the

December

The EFO Officers

2016

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Ken Myers 1911 Bradshaw Ct. Commerce Twp, MI 48390 Phone: 248.669.8124

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Board of Director: Arthur Deane 21690 Bedford Dr. Northville, MI 48167 Phone: 248.348.2058

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Ampeer Editor:

Ken Myers 1911 Bradshaw Ct. Walled Lake, MI 48390 Phone: 248.669.8124

The Next EFO Meeting: Wednesday, Dec. 14, 7:30 p.m., Ken Myers' house

What's In This Issue:

Flightline Hobby's New Location - AMA Update - District VII VP - Building Airframes with DTFB -October EFO Flying Meeting - AXI Outrunner Motors - Innov8tive Designs is on the Move - 2016 Indoor Flying in Brighton - Upcoming Foam in the Dome - Upcoming Events

Flightline Hobby's New Location From Joe Hass via email

October 23, 2016

I received the following from Joe at the end of October, so the move has happened. This is my favorite area hobby shop, and well worth the drive for me. KM

John Hoover asked my to pass on this important message. PLEASE PASS THIS ON!

Flightline Hobby will be opening in their new location at 11AM on Wednesday October 26, 2016. Here is the new address:

Flightline Hobby 3039 South Baldwin Rd Lake Orion, MI 248-814-8359

Flightline is now located in the Walden Pond Shopping Center on the Southeast corner of Baldwin and Waldon. If you take I-75 north exit at the Baldwin Road exit. Turn right heading north. The mall will be on your right. Congratulation John and Tracie. Thanks for serving the modeling community!

Joe Hass 248-321-7934

AMA Update with District VII VP, Tim Jesky

From Joe Hass via email

Ken,

Please pass this along. I anticipate that there will be a local Goldberg Vital Person Award announcement. Join us for an informative evening concerning topics of interest to the aeromodeling community. Thanks. Joe Hass

> AMA Update with Tim Jesky

Monday, November 28, 2016 7 PM. - 9 PM.

Latest From the AMA & FAA



the Ampeer

Ultimate Soccer Arenas 867 South Blvd. Pontiac, MI 48341

New Products, Special Guest & Pilots' Prizes

No Charge to Attend

Sponsored by Michigan International Aircraft Association AMA Charter Club 5064

For More Information contact: Joe Hass 248-321-7934 or joehass@gmail.com

Building Airframes with Dollar Tree Foam Board (DTFB) By Ken Myers

The following is a synopsis of a presentation that I made at the October 2016 Midwest RC Society meeting. KM

There are a lot of different 'foams' used in the construction, or partial construction, of RC airframes.

Some History

Building and Flying Electric Sport Scale

Transcript of Keith Shaw's presentation to the 1992 Electric Model Fliers of Southern Ontario General Membership Meeting, March 1992 Transcribed by Martin Irvine, Kingston, Ont. http://theampeer.org/shaw/ShawConstructionNotes.pdf

Keith noted several uses for 3/16" foam board (foamboard) in his beautiful scale planes. Edited by Ken Myers, Oct. 2016

There is a wonderful material called foamboard. It can be purchased at art stores. It's basically 3/16" foam with index card bonded to both sides. It has no apparent grain. Therefore, great big holes can be cut out of it.

It weighs about the same as 3/32" balsa. It's a little thicker. Virtually every single airplane I fly has bulkheads made of foamboard. The only drawback is that you MUST use RC56 glue. I haven't cut a balsa bulkhead in many, many years. I just don't know how to cut balsa bulkheads without grain fractures.

Weldbond sticks to the foamboard. If you use epoxy, or typical white glues, it makes a very hard joint, causing a delamination failure. Weldbond All Purpose Adhesive, (identical to RC56), can be purchased from a hardware store. It's a milky white liquid that smells a little like vinyl. It's actually a polymer. You can use that to glue the foamboard to the balsa.

The bulkheads can be cut on a band saw. Just treat it like balsa. On great big airplanes, I've used it for ribs - I mean 14 foot wingspan.

In the forward fuselage there are usually enough stringers for strength. Use some sort of balsa block for the nose with another bulkhead just aft.

