

the

runnerama

July

The EFO Officers

2015

President: Ken Myers 1911 Bradshaw Ct. Commerce Twp, MI 48390 Phone: 248.669.8124	Vice-President: Richard Utkan 240 Cabinet Milford, MI 48381 Phone: 248.685.1705	Secretary/Treasurer: Rick Sawicki 5089 Ledgewood Ct. W. Commerce Twp., MI 48382 Phone: 248.685.7056
Board of Director: David Stacer 16575 Brooklane Blvd. Northville, MI 48167 Phone: 248.924.2324	Board of Director: Arthur Deane 21690 Bedford Dr. Northville, MI 48167 Phone: 248.348.2058	Ampeer Editor: Ken Myers 1911 Bradshaw Ct. Walled Lake, MI 48390 Phone: 248.669.8124
No Mailed Ampeer Subscriptions	The Next Meeting: The Mid-Am, Saturday & Sunday, July 11 & 12	

What's In This Issue:

Upcoming Skymasters' and CARDS Electric Fly Ins - Reminder: EFO Flying Meetings - Selecting a Brushless Outrunner Motor Power System for Sport and Sport-Scale Airplanes (Part 2) - The Keith Shaw Birthday Fly-in Report - Alon Aircoupe Takes to the Air - Lower-Minges LM1 Flies - Materials Used in RC Modeling - Blast from the Past - Mid-Am Info - Upcoming Events

Upcoming Skymasters' Electric Fly In

The Skymaster's Electric Fun Fly is scheduled for **Sunday**, June 28. It will be held at their Scripps Road Field. Scripps Road is between Joslyn and M-24 in Lake Orion, MI. The start time is 10:00 AM.

This event is a full day of flying. There will be Electric Power open flying from 10 a.m. until 8 p.m. Pilot prizes are provided for participants.

Additional Event Information

<http://www.skymasters.org/index.php?page=events&id=1427>

Event Flyer

<http://www.skymasters.org/index.php?page=events&flyer=data/flyers/2015/2015electricfly.png>

Event Website

<http://www.skymasters.org/index.php?page=events&type=detail&event=electric>

Event Map

<http://www.skymasters.org/index.php?page=information&type=wherewefly&item=scrippsfield#scrippsfield>

Contact CD Pete Foss

Email: electricfly@skymasters.org

Upcoming CARDS Electric Fly In



EFO Pit Area at the 2014 CARDS meet

The Capital Area Radio Drone Society (CARDS) Electric Meet is Saturday, August 22, 2015

<http://www.cardsrc.com/2015/electric/>

There field is located at 8328 Otto Rd., Grand Ledge, MI. Time is from 9 a.m. to 9 p.m. The Landing Fee is \$15, which includes pizza & a soda. The field is available to registered pilots for electric only open flying on Friday Aug 21st from 4-9:00 p.m., Pilot pre-registration and Spectators are welcome.

Pilot and airplane requirements:

Current AMA or MAAC card required

Open to All RC Electric planes and helicopters

Site Accomodations:

1000 ft E/W runway

Basic restroom facilities

Contest Director: Marv Thomson

Reminder About EFO Flying Season Meetings

Dates given for the flying season EFO flying meetings are **tentative**. The date depends on the weather and may change from the one noted in the monthly *Ampeer*. The EFO Web site at <http://www.theampeer.org> has the most current information posted. Also, emails are sent to EFO members if a date change is required.

Selecting a Brushless Outrunner Motor Power System for Sport and Sport-Scale Airplanes (Part 2)

By Ken Myers

The first part of this article appeared in the June, 2015 *Ampeer*.

The article had reached the point of selecting the specific motor for my new Sig Four-Star Forty.

I stated that I reached the conclusion that there were five Cobra outrunner motors that would be appropriate for consideration for this project when using an APC 12x8E prop and 4S LiPo. A table of appropriate motors was shown in the June issue. Note that all five motors have approximately the same watts **out** (about 500).

3.19 watts in per gram of motor weight. While it would work, it would 'waste' the most energy, run the hottest and just generally not be a good choice, except where weight might be a critical.

