



*August, 2006*  
*Volume xxiv, Issue 7*

Monthly Meeting  
 Aerospace Museum, Balboa Park  
 4th Tuesday, 7:00 PM, August 22  
 Electroglide  
 Saturday, following Meeting  
 9:30 AM, August 26

# PEAK CHARGE

Dedicated to the promotion of electric propulsion  
 in all types of aeromodeling

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## Mission Statement

The objective of the Silent Electric Flyers of San Diego is to promote and further the technology of electric powered R/C aeromodeling; encourage competition in Electric Soaring, Pylon Racing, FAI-F5B/D, Scale, Old Timer, and Pattern Electric categories by hosting major Industry-sponsored events and sanctioning "Fun-Fly" types of contests; provide forums for the exchange of technical information, instruction and experience; and participate in demonstrations of electric propulsion in area-wide model aviation events.

### the WattFlyer event

*by Jim Bonnardel*

Here are award winners L to R (on the front cover), Kyle Mike & Jerry from Vision Hobbies, Richard B (from Hawaii), myself, Mike & Nick Freas, & Steve Dente.

**Bomb Drop:** Airplane:  
1st Jim Bonnardel AirfoilZ Edge 540  
2nd Mike Freas Sr. Telemaster  
3rd Will Fuller AirfoilZ YAK

**Spot Landing Winners:**  
Nick Freas Sr. Telemaster  
Will Fuller AiroilZ YAK

We had Pilots attending from Hawaii, Pheonix, Bakersfield, Fontana, Vegas and Oakland. AirfoilZ sponsored the Spot landing Challenge with two AirfoilZ airplanes. Vision hobbies sponsored the Bomb Drop with \$300 in Prizes for 1st, 2nd and 3rd place. Radio Control Specialties sponsored the Breakfast, and part of the lunch, and gave away \$300 in prizes.

**Aerospace Museum**  
Monthly Meeting site



**Field**

Flying Field GPS Coordinates

AMA Charter Club 3078 Latitude 32.7626416 N Longitude 117.2143138 W

web site: <http://sefsd.org/>

Zip Code 92109

ESC control over the endpoints instead of calibrating each time you power up to the transmitter endpoints. It will ensure that all motors turn at as close to the same rpm as possible. Third, set the controllers for soft cutoff. This ensures all motors will continue to run when they are at the voltage cutoff point. If you use hard cutoff, one motor will cut off before the other(s) and the pack voltage will recover, increasing the rpms of the remaining motor(s) and sending you into a death spiral. The final requirement is to program the controllers with the same soft start option. This way, all the motors will start in unison.

Wiring is the final hurdle to overcome and we'll be airborne. A common misconception of the Phoenix controllers is that you must

disable one (or more) of the BECs (Battery Eliminator Circuit) in order to keep them from interfering with each other. This is not the case. The Phoenix BECs were designed to be run in parallel with no conflict...this means you can gang several BECs together to run even more servos and other devices. Retracts, gun turrets, lights, bomb bays, you name it. Make sure you test the setup on the ground prior to putting it in the air, obviously. Run the motors at ½ throttle while simultaneously exercising all the servos. Do this for approximately 1 minute. If you hear the motors cut out momentarily you know the BECs are having a hard time with the setup. Now, back to the wiring. Use a "y" connector (or several if necessary) to parallel the speed controllers, and plug the single connector into the

throttle channel on your receiver. The absolute most important thing to remember is to run ALL of the controllers off a single battery pack, no matter how many motors are in the setup. You can parallel several packs together to handle the current draw if needed. This will ensure that all motors are receiving the same voltage, and will not hit the cutoff voltage before the other(s).

That's it...you're good to go. Get out there and make everyone in the perimeter flock jealously towards you. As always, happy landings! I'll catch ya on the flipside. DrkSdeOTM out.

Joe Ford  
Product Specialist  
[joeford@castlecreations.com](mailto:joeford@castlecreations.com)

## The Raffle

*by Robert Abel*

Those of you who did not show for the July meeting missed a lot of goodies for the raffle. I've no Idea what we will have for the August meeting, but we will have something. Don't forget to think about who you want to be the new President of our club. If anyone wants to do the raffle, I'll let them do it. My personal work load is getting somewhat extreme. God only gives you what you can handle, Uhm.....Guess he thinks I can handle all that is on my plate.....

