

Pfeiffer Field R/C News

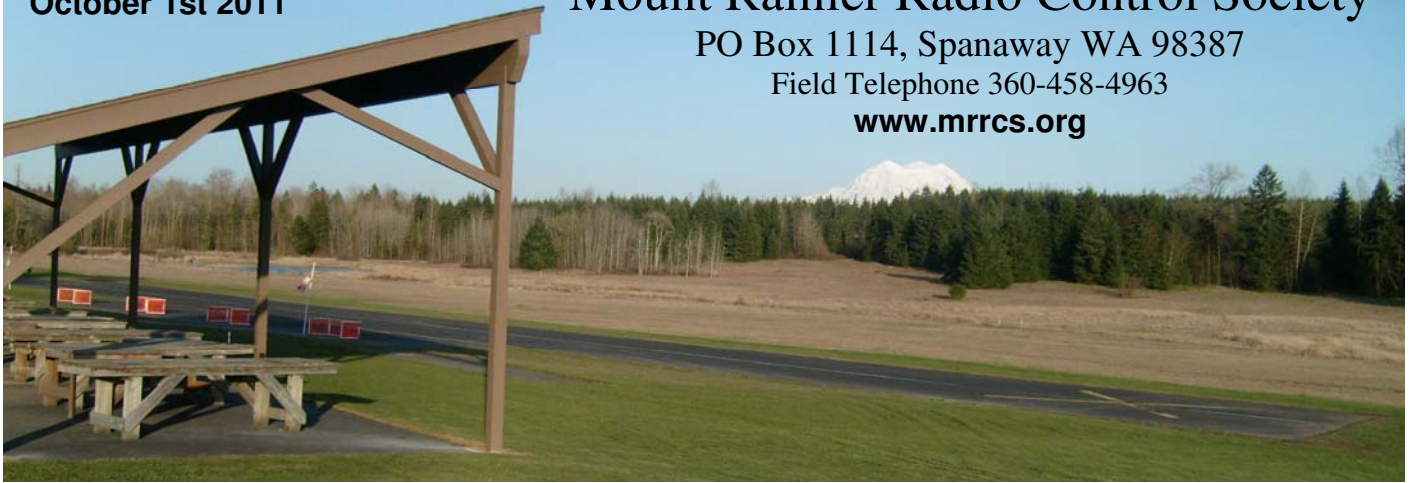
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Mount Rainier Radio Control Society

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A123 Receiver Battery Packs by **Rick Hanners**

Technology moves on as we all know. It was only a few short years ago that 2.4GHz radio systems showed up when 72MHz radio systems were the radio system of choice. Yet in just a few short years, 72MHz system availability has just about disappeared. Yet today those of us who fly glow/gas powered models are using the same receiver battery technology we have been using for decades. Namely the tried and true NiCad battery pack and more recently the NiMH battery pack.

These types of battery packs have served us well over the years but they do have several disadvantages:

- Recharging can take a long time depending on level of discharge

- NiCad's can develop a memory

- Their self discharge losses are high

- If inactive for long periods they often die

- NiCad's aren't good for the environment, NiMH's are OK

I've used NiCad packs for as long as I've been flying but recently with larger aircraft that I've been building I was looking for something that might be better. Like everyone else who started flying electric powered models, my main power source has been Lithium Polymer (LiPo) batteries.

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Notice

Nominating Committee

At the October meeting the president appointed three members to a nominating committee for the election of officers and 2 board members for the year 2012. The committee members are: Ken Murdock, Tom Randal and Gene Iwanski. If you would like to run for office or want to nominate someone please contact one of these members.

Nominations will also be taken from the floor at the November meeting.

The problem though of adapting these batteries with our radios systems was that the voltage out of a 2 cell LiPo pack was just too high. Receivers could handle the higher voltage due to built in regulators but the raw battery voltage supplied to the servos would just burn them out if used. Then in 2006 A123 Systems introduced a cell known mainly as the A123. The chemistry was lithium based called Lithium Iron Phosphate (or Lithium Ferrite Nano Phosphate), usually abbreviated as LiFe or LiFePO4. These batteries quickly became the battery of choice for battery powered hand tools due to the fact that they were extremely rugged, could be charged at least 1000 times before significant capacity loss, could be charged in a short amount of time using high currents and were capable of supplying high amounts of current. Eventually these cells came to the attention of electric flyers. However, despite their rugged nature, the fact was the nominal cell voltage was less than that of LiPo cells. So a similar cell count battery pack couldn't deliver the same power to a motor as the same cell count LiPo pack could. LiFePO4 battery packs still are used by electric fliers as a flight pack battery but for this application just are not as popular.

However, as it turns out a 2 cell LiFePO4 battery pack has essentially the same voltage levels as are found in a 5 cell NiCad/NiMH battery pack, which people have used for years in model planes, although they are not as popular as the standard 4 cell NiCad/NiMH packs. So within the last couple of years Lithium based receiver packs based on LiFePO4 chemistry have been introduced to the modeling community. Many hobby dealers sell LiFe batteries packs for receivers and transmitters. However, not all LiFe batteries are the same as the original A123 cells. They are usually not as rugged, usually can't deliver the same discharge current and depending on the brand, might not be able to be charged at the same high levels. My experience has been only with the A123 battery packs so the rest of the information that follows relates to their use. A123 battery packs used as a receiver pack have several advantages over current NiCad/NiMH technology:

- Half the weight of NiCad's, with no loss of performance
 - Capable of up to 30C discharge (limited by wire size)
 - Low self discharge – retains better than 95% charge for a month or more
 - Long cycle life – over 1,000 cycles at 10C discharge Resistant to explosions/fire, even from accidental overcharging
 - Extremely flat discharge curve, better than NiCad's and LiPo's
 - Not sensitive to heat like LiPo's
 - Can be quickly charged in about 15 minutes
 - Servos run faster with higher torque
- A123 battery packs of course, do have their disadvantages also:
- They only come in 2 sizes – 1100 and 2300ma
 - Need a charger specifically capable of charging LiFe cells
 - Balancing required but far less frequently than LiPo's
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Members please attend our monthly meetings and have a chance to win a new Futaba radio system or a gallon of glow fuel. Also at every meeting we have our normal gourmet lunch provided by our Chef Mike Nagley.



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For me the disadvantages of A123 packs really haven't been a show stopper. The two capacity sizes fit in with the type of planes I fly, I already had a LiFe capable charger and after 8 months of use, I've yet to find the cells out of balance enough to need balancing. The speed of the servos has increased as well as the torque.

So long as your servos are rated for 6v operation (see the specs on the servo box), you are good to go. The flat resting voltage of an A123 pack is 6.6v. My 2 cell battery pack is made from 1100ma cells and so is capable of delivering a constant 33 Amps if the wiring could take it. The result is a delivered fairly constant voltage with more than sufficient current capability to meet the demands of the servos. After 8 months of use I'm now convinced that for me, when a receiver battery pack is going to be required, it will be a 2 cell A123 battery pack unless the size of the plane dictates using a NiCad (such as a 1/2A plane). The advantages are many, the disadvantages few, so I invite you to do your own investigation to see if this new technology might suit your needs also.

Crash of the month



Should be an easy fix!

Many Chinese dealers are trying to get into the USA market, please support your local hobby dealers.

Hobbytown
402 Garfield St. South
Tacoma, WA
253-531-8111

Remote Control Hobbies
7837 Martin Way Suite 101
Lacey, WA
360-456-4517



Trivia Question for the month

Name this airplane?



No one has correctly guessed the make of this airplane
Please send your guess to denney47@comcast.net



Who is this guy?