



BATTERY SERVICES INTERNATIONAL

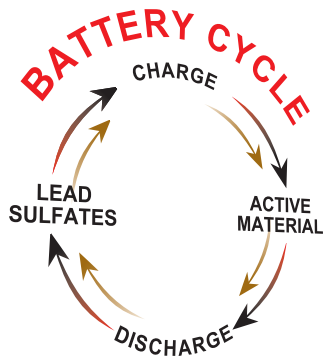
BATTERY SPECIALISTS

The problem with lead acid batteries

"8 of every 10 batteries fail due to sulfation."

The prevailing cause for the malfunctioning of lead acid batteries is sulfation. It is estimated that for every ten batteries discarded at least eight are thrown away due to sulfation. This is why we want to explain here what sulfation is and what is our revolutionary technology to bring back to life discarded sulfated batteries. We also want to explain how to protect batteries in current use from sulfation.

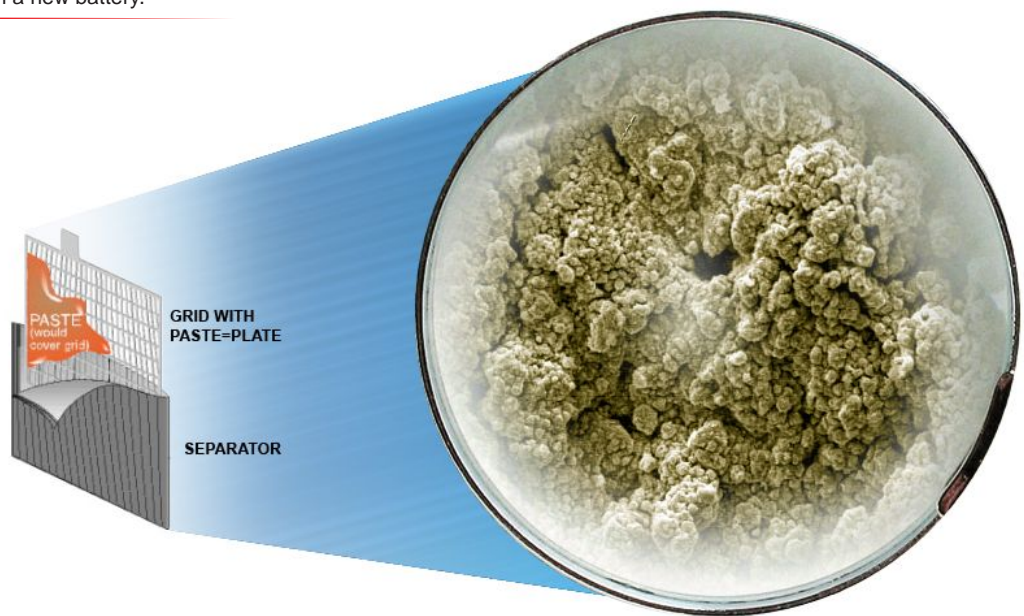
The Sulfation phenomenon



Lead acid batteries generate electricity out of an electrochemical reaction in which various components of the active material —sponge lead (Pb) in the negative cell, oxide lead (PbO) in the positive cell, and sulfuric acid (H₂SO₄)— mix together. During this natural chemical reaction inside the battery, electricity is released while lead sulfates precipitate, especially during the discharge phase. When the battery is in the charging phase the lead sulfates change back to sulfuric acid, sponge lead and oxide lead. This happens during each cycle of charging and discharging of the battery.

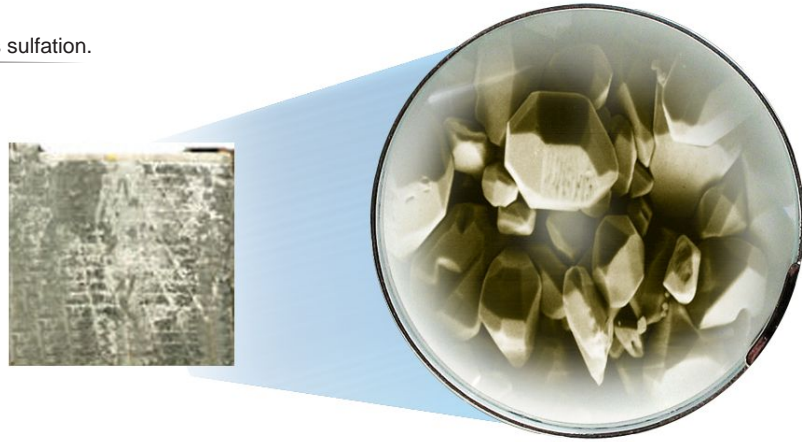
Fig. 1- View of the active material in a new battery.

