

From: "Clipper"

Subject: [tt-forum] The care of lead acid batteries

Date: Wednesday, December 29, 2010 9:46 AM

I ran across this on another group and thought it may be good information to pass along. I suppose Mikel could verify or correct if need be.

Clipper

The care of lead acid batteries

Storage batteries are used in just about every independent energy system. The lead acid storage battery is a familiar sight in your car. Usually these Batteries give years of trouble-free service and the average driver rarely has to be concerned about the chemistry of the battery, cycle life, or charge/discharge rates.

The lead acid batteries used in an independent energy system are another story. If there is one item that is least understood or abused in these systems, it's the battery.

If you follow the list of do's and don'ts outlined below, living with the Storage battery will be a lot easier and less costly.

Rule 1. This comes as a shock to most people, but a 12-volt lead acid battery is almost dead when the voltage at rest (no loads or discharge) is 12 volts. Less than 25% of the battery's capacity remains. The voltage of a 12-volt lead acid Battery will vary between 11.6 and 12.6 volts discharged and fully charged. This one volt range can be used as an approximate indicator of the state of charge and illustrates the need for an accurate digital voltmeter.

Rule 2. In order to obtain long life from your batteries they should be discharged to no more than 50% of capacity. This is not easy to accomplish,

especially in a solar electric system in winter. A backup generator or, if you have the wind, a wind generator, can make this a lot easier to do reliably. Hydroelectric systems don't usually have this problem.

Rule 3. Don't use car batteries in an independent system. They are not made to be deep-cycled and will have an early death when used in this way. A good golf cart or forklift battery like the Trojan L-16 is a much better choice.

Rule 4. Never let a lead acid battery sit in a discharged state. Recharge as soon as possible. Every time you let them set for any length of time (even a few days) you will begin to accumulate lead sulfate on the plates that reduces their capacity.

Rule 5. If you live in a cold climate, be sure and provide insulation or a warm area for your batteries. The useful capacity and the batteries' ability to deliver power are greatly reduced in cold temperatures. Your batteries can also freeze when in a discharged state, so keep them warm.

Rule 6. Never draw large amounts of current from your batteries when in a Discharged state. Damage to the plates can occur.

Rule 7. Batteries should have an "equalize charge" at least every other month or sometimes once a month depending on how severe the service. An equalize charge is a form of controlled overcharge that helps to place all the cells at an equal voltage. Large currents are needed to equalize, so once again you can see the need for a backup generator. An ideal method of equalization is to purchase an inverter with a built-in battery charger and an equalize function.

Rule 8. Never attempt to adjust the electrolyte level in the battery. Raising or lowering the specific gravity not only voids the warranty, but can ruin the batteries or pose an unhealthy risk of acid burns. Adding distilled water when needed should be as far as you go.

Rule 9. Always keep battery terminals and the tops of the batteries clean and free of corrosion. The batteries can self discharge rapidly, and badly corroded terminals can cause electrical problems, especially when drawing a lot of current.

Rule 10. Do some follow-up study on charge and discharge rates for your batteries. Consult a reputable battery dealer or the supplier/designer of your system as to the best way to treat your batteries. Nothing can kill a good set of batteries faster than improper charging and discharging. ?