Cornwall Aero Modellers

NEWSLETTER

December 2014

Club Executive

President: Karl Kingston
Vice-president: Rick Besner
Secy/Treasurer: Roger Belanger
Field manager: Wade Flynn
Events: Jack Dikland & Merv Blizzard
News editor: Frank Reaume
Safety Officer: Taylor Pratt
CFI: Karl Kingston

The December meeting was held at Minimax, with 10 members present.

- The treasurer's report was adopted as read.
- The swap shop, held on Nov. 29, was a financial success.
- The club was unable to secure either the Armoury or a local gym for the winter season of indoor flying.
- The entrance road to the club will be marked for snowplowing.
- Another 100 club brochures will be printed for future use.
- The club anticipates hearing from the ZD concerning the schedule of events for the 2015 season.

The next club meeting will be held on Jan. 12 at Minimax, starting at 7:30pm

The club will hold its annual Christmas dinner at the Legion on December 20. Cliff Morris will be honoured for his life-long involvement with the hobby.

The club treasurer is now accepting 2015 membership dues, so send in your cheques asap.

Turbo Spinners:

Electric fliers should note that Tru-Turn has introduced a line of “Turbo-Cool” spinners, which are specifically designed for electric motor configurations. The cone and backplate have been machined in a manner to promote air flow into the model, to assist in cooling the motor and speed control. Available in most of the usual sizes, and can also be ordered in various anodized colours.

More info available at: http://www.truturn.com

Using LiFe batteries in R/C applications:

Most modern servos and receivers can operate with voltages in the 6v range. For many years, people used Nicad or Nimh cells in their receiver packs with great success. However, a new chemistry is now available for this purpose, i.e. Lithium-Iron-Phosphate cells (usually referred to as LiFePO4 or simply LiFe packs).

These cells were developed in the late 90's, and were originally produced by A123 systems. In this technology, the particles of lithium that loose/gain electrons during charging and discharging are extremely tiny. This makes it possible for the cells to be charged and discharged at very high rates without overheating or loosing capacity, as has happened with LiPo packs.

At a molecular level the negative plate material stands like a shag carpet rather than laying 'end-to-end'. This produces an incredible amount of surface area gain for A123's negative plate and it's why A123 can tolerate immense current loading without voltage sag. Another benefit to the nano plating technology is a huge increase in cell life. A123s are aluminum cased cylindrical cells with welded alloy end plates and towers like a Nicad cell. This enables a rugged welded strap pack assembly system (like Nicads) that is exceptionally robust and very resistant to vibration and hard knocks.

LiFe batteries are considered a "Lithium-ion" battery because they use a liquid electrolyte solution as opposed to the solid "gel-type" polymer used in "Lipo" packs. The chemistry of LiFe battery packs is much more stable than the LiCoO2 chemistry found in conventional LiPo batteries, making them much less likely to overheat or catch fire when overcharged or crashed. This is a big plus.

The nominal voltage of an A123 cell is 3.3 volts per cell, as opposed to the 3.7 volts per cell of a standard Lipo Pack. The maximum charge of an A123 cell is 3.6 volts whereas the maximum charge of a Lipo cell is 4.2 volts. In the r/c world, we typically connect two A123 cells in series to produce 6.6v to power the receiver. Under load, this usually falls to 6.2v, which is perfect for r/c use.

Another great advantage of A123 battery packs is the fact that the voltage remains virtually constant throughout the entire discharge curve, which allows you to fly at full power the entire flight. If you are accustomed to using Nicad or Nimh packs,

the flat discharge curve of these batteries can take some getting used to. Measuring the voltage of LiFe battery packs is really no indication of how much capacity is left in the battery. So it takes a few flights to get a good idea of how long the battery will last with your set up and flying style. Careful monitoring of the capacity taken from the pack during a normal flight will give the pilot a good idea of how many flights can be flown before a recharge is necessary.
A word of caution: It is imperative that you utilize a charger that is compatible with LiFe chemistry.

There are two types of A123 cells in common use for R/C purposes.

(1) A123 single cell, 1100mah. These batteries are capable of 30C constant discharge, with a 10 second pulse rating of 60C. Can be cycled up to 1000 times before significant capacity loss occurs. The rugged assembly of the products will ensure that your pack will last for years, not months. Can be repeatedly charged to 100% in 15 minutes.