"Our battery additive PowerPlus aids batteries in staying clean of sulfation buildup and it is friendly to the environment and to your health."



With every cycle of charging and discharging, a certain amount of lead sulfates (sulfation) stay adhered to the porous walls of the metallic plates of the battery. These lead sulfates harden enough to become white round crystals that clog the porous plate walls, yielding an increased resistance that inhibits the accumulation of electricity in the battery. This is the primary reason for which eight out of ten lead acid batteries die prematurely, unable to retain and discharge electricity. The common name given to this phenomenon is sulfation.

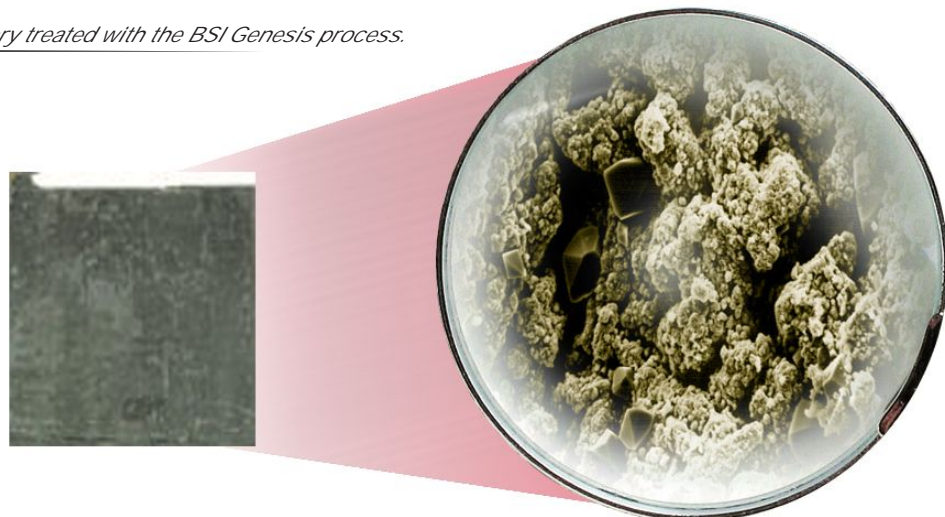
Fig. 2- View of the active material as sulfation.



“In BSI we are experts at completely eliminating sulfation buildup. We can return the optimal operational capacity of any sulfated lead acid battery.”

Thus, sulfation is a natural process in every lead acid battery. One specialized service of Battery Services International (BSI) consists of aiding lead acid batteries to perpetually continue their cycle of charging and discharging generating lead sulfates. In BSI we know that if this natural process of lead sulfate generation is stopped, then the battery dies because instead of accumulating and generating electricity it will accumulate resistance. The use of our revolutionary technology is the most effective tool you can have to prevent and reverse the killing effects of sulfation in any lead acid battery. We have named our technological breakthrough “Genesis Battery Rejuvenation Process”.

Fig. 3- Partial view of a battery treated with the BSI Genesis process.



“PowerPlus perpetually combats sulfation build-up.”



Ten common factors that increase sulfation buildup:

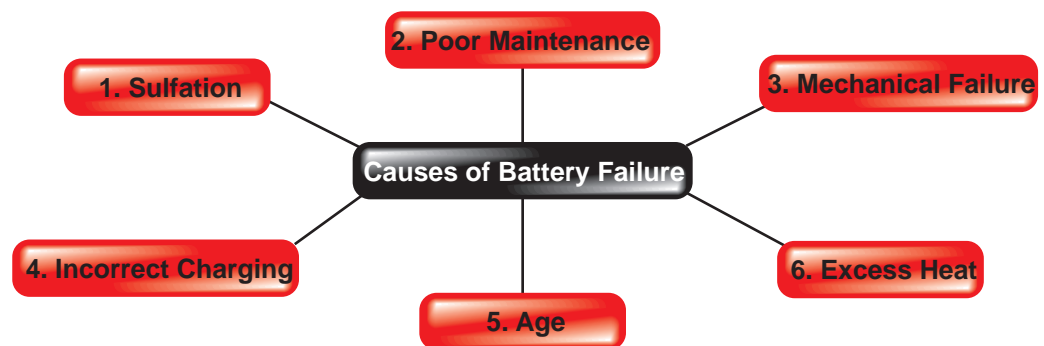
- Leaving the battery discharged for a long time.
- Allowing the battery to remain inactive for 24 hours or more.
- Adding sulfuric acid to electrolyte, promoting sulfation buildup.
- Frequent overcharging and over discharging sessions.
- Interrupted charging sessions, causing acute sulfation buildup.
- Inefficient battery chargers that cause chronic sulfation buildup.
- Adding distilled water not in the opportune moment.
- Charging a battery insufficiently thereby causing sulfation buildup in the portion not activated by the charge session.
- Plates lacking of electrolyte and exposed to air creating immediate sulfation.
- Temperature of 100°F (=38°C) or more, which accelerate sulfation buildup.

