



Flywheel

from 80 to 900 kVA

Battery-free power supply for UPS systems

Dynamic energy storage systems



The solution for

- > Data centres
- > Service sectors
- > Industry
- > Telecommunications
- > Medical applications

Complementary pages

- > Green Power 2.0, [page 14](#)
- > DELPHYS MP elite, [page 28](#)
- > DELPHYS MX, [page 30](#)

Reliable power to keep critical functions operational

- FLYWHEEL, a dynamic energy storage solution removes restrictions linked to traditional battery use.
- The FLYWHEEL system provides a high level of availability for DELPHYS MP elite, DELPHYS MX and GREEN POWER 2.0 160-500 kVA Uninterruptible Power Supply units.

The FLYWHEEL advantages

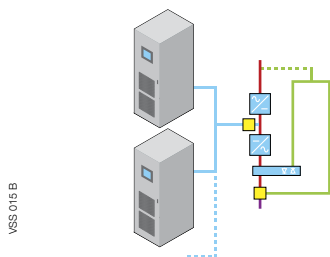
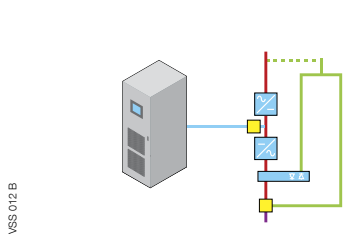
Dynamic energy storage technology with even more technical advantages:

- outstanding reliability,
- reduced maintenance,
- simplified maintenance,
- long service life (> 20 years),
- max. power in min. volume,
- less floor space < 0.58 m²,
- high efficiency 99.4 %,
- May be used when battery use is impossible because of critical operating conditions (i.e. high ambient temperatures).
- self-diagnostics,
- rapid recharging (typically 12 minutes),

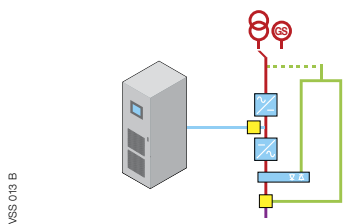
- adjustable voltage and current parameters,
- silent operation,
- simple operation,
- cabinet on castors for ease of installation,
- no load restrictions on ground,
- installation requiring no structural work,
- cable access via bottom section,
- simplified connections,
- units coupled in parallel to increase power and back-up time,
- front access for maintenance,
- environmentally-friendly.

Various configurations

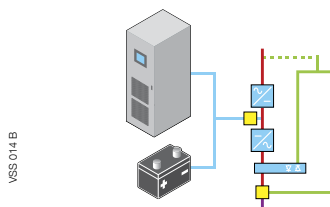
- Ideal solution for frequent short outages.



- Load supplied until the GenSet starts.



- To increase battery life in the event of frequent short outages.



FLYWHEEL: a battery-free solution

	<i>Flywheel</i>	Battery
Operating costs		
Energy consumption	few watts for minutes	few watts for hours
Maintenance	reduced	high
Ventilation - Air conditioning	not applicable	maintaining ambient temperature increases operating costs
Service life	> 20 years	periodical part replacements
Back-up time availability		
Reliability	high	need for constant monitoring
Availability status	continuous	actual back-up time difficult to ascertain
Life cycle (number of discharges)	no impact on service life	reduces service life
Ambient temperature	no impact up to 40 °C	service life time is reduced when temperature is > 20 °C
Recharge time (BUT recovery)	very low (100 % in 12 minutes)	very high (80 % in 8 hours)

Technical data

<i>Flywheel</i>	
ELECTRICAL SPECIFICATIONS	
Rated unit power	up to: 300 kW
Rated input voltage	400 to 630 Vdc
Rated output voltage	400 to 600 Vdc (adjustable)
Output voltage control	± 1%
Ripple factor	< 2%
ENVIRONMENT	
Operating ambient temperature	0 °C to + 40 °C
Cooling	Forced ventilation
Maximum altitude	up to 1500 m without derating
Acoustic level at 1 m (ISO 3746)	< 68 dBA
UPS CABINET	
Dimensions W x D x H	762 x 762 x 1872 mm
Weight	826 kg
Degree of protection	IP20
Colours	RAL 7012
STANDARDS	
Conformity	CEE 2004/108 EMC directive, CEE 98/037 Machine directive, EN 61000-2-4 EMC emission, EN 61000-2-2 EMC immunity, EN 60204-1 Machine safety, EN/ISO 12100-1 basic terminology, EN/ISO 12100-2 technical principles, OSHPD Seismic certified

Operating principle

- Uses a very high-speed, rotating flywheel.
- Combined flywheel, shaft and generator.
- The rotating assembly is held up by electromagnetic, with no contact with other parts.
- Less maintenance: the internal system vacuum eliminates friction.
- The flywheel-driven generator supplies energy to the UPS during a power failure, thus providing continuous power to the load.
- When mains power is restored, the flywheel takes only 7 minutes (configurable) to return to full speed.

Standard equipment

- Control panel with LCD display.
- Integrated MCCB protection.

Additional equipment

- Air filter.

Communication options

- Remote management via Data Collection Module (DCM).
- Dry contact interface.

Autonomy versus UPS model

