly cooled for example, batteries will degrade, quickly putting the power protection infrastructure at risk.

Reliability is the major concern. "We have two battery-based UPSs that we've had for almost twelve years. While the UPSs themselves have been reliable, **we've experienced three failures of the batteries.** We do preventive maintenance every quarter as the factory recommends and still we weren't able to avoid battery failures," said Crowhurst. One bad cell in one battery of a chain of "maintenance-free" lead-acid batteries is enough to bring down the whole set. They also require an excessive amount of testing, monitoring and maintenance to ensure against such occurrences.

For EasyStreet, building a new data center meant looking at all the green technologies available; reliability was always the number one consideration. So when it came to energy storage, Crowhurst looked to VYCON to learn more about its clean energy storage systems – flywheels. An important consideration of implementing flywheels is that they had to be able to work with double-conversion UPSs. VYCON's VDC-XE units were the perfect fit as they

easily pair with highly efficient, double-conversion UPS systems. “I visited the VYCON factory and looked at how the flywheels were made. VYCON’s experience and history in the marine and rail industry is a fairly impressive use of the technology – shows how rugged they are,” reflected Crowhurst.

Environmentally Friendly Energy Storage

VYCON’s VDC flywheel systems store and deliver a reliable source of DC power utilizing the kinetic energy of a high speed flywheel. Compatible with 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.

The patented technology enables the VYCON flywheel to charge and discharge at high rates for countless cycles without degradation throughout its 20-year life – unlike traditional batteries.

Another key advantage for EasyStreet is the significant space savings of the flywheel systems over batteries. A battery plant is approximately three times the size of a comparable-sized flywheel. “As a colo, space is a precious commodity. The more space we have the more we can accommodate our customers’servers and other computing assets,” affirmed Crowhurst.

Flywheel systems were not new to EasyStreet as it had experience with one from another manufacturer for its previous data center. However, maintaining and replacing bearings with a cost of nearly $10,000 every few years was an issue. **“Having to replace the bearings in the other flywheel system is a relatively expensive maintenance operation and the unit is out of service for six to eight hours,”** stated Crowhurst. **The VYCON VDC-XE does not require any bearing maintenance.**

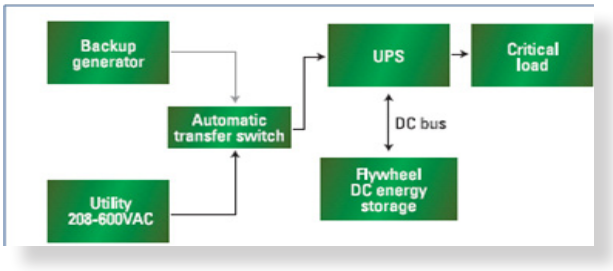
Debunking the Myth of Battery Backup

In the new data center, EasyStreet has three VYCON VDC-XEs running in parallel with double-conversion UPS systems. If there’s a power outage, the 300 kilowatt flywheel systems act as a bridge that seamlessly transfers to the facility’s diesel-engine generators. Crowhurst explains why backup batteries are not needed.

“Having 15 minutes or half an hour of batteries is, in my opinion, pointless. If the generator doesn’t start in the first 30 seconds, there’s nothing you can do. If you had two generator mechanics with their tools in hand, standing next to the generator and said, “I need this fixed in 14 minutes,” they’d both laugh at you, because there’s nothing that can be done to diagnose or repair a problem with the generator in the time allowed. **A well-maintained generator plant doesn’t need 15 minutes of batteries.”**

The Future

As EasyStreet’s new data center becomes more populated and energy demands increase, Crowhurst will add more UPSs and VYCON flywheels. “The end stage is three UPSs with eighteen flywheels total,” envisions Crowhurst. “Reliability, sustainability and having a low carbon footprint are part of the ethos of our company. This vision with actual energy savings allows us to save money which translates to saving our customers money – it’s a great win-win.”



When used with a UPS system, the VDC flywheel system provides uninterrupted DC ride-through power and voltage stabilization during brief utility power disruptions and brownouts.

About VYCON:

VYCON is an innovator in the design and manufacture of technologically advanced flywheel energy storage systems that enable a highly reliable, cost-effective and “green” energy storage solution for a variety of applications. The company’s REGEN flywheel systems, used in regenerative power applications such as container cargo handling crane applications and light electric rail, reduce power and energy costs to port and rail operators as well as provide a reduction in green house gasses. In addition, VYCON’s line of VDC and VDC-XE systems are deployed in mission-critical operations around the world protecting critical computing assets against costly power outages.

For more information on our innovative clean energy storage systems for your appliacation, contact us at 714-386-3800 or visit our web site at: www.vyconenergy.com.

VYCON
Expect More

www.vyconenergy.com

23695 Via Del Rio, Yorba Linda, Ca 92887 Phone: 714-386-3800