Ten symptoms and effects of sulfation buildup in a battery:

- Sulfation covers the porous walls of the plates inhibiting full charging.
- Expanded battery case and plates that cause mechanical failure.
- Longer charging session.
- Runtime of the battery decreases in duration and intensity.
- Electrolyte density decreases because of the loss of sulfuric acid.
- Battery temperature increases prolonging the cooling period.
- Accelerated corrosion in each cell.
- Increased danger of battery explosions.
- Premature death of the battery.
- Equipment utilizing sulfated batteries can malfunction.

Five main causes of battery failure

In addition to sulfation treatment, Battery Services International's service capabilities target each of the following main causes of battery failure:



Effects of battery failure from a managerial point of view:

- Increased operational costs due to frequent battery replacement, increased electrical consumption, and higher battery and equipment maintenance.
- Increase in downtime for people and equipment.
- Reduced productivity due to prolonged charging periods and the reduced service time of the charged batteries.
- Capital investment budget impacted by the increase in operational costs.
- Increase in environmental pollution.

BSI SERVICES INCLUDE:

- Reactivation of discarded batteries
- Treatment of new batteries
- Maintaining batteries
- Recycling
- Dismantling and removal
- Diagnostics and troubleshooting
- Sale of reconditioned batteries

Visit our website right now!



*We can recondition
batteries completely dead!*



BSI battery regeneration technology

*"Save money
& time.
Restore your
old batteries."*

*"Company
profile is
enhanced
with added
cost savings
opportunities
due to our
services and
technology
that double
the life of all
of your
batteries."*

Battery Services International has solution focused technologies that are precise, safe, effective, and efficient. Our battery regeneration process has been designed to revive any sulfated battery that is mechanically intact. It has been field tested for years in the market with different battery types, brands, ages, applications, voltages and amperages. We have reconditioned batteries found completely dead with zero charge for years. Our battery reconditioning process is named Genesis and it combines advanced electronics with our revolutionary battery additive PowerPlus to recondition and extend the life of any lead acid battery either cranking or deepcycle. Our Genesis process for reconditioning batteries includes:

- 1. Diagnostic step**— during this step our technician examines the battery mechanical condition inside and out, state of charge, sulfation buildup level, maintenance history, battery environment, temperature, and charger. This assessment also takes note of client's concerns.
- 2. Recommendation step**— once diagnostic report is completed, the technician proceeds to recommend a treatment plan for the battery.
- 3. Regeneration step**— upon client's approval, the BSI technician proceeds to recondition the battery utilizing the Genesis process. Four steps follow: leveling, use of the Genesis reactivator, injection of PowerPlus battery additive, and equalization after charging.

Some advantages and benefits of BSI battery services:

- **Cost savings**— Various advantages and benefits such as:
 - Sustaining optimal runtime capacity.
 - Reduced charging time lowering monthly charging costs.
 - Reduced battery purchases as battery replacement decreases.
 - Less maintenance required per battery.
 - Decrease in utility costs as batteries are able to charge quicker.
 - Increase in productivity because battery runtime extends.
 - Stronger capital investment budget because of the found gains.
- **Guarantee**— all BSI services and products are protected with our excellent guarantee program. For more information please visit our company website.
- **Proven technology**— our technology and battery reconditioning process has been proven for years in different markets and with all sorts of lead acid batteries. This is why we affirm that our services are “Safe, Reliable, Guaranteed”.
- **Improved batteries**— our technology doubles the life of batteries, reduces charging time, increases runtime, lowers self discharging, and inhibits sulfation buildup.
- **Safety**— BSI technology (the Genesis and Xcharger equipment and our battery additive PowerPlus) has been designed to prevent accidents, and the battery additive PowerPlus is fully unharmed to the environment or the users.
- **Environmental**— The BSI approach decreases the quantity and rate of batteries that go into recycling because their operational life doubles, allowing for fewer batteries to be discarded. In addition, our technology seeks to protect the environment, utilizing products that are safe for nature and users.



SERVICES
100%
GUARANTEED

In summary, at Battery Services International we are committed to improving the operational profile of companies that rely heavily on lead acid batteries.

We take pride in the quality of our products, technology, and our customer service focus. Please visit our website for more information.

*Visit our
company
website!*



www.batteryrejuvenation.com & www.bsiopportunity.com