With foamboard half shell fuselages, on every bulkhead, somewhere in the middle, like with the crutch, set up a place where there is going to be a pair of lengthwise 1/8" x 3/8" pieces of spruce. All of the outer structure is gong along for the ride. It is just there to make the model look like a real airplane. The inner structure is carrying the load. Since the bulkheads are load bearing, face small areas of the bulkheads with 1/64" ply to help carry the load. The load goes from the strips to the 1/64" ply and is transmitted across a larger surface of the foam board, tying them together, distributing the load.

Tail Surfaces:



To make a curved tail outline with straight pieces is a pain. Making a laminated tail is easier. Use a piece of foamboard and undercut the outside dimensions by about 1/4". Cut strips of 1/16" X 1/4" balsa and stack it up with white glue between the laminations, wrap it around the foamboard and tape it in place. Let it dry, take the tape off, pin it down and fill in inner structures. You can use 1/32" strip for the really small airplanes. It is very strong, like eggs and circles. It weighs virtually nothing.

If you don't want to do all that, you can use the "core" method, leaving the foam board inside.



Turn it over and repeat on the other side. Then sand it to section.



My History In 2009 I built a foam board airframe based on Carlos Reyes' Modifly.

http://theampeer.org/ampeer/ampaug09/ampaug09.htm#MM



It used a KFm1, bottom-stepped, flat-plate type airfoil. The hardest part of building it was removing the 'card stock' to just use the foam. The parts had to be soaked in my bathtub to remove the 'card stock'. The 'card stock' on Dollar Tree Foam Board peals off easily. Some might say, too easily. The plane flew okay, but not great.

Why Foam Board Now?

In December of 2015 I started a project where I was learning more about LiPo batteries. I'd purchased a lot of 3S 1000mAh batteries, but had no plane to fly them in. I wanted something really simple to build.

I remembered that EFO vice-president Richard Utkan and EFO member Owen Morgan had brought

Dollar Tree Foam Board (DTFB) planes to EFO meetings.



In January of 2015, Richard shared his Flitetest Old Speedster. http://store.flitetest.com/ft-old-speedster-speed-build-kit/



The previous March, Owen Morgan shared his Flitetest Spitfire.

http://flitetest.com/articles/ft-spitfire-build

Their successful planes, constructed of this, new to me, building material, intrigued me.

I started searching and researching Flitetest.

What I Learned About Dollar Tree Foam Board (DTFB)

DTFB is a bit less than 3/16" thick light foam covered with craft paper-like card stock. It costs \$1.00 per sheet at Dollar Tree stores.

Its proper name is, "Readi-Board, FOAM BOARD, ADAMS, R.L. ADAMS Plastics, Inc., Wyoming, Michigan 49519". www.goadams.com

It is said to be 30 inches by 20 inches, but it is NOT! For 12 example pieces, the supposed 30" length was never 30". It averaged 29-13/16", give or take a little each way. The 20" width never measured 20". It ranged from 19-15/16" to 20-5/32". Those dimensions are really only important for scratch designers and builders when they are laying out parts. It is approximately 0.177" (4.5mm) thick.

It weighs, with the craft 'card stock' on it, about 0.19 grams (0.0067 ounces) per square inch or 26.9 grams (0.95 ounces) per square foot. The average weight for the average 599 square inch sheet was 113.3g (4 ounces).

The typical, 0.215" (5.5mm) thick, foam board sold at Meijer, Walmart and craft stores weighs about 219.5g (7.75 oz.) per sheet or 52.85g (1.86 oz.) per square foot.

The Old Fogies



Three DTFB enlarged FT Old Fogies. Norm Peters' is the yellow one in front. Ken's prototype (white) and final version (red & yellow) in the rear.

I decided that the simple looking Flitetest Old Fogey, enlarged 1.22 times for my 3S 1000mAh

packs, would make a good learning project. Since I quickly learned that I could not use my wife's hot melt glue gun and glue, it was the wrong type gun and glue, FOAM-TAC, basically a type of contact adhesive, was used throughout the construction, and many, many reconstructions of the prototype. The reconstructions were caused by the Old Fogey being and almost unflyable design!

http://theampeer.org/oldfogey-videos.html

DTFB allows modifications to be made easily, quickly and cheaply. There were a lot of modifications needed to my Old Fogey!

