No. 212 FEBRUARY 2004

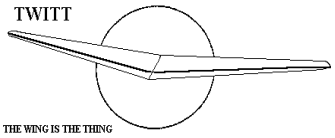
T.W.I.T.T. NEWSLETTER

The Marske Monarch, Pioneer II and Genesis sailplanes on the ramp.
Source: http://www.continuo.com/marske/index.htm

T.W.I.T.T.
The Wing Is The Thing
P.O. Box 20430
El Cajon, CA 92021

The number after your name indicates the ending year and month of your current subscription, i.e., **0402** means this is your last issue unless renewed.

Next TWITT meeting: Saturday, March 20, 2004, beginning at 1:30 pm at hanger A-4, Gillespie Field, El Cajon, CA (first hanger row on Joe Crosson Drive - Southeast side of Gillespie).



THE WING IS THE THING (T.W.I.T.T.)

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation, which is dedicated to furthering education and research in a variety of disciplines.

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Meetings are held on the third Saturday of every other month (beginning with January), at 1:30 PM, at Hanger A-4, Gillespie Field, El Cajon, California (first row of hangers on the south end of Joe Crosson Drive (#1720), east side of Gillespie or Skid Row for those flying in).

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PRESIDENT'S CORNER

I apologize for the short issue last month, but it was already late due to my eye surgery recovery and I ran out of material without going to the Nurflugel page for some interesting letters. As I start this month's issue, I am not quite sure what will end up in it, since there hasn't been any new stuff sent in over the past several months. I will get on my usual soapbox and again ask out members to please send pictures, stories, etc., so we can share them with the rest of the organization.

I am also on my soapbox about our southern California members trying to help with identification of possible program speakers. I imagine there are many aeronautical engineers in the Los Angeles basin that are known by some of you and could probably pass along some good information on an aspect of design useful to building flying wings. Please keep your eye and ears open for such opportunities.

I had a inquiry about what it would cost to copy the TWITT library so he could add that material to his own library. This is the first time we have had such a request, and I explained that it would be nearly impossible to make a copy of all the items in the library. This is partly due to the volume of material and partly due to the fact we don't have the volunteer manpower to accomplish such a task. So, if you would like a copy of a specific item out of the library, we can usually handle that and give you a price based on copying, packaging and mailing costs. If you have back issues of the newsletter, you sort of know what is in the library since we have published all or excerpts from just about everything we have accumulated over the years.

I hope you enjoy this issue with the recap of comments by Jim Marske. We also have a Nurflugel e-mail from him making comments on one of the subjects addressed on the mailing list.

Andy

MARCH 20, 2004 PROGRAM

We are trying to get one of our prior members to come down and tell us about his flying wing project that is in the model prototype development. We are also exploring some other possibilities for a speaker that may not be directly related to flying wings but can shed some light on an aspect of construction or design that could be used in working on a flying wing project. So keep an eye out on this section next month for what the final outcome will be.

JANUARY 17, 2004 MEETING RECAP

Since there were only a few members present, Andy dispensed with the usual opening remarks and went right into the "program" for the day. Through Lloyd Watson, a Pioneer II builder, he had obtained a partial videotape of an interview with Jim Marske that covered some of his background leading up to the Pioneer series, and a little bit about the new Pioneer III design. The idea was to see if any questions could be generated from the group on any of the material and then send it off to Jim and see if he would explain the particular item further. To make a long story short, there really weren't any questions for Jim, but everyone enjoyed watching the video and getting a feel for his design philosophy. I have included a recap of what was said on the tape and some pictures I took from the TV screen. *(ed. - I haven't gotten far enough into the electronic age to be able to download video into my computer, yet.)*

(ed. – The following is a recap of what Marske said about these subjects on the tape.)

Jim Marske started by explaining how he had seen the flying plank designs of Al Backstrom. Jim equated them to a flying hershey bar; short, stubby and no taper, with a cockpit pod in the middle. This design had wingtip fences, which made it a very simple glider. So Jim began writing to Al and they carried on an exchange of information and ideas, including airfoil shapes. Jim then spent about a year and half drawing up plans for his own plank with essentially the same layout but he gave it a much longer wing.

