

# R/C Sportflyer

## April, 2003

Next Meeting at First Baptist Church of Grandview – Thursday, April 3 @ 7:00 p.m.

### Club Officers

**President**

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**Vice President**

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Internet address: [Walt.Calkins@mail.sprint.com](mailto:Walt.Calkins@mail.sprint.com)  
Send newsletter information and items for sale or wanted to the newsletter editor. He's almost always home after 9:00 PM or call his work number, 913-624-2570, it has a recorder, or send via Internet.

**Club Web Site:** <http://www.rcsportflyers.com/>

### Minutes of March 6, 2003 Meeting

We had 21 members and 3 visitors at the March meeting. The visitors were A. J. Seaholm and David and Alex Walter. A. J. joined. at the meeting. A. J. is the 2002 National RC Combat champion. I think our combat flyers are in for an "interesting" summer.

The minutes of the last meeting and treasurer's report were approved.

**Safety:** Cliff Miller reminded us to check our airplanes thoroughly and especially check batteries before going flying the first time this spring. It's good to check servo/control surface push rods for keepers on the clevises and to make sure there's no binding.

**Parks:** Cliff also let us know that the parks department will be checking much more closely for flyers having permits. I'm not sure what the fine is for not having a permit, but I'm sure it's a lot more than the cost of the permit. Mike Krass let us know that the completed survey form had been sent to the parks department. Also, Bernie is going to request some replacement barrels for the field.

**Combat:** John Carnal reported that KCRC is building combat planes, but it's still too cold to fly (as of the March meeting)

**Web Site:** Scott Goergen has had the web site on his server for about two weeks. The response sees to be faster.

**Formation:** Dennis Tschirhart let everyone know that the plane the formation team has settled on is the Ultra Stick 40. If you are interested, get in touch with Dennis before April 15. His phone number is 816-524-0917.

**RCSF Open Fun-Fly:** Dave Klaus will head up the effort to get donations for raffle prizes.

### **New Business**

**Club hats, shirts, jackets:** We had some discussion on the topic and there was definite interest in getting more shirts and jackets. We still have about 10 hats, I believe John Urton has the hats. Dennis Tschirhart will get some prices for shirts and jackets. Also discussed was the possibility of using the club web site to order.

**Antique Aircraft Fly-In, Atchison:** This is a full-scale fly-in put on by the Kansas City Area Antique Aircraft Association. Last year about a half-dozen RCSF members helped collect money at the gate and the club had a static display near the ramp. While it's not an absolute guarantee, those that helped last year got an airplane ride as a thank-you for helping and the club got a very nice announcement at the fly-in and a nice write-up in their newsletter. For those interested in helping, Walt Calkins is the contact. The basic situation is that you will help out for a 1-hour (approximate) tour of duty at the gate, spend some time at the static display and the rest of the time you're free to walk the flight line, etc.

**Raffle Prize:** Mike Krass won the Hobbico Quick Field Charger.

**Show and Tell:** Ed Law had a Great Planes Extra 300XS, which was very nicely done.

**Treasurer's Report - This Month**

<b>Beginning Balance</b>	<b>\$ 1124.55</b>	<b>General Fund (Checking, \$1099.05, Cash, \$25.50)</b>	
<b>Income</b>		<b>Expenses</b>	
Dues (New, 2003, 1)	\$25.00	Newsletter Postage	\$14.80
Dues (Renew, 2003, 3)	\$60.00	Transfer to mower fund	\$10.00
Raffle Prize	\$72.00	Raffle Prize	66.65
		AMA Insurance*	120.00
		AMA Charter*	\$36.00
<b>Total Income</b>	<b>\$157.00</b>	<b>Total Expenses</b>	<b>\$247.45</b>
		<b>Checking Balance</b>	<b>\$1008.60</b>
		<b>Cash Balance</b>	<b>\$25.50</b>
		<b>Ending Balance</b>	<b>\$1034.10</b>

\* Club membership charges for AMA Charter and Club Insurance. *Questions, See Walt I just pay the bills and balance the books!*

**March Allocations**

None	\$0.00	
<b>Committed expenses</b>	<b>\$0.00</b>	<b>Forecast Balance \$1034.10</b>

<b>Beginning Balance</b>	<b>\$ 943.89 - Mower Fund</b>		
<b>Income</b>		<b>Expenses</b>	
Dues	\$10.00	Miscellaneous	0.00
<b>Total Income</b>	<b>\$ 10.00</b>	<b>Total Expenses</b>	<b>\$ 0.00</b>
		<b>Ending Balance</b>	<b>953.89</b>

