



# The Flightline



Volume 48, Issue 15 Newsletter of the Propstoppers RC Club AMA 1042 May 2018

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## President's Message

Is flying weather ever going to arrive? I don't remember a spring this wet, or as mixed up. At least we had some nice Indoor flying. Of course a good breakfast followed by some flying is hard to beat. OOPS!!! Sorry for you guys that still have to work. That's a low blow. But, we do miss seeing you at the field. The weather lady is predicting some warmer, dryer weather coming soon. I really hope she's right.

While you're sitting around waiting for it to happen, how about giving some thought to events we might have at the field to stir up a little fun, like balloon busting, or most loops in one minute, or spot landings. We can give some thought to various sizes, and types of planes.

It would be nice if we had a few more people attend the meetings to let us know what it is YOU would like. Give it some thought, please. Enough???????

Chuck Kime, Vice President

### **Agenda for May 8th Meeting At Gateway Church Meeting Room**

**7:00 pm till 8:30**

1. Call to Order and Roll Call
2. Approval of minutes
3. Treasurer's Report
4. Old Business
  - By Laws Committee Report
  - Show and Tell Committee
5. New Business
6. Show and Tell
7. Adjournment

## **Minutes of the Propstoppers Model Airplane Club**

Minutes of the Propstoppers Model Airplane Club  
April 10, 2018 at the Gateway Church meeting room.

Call to order took place at 7:10 PM by Vice-President  
Chuck Kime

The meeting was conducted by the vice president in the  
absence of the president.

Minutes of the March meeting as published were  
approved by the membership.

Roll call showed 14 members present

### **Old Business:**

Larry Woodward presented the first draft of the revised  
bylaws. Larry explained some of the revisions that were  
proposed. He explained how the bylaws and rules and  
regulations are separate. He will make the new bylaws  
and regulations available to the membership. If there's  
no dissent we will hold an approval vote at the May  
meeting.

### **Show and Tell:**

Al Tamburo showed a 1958 Dynamic model powered by  
a fox 07. It was a control line model that he particularly  
liked.

He also showed a 1960s 45 size glow motor that was  
used in control line flying. He modified the carburetor  
since it ran poorly. It seems to run better with his  
modification.

Adjournment took place at 8:15 PM

## **Propstoppers RC Club of Delaware County, Pennsylvania. Club Officers**

**President**  
Dick Seiwell  
(610) 566-2698  
**Vice President**  
Chuck Kime  
(610) 833-5256  
**Secretary**  
Richard Bartkowski  
(610) 566-3950  
**Treasurer**  
Pete Oetinger  
610 627-9564  
**Membership Chairman**  
Ray Wopatek  
610 259-4942  
**Safety Officers:**  
Eric Hofberg  
610 566-0408  
Ryan Schurman  
**Newsletter Co-Editors:**  
Dave Harding  
(610)-872-1457  
Larry Woodward  
610 891-7936

Propstoppers Web Site; [www.propstoppers.org](http://www.propstoppers.org)  
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## **2018 Indoor Flying at the Brookhaven Gym**

**Night indoor flying is closed for the  
summer season and will resume in fall.**

**Indoor flying after Tuesday Breakfast  
10.00 am continues until reliable outdoor  
weather returns.**

## April 10<sup>th</sup> Show and Tell



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Al Tamburo showed a 1958 Dynamic model powered by a fox 07. It was a control line model that he particularly liked. It has a flat plate balsa sheet wing. This stimulated an impromptu discussion about the lift characteristics of flat plate airfoils compared to undercambered and conventional shapes.

Dave Bevin responded with a short chalk board presentation of wind tunnel experiments testing flat plate designs. He explained why flat plate wings are so effective and how they challenge some conventional theories of how wing lift is created.

Al also showed a 1960s 45 size glow motor, including his modified carburetor, used in control line flying.

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# Membership Renewal For 2018

Membership renewal for 2018 is now required. You can renew by mail or at the club meeting in December or January.  
Don't lose your club privileges!