After completing the building he and a couple of his high school friends took it out to the local field and started doing some car tows. It flew and handled very nicely, but it was a little more sensitive to elevator control than he was used too. They made a number of flights to about 60', but after having second thoughts about the safety of the structure he decided to not take the testing any further. He did decide that if he was going to continue this project he needed to get some education so enrolled in college and was accepted at Parks College in St. Louis.

As he began learning more about aero-structures he made changes to his initial design and went back to the flight test program. This included tows to about 700' and doing 360° turns to further checkout the handling characteristics. When winter hit he packed up the glider on a trailer and headed for California where he could do year around testing. This also gave him access to many of the engineers and designers that were flying gliders, and they were very helpful in providing him with ideas for improvements.

ABOVE: The Monarch sailplane. Source: http://www.continuo.com/marske/index.htm

Modifications included removing the tip fences/fins and replacing them with a single rudder on the back of the fuselage pod. With help from his roommate they refinished the wing, making it smoother and giving it a new coat of paint. It was at this point he made his first aero-tow, which worked out okay and started getting him to 2,000' for more handling tests. He was finding thermals now and learned that refinishing the wing, along with a good wax job, made a big difference in the performance. He redesigned the wing tip shape, which turned out to give him better response from the rudder.

He related a story where he and another club member decided to make a run along the ridge line that was northwest of the field. The challenge would be to jump the gap part way up the ridge and make it to Santiago Peak. He worked his way up to altitude on the main part of the ridge and started into the gap, but

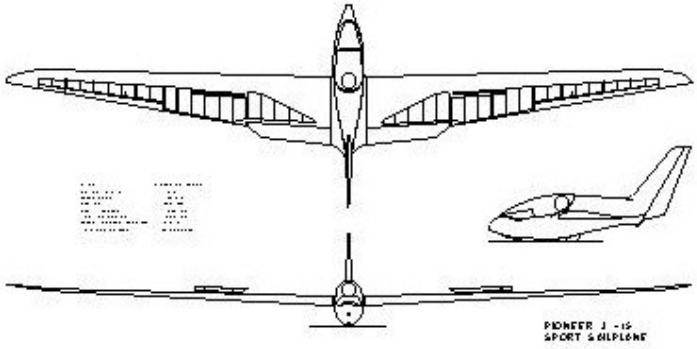
lost too much height and ended up in a canyon scraping in turbulent lift to get back up. He finally got back to the top and headed out for the peak. Part way there his flying buddy comes streaking by him headed for home, so Jim thinks he really needs to make it to the peak so he is not out done. After turning around the fire tower at Santiago Peak he cranked the glider up to 130 mph and cruised back to the airfield (Elsinore, CA). After landing he compared flight notes and found the other pilot hadn't made it to the peak due to the strong turbulence. Jim's comment was that he learned a lot about the benefits of a flying wing on that day.

ABOVE: Lloyd Watson's Pioneer II. Photo by Lloyd Watson.

He discovered flying wings were highly spin resistant and stall proof. Whenever he tried to spin it he would just end up in a skidding turn. He had occasions when he would fly in thermals with the stick all the way back, which normally can't be done in a conventional glider. The stability also allowed him to survive being enveloped by a cloud and climbing up through it where he found good lift in the clear air above it. He ended up cruising around for a couple of hours and never got below cloud base. It is not something he would do again, but it was another event that sold him on the benefits of a flying wing.

At this point the video moved over to Jim's development of the Monarch. It took about 6-8 months to complete construction of the prototype and he continued as in the past by beginning with short auto tows to test the new design. These flights resulted in some changes to make it easier to handle, like adding a wheel instead of just using a skid. He estimates he made nearly 500 flights on the prototype glider, many of which were good soaring flights using thermals and getting up to 5-6,000' and staying up for 3-4 hours at a time. It was a good machine, but he was also thinking about what should come next.

The Pioneer II was the result of various evolutions over the past 25 years. He had always wanted for himself a glider that was quick and easy to build, was light, maneuverable on the ground, easy to setup, very forgiving in the air, while having good performance. Pioneer II has achieved all the goals he set for it and the kit builders have all been satisfied with the aircraft. The first builders heard it had a 35:1 glider ratio so undertook the 1 to 1½ years project even if they thought they might only get 31:1. An early builder found that he was getting nearly 37-38:1 out of his finished sailplane, which obviously pleased him.



