

Battery Services International **Battery Specialists**

About Us

Battery Services International LLC it is our new name. We registered it in Florida on 2005 with the purpose of sharing with others our battery improvement technology for the recovery of the lost potential of all types of lead acid batteries including those with gelatinized electrolyte, AGM, VRLA, and vented batteries. Since 1996 we had the name of Mr. Battery which purpose was battery recycling. It was during our battery recycling operation that we came up with the idea of creating a revenue stream by engaging on the recovery of the lost capacity of scrap batteries.

On 1999 we initiated experiments to improve and recover the lost potential of scrap batteries. By 2003 we attain success of recovery of the lost potential of any type of lead acid battery in any state of charge or state of health. During the year 2007 we begin letting others use our battery recovery technology. Here in United States we have associates in Texas, Georgia, Colorado, Minnesota, North Carolina, and West Virginia. In foreign countries we have associates on the Kingdom of Saudi Arabia, Trinidad and Tobago, Dominican Republic, Mexico, South Africa, and India. All these associates had demonstrated that our battery improvement technology works efficiently when applied to lead acid batteries of all sorts used on environments different than ours by climate and economic background.



Saudi Arabia Associate

Our Innovation

In order to appreciate the reach of our battery recovery technology one should get acquainted with the inherent problem of all lead acid batteries. Battery experts point out that the lead acid battery exhausts its useful life due to a constellation of problems of which hardening of the lead sulfates and mechanical problems tend to have higher occurrence. Other problems are dehydration, decompression, manufacturing defects, lack of maintenance, paste shedding, improper charging, and vibrations.

Mechanical failure on lead acid batteries is considered by many as the cause that fractures the electrical conductivity pathway in the battery. Grid plate degradation, broken connectors between cells and plates, terminal post deformation, shedding of the pastes (Pb & PbO₂), burnt cells, and others are considered mechanical failures. However, the leading cause of lead acid battery failure is acknowledged as an occurrence of hardening of the soft lead sulfates (PbSO₄). This hardening or passivation of the lead sulfate is estimated to be the cause for 7-8 batteries of every 10 that are spent. Mechanical failure is considered as the explanation for every 2-3 batteries of every 10. Something interesting about this statistics is that comes from Battery Council International, the organization that represents battery manufacturers here in United States.



Sulfato de Plomo blandos (PbSO₄)



Sulfato de Plomo endurecidos (PbSO₄)

Our years of experience in the field of lead acid battery recycling and restoration suggest that the statistics mentioned above is truth. However, in order to be able to recover the lost potential on every 7-8 lead acid batteries of every 10 one needs access to a battery recovery technology that is reliable, efficient and effective. Something we did at the beginning was to try existing

technologies for battery recovery such as Battery Doctors, Duo Regen, BattRecon, Pulse Technologies, and others. We also tried solutions of battery companies outside United States such as Battery Equalizer, BatCure, Battery Gurus, Pholon Technology, and others. The outcome of all the trials we issued with existing technologies on the market gave us unsatisfactory results. Something that kept emerging on every trial was that we were not able to recover the lost potential of all and every depolarized battery that was mechanically intact. Due to the lack of success at the performance level we wanted with existing solutions we decided to develop our own battery recovery technology.

Our battery recovery technology is name as “Genesis Battery Power Recovery Process”. This process follows scientific understanding of the electrochemical functioning of a lead acid battery. It is also based on our theory of what causes passivation of the electrochemical potentials in a battery. At the core of it is our understanding that in order to dismantle hard lead sulfates (PbSO₄) one has to cause an *electron fracturing process* that recover the potential of the battery at the molecular level where the lead sulfates form. In order to use our *Genesis Process* we had to develop technology in two areas: electronic and chemically. Electronically we developed the XCharger and the Genesis; chemically we also developed our battery desulfating compound PowerPlus Automotive and PowerPlus Industrial.

Genesis Battery Power Recovery Process

This methodology was design to follow strict scientific principles of electrochemistry of lead acid batteries. The overall purpose of the methodology is to recover the lost potential of any lead acid battery in any state of health, any state of charge, any age, any make and brand, any application, any size, and in any work environment. The only main characteristic is that the batteries be mechanically intact inside. This Genesis method includes the following procedure:

1. Screening— identification of battery integrity or mechanical failure
2. Regeneration— recovers the electrochemical potential of the battery
3. Charge— recovers full state of charge of the battery
4. Branding— capacity is tested to establish quality control standard

The Genesis procedure requires the use of the XCharger or the Genesis and our battery desulfating additive PowerPlus. The XCharger is for batteries with voltages of 6, 8 and 12. The Genesis is for industrial batteries use on forklifts and electric pallet jacks of any voltage and amperage. Please refer to our document “*BSI Technology*” to learn more about this.