### DO NOT CUT THE ANTENNA WIRE.

You have all seen this warning on your paperwork with your receivers. The reason is the way receivers work. If you cut the wire you can disrupt the "Standing Wave Ratio" of the Antenna wire length. A 1 to 1 ratio is the best you can get. Most receivers are adjusted to the broad spectrum of the 72 MHz band of our transmitters. You can fine tune your receivers to your exact frequency by adjusting antenna length. This will tend to make your receiver more selective in rejecting adjacent signals and noise associated with R. C. transmissions. Here's how to do that. For a 1/4 wavelength antenna the formula is:  $L = 234 / F$  (MHz). The number 234 is a constant in this formula. Thus, 234 Divided by 72.xxx = antenna length in feet. A little math is required to get inches. So:  $234 / 72.000 = 3.25$  feet. 3 feet = 36 inches + .25 feet. 12 inches divided by .25 = 3 inches. Thus 36" + 3" = 39 inches for the frequency 72.000. For example channel 58 you would take:  $234 / 72.950 = 38.4912$  inches.  $36 + 2.4912 = 38.4912$ . If you need to error, error on the LONG side of the length. That way the sine wave will develop fully in the receiver antenna for the receiver to see. If you want to shorten the antenna you can wrap it around the "bone" that Hi Tech gives you with the receiver. It shortens the antenna and reduces the effective range. To retain range and shorten the antenna you can use a large soda straw cut to about 2" long. Measure 4 1/4 inches from the receiver, mark and drill a hole in the straw, feed the antenna through the holes and wrap tightly, with NO overlaps, 18 to 22 turns, mark and drill another hole at the end of the wraps, feed antenna through and exit to the rear. This gives about 18 total inches of "Base Loaded" antenna. Keep the antenna coil away from electronic parts and moving metal push rods. Secure from flopping around. Gives a full range antenna receiver strength. A center load is possible, just figure the 1/16 wave length and mark antenna, wrap same as above. Hope this helps, Safe Landings, Robert.

## Joe Jabs

### Brushless Multi-motor Power Systems

If you've ever heard a multi-motor aircraft fire up, there's no way to describe the feeling it gives you...even if you're only a spectator. The sound of the props beating the air just screams cool. Since I began working at Castle I've received literally hundreds of inquiries on the necessary components, speed controller programming settings, and wiring arrangement needed to be successful with this type of system. For those of you who were smart enough to sign up for our newsletter, I expect no more inquiries of this nature from this point onward. hehehe

The most frequent question I receive is "Can I run two brushless motors off a single esc?". We highly recommend using a separate controller for each motor. While you can run two motors off a single controller in some situations, there are several things one must keep in mind. As I cannot come close to explaining these reasons as well as Patrick, I've taken the following excerpts from his posts on RCGroups.

First, the motors must be very closely matched— within 1% or so on Kv. If they are not perfectly matched, timing from the controller is averaged between the difference on the two motors (this happens because the back-EMF pulses average when the wires are paralleled on the motors. This will cause higher surge currents to the motors and will tend to increase the temperature of the controller and motors. They will not always start correctly. If they don't start correctly (for example, one motor starts, and the other does not) the controller can be damaged. If two

motors are run, they must be started on the ground, and there should be no attempts at restart in the air. If one motor fails to start, the power should be shut down immediately. If the user runs two motors on a single controller, the controller should be derated by 30% (for example a 45A controller should be used in an installation which draws no more than 31 amps on both motors). If two motors are run on a single controller they must be the same type and wind, and must be well matched. The motors should be started on the ground, and should not be restarted in the air. High inertia loads (for example, large props on small motors through gearboxes) shouldn't be attempted in a dual motor installation.

Generally, motors with kvs that are closely matched are also the more expensive ones...food for thought when deciding whether or not to attempt such a setup. The reason for this is that there is much less variance in these motors. In most instances, motors will not start properly and will not run efficiently...leading to heat in both the motors and the controller used, as well as a lower power output. Whether you're willing to "roll the dice" so to speak, is entirely up to you. I personally prefer the tried and true method of using one controller per motor.

When using one controller per motor, there are several things that one must do to ensure proper motor operation. Let's start with the power system components required. While we have had some reports of the Thunderbirds being used successfully in this application, it is not recommended. They do not have all the recommended programming options, and long term effects of use in this manner are not known since they were only released a short time

ago. The Phoenix line has been used for quite some time with excellent results, and the plethora of programming options make them ideal for multi-motor applications. There are three things to remember when selecting the controllers to be used. First, make sure you use controllers that have the same amp rating. There are several differences between controllers, even when made by the same manufacturer, that can cause issues. The most notable of these are resistance values and overall design. Second, be sure to use controllers that are the same generation. Here there are many more issues of concern that can cause improper motor operation. Different generations of controllers can use different processors, FETs, resistors, etc. Obviously this can vastly affect operational performance from one motor to the other. Generally, our hardware does not change very often. If you purchase the controllers within 3-4 months of each other they are more than likely the same generation. Finally, make sure you are using controllers that have the same firmware...the reasons should be obvious. To ensure they have the same software you will need the Castle Link USB adapter.