ABOVE: 3-view of the Pioneer III being developed by Jim Marske. Source: http://www.continuo.com/marske/index.htm

The Pioneer II owners have been happy with the sailplanes overall performance. They have found them to be very good in thermals, often out climbing higher performance ships, and stay up on days when others could not due to the light weight, tight turning radius and low sink rate. Because of the clean design it also has a very good high-speed capability when compared to the big glass birds. Jim attributes this to the lack of conventional tail, which results in the lower overall weight and lower drag. Most of the Pioneer II that have been built came in at about 300-315 pounds compared to 450 pounds for a Schweizer 1-26 with six feet less wing span.

The video moved on to Jim talking about the Pioneer II fuselage kit. Jim went around one of his fiberglass fuselages explaining the various parts and how easy it is to construction this section. The rear turtle deck comes off for easy access to the root and aft sections for placing the steel tube sub-frame and running the rudder control cables. The instrument panel comes out for ease in laying out and mounting the instruments, and then using quick release fasteners for access in the future. The seat bottom comes out, again to allow for placement of the tube frame and rigging of the controls. The tube frame carries the wing loads and provides a mounting point

of the main landing wheel. All the mounting stations for the control systems and rudder pedals are all in place and only require some drilling for the fittings. The left canopy rail also has the mounting for the spoiler handle.

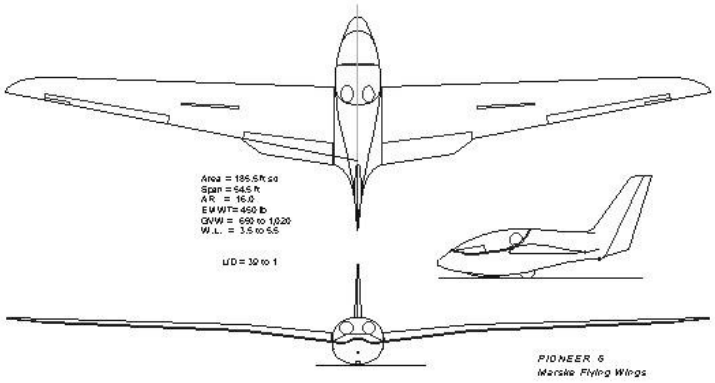
ABOVE: This is Bernie Gross's Pioneer II sailplane he built from a kit many years ago. It is now in a museum. Photo from Bernie Gross.

The only question from the group that came up during the video was how to determine the center of gravity. Well we didn't need to pass it along to Jim since he answered it by saying the wheel was located just aft of the CG, so you just sit in the cockpit with the canopy on and see how the glider sits. It should balance almost evenly on the wheel. If it falls heavily on the nose then some tail weight might be needed, although it is flyable but just not comfortable in the stick forces. If it falls back on the tail, then nose weight is needed to bring it back to a neutral position on the wheel.

Jim moved on to his next dream, the Pioneer III. He explained how they had started on the foam mockup of the fuselage that would become the plug for the final shells. It appeared that the kit version would probably have some of the same attributes of the Pioneer II kit, like removable upper sections for installation of the tube frame.

He has a new airfoil that he developed with the help of John Roncz and David Lednicer. It has 20% less drag than the old Pioneer II airfoil. It will maintain laminar flow back to about 33% on the upper surface and 90% on the lower surface. The spars will be carbon and he plans on using more modern materials throughout the sailplane.

That was where the tape stopped, so we adjourned the meeting to eat the rest of the donuts and do a little hanger flying about what had been seen on the video.



ABOVE: The Pioneer V, two-place sailplane. http://www.continuo.com/marske/index.htm

LETTERS TO THE EDITOR

December 26, 2003

New Horten IV

In Germany I am running the project of rebuilding a new Horten IV. Progress is good. Please see

www.horten-iv.de

You can contact me at the address below.

Best wishes.

Bernd Ewald
b.ewald@debitel.net

(ed. – The website he included is in German, but you can get a good idea of what is going on with the project. You might even find some Horten pictures you haven't seen before.)

January 9, 2004

TWITT:

Did you find a solution? I want a Kasperwing. Where can I find them advertised. Or plans? Is Witold Kasper still living?

