

Battery Care

Manage the optimisation of your back-up time



your energy
our expertise



socomec
Innovative Power Solutions

Why you should be **proactive** in maintaining your battery system

The key to ensuring the reliable operation of your battery plan is to establish a comprehensive predictive maintenance and testing program.

Source: IEEE Guide for Batteries for Uninterruptible Power Supply Systems.



The loss of service and communication, and consequently the downtime of business operations, even for a limited period of time, is not acceptable. Maintaining the uptime of critical applications is a major concern for IT and Facility managers. Although UPS systems play a major role in ensuring the availability, reliability & quality of the electrical supply, the core element of any critical power protection system is provided by the battery: their effectiveness and availability are essential for preventing load downtime, but at the same time batteries are the most vulnerable and failure-prone component of such systems.

It is no coincidence, that one of the most frequent causes of unplanned outages are due to battery failure in the UPS system, mainly caused by the “premature end of life” of a few battery blocks. A corrupted battery block, if not detected early and not replaced, can accelerate ageing within the rest of the battery string, therefore jeopardizing the integrity of supply to the critical load. The level of predictability for failure detection on a battery block depends on the number of measurements, tests and analysis that are performed on every single block.

To find out more

For more information about our complete offer for Expert Services, download the catalogue.

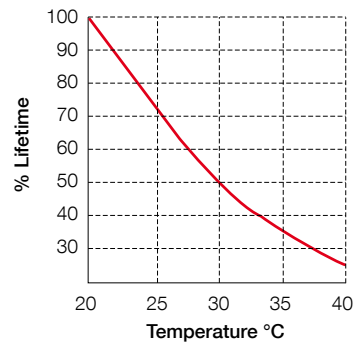
www.socomec.com/en/services-catalogue



What affects battery lifecycle?

Battery manufacturers always define the battery design life. This duration is a theoretical value for one block, valid only in optimum environmental conditions, such as temperature and if each charge/discharge cycle meets with the manufacturer's specifications.

In UPS applications, blocks are mutually influenced: the ambient temperature can be variable and discharges depend on load levels and on the quality of the mains supply. Even if the battery charging regimes are correctly applied, real operational life time never matches the theoretical battery "design" life.

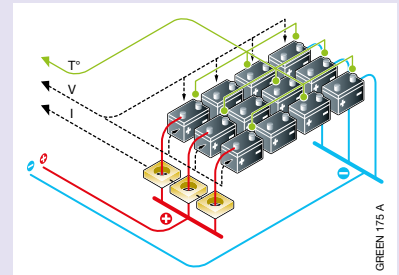


Source: Eurobat

What is a battery?

A battery is a collection of the following:

- 1) blocks (typically 12 VDC), can be assembled in series to create a string,
- 2) several identical strings, can be assembled in parallel to create a battery.

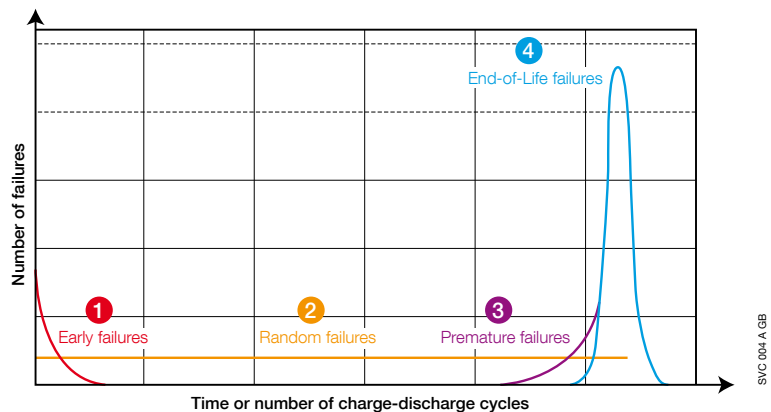


Example of one battery including 3 strings. Each string is made of 4 blocks.

What are the main reasons for battery block failure?

There are 4 potential types of failure that could corrupt a block:

- 1 **Early failures** are mainly due to defects introduced during the manufacturing process. Early failures appear generally during the first discharge cycle.
- 2 **Random failures** can appear at any time during the life of a battery.
- 3 **Premature** and
- 4 **End-of-Life failures** are due to latent defects or environmental conditions such as high ambient temperatures that can shorten battery operational life time. If this type of failure appears, it means that the health of the battery string is seriously compromised and cannot be relied upon for any autonomy time.