**Bring cash or check and your AMA card.**

**Dues are \$60.**

To renew by mail, please send a check made out to the **Propstoppers** to:

**Ray Wopatek  
1004 Green Lane  
Secane, PA. 9018**

Please enclose a **copy** of your current  
A. M. A. Membership card,

**And Please, Please enclose a  
Stamped self- addressed envelope.**

**Ray Wopatek Membership Chairman**

## Calendar of Events

### Club Meetings

Monthly Meetings

Second Tuesday of the month.

Gateway Community Church at the Christian Academy. Doors open at 7:00

#### Gateway Church Meeting Room

Tuesday Breakfast Meeting

Tom Jones Restaurant on Edgemont Avenue in

Brookhaven. 9 till 10 am. Just

show up.

Flying after in the summer at CA or Elwyn Field 10 am. Weather permitting.

Indoors at the Brookhaven Gym in winter

10:00-11:00 (subject to availability of the gym).

### Regular Club Flying

**At Old Christian Academy Field; Electric Only**

Monday through Friday after school till dusk

Saturday 10 am till dusk

Sunday, after Church; 12 pm till dusk

At Elwyn Field; Gas or Electric

Monday through Saturday 8 am till dusk

Sunday 12 pm till dusk

INDOOR Flying, see attached dates.

### Special Club Flying

Saturday mornings 10 am

Wednesday Helicopter evening in summer

Thursday evenings in the summer

Tuesday mornings 10 am weather permitting after breakfast.

Check our Yahoo Group for announcements;

<http://groups.yahoo.com/group/propstoppers/>

### Beginners

Beginners using due caution and respecting club rules may fly Apprentice or similar models without instructors at Christian Academy Field.

The club also provides the AMA Introductory Pilot Program for beginners without AMA insurance.

## Editor's note:

Each spring, triggered only by the turning of calendar pages, I find myself compelled to make preparations for a northern migration. This is common behavior of many of my species, *oldfartium aeromedeleri electrofoamus*, but can take many forms. In my case it manifests in a 400 mile journey to a remote part of the New England coastline called Crosby Landing Beach on the Cape Cod Peninsula.

There each morning, I will join others of my species. A few hardy individuals will have wintered over in place. But, the majority of the specimens will have migrated, like me, from as far away as Alaska. (No-one can really figure out that particular specimen who winters in Alaska and summers on Cape Cod. Seems like he has it backwards.) Throughout the summer you will find this small "flight" congregated around the salt marsh fields behind the dune line. Many varied forms of flying pattern and colorful plumage will be observed along with a continuous chatter, something sounding very much like human laughter.



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Crosby Landing Beach

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Then at summers end and on into fall, one by one, all but the hardy few will gradually leave for winter quarters in far flung parts.

So, what this means for Propstoppers is that your Editor will not be around during the most active and interesting events of the year. If you want to enjoy a newsletter filled with photos and articles featuring the summer's antics, not to mention links to more of Pedro's fabulous flight videos, then you will have to get out your smart phones and laptops and email me newsletter CONTENT. Otherwise, it will be a very thin newsletter.

However, I will continue to make a point to bring you a monthly report on the "wildlife" observed at Crosby Landing Beach. In fact you might as well consider them Honorary Propstoppers. They will be enjoying the newsletter along with you.

Have a great summer,

Larry



# GoFlyPrize

Article by Dave Harding

<http://goflyprize.com/>

## TOGETHER, WE WILL MAKE PEOPLE FLY.

We're calling on all inventors and doers to make human flight a reality by building the world's first personal flying device for anyone, anywhere. Over the next two years, teams will compete to win \$2,000,000 in prizes, creating revolutionary technology and accessing the top minds in aerospace.