It is not necessary to break apart a battery to use the Genesis Process. Its main feature is that it can be used for maintenance, prevention, trouble shouting, and recovery of the lost potential of batteries considered scrap or out of service. Below please find a table describing this in relation to labor and our equipment service time with batteries considered “scrap” or “spent”:

GENESIS PROCESS FOR EVERY 16 CRANKING BATTERIES		
Genesis Procedure	Time	Type of Intervention
Screening	½ Hour	Labor
Reactivation	1 Hour	Labor
Charge	20 Hours	XCharger
Branding	1 Hour	Labor
GENESIS PROCESS FOR EVERY 30 DEEP CYCLE BATTERIES		
Genesis Procedure	Time	Type of Intervention
Screening	1 Hour	Labor
Reactivation	1 Hour	Labor
Charge	24 Hours	XCharger
Branding	1 Hour	Labor

**GENESIS PROCESS ON INDUSTRIAL FORKLIFT BATTERIES
OF ANY VOLTAGE AND STORAGE CAPACITY**

Genesis Procedure	Time	Type of Intervention
Screening	1 Hour	Labor
Reactivation	1 Hour	Labor
Charge	24 Hours	XCharger
Branding	1 Hour	Labor

PowerPlus Battery Desulfating Additive

We are the proprietary owners and developers of the compound PowerPlus Automotive and PowerPlus Industrial. This additive was designed to permanently combat evolution of the hardening of soft lead sulfate (PbSO₄). It is biodegradable compound classified as non-hazardous and non-regulated that will not harm human health or the environment. It will not evaporate from inside the battery which states in the battery until it is discarded due to mechanical failure. The shelf life of PowerPlus is five years. Below please find a listing of its benefits to all lead acid batteries:

- ❖ Disallows hardening of lead sulfates on both plates
- ❖ Reconverts hard lead sulfates to original state of softness
- ❖ Reduces duration of charging time
- ❖ Increases discharging efficiency
- ❖ Reduces auto discharge phenomena
- ❖ Reduces risk of thermal runaway events
- ❖ Reduces water lost due to overheating
- ❖ Improves recombination of gasses
- ❖ Optimizes energy storage and retention in all batteries

The following tables allow you to appreciate how much batteries you can service with PowerPlus Battery Enhancer:

PowerPlus Automotive (5 Gallons or 640 oz (19 liters))

Quantity of Batteries	Type of Batteries
210	12 volts cranking (autos/trucks/motorbikes)
210	6 volts deep cycle (gulf carts, solar, etc)
160	8 volts deep cycle (gulf carts, solar, etc)
106	12 volts deep cycle (gulf carts, solar, etc)

Dosage of 3 ounces (89cc) per car battery; and 1 oz (30cc) per cell of deep cycle battery.

PowerPlus Automotive (5 Gallons or 640 oz (19 liters))

Quantity of Batteries	Type of Forklift Batteries
5.1	48 volts (24 cells of 2 volts each)
7.2	36 volts(18 cells of 2 volts each)
10.13	24 volts (12 cells of 2 volts each)

Dosage is 5 ounces (148cc) per cell of forklift battery.

Our Electronic Battery Conditioners

Our battery special charging conditioners are also proprietary of our company. We developed and manufacture them. Designed to match our battery recovery process Genesis. The chargers are multi-batteries and multi-voltage because they can service more than one battery at the same time on different voltages (state of charge), different electrolyte potentials (specific gravity), different applications (cranking or deep cycle), and different makes (Gel, AGM, VRLA, Vented). We use microprocessor technology that is acompany with our logic making the equipment easy to use and automated as they autoregulate the recovery process or the charge.

Let's look at the capabilities of each equipment:

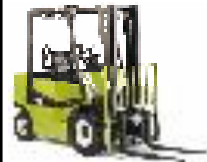
XCHARGE



Amount Batteries	Type of Batteries	Sample Applications
10	24 volt cranking	Military vehicle use
16	12 volt cranking	Cars, trucks, motorcycles, Military
16	12 volt deep cycle	Golf carts, Marine, Solar, Military
24	8 volt deep cycle	Golf carts, Marine, Solar, Military
30	6 volt deep cycle	Golf carts, Solar, Military

GENESIS

Genesis-I can recover the lost power of forklift batteries:



- any 24 volts of any amperage
- any 36 volts of any amperage
- any 48 volts of any amperage



Genesis Max can recover the lost power of forklift batteries of any voltage from 2 to 120 volts and of any storage amperage.



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