

Extending battery life saves money and the environment

By BILL SIURU

Sulfation is the greatest killer of batteries. About 80 percent of the lead-acid batteries discarded, died because of excessive sulfate build up on the plates. Complete drains also drastically reduce the life of the battery. One deep discharge can reduce a battery's life by 30-40 percent. For those in cold climates, a completely discharged lead-acid battery will freeze at around +20 degrees F. One with a 25 percent remaining charge will freeze at about +5 degrees F. Usually, frozen batteries crack and are rendered useless.

Sulfation occurs when sulfur molecules in the battery electrolyte discharge to a point where they crystallize and coat the lead plates. The more the plates are coated, the less energy they can accept. Eventually, they become so heavily coated the battery dies.

A variety of products claim they reverse the sulfation process. Some probably work well, while others are worthless.

The Solargizer and PowerPulse Battery Maintenance Systems marketed by PulseTech Products Corp. appear to be based on sound technical principles. Perhaps the best testimony is the list of users of the PulseTech technology, which includes the U.S. Army, U.S. Marine Corps and Canadian military.

PulseTech's patented technique emits a pulsating DC current into the battery's plates. The current re-energizes the crystallizing sulfur molecules, coating the plates on an individual basis. The pulsing current affects only the sulfur molecule, not the plate. The removed sulfates are returned to the battery acid as "active sulfur" molecules. The pulses are at the resonant frequency of sulfur, so they affect only the sulfates and not the plates.

According to PulseTech, some other products designed to limit sulfation maintain the batteries by constantly charging or overcharging them. Too much charging can overheat and damage the lead plates. The process can also vibrate the plates to knock the sulfates off. This can damage the plates. Also, the sulfates removed fall to the bottom of the battery acid and do not re-enter the electrolyte as active molecules.

By removing all sulfates and returning them to the acid, it keeps the battery operating at 100% efficiency and can extend battery life by up to five times. It can also reduce recharge time, extend battery capacity so idle batteries go longer between charges and prevent complete loss of the charge when the battery is left idle for extended periods.

The PulseTech technology is incorporated in a variety of products. The Solargizer versions are powered by a small solar panel which absorbs sunlight, converting it into energy to desulfate the battery. The solar panel is efficient enough that it only needs one to two

hours of direct sunlight a day to accomplish its task for 24 hours. This is true even in areas where skies are cloudy or lightly overcast most of the time. If the skies are extremely overcast, it may take a bit longer to absorb sufficient sunlight. Since the panel is so effi-

cient, it can be installed either vertically or horizontally. Installing it vertically will prevent snow, dirt or other materials from covering the solar panel and blocking sunlight. PulseTech offers a model of the Solargizer with a 115-volt AC adapter to supply power for

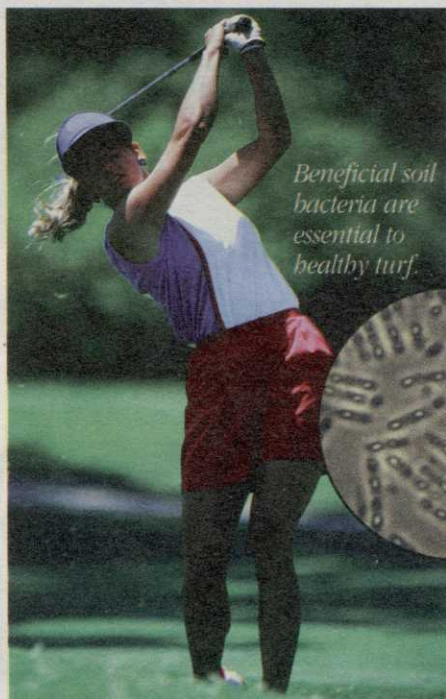
vehicles stored inside or under cover.

The technique can be used with any lead acid battery. Solargizer Battery Maintenance Systems are available in standard and industrial 12-volt, marine and 24- and 36-volt versions.

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Why on-site fermentation for beneficial soil bacteria is overkill

A huge investment in on-site fermentation systems is made unnecessary by a new controlled-dose microbial inoculant that can be even more effective



Beneficial soil bacteria are essential to healthy turf.

Highly effective microbes in an easier-to-use inoculant form

Now a new option for inoculating fine turf with beneficial soil microbes is available in the form of a product called Organica® Plant Growth Activator (PGA). Compared with complex on-site fermentation systems, its practical advantages include extraordinarily low cost and ease of application. The inoculant includes multiple microbial strains, and is delivered in dormant, dry form, which is easily dissolved for application with standard spray techniques, or for injection into irrigation systems.