Once the prototype was flying reasonably well, a completely new second version was created. The second version included all of the modifications I found necessary, and it was covered with TopFlite EconoKote, which worked very well.

Video of the final prototype Old Fogey 1.22x flying.

https://www.youtube.com/watch?v=z5FvM65zuos

Continuing DTFB Research Yielded More Info During the time I was working on the Old

Fogies, I was learning more about DTFB.

Besides FliteTest, I found several sources of information on RC Groups and the Internet with DTFB tips, tricks, and plans for airframes.

On RC Groups, in the Foamies (Scratchbuilt) section there is a sticky named Foamboard Scratchbuild University.

http://www.rcgroups.com/forums/showthread.php?t=1587275

There are also a lot of threads in that forum with the words Dollar Tree Foam, FliteTest or FT and DTFB in the title. A search of the forum using those and similar words will bring them up.

Why the Stik?

Later in the year, I decided I would like to have a flying discharger for the left over charged LiPo batteries from training sessions where I did not use all the batteries that I had charged.



https://youtu.be/karr67ZYho4

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I looked at several possibilities. Something with an "Armin Wing"? No, I didn't really want a flat bottom wing, and I really did not like the construction. The FliteTest (FT) Racer, Slinger version



http://flitetest.com/articles/ft-slinger

No, I didn't care for the wing construction.



While watching the video for the FT Baby Blender v2 build, I saw a construction technique more to my liking. Wing construction starts at about 19 minutes into the video.

https://youtu.be/pL7kXnHQvfI

While the airfoil was not what I was looking for, part of the technique seemed like it should work and would be able to make a symmetrical or semisymmetrical airfoil.

I decided to try to create an Ugly Stik based on the original Phil Kraft design.



The original version of my Stik used the identical proportions of the Phil Kraft design. A Clark-Y airfoil was chosen, although not used on the original.



Once the wing was 'designed' in CAD, a span shortened full-size prototype model was made. (show prototype) The original design was later modified, but proved that I could make a Clark-Y airfoil using DTFB.

The whole design went through several changes, including a completely new, longer fuselage, 3/16" plywood firewall and new vertical fin and rudder. The final change was modifying the angle of incidence, by decreasing it, right on the second fuselage, so that they plane would not climb too much at full power. Again, the modification was fairly easy right on the previously finished and the now flying fuselage.

The airframe was covered with TopFlite EconoKote. I measured the weight of the airframe before applying the covering and again after. The EconoKote covering added 44.5g (1.57 oz.) to the overall weight of the airframe. The wing area is approximately 340 sq.in. or 2.36 sq.ft. The covering added about 0.66 oz./sq.ft. I'm pretty sure using colored packaging tape, an often used technique for DTFB covering, would have added that much, or maybe more, weight.

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Video of the Stik Looping

https://www.youtube.com/watch?v=iYZ9MyQqwVA Video of the Stik Landing https://www.youtube.com/watch?v=lWdqIw8N94g

Some Tips and Tricks I've Learned Adhesives I've Used

Original Titebond (wing construction, fuselage construction)

FOAM-TAC (wing construction, fuselage

construction)

Slow cure epoxy (firewall, vertical stab, horizontal stab)

Spray Adhesive (attach paper templates to the foam board)

Elmer's Disappearing Purple School Glue (attach templates to the foam board where no spray adhesive residue was desirable)

Other Construction Materials Used Besides DTFB

1/32" plywood (used on front and back of DTFB to create a firewall - bad idea - it compresses too much)

3/16" plywood (firewall material - thick enough to hold blind nuts for motor mounting - 1/8" plywood isn't thick enough to hold the blind nuts) clear packing tape (dihedral joints on Old Fogies & center joint on Stik)

Construction Tools

3 ft. and 4 ft. metal straight edges Carpenter's square - DTFB is not square right triangles, metal and plastic single edge razor blades X-acto #11 blades Dremel table saw Dremel jig saw masking tape, both painters and regular Phillips head screw driver scissors covering iron (Coverite iron) sanding block and 'fine' sandpaper electric drill with appropriate size bits Dremel Moto-Tool w/various bits

Hints and Tips

Be careful where parts are laid if spray adhesive is use to affix templates to the foam board. It will pick up bits of 'stuff' after the template is removed. Adding pull strips to the paper templates, that have no spray adhesive on them, makes the templates easier to remove.