In addition to power system requirements, there are also specific settings that need to be programmed into the controllers in order to assure proper operation. First, you MUST disable current limiting...COMPLETELY. Do not set it for insensitive or you may end up paying the price. There is no risk involved if you know your full throttle current is at or below the maximum current limit of the controllers. In short, this will ensure that the motors keep running no matter what. Having one or several motors shut off in flight and the remaining motor(s) continue running will put a serious dent in your ego...not to mention your wallet. Second, you must use fixed throttle. This gives the

## the WattFlyer event

by Jim Bonnardel



Here is a happy young lad who won the Airfoilz in the Spot Landing! (he was flying with a trainer buddy cord & dad)



Yours truly calling raffle tickets



the flight line and attendees:



## The President's Corner

By Steve Manganelli

Let's start with the F-5B World Championships, because as this is

written, the team departs for Romania in just 4 days! Madcap preparations of 13 models are underway in Steve Neu's garage with the final step being to throw (OK, gingerly place) the models into big airline proof boxes for transport. Speaking of boxes, I'd

like to publicly thank Bruce and Chuck Brown for supplying the aluminum boxes. Chuck already had an Aluminum box big enough for fuselages, but unfortunately not large enough for wings. Not a problem; specs were provided Tuesday A.M., and a new made-to-order aluminum box was delivered Thursday Evening. Much obliged gents! We've made many "wooden wonders" over the years, but none of them lasted too long or faired very well on the airlines. This one should be a jewel!

Anyway, the actual contest should be underway during our next meeting, and since the hotel in which the troops are staying has high-speed internet, Team Manager Chuck Grim will try to get me a preliminary report to talk about at August's meeting.

Next, I want to recognize the fantastic job performed by Jim Bonnardel on his Open House for the Watts Up Flyers computer group. This friendly competition took place on July 22<sup>nd</sup> in the middle of our heat wave. Jim

proved himself both a gracious host and able administrator providing snacks, water, beverages, etc. in addition to the lunch, prizes, plaques, etc. A first class job, Jim. The enthusiastic participants came from far and wide including Jim's dad from Hawaii. "Is it hot enough for you, boss?" "Yeah, too hot and not windy enough, either!" In the epilog, Jim somewhat lamented the lack of participation from Club members having just a couple. One possible explanation is lack of event detail in print media. As Mr. Fee pointed out, a lot of our members don't deftly and regularly surf the net for R/C Club information, instead depending on the Newsletter. (Editor's note: it was listed in the June issue Calendar of Events). Now that we know what a great organizer Jim is, if he ever wants to do another event we'll make sure it gets the print media coverage it will most certainly deserve!

August 16<sup>th</sup> could be an interesting day for the Club. The City of San Diego is having a meeting to gain public input for long term planning of Fiesta Island. Some of you will recall that right at 6 years ago, SEFSD hosted the F-5B and F-5D World Championships (like what will take place in Romania in about a week and a half) on Fiesta Island. We were able to obtain use of the South Westerly most corner (West of the perimeter road) for our event, having adequate room for both a 150 meter X 75 meter pylon course and a 150 meter parallel plane distance course. The decomposed granite runway we constructed can still be seen from the air! A field built on this area of Fiesta Island would be superior to our current location in several ways. It would allow us to fly larger models "further out" as there are no obstructions or public safety concerns. If a permanent tenant we could do some development of a better runway, maybe some sun shades, etc. Before

you say, oh great, 2 fields! No, not two fields, we'd have to abandon the one we currently use as it would cause frequency interference. We recognize they're a few days out of the year that we'd be forced out of there (like over-the-line for instance) but the SEFSD Board felt it would be worth it to pursue this possible opportunity. Please, this in just throwing our hat into the ring, I'll let you know what transpires at our members meeting.

August 26<sup>th</sup> will be the next AT-6 pylon race in our Southern CA series. Note that both the venue (our field vs Miramar) and the date has changed (formerly August 19<sup>th</sup>). Should be another good time for go fast, turn left crowd. My own Purgatory Racing Team will have to conscript a pilot from the Replacement Air Group, namely myself as chief pilot Mr. Neu will still be in Romania. This is your chance, you Unlimited tossers! I understand there may be a really neat prize for the series winner to be awarded this Fall. Hopefully Frank Gagliardi will fill us in.

Depending on when Peak Charge arrives, it may be in time to appraise you of a local event hosted by SEFSD Board Member Tim Attaway and the Chula Vista R/C Club at the Chula Vista (border) Field. The event is the San Diego International Miniature Aerobatics Club (IMAC) contest on August 19<sup>th</sup> and 20<sup>th</sup>. Yeah, I know it's gas not electric, but you'll see some amazing pilot skill and be able to show your support to SEFSD Members Ray Fulks, Tim and Pedro Brantuas. I'll be there at least some of the time.