*The goal of the GoFly Prize is to foster the development of safe, quiet, ultra-compact, near-VTOL (Vertical Takeoff or Landing) personal flying devices capable of flying twenty miles while carrying a single person.*

*The takeoff/landing envelope is a 30 foot diameter cylinder. The virtual walls of the envelope are 12 feet high.*

*The final score is a function of the scored parameters;*

<u>Scored parameter</u>	<u>Threshold</u>	<u>Score factor equation</u>
Size (ft)	8.5 ft maximum	$\theta_{Size} = 8.5 - Size$
Noise (dBA)	87 dB <sub>A</sub> maximum at 50'	$\theta_{Noise} = \frac{87 - Noise}{4}$
Speed (kts)	30 kts minimum	$\theta_{Speed} = \frac{Speed^2 - 900}{Speed^2 + 900}$

The challenge consists of three progressive payout opportunities spanning two years beginning in 2017:

### Phase I:

- Up to ten \$20,000 prizes awarded based on a written report.

### Phase II:

- Up to four \$50,000 prizes awarded based on revised Phase I material (or for new teams new Phase I material) and demonstrated performance of progress to date.

### Fly-off:

1. One \$1,000,000 Grand Prize awarded for the best compliant overall fly-off score.
2. One \$250,000 prize for the quietest compliant entry.
3. One \$250,000 prize for the smallest compliant entry.
4. One \$100,000 prize for disruptive advancement of the state of the art.

I am a judge, (no I won't sing "here comes the judge"). so watch this space. Dave Harding









**Get The Idea?**  
Of course you could enter



# **Bylaw Revision: Process and Progress: Ready for Membership Review**

by Larry Woodward

The Bylaws Committee has been busy throughout the winter. You may recall that the original call for review stemmed from concerns raised about safety rules and how they are impacted by rapidly changing technology, especially FPV and GPS equipped aircraft. After a quick examination, it was decided that the basic document needed to be updated regarding outdated and inconsistent language before we could address the safety issues.

Prior to finalizing the draft, I contacted AMA headquarters and spoke with Ilona Maine, the AMA staff person responsible for club bylaw review and advice. She was very helpful and explained that we were free to create whatever rules and processes we wished as long as they were clear and enforceable. AMA's concern is primarily: if they are required to defend a member or a club in court, that the bylaws provide a coherent process and that it has been followed. The AMA sample bylaws are designed to provide an example of a reasonable model.

The current draft document is available for your review at the following web link:  
[Propstoppers Bylaws Draft For Review-5/8/2018.](#)

Please take a moment to look it over. We will be discussing the draft at the May meeting.

After we have a consensus on the draft, it will be sent to AMA headquarters for compliance review with AMA policy. If they give the okay, it will be brought before the membership at a monthly meeting for ratification. In the meantime, we will begin the second phase of our work looking at the Safety Rules.

The following is a quick explanation of the major changes found in the draft document.

## **Article IV Officers:**

In the current Bylaws we found inconsistencies in the language regarding the roles and responsibilities of the Board Officers/Directors. The revisions establish a more clear structure and explicit roles and responsibilities. Essentially, the elected officers, President, Vice President, Treasurer and Secretary, constitute the Executive Committee which has the legal authority and responsibility for the management of the Club. Other Officers, appointed by the Executive Committee, function as specific area managers and serve at the direction of the Executive Committee.

The basic positions remain the same except that the position of Webmaster has been added to pick up, and possibly expand, the internet/social media work previously carried out by the Newsletter Editor.

**Article V Meetings:**

The changes in this article are typical of rewording throughout the document designed to simplify decision making. The previous language stated explicitly that meetings would be on Tuesdays. That meant it would require a Bylaw change if we ever wanted to meet on another night. Now the Bylaws simply require that regularly scheduled meetings must be held, but does not specify when. Now the Executive Committee is free to determine the meeting schedule.

**Article VIII Nominations, Elections and Recall**

The current Bylaws require a formal voting process for elections with mailed ballots. However, since our elections are rarely contested we typically vote to suspend the formal process and hold a voice vote. The revised language makes this voice vote process the default method with a more complex ballot process required only when requested by the membership.

**Article XI Grievance Procedure**

The Grievance Procedure has now been divided into two categories, Safety Violations and Social Violations.

**Propstoppers Safety Regulations and Guest Policy**

As stated earlier, the Safety Rules have not been fully reviewed at this time. However, one change was implemented to accommodate the current standards in transmitter frequency management. The old 72Mhz channel management board is no longer required to be maintained and 2.4 Ghz Frequency Hopping equipment is now the club standard. However, provision is still made for those who wish to continue using 72Mhz transmitters.