Brent Scott
BScott116@aol.com

(ed. – Brent's request for information on where to find Kasperwing (ultralight) plans has been out there for a while, but there are no obvious solutions. I explained to him that Kasper has passed away, so that was not an option. If anyone knows of where plans or kits for the Kasper ultralight (I think this is old Cascade airframe), please let us know.)

January 20 2004

Thanks so much for your research. I did run across a note saying that a fellow in Wisconsin had purchased the Kasperwing rights and still supplies parts and wing covers. "J" something. Doesn't have e-mail.

Brent

January 14, 2004

TWITT:

I am interested in obtaining 3-D diagrams of the Fauvel AV-222 for use in constructing a 1/6 scale (stand-off scale, not exact scale), electric powered, radio controlled model. The web page

http://www.nurflugel.com/Nurflugel/Fauvel/e_AV222.htm

has one set of drawings; I will use these if I can not find anything better. I have sent an email message to the URL listed on that web page, but have not yet received a response.

Bruce W. Rose
bruce.w.rose@intel.com

(ed. – If anyone knows where these types of drawings could be found, please let Bruce know and copy TWITT if you do so we can add it to our list of sources for the future. Unfortunately, I was not able to find anything to help him in the TWITT archives, but I have referred him to Christophe Bordeaux, who is the source of the website.)

January 18, 2004

TWITT:

Thank you for the mention in the January issue. If I had to give a title to the drawings I enclosed to you it would be, "Where do I place the engines?" Center of gravity and drag considerations are a part of my day regarding this design, which I have named "Ellipse".

The airframe does have some geometry in common with Horten's "Parabola". I use dihedral in my designs, though, not a common practice in Nurflugel design. Model flying showed me that the use of dihedral reduces the period of oscillation in yaw. This due to the center of mass being lower than a good bit of the lifting line and the lower part of the wing affording more drag (drag can be a good thing, sometimes). The lift line is also "centered" by the use of dihedral, another plus for stability.

Pleasant to see that Norm Masters is here. I first found TWITT through one of his pages as posted on Ken Moeller's "Homemade Pulsejet" site.

Later, Henry E. Whittle
gulfrose@juno.com

(ed. – Thanks for writing back and passing along more information on your design. Please keep us in the loop as you progress.)

February 5, 2004

TWITT:

Having found your site I thought I'd pass along a rather unusual flying wing design of my own. It is called the Carbon Falcon, is an electric park flyer and offers solid stability without any vertical surfaces. Loosely based on a modern hang glider, it differs by utilizing wing warping for control without any control surfaces used.

Here's a link to my website with all the details if interested. If so, feel free to use anything you feel of value:

http://www.acesim.com/rc/p2/p2.html

Regards,

Ken Hill
Ace Sim RC
ken@acesim.com

(ed. – Here are a couple of pictures from Ken's website. It uses a modified version of wing warping versus rudder or ailerons. I like the way it folds up into a small, easy to carry package; great for traveling.

The Carbon Falcon is sold in ARF form with $40 worth of high-torque BB servos already installed and adjusted. No building is required and it's only a couple minutes from box to flight after you hang your gear the first time (30 min.). All that's needed is to add your GWS or other micro receiver, ESC and 2-3 oz battery pack. The price is $140 direct from Ken, but it seems you get a lot and the convenience of being airborne in a short period of time.)

February 2, 2004

TWITT:

My name is Randy Taylor. I am a 20,000 hour Commercial Pilot as well as an accomplished RC Aircraft Pilot. I also have a Bachelor in Aerospace Engineering from Auburn University. I have several model aircraft of a full-scale single pilot aircraft I am currently constructing. It is of a tailless design with a delta wing planform. I was searching for info on this design when I came across your website. The models I have flown have some undesirable stall tendencies.

I would like to join you. You may have the answers I need. Please tell me what I need to do to see more of your website.

Thanks

Randy Taylor
randytaylor@direcway.com

(ed. – I have written to Randy with the information on joining and asked him to provide us with more information on what types of problems he is having with his projects. I also asked for pictures, so hopefully we will have more in the future.)

(ed. – Here are some of the more pertinent items from the Nurflugel mailing list. The first one is especially topical based on last month's meeting subject.)

