

## INDUSTRY SPOTLIGHT

### Emergency Rescue (ERV)

Having an emergency vehicle start every time is critical. Lives could depend on it. The problem is, these vehicles are potential "battery killers".

Imagine the power drain on emergency vehicle batteries. These vehicles use light bars, sirens, radar guns, radios, onboard computers and more. All that electronic equipment would tax any type of lead-acid battery. That's why every one of these vehicles needs *ReNew-IT Pulse Technology* products from PulseTech.



There are several models available for this industry, including **PowerPulse**, **Solargizer** and **RediPulse**. These scientifically-proven systems are ideal for emergency rescue vehicles and equipment. They improve performance by maximizing battery power and reliability while reducing downtime and maintenance. Plus, batteries last up to three times longer and perform stronger every day.



## TESTIMONIAL

"Before, we would go through about one set of batteries on each bed digger every year. But since we installed the Solargizers, we haven't had to replace a single battery."

Steve Armenta  
Maintenance Supervisor  
Basic Vegetable  
Hanford, California

## SUCCESS STORY

# PowerPulse Increases Electric Vehicle Range 42%

According to a survey, at least 25% of the U.S. would buy an electric vehicle (EV) if it were available at the same cost as a conventionally powered internal combustion driven car or truck. However, as EVs develop and become the standard on the roadways, a few concerns need to be resolved. One of these concerns is an effective power source which currently meets battery-performance and cost targets.

Green Motorworks in California has been involved with many phases of electric vehicle (EV) development since 1990, and lead-acid battery performance has also been one of its main concerns. That's why they decided to evaluate the effectiveness of the PowerPulse Battery Maintenance System from PulseTech.

**Evaluation:** GMW ran a control test with the PowerPulse since it is designed to optimize battery performance and increase the life of battery systems. The test was performed by Clare Bell, an EV technician/specialist with Green Motorworks. Clare has been working with EVs for several years and is editor of Current EEvents, the official newsletter of the Electric Auto Association. Clare installed a 48-volt model on the traction battery pack of a Kewet E1-Jet 3 neighborhood electric car. She performed a range test at average speeds up to 35 miles per hour.

**Results:** The vehicle traveled approximately 25 miles until 80% depth of discharge was reached. Previously, in a similar range test on the same terrain, the vehicle traveled only 14.7 miles to 80% depth of dis-

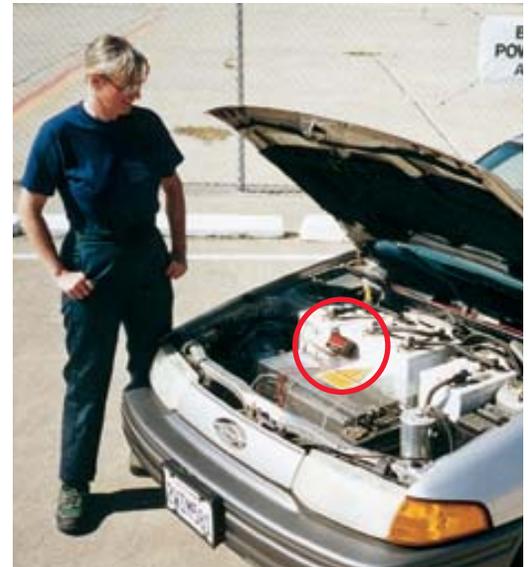


Photo: Clare Bell, electric vehicle technician/specialist for Green Motorworks and the editor of Current EEvents, stands next to an electric-powered Ford Escort using a PowerPulse to improve battery performance. (Bottom) A 48-volt PowerPulse system installed on the Escort batteries.

charge. That means PowerPulse increased the overall battery range by 42%.

"The (Kewet) should provide a range of 25 miles with (its) batteries. However this car has fallen off to less than 15 miles of range due to non-use and infrequent charging. After one week on the PowerPulse unit, I put the car on charge prior to range testing it. The batteries behaved significantly different under charge after PowerPulse treatment," said Clare. "Before installing PowerPulse, the batteries would gas vigorously at 55.6 volts and would not go above it with the charger current remaining at 19-20 amps without tapering off. After PowerPulse, the charger operated properly. The charge current began at 24 amps and stayed stable until the pack reached the gassing voltage of 58, then it began to taper off."

