Fail-safe battery back-up
optimising lifespan
and permanent monitoring of power reserves

Increased battery life

The battery represents one important element for the UPS configuration because it can affect the global UPS availability. Therefore it is important to prevent possible faults and to reduce operating costs, limiting all the events that could cause early battery ageing and its untimely replacement.

Battery reliability depends on several variables: the working ambient temperature, the environment, the number of discharge and recharge cycles, and so it is important to introduce systems that can manage them in order to limit their impact on the UPS life cycle.

The early ageing causes:

- corrosion: battery overcharge or high working temperature,
- sulfation: low recharging voltage or long storage time,
- passivation: frequent discharge/recharge cycles (cycling) with consequent capacity loss.

SOCOMEC UPS proposes ***EBS*** (Expert Battery System), a system that manages the battery charger that responds to the working temperature to preserve the battery lifetime and reduce operating costs.

Key elements of ***EBS***:

- an adaptive algorithm that automatically selects the recharging method according to environmental and battery conditions,
- elimination of overloading due to permanent floating, which accelerates the corrosion of the positive plates,
- isolation of the battery from the DC bus, thanks to the separate charger function from the rectifier. Premature ageing caused by residual ripple from the rectifier bridge is eliminated,
- protection against deep discharge,
- management of different types of batteries (sealed, open lead and nickel cadmium batteries).

Monitoring system providing:

- real time calculation of the remaining back-up time,
- real time measurements concerning the battery (voltage, battery current and battery capacity),
- a periodical battery test for monitoring battery efficiency and for programming preventive or curative maintenance in case of abnormal situations.

The tests carried out by SOCOMEC UPS on several brands of batteries and the years of experience show that the battery life can be enhanced up to 30% by the use of ***EBS*** compared to a traditional battery management.

DEPYS 036 A

Battery safeguard

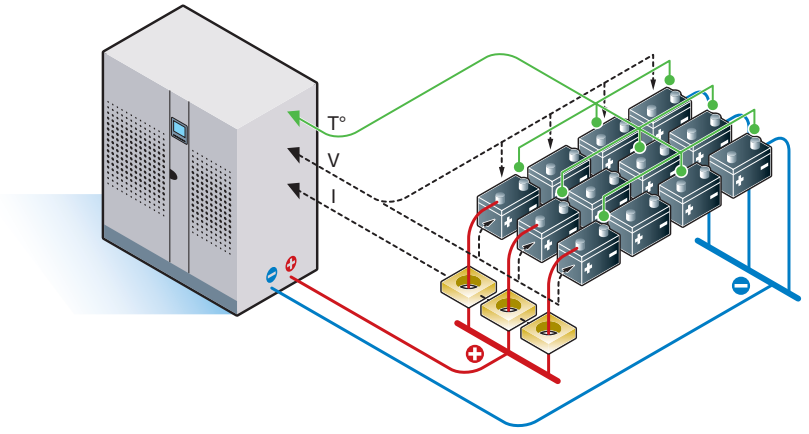
The Battery Health Check (***BHC***) monitors and optimises the capacity of the battery in order to maximise availability of the latter. It collects measurements for early detection of weak blocks. The ***BHC*** acts interactively with the charger facility and undertakes automatic corrective action for optimising the capacity of battery cells. In association with the graphic touch screen, it gives an accurate overview of the battery condition and informs the user if preventative maintenance intervention will have to be planned to maximise the reliability of the system.

Permanent monitoring

The ***BHC*** reports the battery health to the user

- Integrated into a ***DELPHYS*** UPS (**MP** or **MX** version), the ***BHC*** facility achieves monitoring and extensive analysis of battery parameters (current per string, voltage per block and ambient temperatures).

  Parameter analysis, operating statistics and alarms are displayed on the graphic touch screen.
- The ***BHC*** can be connected to intranet. It gives access to displays from remote workstation.



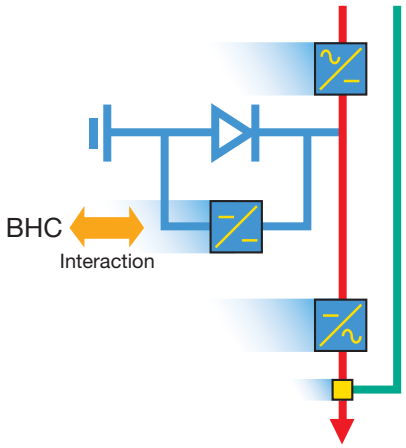
DEPYS 138 A

Battery safeguard (cont.)

Optimisation of the battery lifetime

The ***BHC*** operates in direct interaction with the battery recharge system (***EBS***)

- In case of value drift of a battery cell, the charger automatically adapts the recharge parameters. Such corrective action aims to get homogenisation in the behaviour of cells and therefore enhances the battery lifetime.



DEFYS 146 A

Rapid, efficient and targeted intervention

The ***BHC*** individually locates weak blocks

- The ***BHC*** function analyses the behaviour of each battery block or cell. It pinpoints possible failure to assist with rapid and efficient preventive maintenance.

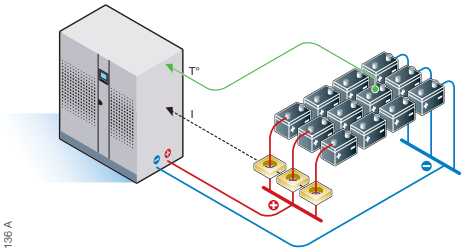
  Faulty elements are shown in red on the graphic touch screen of the UPS. The log display for each cell allows scheduling preventative maintenance and reducing maintenance costs.

DEFYS 145A GB

BSCM

Another version of the battery management facility is available depending on the monitoring level required

- The Battery String Current Monitoring (***BSCM***) can check between 2 to 6 battery strings. It collects the currents of each string, analyses the data and detects faulty or open battery strings. In case of problem, the ***BSCM*** reports an alarm with accurate fault description to the user. This device does not necessarily require the graphic touch screen as it is also compatible with the standard panel.



DEFYS 136 A

Main features

	BHC	***BSCM***
UPS COMPATIBILITY		
DELPHYS MP	-	Yes
DELPHYS MP elite (with ***EBS*** option)	Yes	Yes
DELPHYS MX and ***DELPHYS MX elite***	Yes	Yes
MEASUREMENTS		
Voltage measurement (per string)	per 12V block	overall
Current measurement (per string)	Yes	Yes
Measurement of battery ambient temperature	4 per string	1
DISPLAY COMPATIBILITY		
Graphic touch screen	necessary	compatible
Standard control panel	not compatible	compatible
BATTERY		
Battery type	VRLA(1)	VRLA
Number of strings	1 to 6	2 to 6
CORE CONTROLLER		
Calculator	embedded in the UPS	embedded in the UPS
Detection and localisation of failures	per block	per string
Interactivity with the charger	**Yes**	-

(1) Valved Regulated Lead Acid.