January 16, 2004

Is there some place one can get model plans for one of the Pioneer gliders? I would like to do this as a 2 or 3 meter model of this or of the Genesis.

Thanks,

Warren Bean

Warren:

Full size construction plans for our own 1/4 scale (129.5" span) Pioneer II-D are available from

Harry Volk
Cirrus Aviation
P.O. Box 1375
Nanton, Alberta T0L 1R0
(403) 646-1188
http://www.cirrusaviation.ca/

Ask for #141. Price is US$35.00

Harry accepts Visa and MC.

Bill & Bunny Kuhlman
http://www.b2streamlines.com
bsquared@b2streamlines.com

December 20, 2003

Subject: Pictures Of My Latest Wing In Flight

I have added pictures of my latest flying wing in flight to my photo site.

http://f1.pg.photos.yahoo.com/ph/northropn9m/lst?.dir=/Electric+Flying+Wing

I have five flights on it, all within the last week. The weather has been bad here in Indiana. I am getting 17 minutes of flying time out of my 2400 mAh NiCad battery pack. The airfoil creates so much lift that the plane flies at 1/3 throttle.

I began working on the 150" wing on Friday. I have built a full scale mock-up of the center section so that I may test the fit of the engines, landing gear and fuel tanks.

Jeff
northropn9m@yahoo.com

(ed. – This is a long URL so make sure to type it slowly and correctly or you won't get through to the pictures. Fortunately, this is a non-password section so you shouldn't have an problems.)

December 28, 2003

Subject: Spars and Things

Any rules for sizing spars and determining the need for secondary spars in model aircraft? How about determining the thickness for ribs and sheeting?

Doug Halverson
dholverson@cox.net

Doug:

It all depends on what size the model is in wingspan, the size determines the wood that is used and also the gap between spars and ribs On a five foot (1.5m) model I like to space the ribs about 3" (75mm) apart and I use 3/32" (2mm) wood, the main spars are usually of 1/4"sq. (6mm) with at least a 1/32 (.75mm) sheet web between upper and lower. I use secondary spars where the airfoil line changes direction and use
small sizes for this placed vertically only for covering attachments. If the wing is sheeted then sizes of wood etc. can be made smaller, from this size things can be scaled up or down depending on the desire of the builder.

Again these are MY preferences and anyone can argue the points but to little agreement from anyone.

Carlo
regiaero@acsol.net

Regarding spar sizing, this link will provide some guidance:

http://www.charlesriverrc.org/articles/allegro2m/spar_sizing.txt

Nicholas Cafarelli
nicke@yahoo.com

Here´s another. This one is mostly for strength estimation of vacbagged composite model wings:

http://www.eclipse.net/~mikel/f3b/layup.html

Petri Nygrén
petri.nygren@kolumbus.fi

December 29, 2003

Subject: Zimmerman and Ducts

I was away for a long time but now I have some questions related to this list. They are very low aspect ratio questions. Zimmerman or Arup style.

What are the consequences of placing a duct on top of a elliptical low aspect ratio like the Vought "Flying pancake" and the Arup series?

And what will happen to the stall behavior if one placed floats on the wingtips of a similar design? The floats can be placed on pylons or be integrated in the wingtip shape. Still not sure about that.

By the way, where can I find the data on the airfoil and airfoil angles of these "flying pancakes"?

Keep that brain spawning wings,

Koen Van de Kerckhove
nestofdragons@hotmail.com

I have built a small-scale version of the Vought XF5U-1, son of the Flying Pancake. The real plane was never flown. My model is completely built with Depron sheets and is powered by two direct drive Speed400 electric engines. Well I should say was.....a radio glitch caused its demise. It flew well, beyond what were my expectations. I based my model on drawings by Paul Matt. They feature many more things than a common 3-views. They have airfoils and even CG position. I know that it's not possible to attach anything otherwise I would have sent a picture of my model flying along with scanned plans.

