

Capacitor power for free flight?..

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Battery technology has been advancing so rapidly the past decade that "obsolete" has become the byword. Toss out your NiCads and charger and even the NiMH's because LithiumPoly is here! You may burn down your house of course but hey, isn't progress worth it? Looking at the situation from the free-flight point of view, though, the huge capacity of the LiPoly newcomer is **not** much help. For one thing, it comes only in high capacity versions, which means many, many lost models unless a timer is installed in the flight circuit. Another gadget to add expense, complexity, a bit more weight and something else to go wrong. Even with NiCad technology, free flight models are often lost when the motor runs too long. In short, the newer batteries are more of a boon to the RC flyers than to free flighters. We need batteries that are smaller in capacity and of light weight — and simplicity in wiring and support apparatus. So now capacitors have entered the scene. In past years even a one-farad capacitor was huge, far away from usefulness to model airplanes. But things are changing fast. We hear from Reg Boor in England that he uses a TEN farad capacitor to power his models. It charges up in 1-1/2 minutes and gives him a 20-30 second motor run. In checking out sources on the Internet we find, for example, Digi-Key Corporation offering a 10-farad capacitor less than 1-1/2" long selling for \$4.04 each. One drawback is the rated voltage, only 2.3 volts. Charging at this voltage provides a life expectancy that is, figuratively, forever. They can be charged at higher voltages with a shorter life expectancy, and the charging voltage is the voltage you get at the motor. No need to worry about a suitable charger; simply connect a couple of AA batteries in series to the capacitor for a minute or so and you are ready to launch. The motor run will be a bit shorter than a rubber motor will give you in most cases but this can be remedied by connecting two capacitors in parallel. If you must have a higher voltage, connect them in series. And so on. Many combinations are possible

Florent Baecke brought to our attention an article in *DISCOVER* magazine. Here's the gist of it: "A better energizer....An ultracapacitor is what really keeps going and going...MIT electrical engineer Joel Schindall thinks the time is ripe for capacitors. 'They are better than batteries in almost every way, except the amount of energy they store,' he says. Schindall and his support group have licked that limitation. Unlike batteries, which produce voltage from a chemical reaction, capacitors store electricity between a pair of metal plates. The larger the area of the plates, and the smaller the space between them, the more energy a capacitor can hold. Schindall's group had a radical idea: Cover the plates with millions of microscopic filaments known as carbon nanotubes. The tiny tubes vastly expand the surface area, creating a perfect sponge for electricity....since capacitors can be used indefinitely, environmental waste from discarded batteries would become a thing of the past. Schindall says battery-free bliss may be less than five years away." The date of the magazine is May 2006, so this appears to be a further improvement of the capacitors now available from Digi-Key

and other sources. On the other hand we are being told that hydrogen-cell batteries are just around the corner. So hold on to your hats, folks, the best is yet to come no matter who wins. Eh, what?