

NEXT MEETING - TUESDAY, APRIL 19, 1994 - 7:15 PM
 SERRA MESA RECREATION CENTER
 9020 VILLAGE GLEN DRIVE
 SAN DIEGO

NEXT FUN-FLY - SATURDAY, APRIL 23, 1994 - 8:30 AM
 DUSTY RHODES PARK
 SW CORNER OF I-8 AND NIMITZ BLVD
 SAN DIEGO

Silent Electric Flyers of San Diego
 c/o Roger Jaffe, Editor
 6462 Sunny Brae Drive
 San Diego, CA 92119



PEAK CHARGE

Newsletter of the Silent Electric Flyers of San Diego

1994 Officers

President, Steve Manganelli	225-1152
Vice President, Steve Neu	284-0816
Secretary, Steve Belknap	693-3739
Treasurer, Chuck Grim	274-7322
Safety, Phil Moore	459-3133
Newsletter Editor, Roger Jaffe	463-4455
Newsletter Publisher, Jerry Berman	

Club meetings are held on the third Tuesday of each month at the Serra Mesa Recreation Center, 9020 Village Glen Drive, San Diego, at 7:15 pm. Full membership is open to all Academy of Model Aeronautics (AMA) members. Next meeting: Tuesday, April 19th, 1994. Next Fun-fly: 8:30 am, Saturday, April 23rd at Dusty Rhodes Park, SW corner of I-8 and Nimitz Blvd.

Volume IV, Number 4, April 1994

PRESIDENT'S CORNER

BIG WHOOPS!

What if we had a meeting scheduled and none of the officers came? What if we had a Fun-Fly scheduled and it rained? We can just call March a scratch and hope for better things in April. As of the time I left for my vacation, Chuck Grim's on-again off-again business trip was off, so it looked like he and Steve Neu would lead the meeting. On the morning of the meeting, Steve Neu had an unexpected business trip arise and called Chuck to inform him, only to find out he was already out of town! Steve and Roger did the best they could to inform them members of the cancelled meeting; our humble apologies to the members that turned out. Obviously, there are no minutes or treasurer's report for March.

Way to Go Steve Belknap!

Did you check out the minutes of our last meeting as published in the March *Peak Charge*? Not only did our new Secretary take careful and thorough notes, but he obviously took the time to follow up on some of the details, like price and availability of the foam Steve Neu displayed, etc. Super job, Steve.

Flying Field Status: Mixed News

I finally made contact with the City Official who issues Right of Entry Permits, the legal document that will give us permission to use the Mission Bay Park site again. Apparently, the City is now considering the construction of an entry road and a parking lot (presumably adjoining the boat launch ramp) before the summer season begins. If that is going to occur, the City is reluctant to make any commitments to us until they can ascertain the impact of our flying on either the construction or the use of these improvements. I implored that our past runway was well to the east of both the launch ramp and the road, and that given the

current grading, we can move even further east if necessary.

I was instructed to contact him again in about 3 weeks when the current grading should be complete and plans for the parking lot/entry road should be solidified. With any luck, I should have some sort of Right of Entry Document by our next meeting.

The overall impression I got was that even though the construction of the actual park was not imminent, model airplane flying is definitely not in their plans and we should not get too attached to the field as a permanent site. He even mentioned other groups such as an Art Show seeking use of the unimproved site on a special event basis. He is willing to consider a "month-to-month" permit but is unwilling to make any long term commitments to us.

Upon later consideration of the speed at which the City does things, I can't see how any development of the Park could occur within two years nor would any conceivable interim use of that site obstruct our flying. It is logical that any event involving a gathering of people (other than Model Airplanes) would occur near the parking lot and bathrooms, rather than the east end of field where we fly.

Astro Contest?

Bumped into Astro Bob himself at Torrey Pines the other day. He harangued me about the Astro Champs and if and when we would be holding it. I said I would know within about three weeks in accordance with the above. If I get the green light from the City, we will start planning the event at April's Club meeting. Bob mentioned contest dates of late August or early October.