While the failure rate for a single battery block is dependent upon a number of elements the failure of any one block in a string batteries renders the whole string useless or seriously affects the back-up time available. Other battery blocks are quickly affected by the lack of charge, or in rare cases, an increase in charge current both of which quickly damage those remaining batteries within the string.

Socomec's Battery Care services and packages

Socomec has developed a comprehensive portfolio of services dedicated to your battery system to ensure the integrity of your business continuity.

High quality engineering support is a vital component of any business continuity plan.

The services and packages are entirely tailored around customers' needs, taking into account individual operating constraints, a particular business' activity and the unique level of criticality associated with a specific application.

Battery Check during standard UPS preventive maintenance visit

Battery Check during UPS preventive maintenance visit is the first level of care for batteries which should be carried out on a regular basis to keep the equipment operating at optimum levels and to avoid system downtime with the associated risks of damage to the critical loads.

How does the Battery Check work ?

The Battery Check is a service included in the standard UPS preventive maintenance visit and is performed by qualified Socomec engineers. During the visit, they will perform tasks designed to check the environment and the main battery parameters at string level only.

A technical report will be issued with general information related to the battery system's health.

Battery Care packages

Battery Care is a brand new set of service packages that will ensure the integrity of your business continuity by performing the highest level of inspection to your battery blocks.

How do the Battery Care packages work ?

Depending on the package chosen (IMP, TEMP, PRIME), a set of accurate measurements, tests and analyses will be performed on each single block across all battery strings by Socomec trained engineers.

An in-depth report will provide information about:

- the health of each single battery string/block,
- the faulty blocks that need to be replaced,
- the real "back-up time" of the battery system.

Discover how Socomec can tell you the real back-up time of your battery system



Have you ever thought of measuring your real back up time ?

Your UPS has been designed to provide clean and reliable power to your mission-critical equipment.

In the event of abnormal mains supply, the battery system should act by providing the correct back-up time to save the operations and safely shut down applications. If required, the UPS back-up time must be large enough for the diesel generator to get started and reach its standard working conditions. The back-up time declared by the battery manufacturer is influenced by different external agents such as operating temperature, number of charge/discharge cycles and ageing of the blocks.

Thus your real back-up time could be much less than the one expected.

Back-up time measurement: thanks to specific set of measurements and analysis, Socomec is able to provide you with the exact back up time of your battery system.

Features

Battery Care offer is designed around 3 packages: IMP (IMPedance), TEMP (TEMPerature) and PRIME (the full package).

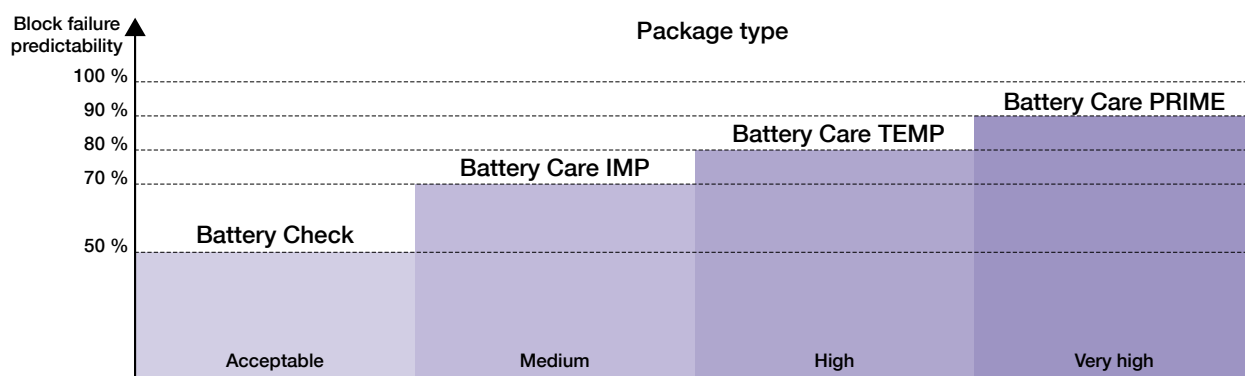
ACTIVITIES	WHERE	BATTERY CHECK	BATTERY CARE		
			IMP	TEMP	PRIME
Visual inspection check leakage and corrosion	string	•	•	•	•
Cleaning	string	•	•	•	•
Measurement with partial discharge of V & I	string	•	•	•	•
Environment temperature check	string	•	•	•	•
Control of floating voltage and max current*	string	•	•	•	•
Impedance test	each block		•	•	•
Temperature measurement	each block			•	•
Voltage measurement*	each block			•	•
Thermal image	each block				•
Torque setting	each block				•
Back-up time measurement**	string		o	o	o

* during battery charge. **: by performing the end of discharge voltage test.