Organica is a primary researcher, developer, and manufacturer of high quality microbial products for professional turf applications. Organica scientists, advisors and board members

include some of the world's most experienced authorities on biological product development.

Dr. David Pramer
former Dean of the School of Microbiology, Rutgers University

Dr. Raj Mehta
President of Organica, Inc.

Dr. Charles Bruno
former Director of Squibb Medical Institute

Dr. Calvin Ward
former Co-Director of the U.S. EPA Research Center

Dr. Marvin Weinstein
Director at New Brunswick Scientific Co.

Dr. Claude Nash
former Senior Director at Sterling-Winthrop

Dr. Fred Obenchain
President of BioNet International, Inc.

Dr. William Donahue
President of Sierra Research Laboratories

Once introduced in soil, beneficial microbes establish conditions effective in improving plant health and helping prevent growth of damaging fungi, such as *Pythium*, *Rhizoctonia*, and *Fusarium*. Organica PGA helps solubilize phosphorous and other soil minerals for plant availability. It improves soil conditions and enhances turf health with nitrogen-fixing and cytokinin-producing bacteria, essential amino acids, and an array of vitamins to help reduce dependence on chemical applications.



New Organica PGA microbial inoculant comes ready to apply, promises high efficacy with added convenience and lower cost.

In the move toward more biologically sound turf solutions, Organica PGA deserves a try on your course. Test an area on your turf. We believe you will find the results so encouraging that, when it comes to beneficial microbial inoculants, your first choice will be Organica Plant Growth Activator.

* Cook and Baker 1983. The Nature and Practice of Biological Control of Plant Pathogens. The American Phytopathological Society, St. Paul, MN.

THE EVIDENCE FOR the beneficial effects of an enhanced rhizosphere through optimized bacterial activity is well documented.

"*Pseudomonas spp.* are well adapted to rhizosphere occupancy, but are sensitive to drying. Spore-forming *Bacillus spp.* are more durable than *Pseudomonas spp.* but less specialized for the rhizosphere. Both of these groups have given excellent results in field tests."*

The question is, how best to introduce and propagate beneficial soil bacteria in the soil environment to increase plant health and reduce chemical needs?

Some believe that on-site fermentation of beneficial bacteria is better than any other method of introduction. The facts of microbiological science, however, tell a different story. Beneficial bacterial strains, such as *genus Bacillus*, and *Streptomyces* survive very well in a dormant state, given proper conditions.

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Colleagues coalesce at Congressional, come to the aid of super, U.S. Open

By TERRY BUCHEN

Paul R. Latshaw, superintendent at Congressional Country Club, has been a leader and trendsetter since his college days at Penn State. He still is and will probably be the only superintendent on the planet to host The Masters, PGA Championship and U.S. Open. One of his many innovations was to mow all of the fairways at Congressional during this year's U.S. Open with walk-behind greensmowers ... but more on that later.

One of Latshaw's proudest moments came during the Saturday telecast on NBC, in the midst of a rain delay. Johnny Miller said there were many superintendents on staff that

would help get the course playable quite fast after the rain stopped. Then Dick Engberg echoed Miller's sentiments, saying many superintendents stood ready to help, especially in shoveling sand and readying the bunkers for play to resume.

Every superintendent in the world probably got goose bumps listening to these long-overdue compliments that gave our profession more exposure than witnessed in a long time.

Miller's many compliments about the "perfect playing

conditions" and the overall condition of the course, along with a thank-you to Latshaw for a job well done made all of us in the trenches feel great. "We had 50 regular employees and 75 volunteers, many of whom

were superintendents and assistants from around the world," said Latshaw. "And these supers and assistants weren't supervising or anything like that. They were doing the actual mowing and attention-to-detail work, or as we called

