

Direct Connect VDC
For UPS Systems



High Reliability

Predictable Performance

20 Year Life

Small Footprint

Low Maintenance

Green



Flywheel
Energy Storage

VDC
VDC-XE



Clean Power Protection for
Healthcare Applications

Direct Connect VDC and VDC-XE

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 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.



High Reliability Low Maintenance Small Footprint

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. Data centers, hospitals, broadcast studios, casino gaming centers and manufacturing plants are enjoying the reliability benefits of VYCON's flywheel energy storage systems.

Utilizing clean energy storage from VYCON's patented flywheel technology, the VDC and VDC-XE are the perfect solutions for users needing a more reliable and greener approach to backup power in place of hazardous lead-acid based batteries.

Batteries – The Weakest Link

When it comes to power continuity, batteries are the weakest link in the power infrastructure chain. Relied upon to provide ride-through power for UPS systems, valve regulated lead-acid (VRLA) batteries are unreliable, unpredictable, maintenance intensive, space intrusive, temperature sensitive and are not environmentally friendly.

VYCON's innovative VDC and VDC-XE systems are dependable high-speed flywheel systems that provide clean ride through backup power that is **predictable and seamless**. The VDC units can replace traditional UPS batteries or work in tandem with batteries to provide the most reliable, **instantaneous, on demand power**.

Power you can depend on
Genset Ride-Through: NFPA 99 regulations for Emergency Power Systems stipulate that Gensets must be able to assume the load within 10 seconds. While batteries can perform this function, their reliability is always in question. Are they fully charged? Has a cell gone bad in the battery string? When was the last time they were checked? By contrast, VYCON's VDC systems provide reliable energy storage instantaneously to assure a predictable transition to the stand-by gen-set, all in a compact footprint.

Battery Hardening: For applications without Gensets or for those who still want to use batteries, the VDC and VDC-XE can operate in parallel with batteries. In this configuration, the VDC is the first line of defense against power anomalies – saving the batteries for prolonged power outages. By being first to provide the necessary energy to ride through power glitches, the VDC system significantly increases battery life by absorbing over 98% of the discharges that would normally cause the batteries to be cycled.

The VYCON Flywheel

Serving as a mechanical battery, the flywheel is a kinetic energy storage system that replaces traditional backup batteries and performs in applications where batteries and other storage devices fall short.

The VYCON flywheel stores kinetic energy in the form of a rotating mass and is designed for high power, short discharge applications. VYCON's patented technology used within the flywheel includes the flywheel hub that is formed from aerospace-grade steel, a high speed permanent magnet motor/generator, contact-free magnetic bearings that levitate and sustain the rotor during operation, and a superior touch-screen control system that provides vital information on system performance.

These innovative patented technologies enable the VYCON flywheel to charge and discharge at high rates for countless cycles without degradation throughout its 20 year life – unlike traditional batteries.