The **C-4130/14** and **C-4130/12** are the most efficient and have the the lowest percent of voltage drop. At about 600 watts in each, they have the lowest watts in per gram of motor weight at 1.5 watts in per gram of motor weight. They weigh significantly more than the other three motors. They might be useful in aircraft with an extremely short nose moment and or a very long tail moment where their weight doesn't adversely affect the wing loading.

The **C-3525/10** and **C-4120/14** could be good choices for most applications. There is only a 40 gram, 1.41 oz., difference in weight between the two motors. The prop adapter and cross mount for the **C-4120/14** is slightly heavier. There is not enough difference in current draw, resulting RPM and price (\$5) to be of any real significance. It is pretty much a toss up. It comes down to achieving the proper CG without having to add weight to the nose or tail of the aircraft.

Both motors require the same 4S 3300mAh 20C LiPo pack, for approximately 7 minutes of flight time, and an ESC with a rating of 60 amps or higher.

Other Brand Motor Choices

Generically, the two most useful Cobra motors are the 4351-780, 253g and a 5052-710, 293g.

Cobra Motor	Wt.	Kv	Io	Max Amps	Volts	Amps	Watts Input	RPM	Pitch Speed	Watts Output	System Eff.	Vout/Vin %
C3520/12	216	820	1.45	56	14.8	46.60	689.7	8842	67.0	487	70.6%	72.9%
C3525/10	253	780	1.65	62	14.8	44.93	665.0	8811	66.8	489	73.5%	76.3%
C4120/14	293	710	1.99	68	14.8	42.55	629.8	8746	66.3	500	79.3%	83.2%
C4130/12	398	540	1.85	65	18.5	31.81	599.4	8685	65.8	482	80.4%	86.9%
C4130/14	400	450	1.46	60	22.2	27.48	610.1	8803	66.7	509	83.4%	88.1%

I noted, "All five motors will 'work' in this application."

How that table was created is explained in this issue.

The **C-3520/12** is the least efficient and has the highest percent of voltage drop. At 689.7 watts in it has the highest watts in per gram of motor weight at

That information can be used to find similar motors that 'should' provide similar performance.

The Hobby King Motor Finder can be used to find similar outrunner motors, weight and K_v, sold by Hobby King.

http://www.hobbyking.com/hobbyking/store/brushless_motor_rc_data.asp

The sliders on the Motor Finder page need to be set to about 5% either way of both the weight and what they note as Kv.

The Cobra **C-3525/10** generically is a 4351-820, 253g

Kv range $820 * 0.95 = 779$ to $820 * (1/0.95) = 863$

Weight range $253g * 0.95 = 240g$ to

$253g * (1/0.95) = 266g$

The sliders on the Hobby King Motor Finder Web page need to be used from both ends to adjust the range for both the Kv and weight.

The search yielded only one motor that was somewhat equivalent to the Cobra C-3525/10. It was the Turnigy 4258 Brushless Motor 800kv.

http://www.hobbyking.com/hobbyking/store/uh_viewItem.asp?idProduct=8490

Generically the Turnigy motor is a 4251-800Kv, 266g compared to the Cobra C-3525/10, which is a 4351-820, 253g.

This particular Turnigy motor has an 'odd' mounting for the motor, as far as I am concerned. No amp draw was noted on the motor's Web page.

The Cobra **C-4120/14** generically is a 5052-710Kv, 293g.

The Kv range for searching, using the Hobby King Motor Finder, is 675 to 747 and the weight range is 278g to 308g.

The search yielded only one motor similar to the Cobra C-4120/14. It is the Turnigy L5055C-700 Brushless Outrunner 700kv.

http://www.hobbyking.com/hobbyking/store/uh_viewItem.asp?idProduct=19618

The Turnigy is generically a 5055-700Kv, 296g and the Cobra a 5052-710Kv, 293g.

Using other sites like, hobbypartz.com, headuphobby.com, towerhobbies.com, horizonhobby.com, etc., is much more difficult.

First, the chosen site needs to be searched for a similar Kv number. That usually requires several searches to locate a similar Kv. Next the weight needs to be verified.