The book is: Paul Matt's Scale Airplane Drawings Vol.2 published by SunShine House Inc. P.O. Box 2065 Terre Haute, IN 47802 ISBN 0-943691-05-2

Other 3-views and a complete history of Zimmerman's dreams, including V-173 can be found on Naval Fighters Number 21 Published by Steve Ginter 1754 Warfield Cir., Simi Valley California, 93063 ISBN 0-942612-21-3

Ciao

Beppe
Ing.Giuseppe Ghisleri
gghisle@tin.it

December 31, 2003

Hello List:

I just recently joined the list. My name is Billy Stiltner. I am interested in making micro model airplanes rubber powered and R/C. I have been looking for the wing sections for the HO IX or Go229. I was told they were on the NOD or nurflugel site. I have looked quite extensively and read most of the Horten literature and links there with no luck finding the sections. I have 3 views from the Internet but am unable to find a decent drawing of the sections. If it is just the Horten section at different percentages I have those from the UNC database. If so then percentages would be nice at various points.

So far I have built a Ho IIId model at 17" span and am working on a 30" span model both from Bob Marchese plans. The 17" span model was not to successful as it was one of the first models I built. I have learned some since then and flown some foam wing gliders so I think I might be able to get the 30" span model to fly. One of these days I would like to get into building real planes I think it would be neat to build the Horten foot launch glider.

Billy Stiltner
wavex@mounet.com

Billy:

I have what you want, although I think that you will want to build large, if you want these to work reasonably on a model. A good source of scholarly engineering information on the Ho IX is Reinhold Stadler, who has contributed many worthwhile posts to this List. He did his engineering thesis on this plane.

If your machine can accept .JPG attachments of some size, I can probably provide you with several pages from WW II AAF translation #526 (AAF TS-526-RE; of 2/21/46): "Tentative Description and Construction of Flying Wing 229" by "Schmid". My copy came from another generous contributor here, but since he may be extremely busy about now, I'll offer access to my third-generation copies with some missing print near the right margins. If you're still interested, e-mail me, and we'll discuss what can be done.

Serge Krauss
skrauss@ameritech.net

January 5, 2004

Hi Billy,

About the whole history concerning airfoils and reflex on Nurflügel models, there are lot of very useful pages. One of the most complete I've found, is Martin Hepperle's one (http://www.mh-aerotools.de) and a lot of other Information (including the explanation of the software "Laschka-Professional" are available on http://www.das-nurfluegelteam.de/, unfortunately the last one only in German. With Laschka professional it will be possible to calculate the right washout for the Horten bell shaped distribution.

I hope this could help you a little bit.

Daniel
Midian e Daniele Walser, madcats@dplanet.ch

January 2, 2004

Subject: 150" Flying Wing Construction Begins

The prototype center section for my 150" flying wing project is finished. I built the center section to test engine, electronics, fuel cell and landing gear mounting locations. The engines will be buried inside the wing just forward of the CG and extension shafts will run from the engines to the props. One engine will turn clockwise and the other engine will turn counter-clockwise.

The wing should be finished in 90 days -- just in time for the Toledo RC show.

Pictures of the 72" center section can be found here:

http://f1.pg.photos.yahoo.com/ph/northropn9m/album?.dir=/150+Inch+Flying+Wing

Jeff
northropn9m@yahoo.com

January 5, 2004

I designed a PSS model of the 229V2 based on a Flugzeugtypenblatt and informations found on "The Horten flying wing in WWII " and "Flying wings of the Horten brothers " by H.P.Dabrowski and "Monogram close-up 12 Horten 229" by D.Myhra.

Wing sections used are: Horten III-15% evolving in Horten III-13% from root to the station where trailing edge becomes straight, with no wash out. Horten II - 10% with 4 degrees washout at tips. I didn't try to have a progressive washout according to Horten's theory. I choose the simple way.....straight. Horten III is a positive Cm section while Horten II is a symmetrical section.

Model flies well on the slope, provided that the lift is good, it only has a good propensity to dutch-roll, maybe due to wing dihedral .You only have to let it go.....within 2 or 3 oscillations it resume its straight flight path.

I have Autocad plans, which I can forward by e-mail at no cost or you can buy paper drawing at Traplet Publications Limited. They have an on line shop. The model has 1,62 metres wingspan. You can also see some pictures of the model and myself on Huib Otten's site.

