

Power storage

Flywheel from 80 to 900 kVA

Back-up storage



The solution for

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

Complementary pages

- > DELPHYS GP
- > DELPHYS MP elite
- > DELPHYS MX

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 GP, DELPHYS MP elite and DELPHYS MX Uninterruptible Power Supply units.

The FLYWHEEL advantages

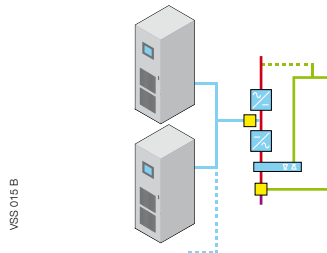
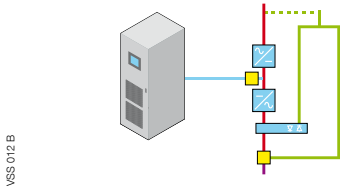
Dynamic energy storage technology with even more technical advantages:

- 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 (normally 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 top and bottom sections,
- simplified connections,
- units coupled in parallel to increase power and back-up time,
- front access for maintenance,
- environmentally-friendly.

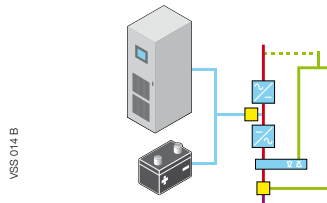
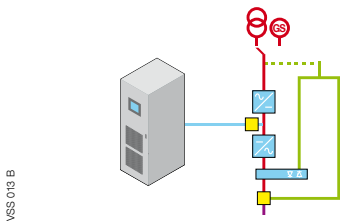
Various configurations

- Ideal solution for frequent short outages.



- Load supplied until the GenSet starts.

- To reduce battery aging in the event of frequent short outages.



Operating principle

- Uses a very high-speed, rotating flywheel.
- Combined flywheel, shaft and generator.
- The rotating assembly is held up by magnetic bearing levitation, 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 graphic display.
- Integrated MCCB protection.

Additional equipment

- Air filter.

Communication options

- RS 232/485.
- MODBUS via RS 232/485.
- Dry-contact interface.

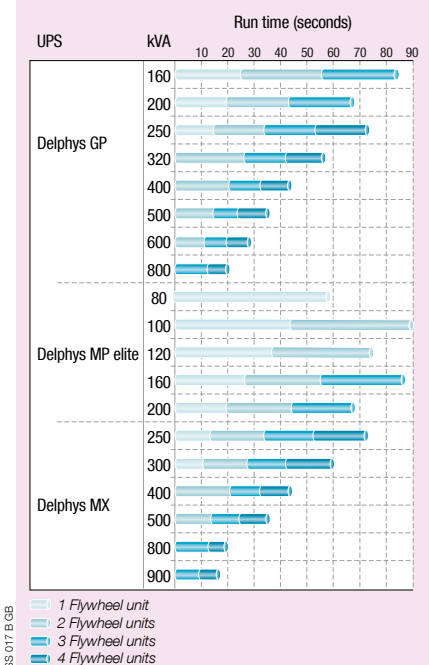
FLYWHEEL: a battery-free solution

| | <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 | 705 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 |

Back-up time versus UPS model



BUT @ 100% of nominal load and PF 0.8