April's Meeting Program

Among other things, April's meeting will feature an Electric Helicopter demonstration (if we don't crash it by then) by Steve Neu. [MB Column Idea?? - RJ]

[What follows are excerpts from February/March issue of Silent Flight, courtesy of R.B. Flockhart, one of Steve Neu's "FAX Friends". Silent Flight is a newsletter published by a British (UK) Model Club - Steve Manganelli]

Electric Competition by Terry Stuckey

The Power Train

Electronic development in microprocessing and high capacity transistors has not taken long to arrive in the modelling world. As with modern R/C transmitters with microcomputers extending and expanding the capabilities of the basic functions the variety of high specification speed controllers has increased to suit demand. The "fuzzy logic" range of speed controllers by Hans Sommerauer and Schulze have enabled the rated capacity to reach very high levels. Modern speed controllers can handle 50 to 120 amps with ease using the new technology 8 bit processors and high capacity mosfets have made their entry which has spurred on the electric motor designers and encouraged nicad development. Motor technology has taken the increase in power handling capacity of the speed controllers and nicad cells increase in usable capacity to develop new magnet systems which reduce the operating friction and improve the efficiency of the motor.

At the high power end of the spectrum in the 27-cell and 10-cell F5B (F3E) classes, the competitors have expressed their demands to the motor designers who have responded with amazing speed. Current 10 cell motors have to produce vast quantities of power for short bursts of duration. The requirement peaks at 85 to 90 amps for 10 to 20 seconds of duration. You can imagine that the rate of climb for this combination of lightweight airframe in composite construction and the amount of thrust generated from the "hot motors" is very rapid. Imagine a conservative 700 ft in 18 to 20 seconds (i.e. 25 mph at a climb angle of 70 degrees). The motors capable of producing this awesome power have reduced the armature windings from the 7 used until recently, to 4 or 3.

Examples of this new breed of motor are the ULTRA 1800/3 and the MEGA FAI 10SP. Both are 3 wind motors and when examined you can identify the new technology used to handle these high currents. The brush gear allows the use of large surface area brushes and the copper wire used increased in diameter to lower the internal resistance. The magnet system with 6 magnets bonded to the case is a design secret but in use the slow rotation of the motor suggests that a special arrangement has given a smooth rotation rather than a "notchy" one.

The current 27 Cell Open FAI models are using the latest developments from the Plettenburgs, a father and son team. The Hecktoplett 355/45/4 or 355/45/5 has been produced with 4 or 5 winds and when tuned to suit the airframe will give climb rates unseen in the UK. Inevitably, the current consumption for these motors is in the 80 to 90 amp range.

With speed controller designers taking the lead and the motor designers responding to the higher currents available, the nicad cell manufacturers also have produced new cells to suit.

The ubiquitous Sanyo or Panasonic Nicad cell has undergone successive design changes to increase its capacity. Although it has retained the same case size and relative weight, the original 1200 mAh could handle very high current drain and still give its power after hundreds of cycles. Many cells are some years old and when cycled regain their power for continued use. The increase of active material within the cell resulted in an increase in capacity

to 1400 mAh (+16%) and recently to 1700 mAh (+41%). These are readily available under the guise of Sanyo SCRC and Panasonic Red Amp. <note : I'm skipping a bit so we'll join Terry in the middle of his adventure>

MEGA MOTORS

"Leaving Northern Bohemia, the trip took us south east via Prague to the countryside of Moravia. The journey was through landscape relaxed and tranquil--very different from the industrial heartland northwest of Prague. Our destination was the workshop of Mr. MEGA--Karel Matyas. This was achieved after some deliberation and not a little difficulty. Many buildings in Brno look the same, the streets look very similar but thanks to an elderly passer-by, the secret workshop was located. Met by Karel himself the time spent in that haven of electric motors passed with alarming speed filled with new discovery and education.

Set out upon a bench were cases, armatures, and backplates strangely reminiscent of the WEBRA electric motors, yes they were 15/10 and 15/20 motors. The WEBRA motors are known in the UK for their light weight and power range, the knowledge that the designer/builder is Karel Matyas opened another avenue of interest. In conversation, Karel expressed his intent to produce a smaller version of the MEGA Motor to be known as the "MINI-MEGA". How serious this project was, became evident when he produced the "full set" of machine drawings for a motor. Slightly larger than the Webra 15/7 this motor was stated by Karel to be more powerful and efficient as a result of the developing motor technology. Mega motors have proven rugged reliable and powerful in the UK with many satisfied users in the "R" range. Karel produces these motors for sale in Europe, with outlets in Germany, Austria, France and the Low Countries <??>, Belgium, and the Netherlands and of course the UK through Modellhaus.