Let's finish up with sowing the seeds of succession or perhaps lack thereof. No one has yet come forward (to me anyway) expressing an interest in succeeding any club officer. Hmm... Let me try this to get your

juices flowing. The Board of directors voted, approved and executed sponsorship of the F-5B Team of Steve Neu, Jeff Keasaman, Thomas Pils and Team Manager Chuck Grim going to Romania to the tune of \$1,500 of Club funds. The amount is paltry compared to what the Team will spend out of pocket beyond what AMA pays for, but it's still a decent amount of money for us. Do you all think that's an appropriate use of Club resources? Remember my "techno-geek society" to "people club" transition plan? Myself and the current Board of Directors will be tickled to death if the Team brings home a World Championship but that was definitely a techno-geek move. If you think the club should be doing different things with our resources, there is only one way to make your voice count: join the Board of Directors by running for Club Office, OK?

## An Editorial

*by Bill Fee*

It's that time of year again, a time when we should all be thinking of the important issues (as we see them) and who would be best qualified to address them. I'm not talking about politics, at least, not the government of city, state or country; I'm referring to the RC electric club of which you are a member. Unlike the kind of election where you go to the polls to vote, where you are inundated by fact and fiction, insights, impossible promises, and false charges, SEFSD elections come and go with an apathy that defies my understanding.

Membership in SEFSD involves a commitment on your part to help run the club. It's a responsibility and a privilege, a real opportunity to make friends, share ideas, and grow in the hobby. Perhaps our membership form should be revised to provide information from prospective members on how they can best serve.

Submit your name (or that of any qualified and willing candidate) to any board member or officer of the club and we will put that name on the ballot for the club's November elections.



### Introduction-

Steve Manganelli brought the July meeting to order shortly after 7 PM. New member Jake Aldwell was in attendance, and announced that he has not flown yet but is already enjoying the benefits of building model aircraft.

### Announcements and Club Business-

There will be an open forum with the city on Aug. 16<sup>th</sup>, with regard to the future of Fiesta Island. There are many groups who use the island, from joggers to model rocketeers to Over-The-Line competitors. It is in the best interest of SEFSD for the club to be represented at this meeting. Steve M. and Ray F. will attend the meeting and will offer a pitch that would create a permanent model flying field on the island. No folks, our current site is far from permanent.

The idea of having summer meetings at the flying field was brought to the attention of the membership, and will be discussed at the next board meeting (Aug. 1<sup>st</sup>).

# General Meeting Minutes

Tuesday, May 23, 2006

*by David Fee*

### Competitions/Events-

Steve M. and Tim Attaway discussed the recent IMAC Precision Aerobatics competition in Salinas, CA. Pedro Brantuas took 4<sup>th</sup> in intermediate, Tim scored 1<sup>st</sup> in unlimited, and Ray placed 7<sup>th</sup> in his category. Both Tim and Pedro qualified for the upcoming Tucson Shootout Invitational competition. There were 31 pilots at the Salinas competition and 41 at the Camarillo event.

The Chula Vista club is hosting a precision aerobatics competition on Aug. 19-20. The entry fee is \$40.

There will be electric AT-6 races at SEFSD again on Aug. 26<sup>th</sup>.

The recent WATT-FLYER fly-in was a great success, with approximately 10-12 visiting pilots.

### Safety, Safety, Safety...

Please, make sure your models are in safe operating condition. While flying, keep all models away from the foot path and Sea World Drive.

### Club Training Program-

The club training program is currently in the care of Pedro Brantuas.

Please contact him if you have any questions or need assistance.

### Show & Tell-

Mike Blott showed us an electronic E-flight gizmo he has been testing. It's the Hyperion Emeter multi-test tool and it seems to be a pretty capable unit.

### Raffle-

This month the raffle was full of goodies including a triton charger, diamond cut-off wheels, a mini-tach, pliers, an IR thermometer, rulers, a covering iron, a Berg microstamp 4 Rx, and more.

### Program-

Steve Manganelli presented "Modeling's Full Scale Analogs." Steve is an engineer at North Island, so every day he works around military aircraft. His presentation highlighted several interesting areas of similarity between models and full scale, as well as some key differences. Notable topics were strength of materials and scaling effects, as well as how these two impact structural and mechanical design. Thanks, Steve!

## The August Meeting

*by VP Doug Rubin*

Our August 22nd meeting we will be getting a tour of the Museum like no other! We will meet the President/CEO Bill Lennartz as well as Foundation President Jim Kidrick! They will be rolling out the red carpet! Please tell everyone to join us! Big raffle prizes and a great movie!

## Schedule of Events

August 17- 26 Electric World Championships Petesti Romania  
 August 19 Electric T-6 Race  
 Miramar R/C Flyers Field  
 August 19 – 20 San Diego IMAC  
 CVMRCC