The Volt Vette Project

Chapter 48

A Second Look at Lithium

As you will recall from my long -a-go chapter on batteries, lead batteries come in 3 types, starter, marine, and deep cell. But electric cars are happy only with deep cells.
In August 2011 I found two of my batteries to be almost dead.

I have been ordering my lead deep cell batteries from a place called Batteries Plus. I placed an order for 2 Deka deep cells. But when I went to pick them up I was presented with 2 Ray O Vac marine batteries. The Batteries Plus guys told me these batteries were just as good as the Deka's.
But I seemed to recall that Ray O Vac had gone under some years ago and the name "Ray O Vac" had been sold... to... who?
I searched the internet but came up empty.

However, I did find some places that sold real deep cell batteries.
But the prices were as high as $600. per 12 volt battery!

Time to give lithium a hard second look.

I find many flavors:

Lithium Polymer
Lithium Cobalt
Lithium Manganese Oxide
Lithium Iron Phosphate
Lithium Iron Manganese Phosphate
Lithium Titrate

Lithium Polymer is very light and packs a lot of power, pound to pound.
It is seen most often powering electric airplanes, including a certain spy plane the U.S. Air Force would rather I not talk about.

Lithium Manganese Phosphate, I have been told, is used in the Chevy Volt.
It appears to have more power than Iron Phosphate and is safer than Polymer.

Lithium Iron Phosphate does not burn even when greatly overcharged.
It is popular with the car conversion crowd because you can actually buy it.
The best battery in the world (in my opinion Nickel Metal Hydride) is of no use to me if I can't get my hands on it.

I thought about buying the Iron Phosphate until I heard about Lithium Iron Manganese Phosphate batteries. These batteries are supposedly just as safe as Iron Phosphate, but with a bit more power.

So it's Lithium Iron Manganese Phosphate for me!

Chris, Kurt, and Stew all want to switch to lithium, too.
So we pool our money and place one big order so we can get a volume discount.

The batteries arrive well protected in form lined cardboard boxes.

As you can see, the GBS brand cells come strapped and wired 4 cells at a time to form nice and neat 12-volt batteries.

Most lithium is sold as individual 3 volt 100 amp hour cells, like the one above.
I also like the plastic caps that help prevent little fingers from getting big electrical shocks!

GBS also supplies pre-cut and drilled copper buss bar connectors, that I hope will make "wiring" the pack a little easier.

If I had been smart, I would have replaced the 13 lead batteries with 13 lithium batteries. But No! I got greedy!
The lithium batteries take up less space in the battery boxes and so I thought, "Why not cram more batteries in?" If I had two strings, each 44 cells long, I would go from having a 16 kilowatt hour "fuel tank" to a 28. More range!
So I buy 88 cells, that's 22 batteries, and find out they are a little bit bigger than I had planned on.

My head hurts as I try, day after day, to think my way out of a costly jam.