A search of the Tower Hobbies Web site yielded: Great Planes Rimfire .46 42-60-800 Outrunner Brushless, 4260-800Kv, 268g.

<http://www3.towerhobbies.com/cgi-bin/wti0001p?&I=LXLWV6&P=7>

The Great Planes motor is a 4260-800Kv, 268g and the equivalent Cobra C-3525/10 which is generically a 4351-820, 253g.

A Spreadsheet to do the Math

A spreadsheet has been created to do the math for you to use as an aid in searching for an outrunner motor. It is located at <http://www.theampeer.org/ampeer/ampjul15/motor-select.xls>. It is an Excel formatted spreadsheet workbook. All of the entries, and there are VERY FEW, are made into the **green** cells only and all of the results appear in **red** cells.

There are several spreadsheets in the workbook demonstrating various examples.

The spreadsheet named "SIG 4-Star 40" is used for this example.

Using the Spreadsheet

Start by entering the data requested in Column B, cells 2 - 7, which have a green background.

	A	B
1	Aircraft Input Data	
2	Aircraft Name:	SIG Four-Star Forty
3	RTF Wt. Pounds:	5
4	Watts in per pound*:	120
5	Prop Diameter:	12
6	Prop Pitch:	8
7	Desired Flight Time:	6.5
8	* Use 100 watts in per pound if unsure	

The Target Motor & Prop Results appear just to the right of the Aircraft Input Data.

	Target Motor & Prop Results		Watt Range	
Target Pin:	600	Watts In	540	706
Pitch/Dia.:	0.67	Dia./Pitch:	1.50	
Motor Weight Range:	200	to	400	grams

The results show that the motor needs to handle 600 or more (+) watts in and weigh between 200 grams and 400 grams. A watts in range is also noted. It also shows the pitch to diameter and diameter to pitch ratios.

A table of Cobra motor weights, to the right of the Target Motor & Prop Results, suggests which series of motors to look at on the Innovative Designs Web site for Cobra Airplane Motors. <http://www.innov8tivedesigns.com>

The table, shown on the next page, indicates that

Cobra Airplane Motors	
Series	Weight in grams
C-2202	15
C-2203	17.5
C-2204	22.5
C-2208	47
C-2213	61
C-2217	74
C-2808	80.5
C-2221	88
C-2814	109
C-2820	142
C-3510	141
C-2826	171
C-3515	178
C-3520	216
C-3525	255
C-4120	295
C-4130	400

the C-3520, C-3525, C-4120 and C-4130 series contain motors in the desired weight range.

Start the search for the 600+ watts in motor using an APC 12x8E prop by selecting the highest K_v motor of the series. Open the Propeller Data Chart. Check to see if it lists an APC 12x8E at about 600 or so watts in. Note the watts in range on the spreadsheet.

The C-3520/10 doesn't have an appropriate match. It lists a 12x8E at about 480 watts in using a 3S LiPo.

http://innov8tivedesigns.com/images/specs/Cobra_3520-10_Specs.htm

The C-3520/12 Propeller Data Chart lists the 12x8E prop at 689.7 watts in using a 4S LiPo.

http://innov8tivedesigns.com/images/specs/Cobra_3520-12_Specs.htm

The watts in may seem high, but it is worth adding to the Motor Input Data of the spreadsheet. Yes, your judgement has to be used about how much more, or possibly less, power in is acceptable.

When a suitable motor is found, using the data from the Propeller Data Chart, enter its name, weight, K_v and I_o starting at cell A12.

10	Work Area:				Input	Motor	Watts	Prop	Pitch
11	Motor Input Data	Wt.	Kv	Io	Voltage	Amps	Input	RPM	Speed
12	Cobra C3520/12	216	820	1.45	14.8	46.6	689.7	8842	67.0

I found it easiest to copy and past the rest of the data from the Propeller Data Chart on the Innov8tive Designs Website for the chosen motor; Input voltage, Motor amps, Watts Input, Prop RPM, and Pitch speed.

The same procedure is used for the remaining appropriate series motors. A total of five motors were found.