**February Mower Fund Allocations**

None	\$0.00	
<b>Committed expenses</b>	<b>\$0.00</b>	<b>Forecast Mower Fund Balance \$953.89</b>

**Calendar of Events – Models**

- Apr 3** RCSF Club Meeting - First Baptist Church Of Grandview
- Apr 5** RCSF Club Fun-Fly
- May 1** RCSF Club Meeting - First Baptist Church Of Grandview
- May 3** RCSF Club Fun-Fly
- May 16-18** Jefferson City Fun-Fly
- Jun 6-8** AMA Grand Event, Des Moines, Iowa - Waterworks Park [www.modelaircraft.org](http://www.modelaircraft.org)
- Jun 6** RCSF Open Fun-Fly
- Sept 27** RCSF Club BBQ

**Calendar of Events – Full Scale**

- May 24** Antique Aircraft Fly-In, Atchison, RCSF invited
- Jun 13-15** WWI Replica Fighters, Gardner, KS
- Jun 14-16** Wings Over Whiteman, Whiteman Air Force Base, Thunderbirds scheduled, [www.whiteman.af.mil](http://www.whiteman.af.mil)
- Jun 27-Jul 1** B-17 *Aluminum Overcast* at Lee's Summit Airport, rides a low-low price of \$395. <http://www.b17.org/schedule.html>
- July 17-19** Heart of America CAF Open House, New Century Airport
- July 22-28** Oshkosh! 100<sup>th</sup> anniversary of Wright brothers flight
- Aug 27-Sep 1** Antique Aircraft National Fly-In, Blakesburg, IA
- Sept 11** Recreation of the 1932 Ford National Air Tours - Includes planned stop in Kansas City, (tentative date). More information to come as it's available. ([www.NationalAirTour.org](http://www.NationalAirTour.org))

**Aviation on TV**

- Dec 17** Documentary of the Wright brothers
- Fall '03** (date not finalized) Documentary of the Red Baron, WW I ace Manfred von Richthofen

Cliff Albright: Cliff was expected to be home the weekend after the club meeting. He would then have about 2 weeks that he would have to stay home and wouldn't be able to have visitors. I understand that his surgery went well and he has been doing as well as expected. - Walt

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Mike Krogh, with assistance from Dick Hinkle, gave a presentation on electric flying, with emphasis on new battery technology. The presentation was originally done by Tom Hunt. Mike brought in batteries to display and Dick had a selection of electric RC planes.

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To follow up on Mike and Dick's presentation, I went out to the internet for information on Lithium Polymer batteries (Li-Poly). I didn't find a lot, which could be because of the limited time I had and the fact that it is new technology. In any case, the following is from <http://www.chungpak.com/new.htm>, the Chung Pak Battery Works Limited

#### Lithium Polymer Battery (Li-Poly)

What is Li-Poly?

Li-Poly is similar to Lithium-Ion technology in terms of energy density, but uses a gelatinous electrolyte rather than liquid, enabling it to be manufactured in various shapes and sizes for custom requirements.

Li-Poly consists of polymer electrolyte, which provides an excellent interface to permit ion transport during both charge and discharge.

Li-Poly cells are expected to make a major impact in the cellular market, and other hi-tech electronic product market.

What are the characteristics of Li-Poly?

1. It has no memory effect.
2. It can achieve over 1000 charge/discharge cycles.
3. It has a low self discharge rate of <5% per month, but many sources have estimated the self discharge rate would reach <1% per month in the near future.
4. The operation voltage varies from 4.2 volts to 2.75 volts, the typical voltage is 3.7 volts or 3.8 volts.
5. It could be made in different shapes other than square or rectangular.
6. In a prismatic form, Li-Poly cells as thin as 0.040 inch (1mm) can be produced to fit in tight spaces.
7. Li-Poly is extremely safe. The electrolyte contains no cadmium or lead and is non-flammable. It is resistant to over charging and over discharging.
8. Li-Poly can be further divided into three categories:
  - Solid type
  - Gel-type
  - Liquid-type
9. It is possible to achieve an ultra-thin thickness of approximate 1mm and obtain high leakage-resistance.