Karel Matyas qualified from university with a degree in Engineering and spent many years in the aviation industry, a lot of this time spent in R & D with electric motors used on aircraft produced by the state manufacturer Aero. In recent years, his interest in model aircraft and especially electric flight has put his knowledge and experience to good use. The result has been the close cooperation between him and the Czech F5B flyers in day to day development. The Czech F5B team in 1992 at the Papendal World Championships used MEGA motors. Electric flight is a continuing development and the motor technology is constantly being revised. Technical advances in magnet technology and brush gear have been incorporated into new designs. Karel has spent some time evaluating the requirements and technical specifications from the leading flyers in Europe to achieve this result. The inside face to the door to his office attests that the cream of F5B have visited with interest. The door is autographed with a who's who in F5B notably Rud. Freudenthaler, the world champion.

To emphasize this desire to produce the motor for the discerning electric flyer, Karel lifted out of his stock cupboard his offerings for 1994 : new motors for F5B, Acrobatics and the sports flyer.

Mega 10SP and Mini-Mega each in distinctive matte black exuded quality. Adjacent to this stock cupboard, Karel has a glass fronted cabinet which was brim full with electric motors from different sources; Rumania (27 Cell), Japan (Solar Power), Germany (FAI), Austria (Webra)<Sounds like Steve Neu's Garage!> Karel is a super keen electric flight motor designer/manufacturer.

Technically, the Mega motors show innovation and quality but how do they perform? Located in the workshop is an extensive motor testing rig equipped to produce static thrust measurements. Linked to a plotter, the performance can be calibrated graphically for each motor and prop combination at various voltages and current ratings. The opportunity to test a motor was taken and static results made on an FAI 10SP motor, this revealed considerable power at 9000 RPM 20/85 amps on a 13 X 7 prop, the static thrust was enormous and invoked the need for a comparative practical test.

The time spent with Karel Matyas in his workshop occupied many hours, the wealth of information and data released by him has given the writer an in-depth expose' of the hard work by one of the dedicated men that has made our hobby so enjoyable.

After spending time at Brno with Karel and his family, the next day allowed time to flight test the Mega motor in an airframe. Equipped with an altimeter watch, comparative tests proved the new motor indeed lived up to the expectations indicated by the static testing.

I was also given some of the performance graphs alluded to in the article. Unfortunately, they do not include measurements of output power; only current with a specific prop and various input voltages. Therefore the efficiency cannot be compared with dynamometer plots of efficiency taken from other known motors. The design of the motor appears similar to the Plettenburg with the backplate and brush system strongly resembling the Keller 50/80/100 series. Hey, any motor that can take 85 amps can't be all bad! (put that in your Astro and smoke it--literally!). If the design is in fact like its snootier European cousins, they're bargains at the \$159 Hobby Lobby sells them for (see figure 4). This should be compared with \$319 for the Hecktoplett 320K/6 Neodym. Even better, is that they can be had through the UK supplier for about \$100. Steve Neu has one MEGA 10SP on order, expecting it anytime. We'll keep you posted.

NEW! Radically lower price on these powerful Czech motors!

HLKM003	MEGA R3 Motor, 7-10 cells	.....	\$159.00
HLKM004	MEGA R4 Motor, 7-14 cells	.....	\$159.00
HLKM005	MEGA R5 Motor, 10-16 cells	.....	\$159.00
HLKM007	MEGA R7 Motor, 12-20 cells	.....	\$159.00
HLKM008	MEGA R8 Motor, 14-24 cells	.....	\$159.00
HLKM011	MEGA R11 Motor, 16-24 cells	.....	\$159.00

Made in Czechoslovakia by Karel Matyas, an engineer who has extraordinary design and manufacturing abilities. MEGA motors have been discovered by top notch German and Austrian electric flyers. Our test results put these in the ULTRA and Hecktoplett class. MEGA motors have huge neodym magnets, extra lightweight armature laminations, dynamically balanced armatures, built in electric noise suppression, and adjustable timing. They are easy to service. The "R" numbers refer to the number of armature winds. See "Max. Output" chart for outputs and dimensions.



... from the Hobby Lobby Catalog

FOR SALE

For Sale: Larry Jolly Electricus 2-meter available to anyone who will build it as a club trainer. A geared 05 motor is available as well as some other parts, etc. Call Wayne Walker at 284-6119