The Motor Results area of the spreadsheet compares the approximated motors' watts out, system efficiency, voltage efficiency, suggested minimum ESC amp rating, number of LiPo cells,

suggested safe battery mAh for the desired flight time, the safe minimum C-rate for the LiPo battery, the similar motor K_v range and similar motor weight range.

A screen capture, on the following page, shows the complete Excel spreadsheet named "SIG 4-Star 40".

The results show that all of the motors turn an APC 12x8E at about 8800 RPM while providing approximately 500 watts out.

The Motor Results also demonstrate that the C-3525/10 and C-4120/14 provide almost identical power to the APC 12x8E propeller. Either motor would 'fly' the plane in a similar, and probably indistinguishable, manner.

The plane would not 'know' that the C-3525/10 is working much harder compared to the 'loafing' C-4120/14, and it wouldn't care.

The spreadsheet screen capture shows that the system and voltage efficiencies are just too low to consider the C-3520/12, when compared to the other motors.

The suggested battery mAh for the C-3525/10 to fly for approximately 6.5 minutes using 80% of its capacity while turning an APC 12x8E prop is a 4S 3042, which can be rounded to 3000mAh.

For the C-4120/14 turning the same prop for the same amount of time, the suggested mAh is 2881. A 4S 2800 mAh 20C, or better, would be appropriate.

Rounding the suggested battery mAh down, might result in slightly less flight time than the target flight time, while rounding up might result in a slightly longer flight time than the target flight time.

To select a similar motor for the selected Cobra motors, the Motor Results show the K_v range and motor weight range for motors that might be somewhat similar.

A	B	C	D	E	F	G	H	I	J	K	L	
1	Aircraft Input Data									Cobra Airplane Motors		
2	Aircraft Name:	SIG Four-Star Forty	Target Motor & Prop Results									Weight
3	RTF Wt. Pounds:	5			Target Pin:	600	+ Watts In			Series	in grams	
4	Watts in per pound*:	120			Pitch/Dia.:	0.67	Dia./Pitch:	1.50		C-2202	15	
5	Prop Diameter:	12	Motor Weight Range:				to	400	grams	C-2203	17.5	
6	Prop Pitch:	8								C-2204	22.5	
7	Desired Flight Time:	6.5	minutes	5-8 minutes	is typical					C-2208	47	
8	* Use 100 watts in per pound if unsure											
9										C-2213	61	
10	Work Area:				Input	Motor	Watts	Prop	Pitch	C-2217	74	
11	Motor Input Data	Wt.	Kv	Io	Voltage	Amps	Input	RPM	Speed	C-2808	80.5	
12	Cobra C3520/12	216	820	1.45	14.8	46.6	689.7	8842	67.0	C-2221	88	
13	Cobra C3525/10	253	780	1.65	14.8	44.93	665.0	8811	66.8	C-2814	109	
14	Cobra C4120/14	293	710	1.99	14.8	42.55	629.8	8746	66.3	C-2820	142	
15	Cobra C4130/12	398	540	1.85	18.5	31.81	599.4	8685	65.8	C-3510	141	
16	Cobra C4130/14	400	450	1.46	22.2	27.48	610.1	8803	66.7	C-2826	171	
17										C-3515	178	
18										C-3520	216	
19										C-3525	255	
20										C-4120	295	
21										C-4130	400	
22												
23	Motor Results:	Watts Output	System Eff.	Vout/Vin Eff.	ESC Amps	# LiPo Cells	Batt. mAh	Safe C-rate	Similar Motor Kv Range	Similar Motor Weight Range		
24	Cobra C3520/12	487	70.6%	72.9%	58	4	3155	18	779 863	205 227		
25	Cobra C3525/10	489	73.5%	76.3%	56	4	3042	18	741 821	240 266		
26	Cobra C4120/14	500	79.3%	83.2%	53	4	2881	18	675 747	278 308		
27	Cobra C4130/12	482	80.4%	86.9%	40	5	2154	18	513 568	378 419		
28	Cobra C4130/14	509	83.4%	88.1%	34	6	1861	18	428 474	380 421		
29												
30												
31												
32												
33												
34	Using A123 2300mAh/2500mAh at approximately 35 amps											
35	Target Watts In LiPo:	600	A123	Watts in								
36			Pin	Per Pound								
37	Round LiPo Watts In to nearest 100	600	600	120.000								
38												
39			Target									
40	Target Volts In	Number A123 Cells	Kv	Kv Range								
41	17.143	6	640	602 731								
42		Wt. in grams	Wt. in grams									
43	Motor Weight Range:	200	to	400								

Using A123 2300mAh/2500mAh Cells

LiPo batteries make the selection process a bit simpler, in some ways, and a bit more difficult, in other ways.