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Battery life

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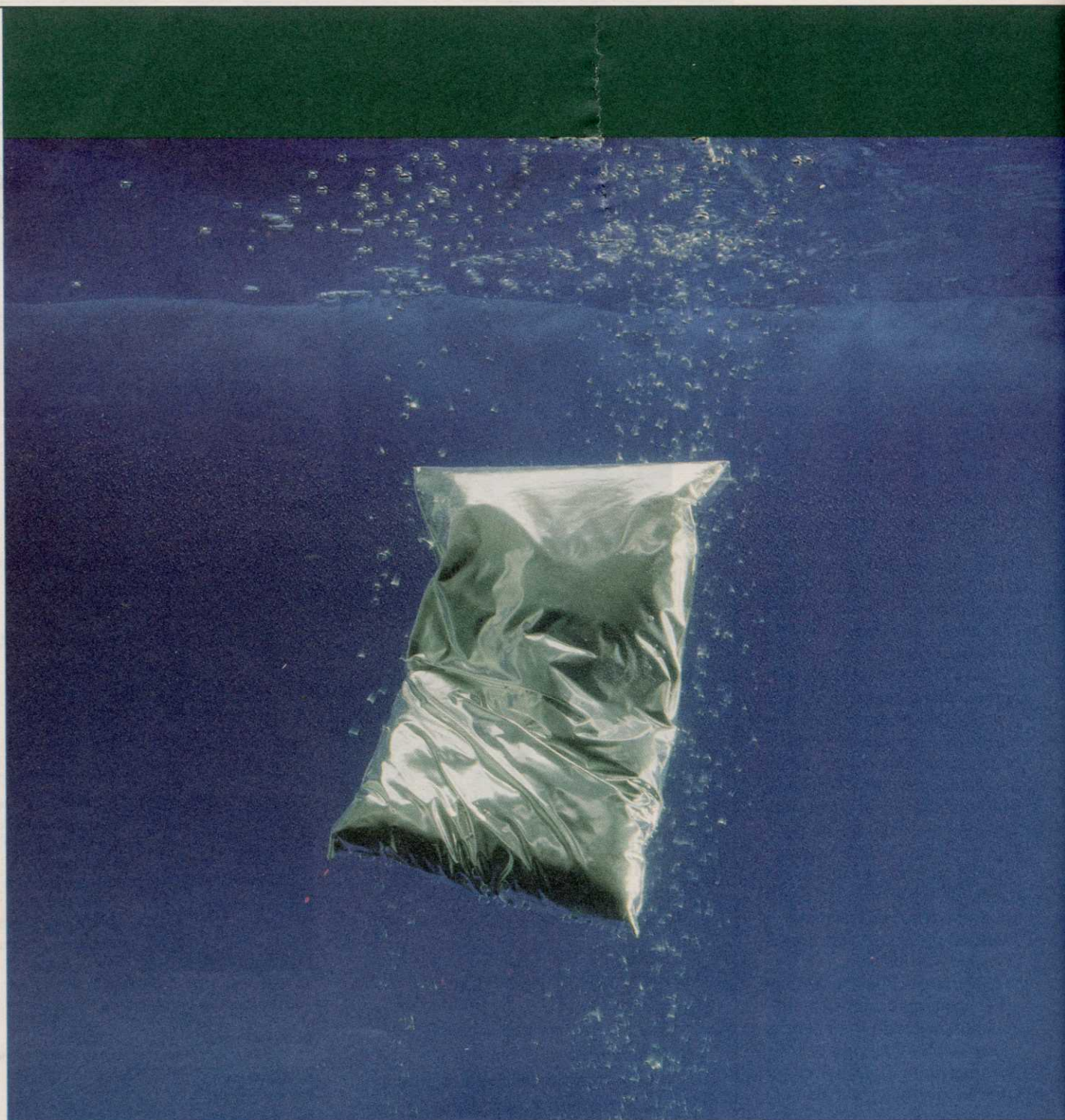
The PowerPulse Battery Maintenance Systems in 12-, 24- 36- and 48-volt obtain their power for desulfation from the battery itself. PulseTech also offers both a solar cell-powered Solargizer Solar Charger and normally-powered Pulse Charger that both charge and desulfate the battery.

PulseTech offers a couple of other products that also extend battery life. The Connector is an all-brass terminal which creates an airtight seal at the battery terminals to eliminate leaking acid gas, a leading cause of battery terminal corrosion.

Made of brass, the connector improves electrical conductivity by 400 percent for more cranking power. The Connector is filled with a dielectric grease through a zerk fitting. The Battery Mat is designed to absorb and neutralize battery acid that may leak or result from a boil-over. It also helps prevent battery corrosion as well as cushioning against vibration and shock.

You can get protection from complete battery drains with PriorityStart! from BLI International. PriorityStart! is an electronic device that is attached to the positive terminal of the battery and grounded to the negative terminal. The device constantly monitors battery power drain sensing when the voltage drops below a preset level. Then a switch capable of handling large amounts of current mechanically disconnects the battery preventing any further battery drain. The battery is reconnected when the system is reactivated.

Making batteries last longer not only saves money, it also helps protect the environment. Since batteries last longer, there will be less contamination by battery lead and sulfuric dumped from discarded batteries.



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Before your greens can look like the one on the right-hand page, you need the product on the left: Fore® fungicide.

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