Use Great Planes control horns. They use Phillips screws instead of straight slots.

Oh Geez, It Happened Again!!!

On Tuesday, October 4, the day before the meeting, I remembered that I had forgotten a reference that I'd run across. It was for Nic Lechner AKA nerdnic. I watched is video about the design of what he calls his 'nnSpeedwing'. https://youtu.be/DGYTvf8UEvA?t=1722

I believe the wife heard the forehead slap upstairs. The technique was basically the same as mine. Duh.

There are some technique differences between our two methods. Instead of using a few 50% cut lines in front of the spar on both the top and bottom inside the wing area, I removed the paper/'card stock' between the front of the spar and leading edge on both the top and bottom and gently encouraged the foam to bend in the direction I wanted before actually gluing the top of the wing panel in place. I also built a capture 'spar' to align with the rear of the top spar to help in alignment. My leading edge was created using a Phillips head screwdriver. I put my servos on the outside of the wing. He used a hot melt glue gun and I used Titebond, pins and bricks. For the type of wing on the Stik, I used 'actual' built on wing tips.

I really like most of the techniques in his method, and I plan on using them in my next build, as the plane I have in mind has the same 'shape', but it will have landing gear in the wing.

Note: I did find out why I didn't run across Nic's video when doing earlier research. It was not posted until September 26, 2016.

During Ken's question and answer session, **Norm Peters** shared some DTFB construction ideas for his latest project. They included a wing structure with ribs, how to 'strengthen' certain areas, like leading edges and control surface facing areas, using bass wood and balsa and how to 'form' DTFB in shapes for cowlings, turtle decks, etc.

Thank you Norm!

Update: Since that time, I've flown the DTFB full airfoil Stik quite a bit. I did some 'crash testing' on the evening of Wednesday, October 19. (Gotta hate dumb thumbs!)

There was only a broken propeller and some damage to the front of the fuselage.

In a short amount of time, the firewall was glued back on again, and a few cracks in the forward part of the fuselage, were also glued back together. I was surprised that the foam board cracked. Yes, it wrinkled, which I had expected, but I was surprised by the cracks.

Some EconoKote was ironed on over the patches, and its flying as well as ever. I was pleasantly surprised that the plane needed no trim changes on the transmitter after the repairs.

The October 23 EFO Monthly Flying Meeting



We finally got a very nice weekend day for our monthly EFO flying meeting. Sunday was a perfect fall day. The temperature started out at about 50 degrees F, but rose to the mid-60s quite quickly. The wind cooperated, and stayed reasonably calm until about 2 p.m.

Greg Eilers can be seen walking back to his car in the first photo. Ken's planes are behind his Subaru. Both Ken and Pete Foss had their Hitec Weekender Extras out and flying.



The beautiful sky and changing leaves can be seen in this photo of the flight line activity.



Keith Shaw and Arthur Deane discuss the benefits of tailless, flying wing aircraft while Carolynne Foss sits above the dogs at a flying field. They are the best flying field dogs in the whole world.

As usual, there was a lot of good flying and camaraderie.

Denny Sumner sent some links to video taken on the 23, along with the following note:

I uploaded my videos from yesterday along with a "hatcam" test I did earlier this Summer.

Better tighten your belts for the 400mph Cub videos...I had image stabilization turned on to try it and the videos look like the camera is moving on the airplane. Guess I'll turn off for next test's and fly slower and smoother.....

https://youtu.be/4WuSIPzTGI4 Hatcam https://youtu.be/ZsGihmkQxvQ Cub rearward facing camera

https://youtu.be/PbUrKGyLuOg Cub forward facing camera



Mark Couling looks on as Pete Foss sets up for a great day of flying. Arthur Deane's Pulse 25 is setting on the table, ready to go.

We'll just have to see what November brings here for weather in southeastern Michigan. Hopefully, at least one more great day.

AXI Outrunner Motors By Ken Myers

On October 28, 2015 I received an email from Hobby Express, formerly Hobby Lobby International. It included the following graphic and a link to the AXI outrunner motors, produced in the Czech Republic by Model Motors.



http://www.hobbyexpress.com/clearanceaximotors.html

I misunderstood what it said in the graphic to mean that they would no longer be carrying these excellent outrunners.