A123 Systems 2300mAh or the newer 2500mAh cells are 'best' used to provide about 100 watts in per cell. That means an amp draw of about 35. Using A123 cells requires selecting a Watts in per pound to equal a Target Power in (Pin) in even hundreds.

The spreadsheet allows for this and can compute a weight range and K_v range for a suggested motor using A123 cells.

Select a Cobra, or other brand of motor, in the suggested weight range and K_v range.

For the example plane, a check of the Cobra Airplane motors on the Innov8tive Designs Web site

showed no 4130-series motors with a K_v between 602 rpm/volt and 731 rpm/volt.

The Cobra C-4120/16, Cobra C-3525/12, and Cobra C-3520/14 all fall within the K_v and weight range.

Actually, the Cobra C-3525/12 was chosen for my Sig Four-Star Forty. A full review of the plane and power system will appear in an upcoming *Ampeer*. For now, just know that the plane flies great on my 6S A123 2300mAh pack, this motor and an APC 12x8E thin electric prop.

This process works very well except for the The Gordian Knot of APC Propellers, which will also be discussed in an upcoming issue of the *Ampeer*.

The Keith Shaw Birthday Fly-in Report



The Flight Line on Saturday Morning

Saturday, June 6, Keith Shaw's actual birthday, turned out to be a PERFECT flying day for this 15th annual event.

The attendance was good, the planes and camaraderie were great.



Carolynn Foss visits with Keith

We were all thrilled that Keith was able to attend. He'd been 'under the weather' since April and was still having problems with light sensitivity. Although he could not fly, we were more than pleased that he was able to spend the whole day with us.

Planes were constantly in the air from about 9:00 a.m. to after 4:30 p.m. What a day!

There were folks from all over attending, and there was a really good contingent of us from southeastern Michigan.

There are some excellent photos taken at the event by Patric Layman. They appear in this thread on RC Groups.

<http://www.rcgroups.com/forums/showthread.php?t=2397836&page=2>



Patric shares a lot more great photos, like the one above of his, on the RC Groups thread.

That is NOT a staged photo. It is Jim Young's Wedell-Williams and Denny Sumner's Gee Bee on a fly-by. Great shot Patric!

Unfortunately, Sunday was less than a perfect weather day. The wind howled and rain was imminent when we packed up our canopy and left about 10 a.m. Sunday morning.

It was still a great time and we will be back next year!



A 63" Jack Stafford Alon Aircoupe Takes to the Air

On April 28, 2015, Denny Sumner's Aircoupe had its maiden flight at the Midwest RC Society flying field.

It was built from a short kit, and mostly redesigned along the way.

The maiden flight was very successful! The photo was actually taken during the maiden.

Full information and more photos appear in Denny's build thread on RC Groups.

<http://www.rcgroups.com/forums/showthread.php?t=2289081>

This is not a hanger queen! It is flown on a regular rotation with his other great planes.

Great job Denny!

Lower-Minges LM1 Flies

Mark Rittinger brought his very unique Lower-Minges LM1 out to the Midwest RC Society flying field for its maiden flight on April 20, 2015. Keith Shaw was on hand to help with the maiden.

Unfortunately this plane did have some 'teething problems', but it did fly!

Mark has the 'bugs' worked out now, and it is flying.

Mark's build thread on RC Groups has a lot more information on this plane very, very different aircraft.

<http://www.rcgroups.com/forums/showthread.php?t=2266680>



Mark's hand disappears into the guts of the beast!