You will see that many other parts of the Bylaws have had minor wording changes. If you have any questions or comments, please feel free to contact me at [woodward.larry@gmail.com](mailto:woodward.larry@gmail.com).

# Drexel Students Compete in the SAE Aero Design International Competition

By Dave Harding

In most universities Senior Engineering students (their last year before graduation) must conduct a Senior Project. This activity is done in a team and takes place over the entire academic year. The project is scored and counts towards their final GPA.

Over the last dozen years or so I have advised a series of teams engaged in the SAE Aero Design competition as their Senior Project. There are three events in these competitions but the one most frequently engaged is the Regular Class. This involves designing, building and flying an airplane in competition to lift the maximum payload with a fixed or defined powerplant, taking off in 200 feet, turning and landing on the same strip in 400 feet. Details of the event are changed every year so the same designs cannot be repeated. Designs tend to be in the 10 foot span range and have the potential to fly at weights over 40 pounds.

My involvement has been with Widener University and recently Drexel University. The one thing all of them have in common is the students are mostly studying Mechanical Engineering. There is no major for Aeronautics at either school so the consequence is virtually none of the students have studied or been involved in aero science; they have to learn is from scratch at the beginning of the project. Some teams come from universities which clearly have some form of club or means to preserve their past activities and although the models are different each year you can see preservation of specific design approaches. Typical of these competitors are the Polish team from Politechnika Poznanska This is a picture of their 2017 model.



The rules for this year were for electric power incorporating a 1 kilowatt power limiter. Maximum span is 144 inches and the payload consists of Passengers; tennis balls, and baggage ½ pound + for each passenger. The passenger compliment must be able to load in one minute. Composite structures are not allowed.

These projects usually begin at the start of the fall term in October and the competition is held both on the East Coast and the West Coast. This year the Drexel Team selected the West Coast location and the competition took place over 6 – 8 April, 2018. The activity requires a report limited to 30 pages to be submitted in February describing the final design. The report is scored as part of the competition and any design changes thereafter generate negative points. At the competition the team must also make a briefing describing their design and its rationale. This is also scored. Finally the successful flights are scored in terms of the payload carried. The final score is the sum of all three elements. An indication of the significance of the report and briefing scores, this year’s 9<sup>th</sup> placed team, out of 37 entries, did not make a scored flight.

This year’s Drexel team consisted of five young men. Some teams in the past have included women engineers. One of the team had some experience flying RC ARFs and some building skills. Applying their engineering tools to the challenge most of them quickly learn;

$$\text{Power} = \text{Thrust} \times \text{speed}^3$$

So for a fixed power you get more thrust at slower speeds.