•: included. o: optional.

Level of predictability for failure detection on a single battery block

Each package is assigned with a level of predictability which estimates the chance of detecting a faulty/weak battery block. Choose the one who can best match your expectations.



For better control of your battery system, upgrade the package you select with the option “Back-up time measurement”.

BATTERY CARE PACKAGES				
IMP	TEMP	PRIME		OPTION
Faulty/weak block detection			+	Back-up time measurement

Key benefits



Information on the state of health of your battery system



Identification of your real back-up time available



Estimation of the optimum time for battery replacement



Optimization of the useful working life of the battery system



Battery replacement service

Among other benefits our Battery Care packages provide our customers with a reliable picture of the estimated end-of life of your battery system and recommend the optimum time for battery replacement.

This insight is vital for business continuity. Thus, it is essential to have the expertise of a UPS manufacturer and service supplier manage the battery replacement procedure. An expert that understands your equipment and how it is integrated into your unique working environment and who can respond effectively to any anomaly should any occur.

What could go wrong with a do it yourself battery replacement ?

- Faulty cabling can cause damage within the UPS power electronics and inevitable transfer to bypass, placing the critical load on raw mains without the protection of the UPS.
- Spillage of electrolyte in the areas surrounding the UPS and battery installation can lead to serious injury. Mishandling battery blocks incorrectly could cause leakage of the electrolyte increasing the probability of a fault within the battery cabinet.
- Not using the correct PPE (Personal Protection Equipment) could cause serious injury to the on-field operator.
- Inaccuracy when carrying out battery charger calibration could cause batteries to overheat, increasing the possibility of thermal runaway, fire or explosion.
- Incorrect battery disposal procedures could lead to legal action being taken against the offending party.

Advantages of using a specialist UPS manufacturer

- Superior understanding of how the batteries integrate within the UPS equipment.
- Consideration of site specifics and end user's working environment.
- Depth and breadth of experience in battery replacement safety procedures.
- Unique supplier and optimization of the operation: replacement can be done together with preventive maintenance visits and other consumable replacements such as capacitors and fans.
- Checking and possible recalibration of battery charger settings.
- Fully secure battery discharge test controlled directly by the UPS firmware.
- Battery disposal according to local law (certification ISO 14001).
- Analysis of the reliability of the mainstream battery protection.
- Advice for the optimization of the battery back-up time depending upon the current load and environmental conditions at site.

Access a manufacturer's expertise



Expert service engineers

- 370 Socomtec service engineers in 20+ subsidiaries.
- 175 business partner service engineers in 70+ countries.
- 4,500 hours of technical training provided per year (product, methodology and safety).

Technical hotline network

- 20+ languages spoken by Socomtec's technical hotline staff.
- 3 advanced technical support centers.
- 100,000+ incoming calls handled per year.

Services

- Specialist team of engineers on call 24/7.
- Technical expertise on site in max 6 hours guaranteed.
- Power quality and thermal imaging audit.
- On site tests, commissioning and training.
- Certified preventive maintenance visit.
- Remote monitoring and proactive diagnostic.
- Corrective maintenance with original spare parts.
- 24/7 original spare part stock availability.
- High priority spare part shipment.

Standard activities undertaken during a battery replacement

ACTIVITIES		
Autonomy test with effective load		•
Voltage check on battery blocks if accessible		•
Battery room temperature check		•
Floating voltage compensation according to ambient temperature		•

•: included.



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End-of-Life management

End-of-Life, in the context of manufacturing and product lifecycles, is the final stage of a product's existence.

For product users, End-of-Life also concerns the responsible disposal of the existing product, transitioning to a different product and ensuring that disruption will be minimal.

Socomec experts can manage all of these critical tasks in a secured and efficient way, from the diagnostic phase through the eventual recycling phase.

Key point

Support for planning the safe removal and disposal of old products (including recycling of batteries) following the applicable environmental standards (e.g. ISO 14001, WEEE, etc.).



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