Materials Used in RC Modeling

2 Brothers Hobby, LLC has an interesting article on materials used in RC modeling.

<http://2bfly.com/knowledgebase/airplanes/building-materials/>

The article covers materials and their uses. The article includes notes about woods (balsa, spruce, plywood & basswood), carbon fiber (all its shapes) and foams, including EPS, XPS, EPP, POE/EPO and other foams.

I thought it was worth sharing.

By the way, their aircraft reviews are first rate!

Blast from the Past

Electra-Fly
from Aristo-Craft
THE FIRST LOW PRICED-PLASTIC
Electrified MODEL AIRPLANE KIT

only \$100

ARISTO-CRAFT DISTRIBUTIVE INDUSTRIES
184 Pennsylvania Ave., MAN 92 Newark 2, N.J.

Here, at last, is the first in a series of "electrified" model plane kits. Three years in development, this unique model is made of light-weight cloud-foam plastic. Weighing only one ounce (without motor), it has a 1.9 inch wing span and uses a special Aristo-Fly battery. Safe, noiseless, instant starting...the Electra-Fly makes model flying trouble-free, more scientific, more fun than ever.

Kit includes prop, forward landing gear, decal, easy-to-follow plans and flight instructions. Get in on the birth of this new era of electric aeromodelling. Be among the first to build and fly Aristo-Craft's Electra-Fly.

OPENS A NEW & EXCITING FIELD OF AEROMODELLING PLEASURE!

ARISTO-FLY WET CELL BATTERY
This miniature "spring" battery has low weight and 15 grams - that is, only one penny! This amazing one time use battery has no moving components, and the special battery has a total weight of the group of operating "cells" of only 1.2 grams.

ARISTO-FLY SUPER MOTOR
This tiny rotating motor has a special "crystal" bearing for the propeller. The motor is only one inch long, weighs only one gram, and has a total weight of the group of operating "cells" of only 1.2 grams.

SPECIAL INTRODUCTORY COMBINATION OFFER

PLANE KIT	\$1.00
MOTOR	1.00
BATTERY SET	.20
TOTAL VALUE	\$2.20
ONLY	\$1.98

Go to Your Hobby Dealer

*Prices subject to change without notice.

Hi Ken,

Thanks for sending me the info on how to access the previous *Ampeers*.

<http://theampeer.org/ampeer/Complete-Ampeer-Index.html>

I have had a ball looking through the back numbers, believe me. I seem to remember being aware of this possibility but not having too much luck.

Anyway, I thought that you would find the attached copy of an advert from MAN of January, 1962 of interest if you had not seen it before. If your print-out of the ad is hard to read, I can send you a decent copy by Mail, let me know, OK?

Thanks again, regards, Cedric Longman of St. Marys, Ontario.

KeeCat Electrified

From Joe Hass via email



Chris Hass captured this low, high speed pass of his dad's KeeCat at the Radio Control Club of Detroit Field.

Joe converted this ARF from glow to electric. Joe worked with Ken Myers of the *AMPEER* Newsletter to determine the power system.

The aircraft is powered by an AXI 4120/14 brushless motor driving an APC 11X9 pattern prop. A Jeti 90 amp Electronic Speed Control controls the energy from a 5 cell 5000MAH Thunder Power 65C Li Po pack. Peak power is 915 watts at 10,600 RPM.

The aircraft radio system is powered by a 5 cell 2000 NiMH pack. A Tactic TX850 transmitter works with a Tactic TR825 receiver and Tactic servos on the flight surfaces. Using the programming in the transmitter the landing gear retracts in sequence and the twin rudders are used as air brakes.



The KeeCat has a wingspan of 55 inches, length of 64.5 inches and weighs 7 pound, 14 ounces.

Some more info from Joe on the KeeCat

It flew and flew well. Just a couple of clicks of down needed.

Looks good with the gear up. Looked great in the air. Rolled really fast. Needs rudder in turns.

Air brakes worked. Caused a pitch up as expected, so I have programmed in some down elevator.

5 minute flights.

Had to readjust the retract mechanism on the mains to lock properly.

Looks like all the math was correct.

Don't remember if I mentioned it but I paid \$40.00 for the ARF including retracts.

