Lithium Batteries

Let me preface what follows by saying that Lithium batteries are not, in themselves, inherently dangerous if used properly. In fact, they power millions of laptop computers, camcorders, and cell phones every day with very few problems. The catch comes when the human factor is introduced. Most of the above mentioned devices come with a dedicated, non adjustable charger, designed specifically for that device's battery. We, however, use chargers with adjustable charge settings to charge a wide variety of different battery types, and, being human, we sometimes find ourselves saying, "Oops!" Add to that, the increasing number of cheap (price AND quality) chargers coming out of China that may or may not be "UL approved," and some extra caution is in order. Unfortunately, in the case of Lithium batteries, these issues can have serious consequences.

First off, never leave ANY battery unattended if you are fast charging it, no matter what the chemistry. Even the familiar old NiCad can burst and cause a fire if grossly abused while fast charging. There is always the possibility that the strain of regular fast charging can eventually aggravate an existing weakness in a cell and cause a problem as well.

Lithium batteries, in particular, are quite intolerant of overcharging, and react violently if abused. They can, in fact, swell and explode very quickly if overcharged or damaged in a crash. As far as charging goes, you should only use a balance style charger, specifically designed for Lithium cells, and be very, very meticulous in setting it up properly for the pack under charge.

Balancing is important because Lithium packs are typically made up of several cells in series. Over time, the cells can become mismatched due to variations in their internal chemistry and can begin to charge at different rates. This can cause the faster charging cells to begin to overcharge while lagging cells play catch up if charged in series. Eventually, this overcharging can cause problems.

When charging, make sure that you have programmed the charger for the correct number of cells and the correct capacity rating/charge current, as specified by the battery manufacturer (Generally no more than 1C, although some newer LiPo packs tolerate up to 3C rates). Prior to starting the charge, double check your work, just to make sure! Remember, one of our members once nearly burned up his new SUV by leaving a battery charging in the vehicle on too high a rate. (Luckily, we discovered the battery balloon before it burst!) I would also recommend charging them on a nonflammable surface and far enough away from any other flammable materials to avoid a fire if a pack should ignite. **Above all, do not leave them unattended**! Remember, most fires with Lithium batteries occur when the voltage or charge current is set too high, or when a charger malfunctions.

Finally, due to the fact that Lithium Polymer batteries are constructed as a soft foil pouch rather than a metal can, like a NiCad, they are much more susceptible to being damaged in a crash. If the pack appears to be physically damaged in any way, it is best to dispose of it. Seems extreme, I know, but that's the price we pay for the extreme performance of these Lithium cells. Sort of reminds me of an old Hot Rod Magazine advertisement for high performance engine parts. It read, "Speed is expensive my son….how fast would you like to go?"

Have fun and be safe!

Jim