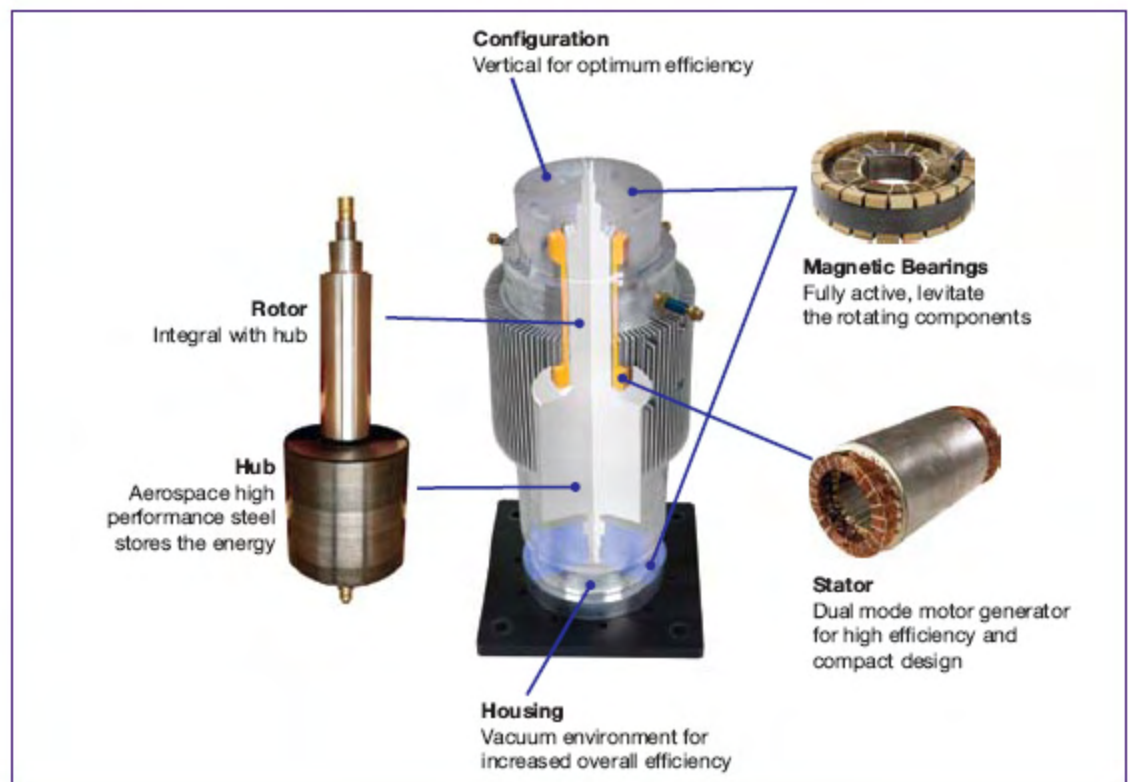
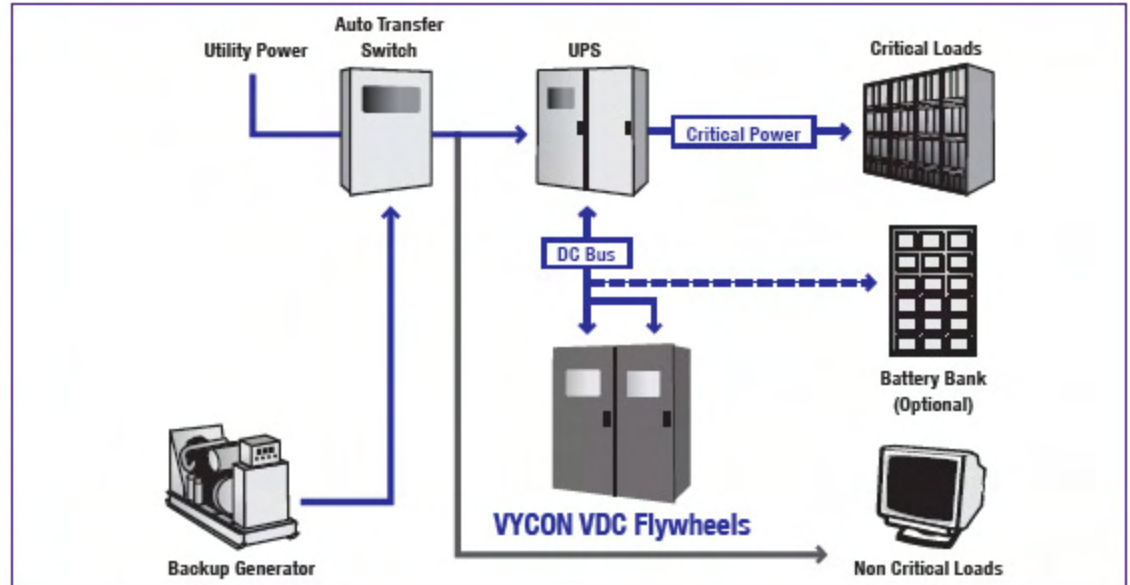
Benefits

