



Shop 4 Caversham Building
Cnr Main & Hawthorne Road
Bergvliet, 7945
Tel: 021 712 3129

INFORMATION LETTER TO ALL CLIENTS AS AT 1 MARCH 2023

Battery Aging due to Load Shedding Cycle Use

Dear Client,

Thank you for your enquiry regarding the condition of your battery. RSEC's supplier's battery specifications meet international standards for capacity and safety.

A battery is a consumable product - even rechargeable batteries lose capacity after each discharge / recharge cycle and eventually need to be replaced after a specified number of cycles.

The remaining capacity of a battery after each cycle is totally dependent on strict compliance of the common known best practices of battery charging; discharging, maintenance and storage procedures.

It is common knowledge that the National Power Utility (Eskom) has increased the number of load shedding cycles by a factor of double or even greater during the last year. This increase has resulted in the battery being cycled up to four times more per day than it was designed for.

The increased cycling is beyond the control of RSEC and leads to the premature capacity reduction of the battery. VRLA batteries, as with most VRLA AGM or GEL batteries, have a finite cycle count of between 300 to 400 cycles. **If there is load shedding up to four times in a day then common calculations show that the VRLA battery will need to be replaced in less than 100 days.(Average four to six months.)**

The battery is guaranteed against manufacturing defects for one year and is not guaranteed to provide full capacity for one year because RSEC has no control over load shedding or the strict compliance of the battery charging; discharging, maintenance and storage instructions.

Manufacturing defects are defined as:

1. Rupture of the battery enclosure due to bubble in the plastic or an open join.
2. Battery voltage at 10V or below after charging and heating up during charge due to shorted cell(s).
3. Battery voltage at 0V and not charging at all due to an open circuit cell.
4. Downward step is the battery discharge curve due to reduced capacity of a single cell.

Analysis

A 12 Volt valve regulated lead acid (VRLA) battery consists of six, 2 Volt cells which are totally sealed from each other and from the outside atmosphere (other than a safety valve to release pressure) and can be referred to as six separate batteries packaged in a single package. Therefore, **any physical condition in one cell cannot physically affect the other cells.**

The six, 2 Volt cells are electrically connected in series to add up to 12 Volts so any electrical current equally flows through each cell and affects all of them equally. Therefore, any damage due to over-charging, over-current, deep discharge, high cycling and extended storage in a discharged state **will affect ALL the cells equally.**

If you consider the above, then you can logically see that:

1. Manufacturing defects will be limited to one, 2 Volt battery cell (or two cells at the most) and;
2. Any change in the electrical performance of the battery will be the result of the total effect of all the 2 Volt battery cells equally.

Outcome

RSEC notes that you have had the use of the batteries for a certain time and that during this time, when newly purchased; the battery provided the capacity to meet the load and runtime as estimated by your calculations.

RSEC therefore originally provided new batteries that met the capacity of the battery specifications but you have highlighted that after a period of use, the capacity of the batteries appears to have reduced.

Such a reduction in capacity is due to the fact that RSEC has no control of load shedding and no control over the strict compliance of the battery charging; discharging, maintenance and storage instructions that high cycling and sulphation of the battery cells has taken place.

Sulphating of battery cells is not reversible and permanently reduces the capacity of the battery while high cycling has reduced the life of the battery.

In such cases RSEC cannot treat the condition as a manufacturing defect but will assist you with the following options:

1. RSEC can run a battery de-sulphation cycle on the battery, and this could restore part of the lost capacity. A battery de-sulphation cycle takes 16-24 hours based on the battery size and the first cycle is done at no cost to the customer.
2. RSEC can run a capacity test on the battery which takes 24-48 hours and the resultant capacity can be recorded. If the capacity is under 50% of the original capacity, then RSEC may offer waste trade in support on a new battery, provided that you agree that should the new battery suffer the same reduced capacity issue. RSEC will not repeat the offer due to load shedding or the possibility of not observing strict compliance of the battery charging; discharging, maintenance and storage instructions.

Conclusion

Load shedding is now a permanent part of our daily lives and we have to consider the fact that stage two load shedding is no longer the norm and backup systems need to cater for at least two outages every day with a possible four hour duration every second day. Please be aware of the fact that our elected Government and national power utility are the real reason for excessive cycling of battery backup solutions and we fully understand your frustration but trust that you will direct the blame accordingly.