Difference between a Lithium Polymer Battery and a Lithium-Ion Battery:

1. Prototype Li-Poly cells have exhibited energy densities exceeding 400 Wh/liter and 250 Wh/kg, twice as high as those of Lithium-Ion batteries.
2. The cost of Li-Poly is lower than that of Li-Ion Battery.
3. When compared with Li-Ion technology, Li-Poly is extremely safe for users. It is inflammable and it is unlikely to explode in the production process.

Advantages:

High power capacity

- Li-Poly provides more than 3 times the energy density of Ni-Cd (Nickel Cadmium) and features a very low self-discharge.

Light weight

-when compared with other battery technologies, Li-Poly can substantially reduce the weight of a device. For example, battery packs for notebook computers and mobile phones could be 50% lighter.

Thinness

- Li-Poly cells could be as thin as 1 mm.

Safety

- Li-Poly has inherent overcharge protection. It is inflammable and it has wide operating temperature range.

Environmental Friendly

- Li-Poly contains no heavy metals such as cadmium or lead.

Low-cost

- cheaper than Li-Ion.

Long cycle life

- Li-Poly provides more than 3 times the energy density of the Ni-Cd.

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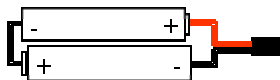
The following article is from Skyborn Electronics of Garland Texas: <http://www.bktsi.com/skyborn/selecting.htm>

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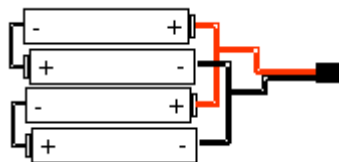
Selecting a Li-Ion battery

As you can see from our catalog or price list we offer several cell types and capacity Lithium Ion (Li-Ion) battery packs. So, how do you decide which battery is right for your application? Let us first explain why there are different cell types. Li-Ion batteries were originally designed for different applications from cell phones, to Camcorders, to portable computers. Because of the different batteries designed for these applications we now have a wide variety of cell types to choose from. The initial Li-Ion cells were cylindrical, similar to other types of batteries. An industry standard is what is known as the 18650 cell, the name derived from the size of the cell, 18mm (about ¾ inch) in diameter and 65mm long (about 2.5 inches). This sized cell is used in the SYE-612X through SYE-1240X series of batteries. Initially these cells were available in 1200mAh capacities. By late 2000 the capacity had risen to 1800mAh and by late 2001 they reached capacities of 2000mAh. Each cell is 3.6 volts. Depending on how they are connected, series or series-parallel, we can achieve multiple capacities. Cells connected in series are what most people are accustomed to (**Figure 1**).

**Figure 2** shows the connection for a Series-Parallel pack. Two 7.2 volt, two cell series packs are connected in parallel to provide twice the capacity. If made from 1200mAh cells the total capacity would be 2400mAh, if made from 2000mAh cells the capacity would be 4000mAh, etc. This also doubles the amount of current the pack can source. Cylindrical cells can source 3.5-4 amps. So a 7.2-volt series pack can also source 3.5-4 amps. However, a series parallel 4-cell pack can source twice that or 7-8 amps.

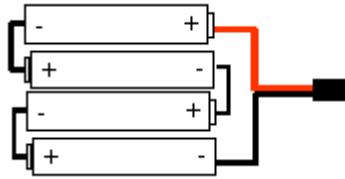


**Figure 1 -  
Series connection**

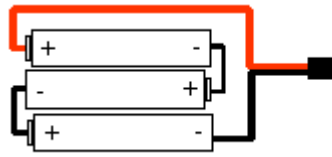


**Figure 2 -  
Series - Parallel connection**

Four cells can also be connected in series, as shown in **Figure 3** to produce 14.4 volts. If we use three cells in series, as in **Figure 4**, we get 10.8 volts. If made with cylindrical cells these packs could source 3.5-4 amps. We can also parallel these packs as we did with the 7.2V packs and come up with 14.4V and 10.8V packs with the capacity to source 7-8 amps and have twice the mAh capacity.



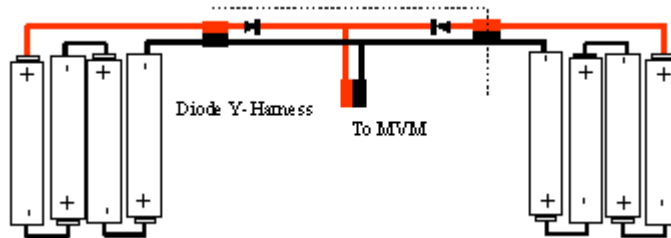
**Figure 3 -  
14.4V Series Pack Connection**



**Figure 4 -  
10.8V Series Pack connection**

The series-parallel packs also have some built in redundancy. Should one of the cells in a series parallel pack short open (no electrical connection) the other side of the pack can still power the airplane, though at half the capacity. If the cell shorts closed (a direct electrical short) then the entire pack can be shorted and the entire pack will have half the voltage.