I double checked and found that they are carrying the V2 version of these motors, and they have only the original versions On Clearance Sale. Whew.

http://www.hobbyexpress.com/axi_motors_277_ctg.htm The fine quality AXI outrunners were the first ones I used. Every single AXI I own is still in service today, except for a 2820/10, which was traded away, as it appeared to be a mislabeled 2820/8.

Some articles that have appeared in the *Ampeer*:

Sometimes You Find What You're Not Looking For, Ken notes that Rob Smith's "Sport Electrics: Techniques" column in the October 2004 *Quiet Flyer* had excellent info regarding the AXI 2212/26. http://theampeer.org/ampeer/ampoct04/ampoct04.htm#SOMETIMES

The Meaning of Some Brushless Motor

Designations, Ken explains how AXI outrunners are named.

http://theampeer.org/ampeer/ampjan05/ampjan05.htm#BL

Comparison of AXI 2212/26 and Top Creations 22S4019A Geared 5.28/1, Warren Plohr agrees with Ken's evaluation of an outrunner compared to an inner runner.

http://theampeer.org/ampeer/ampfeb05/ampfeb05.htm#AXI

What In the World is Going On with AXI/Model Motors?, Ken explains the problem he had with a 2820/10.

http://theampeer.org/ampeer/ampnov05/ampnov05.htm#AXI

More on AXI/Model Motors, Don Belote and Jim LaLone add information on this motor that Ken had big problems with.

http://theampeer.org/ampeer/ampdec05/ampdec05.htm#AXI

AXI_Calc, Louis Fourdan let's folks now about his program.

http://theampeer.org/ampeer/ampjan06/ampjan06.htm#AXI

MM_Calc AXI, Louis Fourdan links to his motor calculation software.

http://theampeer.org/ampeer/ampdec06/ampdec06.htm#MM

Back in 2005 and 2006 I was a huge AXI fan for the same reason that I have become a huge Scorpion and Cobra fan; they provided real world data regarding prop and battery selection.

Unfortunately for AXI, and maybe myself, I moved on to the outrunners provided by Lucien Miller of Innov8tive Designs, but AXI motors are still well made and very useful. You might still want to consider AXI when selecting the motor for your next project, and you'll be able to get it at Hobby Express.

Innov8tive Designs is on the Move http://innov8tivedesigns.com/

On October 17, I received an email from Innov8tive Designs. The email was mainly about a HUGE sale Lucien was having at the California warehouse, but for me, the interesting part was, "Since Innov8tive Designs was founded in 2006, we have been serving the RC modeling community with the finest Electric Power System products and accessories available. We have been at our current location in Vista, California since June of 2009. At the end of November this year, we will be relocating the company back to Monroe, Michigan, the home town of Innov8tive Designs President and founder Lucien Miller."

Wow, that is in our backyard here in southeastern Michigan. Welcome back Lucien!!!

2016/2017 Indoor Flying in Brighton

From Bruce DeLong via email 10/29/16

Just a reminder that indoor flying at the Legacy Center starts weekly this Wednesday November 2nd at 1:00 PM.

Here is the information from the Legacy Center, 9299 Goble Dr, Brighton, MI 48116:

Wednesdays from 1pm-3pm November 2nd – March 29th

The drop-in fee will be \$10/day. We are no longer charging our \$15 annual facilities fee, so those who purchased one last year will still be able to pay \$5/day until their membership expires. At which point they will have to pay \$10/day.

I would also like to stress that drop-in does not begin until the posted time. We need to be strict with the allotted time frame. If space allows, and someone wants to stay after the posted end time they must pay an additional \$10.

Upcoming Foam in the Dome 2016 A Toys For Tots Benefit Schoolcraft Dome 12733 US-131, Schoolcraft, MI 49087 December 17th 9:00 AM to 9:00 PM From West Michigan Park Flyers LLC via email

West Michigan Park Flyers LLC has contacted the Golf Dome in Schoolcraft, Michigan and persuaded them to open the doors for indoor flying this winter for a Toys For Tots Fun-fly.