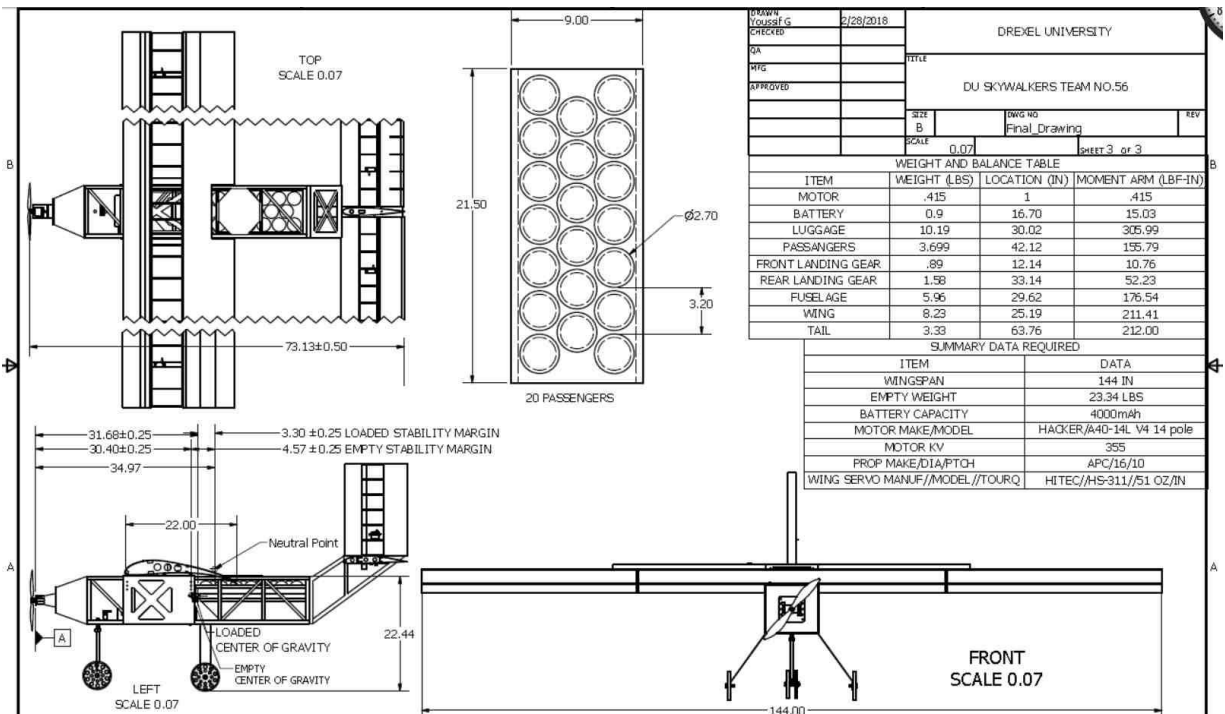
Also  $\text{Lift} = \text{Wing Area} \times \text{CL}$  the lift coefficient  $\times \text{speed}^2$

So you get the maximum lift with high CL and wing area at the reduced speed.

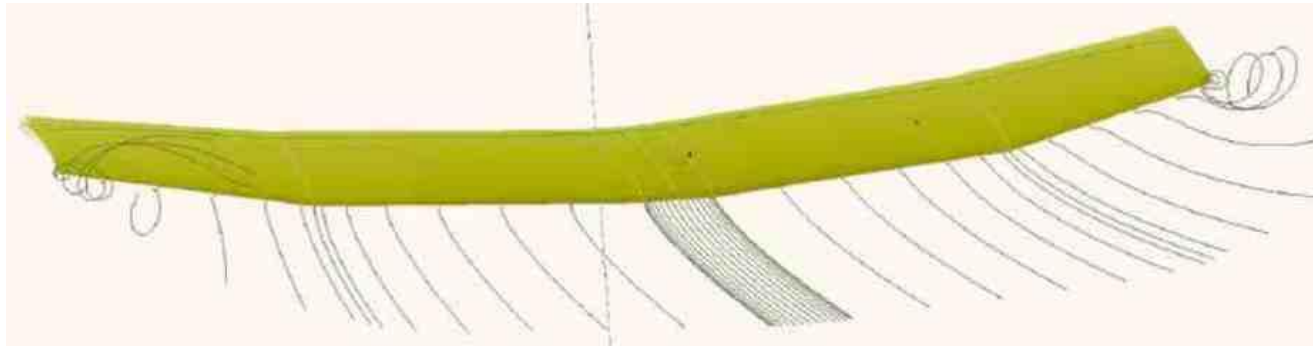
This leads them to design the biggest wing using the most aggressive airfoil which produces the maximum CL. Most teams and the Drexel team selected the Selig S1223 airfoil The Drexel team selected a 144 in span 22 in chord wing.



The rest of the design configuration challenge is to the fuselage to accommodate the payload and the empenage to achieve the necessary stability. Here is the Drexel design drawing from the report.



Of course, being a team of 21<sup>st</sup> Century students they have the latest tools. Parts were laser cut others were 3D printed and aluminum parts CNC cut in Drexel labs. Extraordinary design tools are now available on the PC. Here is a 3D computational fluid dynamics analysis of their wing. They were able to use this tool to define the optimum wing twist to achieve minimum drag. This is the analysis of a double tapered wing before they elected to build a constant chord wing for simpler construction.