**LEARN MORE:** See your local PulseTech dealer to see how our products can help increase your battery reliability. For a dealer near you, call **1-800-580-7554**. Or visit **www.pulsetech.net**.

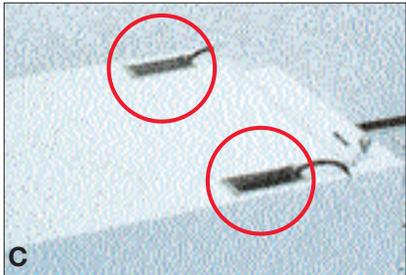
## SAMPLE INSTALLS



A



B



C



D

Installing PulseTech products is easy and well worth the time. Shown above are examples of actual customer installations:

- A. Maintenance personnel installing a 24-Volt Solargizer (735X150) on grader.
- B. 12-Volt PowerPulse (735X012) units on an over-the-road truck in British Columbia.
- C. Solar panels for two 12-Volt Solargizer (735X130) units mounted on ground support equipment for a major airline in Dallas, Texas.
- D. A passenger van using a 12-Volt PowerPulse (735X012) to maintain battery reliability.

## TECHTALK FAQ

Presenting a series of frequently-asked questions regarding the benefits of PulseTech products and how they can help your customers:

### How much longer will the battery last with ReNew-IT Pulse Technology?

It's difficult to determine an exact length of time because service life of a battery varies depending on usage. By using ReNew-IT Pulse Technology, though, the life of your batteries will be extended dramatically.

Keep in mind that there is actually enough reactive material in a battery to perform the energy transfer process for many, many years, but sulfation buildup has always prevented that from happening. Now, by preventing, and even removing, sulfation buildup, PulseTech products enable batteries to fulfill their true potential in performance and life cycle.

Our products have been evaluated by several sources, including NASA, Stennis Space Center, Management Equipment Evaluation Program (U.S. Air Force) and the Army Research Lab. The answer from all is the same—"This product does exactly what you say it does!" One source even stated that "we estimate (Solargizer) will add at least eight to ten years of life".

### Will PulseTech products benefit other electrical components on my vehicle?

Yes. By maintaining your batteries in peak condition, your alternator does not have to work as hard at recharging your vehicle.

The battery will accept a charge more readily and faster so alternator life should be extended. Plus, by maintaining available cranking amps, there will be more available energy going to your starter. The engine will turn over faster, so your starter should last longer, as well.

### What are other common causes of battery failure that PulseTech can help?

It's interesting to note that other common causes of battery failure (buckled plates, shedding, overcharging, mousing, etc.) are directly related to sulfation buildup. For example, according to a leading battery service manual buckled plates may be caused by "being overcharged while sulfated or stored in a deeply discharged state." Sulfate buildup weakens the plates to a point where batteries must be overcharged to accept energy. This will then overheat and warp, or "buckle", the plates.

This service manual also relates shedding of the plates to sulfation buildup. It states that "if material has shed from the plates in small chunks, high charging rates on sulfated plates can be the cause."

All in all, each of these and other common causes can be avoided in most cases through the use of ReNew-IT Pulse Technology products. 🇺🇸

## Scientifically-Proven Technology

Independent studies by researchers at Oakland University and Ohio State University recently confirmed that ReNew-It Pulse Technology increases battery efficiency and battery life dramatically. These two-year studies showed that our technology allowed a more even distribution of lead-sulfate crystals over the surface area of the battery plates. It also revealed a significant reduction in the size of crystals. These changes greatly improve a battery's ability to store and provide energy.

Our technology also prevents sulfate-induced corrosion that is the primary cause of shedding of active material on the plates. As a result, the life span of the battery is increased dramatically.



(Left) A battery plate covered in heavy sulfation buildup which reduces the battery's ability to accept, store and release energy. (Right) ReNew-It Pulse Technology™ cleans these lead-sulfate deposits off the plates and converts them to active electrolyte. This process exposes the active material on the battery plates which means batteries are stronger so you get up to three times longer life and maximum performance.



Visit this local PulseTech dealer today: