Emergency Power from Atmospheric Static Electricity

Charles (KC8VWM) on September 21, 2004
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Emergency Power - Survival Style

What would you say if I told you it is possible to build an effective simple battery charger for an emergency backup battery that is cheap, has no moving parts, has no generator, works day or night, and has no solar cells and when weather conditions worsens, the better it works?

What if we could harness this free energy and use it to our advantage after an emergency event such as a large-scale power blackout, or after a hurricane when we have no other methods at our disposal to charge our emergency batteries after such an event occurs?

What if I told you that most hams already have the main components of this charging system already installed at their operating locations?

Most all of us have learned to pick up our coax and to tap the PL-259 connector against the case of the radio or ground to bleed off this charge before connecting it to our radio equipment.

How few of us have ever been forced into a situation to have to think about how we can turn this everyday static problem into free energy?

It is a well-known fact that enormous charges can build up on long wire antennas and the longer the wire the more charge that it will build. Most hams think of this as a disadvantage. I would like to further explore the possibility of how we can turn this into a distinct advantage for both emergency backup power and wilderness radio energy requirements.

I know that our antennas are supposed to intercept the vertical DC current coming down from the sky. This typically represents a high voltage at a few micro amps (the higher up your antenna is located off the ground, the higher the voltage values on your antenna.)

We can further validate this information by trying this little experiment that only a ham operator would actually be caught doing:

First let's hook up an NE-2 bulb from the antenna to ground, and then watch the bulb in a dark room. It should start blinking repeatedly. Once you see the bulb flashing, try hooking a few more NE-2 bulbs in series to determine how much power your antenna wire can produce. For those that may not be sure what an NE-2 bulb might look like, here is a photo at this link:

http://www.kenselectronics.com/picture3/ne2.jpg

You can "approximate" the voltage available by adding more NE-2 light bulbs into the circuit chain until they won't flash anymore.

In this experiment, we can assume that each bulb adds about 100V to the trigger voltage. If you can persuade a series chain of 10 bulbs to blink, then your antenna is probably putting out at least several hundred volts, maybe even a 1000V!

Let's start this project by choosing a good marine battery. Marine batteries will typically hold a charge longer than regular car batteries. Regular car batteries can loose a charge just sitting around at a rate of almost 2 amps a day… This means precious backup power will be literally lost into thin air! Our objective in this situation is to store as much emergency backup power in reserve as possible, for the longest period of time possible.

Generally speaking, batteries that are rated in "reserve minutes" will typically outlast batteries that are rated in "crank amps."

Next you will need a working spark plug. I prefer the V groove type, but any old spark plug will work just fine. Start by hooking up the spark plug tip to the end of your antenna wire (antenna wire described later) and then run the ground end of the spark plug (where the threads are) into the top cap of a 12-volt automotive coil. Any old salvaged working coil will do. (Of course, except for the one your wife currently uses in her car.)

It is important to choose only insulated antenna wire for this project, as this will work best. The wire should be completely insulated from end to end with no breaks or soldered connections anywhere in-between. It doesn't seem to make any difference whether you lay it out in a straight line, is a looped antenna configuration, or if it weaves back and forth. Length is the key, not its footprint size.

Old discarded phone line, old cable TV coax, practically any wire that is insulated and long will provide satisfactory results provided that you don't tear the neighbor's cable TV wire out of his lawn, you shouldn't have any problems using any type of insulated wire for this project.

To connect the coil to the battery, we will use the bottom connector of the automotive coil that is normally connected to the points in your car. This will now be connected to the positive side of your emergency battery. The negative post of the battery is simply hooked up to a good earth ground.

You can make this work in field, wilderness or portable radio operations by driving a temporary ground rod into the earth and then connect the ground directly to the negative post on your battery.

Next we install a 1 to 3 KV capacitor. The capacitor value will work best if it is around a few pico-farads like those typically found in the horizontal section of a television chassis. The capacitor is then connected from ground back to the wire where the top of the spark plug is connected to the antenna.

Nothing should be touching ground except the ground post of the battery. Approx. 200 feet of insulated wire will completely charge a 12 volt deep cycle every 2 or 3 days! A thousand feet of wire will do it a lot quicker but the voltages will approach lethal levels.

This works as a charging system because the long antenna wire acts like a capacitor building an electric charge on the antenna wire. When a few thousand volts are reached, it will be discharge by "sparking" across the spark plug. The spark plug then delivers the electric charge to the coil, which in turn "down-converts" it to a few hundred volts. The electricity is then injected into the battery from the coil. The coil works by "pulsing" the charge into the battery at regular discharge intervals.

The weather controls how much static electricity is in the air at any given time during the course of the day or night. This electricity is then made available for charging our battery.

The real advantage of this particular charging system during an emergency situation is that the worst the weather gets, the more electricity you will have at your disposal for charging your battery.

When conditions such as wind and super cold air are frequently persistent, you will be able to weld the fillings in your teeth together! ...Be careful!

The higher you get the insulated wire of the ground, the better it will work in capturing DC current from the air for this highly effective, but low cost emergency battery charging system.

73

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