Beppe Ghisleri
Ing.Giuseppe Ghisleri, gghisle@tin.it

January 5, 2004

LSA Survey

There is a student project underway at Pennsylvania State University to design a single-place kit to fit in the new Light Sport Aircraft category. They're conducting a survey to determine what sort of airplane they should design. Naturally I think they should concentrate their efforts toward a flying wing. Tell them what you think at:

http://freeonlinesurveys.com/rendersurvey.asp?id=50871

Norman Masters
nmasters@acsol.net

January 7, 2004

Norman, ARUP, but with a supper critical outer wing panels, 80hp Weslake two cylinder, four stroke aircraft engine, and instead of a single make it two place side by side.

All the Best,

Howard Allmon
howard.allmon@netzero.net

January 7, 2004

Sounds like an idea for Koen. Didn't the ARUPs use an M6 airfoil and a 65 hp engine? The same weight plane with a modern airfoil and 80 hp would probably push the speed limit of LSA.

Norman Masters

January 8, 2004

Norman, I have a brand new WESLAKE 80hp engine I would probably donate to a wing project. Think you are right about the airfoil. I have a lot of info on the ARUP. Talked a bit with Hatfield in Ohio who built a glass single place, but needed a lot of refinement.

All the Best,

Howard Allmon

January 8, 2004

Howard:

Milt Hatfield lived in Elkhart, Indiana, just east of South Bend, where the nyder/Hoffman/Graighen Arups were produced. I too visited him a few times not long before his death. Milt had a couple remnants of the S-2's (I think) plans, and had built three "Little Bird" Arup derivatives (1986, 1988, 1992), the last of which he personally flew only once (I think he said it was the day he got out of the hospital the last time).

Lowell Farran (sp?) apparently did some test flying after Milt's heart problems grounded him and had a similar opinion of the interior finish. The last ('glass ') plane, however, did retain the wood rib and fabric wing.

For Milt, these were really just prototypes for kits he hoped to manufacture. He had produced molds for the fiberglass fuselage of the third plane for intended further production. Farran told me at Oshkosh '96 that the first version had a high-speed pitch-up problem from the reflexed airfoil that caused it to be a "one-speed" aircraft, but that the problem had been alleviated in the last one or two planes. It has been a while, but I think that my earlier posts on this might still be in the archives. Anyway, Milt was a no-nonsense "doer", and did not waste time on decoration while he was developing an idea (at least once chopped one up

and burned it, when it failed to meet expectations). He quickly set to work modifying and even building another plane in order to refine or cure problems through redesign.

I wonder what became of his three prototypes and plans, molds, Arup photos, etc. I know that a couple deals had fallen through for production rights, due to his asking price. I don't know whether his wife still lives out on old U.S. 20, but perhaps I can check next time I'm through there. Who knows - maybe she still has his stuff for sale. Hatfield's friend, Bernard Rice, the chief chronicaller of Snyder's Arups, still lives in the area (Osceola, IN). He probably knows all about this. FWIW, Richard Snyder, Doc Snyder's son lived in San Diego (the last I heard) and addressed a TWITT meeting a couple years or so ago.

Serge Krauss
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(ed. – As far as I know, Richard Snyder still lives in San Diego, but we haven't had any contact with him since he made the presentation on his father's work.)

January 12, 2004

Actually, Milt Hatfield was on the right track. His Little Bird, an unswept flying wing, held a lot of promise and Milt realized that. Why else would anyone over 80 years old, with a heart problem, decide to go into building airplane kits unless he really believed he had something special. And he did. This straight wing concept has no bad flying habits. It has exceptional performance and a very wide speed range. It would make a wonderful little airplane for a novice pilot. It does not stall, is highly spin resistant, has a low takeoff speed and best of all a high cruise speed. Oh, and the airplane is light, compact and not so expensive to build. Milt Hatfield has my admiration for a job well done. Like the Arup and Little Bird it appeared before it's time. My regret is that I never met the man even though he lived only 50 miles from my home. I tried to find him back in the early 90's but I was given an incorrect address.

Swept back wings are beautiful, even awesome, in flight but too many compromises must be made to make it safe to fly and unfortunately, much performance is lost. In my early teens my sweptback free flight models flew very well and were very enjoyable to watch. They had that futuristic look about them that maybe the straight wing flying wing doesn't have. Having said that I'll wager that my 15 meter Pioneer 2D flying wing will outperform the 20 meter Horten 4 in glide and speed range.

Jim Marske
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