

# Battery Maintenance Systems

## What is Europulse?



Europulse is a compact electronic device, so small that it can fit into the palm of a hand. Employing Pulse Technology, it is guaranteed to dissolve sulfate crystals back into the battery's electrolyte solution. It reserves sulfate accumulation in the existing batteries, and also prevents its formation in new batteries.

The working principle of the Pulse Technology is simple. Electrical pulses are injected at a frequency which is equivalent to the resonant frequency of the sulfate crystal, it is able to become ionized and reform back into the electrolyte as an active material. Battery plates stay clean, providing more power, faster recharge speed, and cooler charging temperatures and due to complete absence of sulfation, there is no aging effect; the result, an extra ordinary long battery life.

The Europulse electronically dissolves sulfation formations back into the electrolyte solution without taking the battery out of service. It is important to note that Europulse devices are not battery chargers, but are supplements to existing charging systems.

It is recommended that Europulse products be used as a **preventive maintenance tool** for a heavy duty Traction battery or a Stationary cell. In the case of traction battery, Europulse units normally remove the sulfation, thereby re-strengthening the electrolyte and allowing the battery to return to service. The battery is always in "new like condition" because of the absence of sulfation. The running time of the battery is subsequently increased. Battery replacement cost is also reduced with an increase in the life of the battery.

In the case of an Automotive battery, Europulse is recommended as a **battery maintenance product**, in order to eliminate "shredding". With Europulse you can expect bright headlamps for night driving safety, reduced cost for battery replacement, and full dependability on the vehicle. Ideally one Europulse unit should be attached to a single vehicle battery.



## Product Specification

Europulse units are manufactured according to the approved International Standards of EC and EMC. The rating can be continuous or intermittent. The pulse current is between 0-4 Amp and the Pulse frequency is 8000-12000 cycles/sec. Units activate automatically when the battery is receiving charging current. A LED confirm's that the unit is working. One unit can rejuvenate a number of old batteries connected in series or parallel if the total voltage and Ah ratings are suitable to the unit.

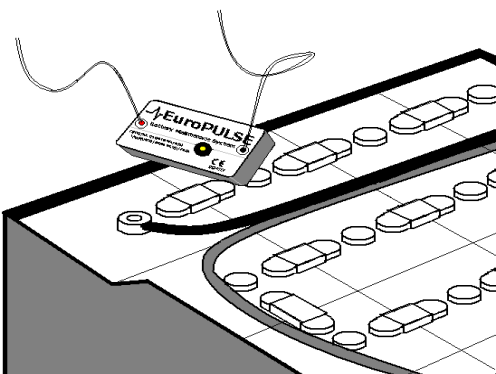
Product no.	Model	Battery voltage	Battery rating (Max current)	Output current
100012	LP12	12 V	100 Ah	1 Amp
110012	CP12	12 V	200 Ah	2 Amp
110024	CP24	24 V	250 Ah	2 Amp
110036	CP36	36 V	350 Ah	2 Amp
110048	CP48	48 V	350 Ah	2 Amp
120012	MP12	12 V	1200 Ah	4 Amp
120024	MP24	24 V	1200 Ah	4 Amp
120036	MP36	36 V	1200 Ah	4 Amp
120048	MP48	48 V	1200 Ah	4 Amp
120072	MP72	72 V	1200 Ah	4 Amp
120080	MP80	80 V	1200 Ah	4 Amp
120120	MP120	120 V	1200 Ah	4 Amp
210012	SP12	12 V	-	-

## Product Warranty

The Europulse products are epoxy molded, waterproof, and shock resistant and can withstand high ambient temperatures. The products carry a guarantee of three years from the date of purchase. We undertake to provide a replacement if the unit is found defective within three years from the date of sale.

## How to connect

Connect the red wire of the Europulse unit to the positive terminal and back wire to the negative terminal of battery. Make sure that the battery voltage corresponds to the Europulse voltage. Now charge the battery as usual.



### Some applications of Europulse units

Trucks, Vans, Buses, Marine, Golf C arts, Forklifts, Emergency lighting, Agricultural Machinery, UPS and Inverters, Electric Cars etc.

## What is the sulfation?

Lead acid batteries have a limited life and must be discarded. Nine out of ten batteries fail or loose capacity because of sulfation. During the normal discharged of a lead-acid battery, lead sulfate is formed due to chemical reaction between the lead plates and the sulfuric acid present in the electrolyte. When recharged, this soft spongy sulfate material is dissolved back into the electrolyte, but a small fraction adheres to the battery plates. The '**sulfation**' is the formation and subsequently hardening of the lead sulfate on the battery plates. This hard and crystalline sulfate cannot be dissolved back into the electrolyte by an ordinary battery charger. The sulfation is a slow ageing process and starts as soon as the battery is put to use; the result, a gradual loss of useful electrolyte and plate material.

## Sulfation in Automobile batteries

Often by the time an automotive battery fails due to sulfation, the battery plates are heavily corroded, the plate materials having fallen to the bottom of the battery. It is called shedding. The reason for shedding in an automobile battery (or starting battery) is simple. An automobile battery has to be light in weight and should be capable of giving high amperage for a short time. The battery plates are manufactured of high porosity to maximize surface area and thereby allow maximum discharged, required for starting the engine. The sulfate enters the porous cavities of the plate and as it advances towards the crystalline state, it greatly expands. The crystal growth causes plate material to break off, much the same way a rock breaks off due to the formation of ice in the cracks.

## Sulfation in Traction batteries

In case of traction batteries, the plates are of solid construction or are tubular, not having the porous quantities of automotive batteries. These batteries discharge large amounts of amperage over a long period of time as their plates are quite large, thick and heavy. Shedding is practically absent because the battery plates are not porous. The sulfate simply insulates the exterior of the plate and because of the high resistance, the batteries do not charge. Since the plates are not heavily corroded, it is comparatively easier to rejuvenate a traction battery and sometimes revive a discarded battery.