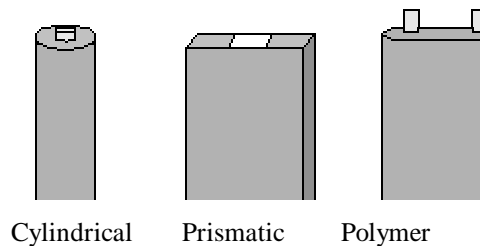
We can also parallel packs externally using a Y-harness as shown in **Figure 5**. The advantage of this method allows the use of diodes in the Y-harness to isolate the packs and protect against a cell shorting closed. Should this happen the diodes in the Y-harness will isolate that pack and allow the other pack to still run the airplane. Another advantage to this setup is that the packs can be placed in different places in the aircraft to aid in balance or to take advantage of tight space in the fuselage. The disadvantage to the Y-harness approach is that each pack has to be charged separately. Typically the larger 4-cell 14.4V packs are paralleled in this manor.



**Figure 5 - Two 14.4V Packs in Parallel with Y Harness**

**Figure 6** shows the three basic types of Li-Ion cells; Cylindrical, Prismatic and Polymer. The Cylindrical and Prismatic cells have the same chemical composition. The Prismatic cells are a rectangular shape and have an aluminum casing rather than the steel case found on the Cylindrical cells and are lighter than the cylindrical cells. The Polymer cells are the latest technology and so are a little more expensive than the Cylindrical or Prismatic cells. They use a solid electrolyte and come packaged in a Mylar casing. They are about the same power per ounce as the cylindrical cells. Because they are made from a solid electrolyte, the Polymer cells can be made in different capacities by simply making them larger. They come in 135mAh up to 3000mAh sizes with many capacities in between.

**Figure 6 - Li-Ion cell types.**



Selecting a battery depends primarily on your application. For instance, many micro-flyers are interested in the 135mAh and 570mAh polymer cells as they are small and light where most TOC/IMAC flyers use the 4000mAh 7.2V packs because they need to have a lot of current available. One thing to keep in mind is how much current your application uses. The micro-motors used in some micro-flyers pull very little current. Sport flyers typically pull 1-2 amps with peaks to 3-4 amps. IMAC aircraft can pull 2-4 amps typical with 8-10+ amps in extreme situations. The newer digital servos are particularly large current draws. If you have 4 or more digital servos on your airplane you should consider using the series-parallel packs such as the SYE-640X as they have higher current capability than the two cell, series packs.

Electric motors on indoor flyers and park flyers can sometimes pull large amounts of current. In general the polymer cells can be used on the 180 size motors and smaller. The prismatic cells are better for 280 sized motors as they have a larger current capability than the polymers. Currently the larger motors (380, 400, and larger) cannot use the Li-Ion battery packs since they pull too much current. We can make a pack for these motors, but the cost becomes prohibitive at almost \$300.

Helicopters demand moderate amounts of current and can use either a larger cylindrical series pack (SYE-620X) or the prismatic packs. The SYE-624Z-R pack has become a popular pack among the helicopter crowd. It is small and light but can source 7-8 amps. In addition, the 2400mAh capacity provides current for several flights before needing to be recharged.

Most TOC/IMAC aircraft are flying two receivers, and an ignition system and sometimes a smoke pump. We recommend the series-parallel packs for the receivers and a series pack for the ignition or smoke pump. For smaller scale (25%-30%) two SYE-624X and a SYE-612X are a good combination for receivers and ignition respectively. For larger scale aircraft (35%-40%) you should use the higher capacity SYE-636X or SYE-640X packs on the receivers. The charts below summarize this information and should be used as a general guide. If you have any questions please call us and we can help you pick the right battery for your application. When ordering add a “-E” to the part number for electric flyers, and an “-R” for the universal receiver connector. The 2 or 4-cell pack configurations are listed, but all can be purchased in single or 3-cell packs.

**Micro - Flyers, Indoor Flyers and Park Flyers**

Part #	Volts	mAh	Type	# Cells	Wt.	Size	Cell Type	Amps*
SYE-601P	7.2	135	S	2	.25 oz.	.75"x.8"x0.2"	Polymer	0.5
SYE-605P	7.2	570	S	2	1.1 oz.	1.4"x2.4"x0.3"	Polymer	2.0
SYE-610P	7.2	1140	SP	4	2.2 oz.	2.8"x2.4"x0.3"	Polymer	4.0
SYE-612P	7.2	1200	S	2	2.3 oz.	1.5"x2.0"x0.6"	Prismatic	3.5
SYE-620P	7.2	2000	S	2	3.5 oz.	1.5"x2.5"x0.75"	Cylindrical	3.5

**Helicopters and Sailplanes**

Part #	Volts	mAh	Type	# Cells	Wt.	Size	Cell Type	Amps*
SYE-612Z	7.2	1200	S	2	2.3oz.	1.5"x2.0"x0.3"	Prismatic	3.5
SYE-624Z	7.2	1200	SP	4	4.6oz.	1.5"x2.0"x1.2"	Prismatic	8
SYE-1224z# (Special Order)	14.4	2400	SP	8	9.2oz.	3.0"x2.0"x1.2	Prismatic	8
SYE-610P	7.2	1140	SP	4	2.2oz.	2.8"x2.4"x0.3"	Polymer	4
SYE-620X	7.2	2000	S	2	35.oz.	1.5"x2.5"x0.75"	Cylindrical	3.5

## Sport and IMAC

Part #	Volts	mAh	Type	# Cells	Wt.	Size	Cell Type	Amps*
SYE-612X	7.2	1200	S	2	3.5oz	1.5"x2.5"x0.75"	Cylindrical	3.5
SYE-618X	7.2	1800	S	2	3.5oz	1.5"x2.5"x0.75"	Cylindrical	3.5
SYE-620X	7.2	2000	S	2	3.5oz	1.5"x2.5"x0.75"	Cylindrical	3.5
SYE-624X	7.2	2400	SP	4	7oz.	3"x2.5"x0.75"	Cylindrical	7
SYE-636X	7.2	3600	SP	4	7oz.	3"x2.5"x0.75"	Cylindrical	7
SYE-640X	7.2	4000	SP	4	7oz.	3"x2.5"x0.75"	Cylindrical	7
SYE-1220X	14.4	2000	S	4	7oz.	3"x2.5"x0.75"	Cylindrical	7
SYE-624Z	7.2	2400	SP	4	4.6oz	1.5"x2.0"x1.2"	Prismatic	7
SYE-610P	7.2	1140	SP	4	2.2oz	2.8"x2.4"x0.3"	Polymer	4

\* For reliability & maximum cell life, we use only cell manufacturer rated current. Most Li-Ion cells can supply higher current with a reduction in cycle life. Nominal cell life at rated current loading is 500 charge cycles, or until cell reaches 80% of rated capacity.

The AMA recently sent out an e-mail to clubs and members warning them of some situations of the news media doing what was represented as a documentary-type of report on RC flying. Unfortunately the report as "edited" into a sensationalistic editorial of how RC planes could be used by terrorists. Below is the text of the AMA's e-mail.

From: Academy of Model Aeronautics [helios@xbot.com]

Sent: Friday, March 14, 2003 2:28 PM

Subject: Urgent Message for all AMA Members

#### MEDIA ADVISORY

We are sending this advisory as a result of recent events involving the news media making contact with local AMA Chartered Clubs, or individuals.

In today's tense atmosphere of terrorist threats, possible military actions, etc., there appears to be exuberance on the part of news agencies and individual reporters to gather information concerning the use of model aircraft as possible security risks. Many times, in an effort to take advantage of the opportunity to garner some public exposure for their local flying activities, the members are surprised when the news release does not resemble what they had assumed would be published. This results in negative press for the sport and local participants, and may spread misinformation.

As a service to all AMA Chartered Clubs, we are suggesting that if you or your club are contacted by TV, radio, newspaper, or Internet reporters for interviews, other than coverage of such activities as fly-ins, mall shows, airport awareness days, etc., you direct them to the AMA Headquarters for information. If in doubt please err on the side of caution.

At any time please contact Jay Mealy at AMA Headquarters with questions, comments, or concerns.

Jay Mealy

Programs Director

765-287-1256 ext. 270 office

765-749-4841 cell

For the latest information, visit the AMA Web site at [www.modelaircraft.org](http://www.modelaircraft.org)