Price of admission is \$30.00 to fly all day. Or \$20.00 and a new toy for donation.

The Dome is 150 ft. x 200 ft. with a 65 ft. ceiling. Plenty enough room for a lot of planes and a whole lot of fun!

We are putting on a one day event this winter, as well as some off hours flying, with the anticipation of expanding it to a 3 day Holiday fun Fly next year.

Next years event will depend on how successful the one days participation is this year. Please help spread the word to your club members.

Events will include:

Balloon prize combat, The Gauntlet, Full Contact combat, Night Fly, And more!

Vendors:

West Michigan Park Flyers will be on site this year with their store and we are working on bringing in a few more vendors.

Food:

There is a Wendy's almost on site and McDonalds and Mar Jo's West just a short drive to the south.

Flying Schedule:

November

11/4 Time 9:30 PM to 1:00 AM Pilot Fee \$20.00 December

12/2 Time 9:30 PM to 1:00 AM Pilot Fee \$20.00 12/17 Time 9:00 AM- 9:00 PM Pilot Fee \$30.00 for All Day!

January

1/6 Time 9:30 PM to 1:00 AM Pilot Fee \$20.00 February

2/3 Time 9:30 PM to 1:00 AM Pilot Fee \$20.00

All proceeds from Pilot fees minus Toys For Tots go to the dome to help keep it open for indoor flying. Thanks and Happy Holidays,

Greg & Barb Markley

West Michigan Park Flyers LLC WMParkFLyers.com 616-667-1809 or 616-550-6479

Update email 10/29/2016

During the event we will be passing on the savings to all our customers worldwide. Even if you are all the way on the other side of the country or local, you can still get in on the savings. Your Savings during the event will be 10% off all kits! Just place your order online during the event and SAVE! Just in time for your Christmas shopping.

Online registration is now open for Foam In The Dome. The first 50 pilots that pre-register will get the following gift packet. See Foaminthedome.com to register now!

• coupon code emailed to them for 25% off the air frame of their choice so you can start building now before the event.

• 1 Bag of Prop Savers

• 1 Foam In The Dome Decal for their flight box.

• 1 Laser cut Custom plywood Wall Hanger to hang that foamy on display!

Your packed of goodies will be waiting for you when you arrive.

| Upcoming E-vents | Everything went fine returning the first pack to |
|---|--|
| Dec. 14, Wednesday, EFO Meeting, 7:30 p.m., Ken Myers' house, everyone with an interest is welcome | storage voltage using the RCX 3-in-1 Battery Balancer, Discharger & Voltage Indicator (150W Discharging). http://www.myrcmart.com/rcx-3in1-battery-balancer- discharger-voltage-indicator-50w-discharging-p-4766.html Unfortunately, the discharger does not stop |
| Dec. 17, Saturday , Foam in the Dome 2016, A Toys For Tots Benefit, Schoolcraft Dome 12733 US-131, Schoolcraft, MI 49087 (info in this issue) | |
| Tuesdays , Indoor Flying at the Ultimate Soccer Arenas in Pontiac, 10 a.m. to 1 p.m. | discharging on its own. I forgot and left the second battery connected all |
| Wednesdays, Indoor Flying at the Legacy Center, Brighton, MI, 1 p.m 3 p.m. (info in this issue) | night! In the morning, I found the cell volts at; 3.115V, 2.25V, 3.205V. |
| Oh RATS! I KILLED IT! | I took the duff pack outside to the gravel drive and |
| On Friday, Oct. 28, 2016 I killed a LiPo battery. I used a couple of LiPo packs to carefully check to see if the latest firmware upgrade, 2.27, had changed the problem with my Revolectrix Gt500 charger yielding spurious results for individual cell IR. It didn't, but that's not the story. | hooked up my 3 bulb halogen discharger to totally discharge it. Once completely discharged, the balance leads were removed and it was placed in the trash. Lesson learned, write myself a note, and pin it on me when I have something going on in the basement! |



The Ampeer/Ken Myers

1911 Bradshaw Ct. Commerce Twp., MI 48390 http://www.theampeer.org

The Next EFO Monthly Meeting: Date: <u>Wednesday</u>, Dec. 14, 2016 Time: 7:30 p.m. Place: Ken Myers' house (address above)