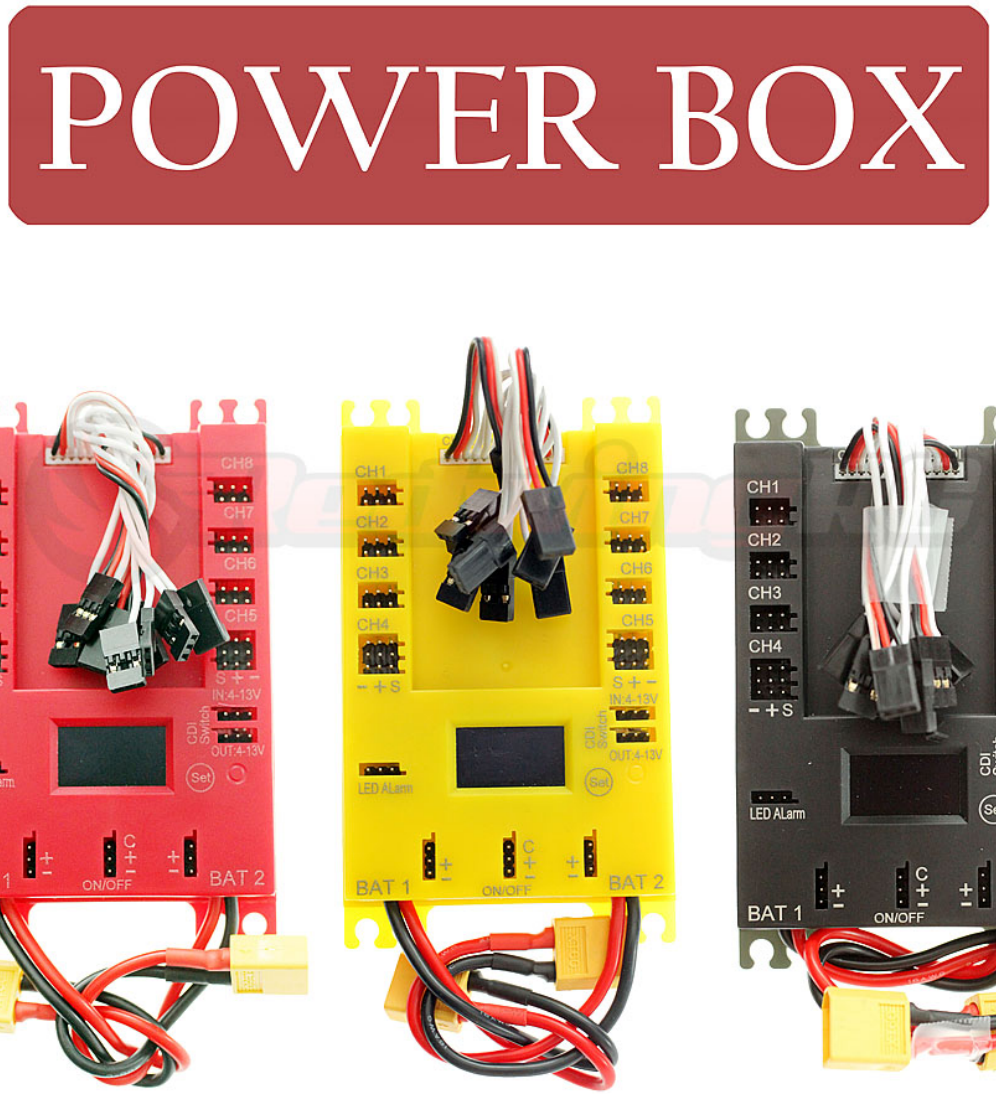
(2) A123 single cell, 2500 mah. These batteries are capable of 50 amp constant discharge, with a 10 second pulse rating of 120 amps. Identical to the 1100 mah cell in all other respects.

At this time, there are many companies (Hobbico, Turnigy, Reedy, etc.) that are producing LiFe receiver packs not built with A123 cells. Rather, these packs are assembled with wafer stacked 'bag' prismatic cells, much like familiar Lipo packs. And, like Lipo, they are fragile, as the cell link tabs are very thin alloy strips and the entire assembly is more susceptible to rough handling and vibration. Further, the prismatic cells and their tabbing system are unable to handle anywhere near the current loading that A123 cells can tolerate with ease.

This is not a great problem for R/C users, as most people are accustomed to treating their receiver battery packs with care, keeping them properly charged, and isolating them from vibration during installation in their model airplanes. Most sport flyers do not impose heavy loads on their servos, and so, an A123 pack is not necessary. The wafer packs do offer many different current capacities, from 200mah to 3-4000mah. Depending on the size and weight of the plane, it is not difficult to install a receiver pack of proper capacity. However, anyone delving into giant scale and 3D flying might be advised to use A123 packs, given that they can supply the higher amounts of current that digital servos require.

Power Box:

Redwingrc is now marketing a line of affordable Power Expander boxes. These can accept two battery packs with redundancy to avoid possible crashes due to battery failure. Having two batteries working in tandem to supply power to servos, and ignition (for gasser guys) is a nice safety feature in this hobby.



There are three versions of the Redwing power box being offered, red, yellow, and black. The base model (red) sells for $99, but offers no battery regulation – whatever you connect (LiFe, Lipo, Nimh) is what the receiver and servos see. The other two models incorporate regulation and other improvements. They all offer:

1. Digital readout of input and output voltage.
2. LED and audible alarms to ensure proper hookup and operation.
3. Touch button programming to select the warning voltage.
4. Wires to the receiver are pre-installed.
5. Lightweight and strong plastic housing.
6. Mounting space in the middle to securely attach the receiver.

Up to eight servos can be plugged into each board, and there are two outputs for each channel, which doubles the servo output capability.

More info can be found at: http://www.redwingrc.com

To everyone: have a very merry Christmas and a happy New Year!