Thanks for your help. It was a great lesson on how to figure out a power system without any math. Your number confirmed my guesstimate.

Possibly Reformatting the HTML Version of the Ampeer

From Andy Kunz via email

Hi Ken,

Would you consider changing the format of the HTML version from the extremely narrow display to something that doesn't force a fixed width? It makes it uncomfortable to read in this format. See attached image. It's much easier to read something that scales with the width of the browser window (you know, the reason people buy wide-format monitors).

Thanks.

Andy

I will definitely look into it. I want to do something that will work on phones and tablets.

KM

31st Annual Mid-America Electric Flies 2015

At the 7 Mile Road MRCS Field

AMA Sanctioned

Saturday, July 11 & Sunday, July 12

Hosted by the:

Ann Arbor Falcons and Electric Flyers Only

Flying Site Provided by the:

Midwest R/C Society

Contest Directors are:

Ken Myers phone (248) 669-8124 or

kmyersefo@theampeer.org

<http://www.theampeer.org> for updates & info

Keith Shaw (734) 973-6309

Flying both days at the Midwest R/C Society Flying

Field - 7 Mile Rd., Salem Twp., MI

Registration: 9 A.M. both days

Flying from 10 A.M. to 5 P.M. Sat. & 10 A.M. to 3 P.M. Sunday

Pilot Entry Fee \$15 a day or \$25 both days
Parking Donation Requested from Spectators

Saturday's Awards

Best Scale

Most Beautiful

Best Ducted Fan

Best Sport Plane

CD's Choice

Sunday's Awards

Best Scale

Most Beautiful

Best Mini-Electric

Best Multi-motor

CD's Choice

Planes Must Fly To Be Considered for Any Award

Saturday's & Sunday's Awards:

Plaques for 1st in each category

Open Flying Possible on Friday

**Night Flying Possible, Weather Permitting,
Friday & Saturday Nights**

Refreshments available at the field both days.

Potluck picnic at the field on Saturday evening.

Come and join us for two days of fun and relaxed electric flying.

Come, Look, Listen, Learn - Fly Electric - Fly the Future!

Merchandise drawing for ALL entrants

To locate the Midwest R/C Society 7 Mile Rd. flying field, site of the 2015 Mid -America Electric Flies, look near top left corner of the map, where the star marks the spot, near Seven Mile Road and Currie Rd.

The field entrance is on the north side of Seven Mile Road about 1.6 Miles west of Currie Rd.

Address: 7419 Seven Mile Road, Salem Twp, MI 48167 - numbers are on the fence.

Because of their convenient location and the easy drive to the flying field, the Comfort Suites and Holiday Inn Express in Wixom, MI have been added to the hotels' listing. They are only 10 miles northwest of the field and located near I-96 and Wixom Road. See the map-hotel .pdf for more details.

<http://www.theampeer.org/map-hotels.pdf>



Upcoming E-vents

June 28, SUNDAY Skymasters' Electric Fun Fly, Scripps Road Field, Scripps Road is between Joslyn and M-24 in Lake Orion, MI, start time: 10:00 AM
Full Details in the Issue

July 11 & 12, 30th Annual Mid-America Electric Flies - full details in this issue.

July 19, Sunday, Pontiac Miniature Aircraft Club (PMAC) All Electric Fly, 10 a.m., at their flying field, 9480 White Lake Rd., White Lake, MI 48386

August 22, Saturday Capital Area Radio Drone Society (CARDS) Electric Meet, 8328 Otto Rd., Grand Ledge, MI, 9 a.m. to 9 p.m., Landing Fee \$15 (Includes pizza & a soda on Saturday) - Full Details in this issue



Why is Ken sitting by this low-wing EPO plane and smiling?

A full review of this plane will be in the September issue. The August issue is devoted to the Mid-Am.



The Ampeer/Ken Myers
1911 Bradshaw Ct.
Commerce Twp., MI 48390

<http://www.theampeer.org>

The Next Monthly Meeting:

Date: Sat. & Sun, July 11 & 12 **Time:** 10:00 a.m.

Place: Midwest RC Society 7 Mi. Rd. Flying Field