Key Configuration Features

- ✦ Single flywheel can provide up to 300kW of power (*See run time table for power and run time combinations*)
- ✦ Parallel flywheel cabinets for higher power, longer autonomy or redundancy
- ✦ Parallel with batteries for added redundancy and longer battery life
- ✦ Each flywheel module includes a DC disconnect breaker for easy isolation

Key User Benefits

- ✦ High reliability/Predictability
- ✦ No bearing changes
- ✦ Environmentally friendly
- ✦ Green technology
- ✦ Very low maintenance
- ✦ Small footprint/High power density
- ✦ Touch-Screen GUI
 - | Easy configuration
 - | Full monitoring
 - | Event logging
- ✦ Simple installation
- ✦ 20-year lifespan



Specifications

Run Times*

VDC	UPS Output Power Rating (kVA)											
Number of Flywheels	40	60	80	100	120	160	225	275	450	550	750	1100
1	99.8	67.0	50.3	40.3	33.6	21.9	11.7	6.4				
2				80.0	65.0	48.8	34.8	26.6	11.3	6.2		
3						72.3	51.5	42.2	23.2	16.8	8.5	
4								55.6	34.1	26.1	16.0	6.0
5										34.8	23.0	11.7

VDC-XE	UPS Output Power Rating (kVA)											
Number of Flywheels	40	60	80	100	120	160	225	275	450	550	750	1100
1	99.8	67.0	50.3	40.3	33.6	25.6	17.4	11.7				
2				80.0	65.0	48.8	34.8	28.6	16.8	11.4	6.1	
3						72.3	51.5	42.2	26.1	21.5	13.9	6.2
4								55.6	34.1	28.0	20.8	11.1
5										34.8	25.8	17.1

* Backup times are typical using .9 Output Power Factor, 80% Full Load Rating, 95% Inverter Efficiency

Operating Parameters

	Direct Connect VDC	Direct Connect VDC-XE
Power / Duration Ratings		
Max Power	215kW	300kW
Max Energy Storage	3000kW-sec @100kW	3000kW-sec @ 160kW
Flywheel Rotational Speed	18,500 to 36,000 RPM	18,500 to 36,000 RPM

Input

Input Voltage	400 – 600 VDC	400 – 600 VDC
Recharge Rate	15-50 Amps	15-50 Amps
	Adjustable per application	Adjustable per application
Efficiency	99.2% at Max Power Rating	99.4% at Max Power Rating

Output

Voltage Discharge	400–520 VDC	400 – 520 VDC
	Adjustable per application	Adjustable per application
Voltage Regulation	+/- 1%	+/- 1%
DC Ripple	Less than 2%	Less than 2%
Operating Temperature	-4°F to 104°F (-20°C to 40°C)	-4°F to 104°F (-20°C to 40°C)
Humidity	95% non-condensing	95% non-condensing
Altitude	5,000 ft. (1524m) max	5,000 ft. (1524m) max
	without de-rating	without de-rating
Audible Noise	< 68dBA at 3.3 ft. (1M)	< 68dBA at 3.3 ft. (1M)

Dimensions and Weight

Height	73.7 in. (1872mm)	73.7 in. (1872mm)
Width	30.0 in. (762mm)	30.0 in. (762mm)
Depth	30.0 in. (762mm)	30.0 in. (762mm)
Weight	1822 lbs. (826kg)	1822 lbs. (826kg)



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About Vycon

VYCON is a manufacturer of flywheel-based energy storage systems that was established in 2002. VYCON employs the latest technologies in power electronics, digital controls, magnetic bearings and high speed motor generators to provide products that are reliable, long lasting and essentially maintenance free.

VYCON's mission is to deliver energy storage technology to industries that require safe, reliable and green solutions in energy re-cycling and power quality applications.

It is time to expect more from an energy storage solution.



Dependable Backup Power for Broadcast Applications

For more information on our Flywheel technology, please visit www.vyconenergy.com or contact your local Authorized Reseller.



Power and Glitch Protection for Harsh Industrial Environments



Mixed Sources

Product group from well-managed forests and other controlled sources
www.fsc.org Cert no. BV-COC-080701
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