Inevitably it seems every team underestimates the time to accomplish the design and construction and often there is no time to make a test flight before packing the model for shipment to the contest site. This was the case with this year's Drexel team. So, little time was spent on structural optimization with the result that the empty weight was significantly higher than it might have been. For instance, the wing spars were analyzed for strength at the highest loaded center and sized in spruce accordingly. But no attempt was made to lighten the outboard structure where the loads are significantly lower.

Of course the model must be shipped to the contest in Los Angeles so it was designed with a three piece removable wing and removable aft fuselage and empennage. Naturally shipping time curtailed the building process and the model was shipped with some work remaining. It was shipped to my daughter's house in South Pasadena where my son-in-law and I maintain a pretty good workshop. So the team arrived in the afternoon prior to the beginning of the meet. They were scheduled to go through technical inspection at 8:30 the next morning, then give the presentation after lunch. Only after this would there be an opportunity to make a test flight.... If they were ready.

Here is the team working to finish the model and following is the picture of the assembled model before packing it into their van to take it to their hotel where they continued to work on it.





Here is the team with the model in technical inspection. They passed but the inspectors and their pilot had concerns about the CG location being too far aft. (I had arranged for the most experienced pilot in the LA area would fly their model. Tony Naccarato also flew a prior Drexel airplane in this competition a few years ago.)



It turned out I gave them flawed guidance in the stability calculations. The Selig airfoil exhibits a huge nose down pitching moment and I made the mistake of including this incorrectly in the equations to determine the stable CG location. My guidance resulted in their balancing the model way aft of what would be normal for this layout. At the contest inspection the experienced inspectors and the teams very experience local pilot both commented on this. So realizing that something was wrong I recommended the CG be moved to a more conventional location. This was achieved by adding three pounds of ballast to the nose. Of course this further increased the empty weight and reduced the possible payload and associated flight score.

In the late afternoon the team was finally able to take the model to the flying field with the intent of making the first test flight. But there was a high wind and worse, it was crossways to the runway. Most teams elected to wait. Eventually as evening approached the wind dropped and several test hops were accomplished.



Tony's approach to flying a new model, especially one that may have poor flying qualities, is to make short test hops that just break ground and reveal control tendencies. In this case first the



landing gear was not tracking true, then a small wing warp caused a roll to the left. Finally the pitch control was too sensitive so the control throws and dual rates adjusted. But by then the landing gear was giving troubles so the day ended with the team planning to make more adjustments before attempting another test flight before the official flying began.

In the event it took more time than available so by the time the fixes were done the official flying began.

A debate took place with the team as to fly with or without payload. Without would not score, with might be problematic as it would be close to the predicted maximum performance and might not make it. In the event the decision was to fly without payload.



This flight was a success, takeoff within 200 ft, gentle climb to turn, apparently smooth downwind leg and turn to final. The landing was on the spot although the rollout invoked a turn but it stayed on the runway. The flight was successful; it validated the strength and stability as well as performance, at least at the lower weight.

However the prop was damaged and unbeknown to me they installed a spare that was an inch smaller. So the next attempt with payload was way down on power and just simply didn't get off and further damaged the landing gear in running off the strip. So the team finished the day with a flyable airplane that needed more work.

They went off to find better wheels and a new propeller. The wheel problem was solved by purchasing a small Razor scooter and harvesting the wheels while the nose gear was lowered to minimize the length of the upper leg that was prone to bending. The prop found was the right size but an APC gas prop that required some surgery to fit the prop adaptor. They were ready for the final flight to be conducted with payload.

This time on power up the motor/prop sounded as it was making much more power than the earlier setups so good to go. Only two people are allowed to attend the model in the flight; the pilot and handler who holds the model against power so as to get the maximum acceleration off the line. Takeoff with a fully loaded model in 200 feet is a challenging part of the flight.



Unfortunately in holding the model against power the handler dislodged the rudder hinges so as the model accelerated it became obvious something was wrong with the handling and the pilot aborted. What a way to end the effort, just as they were finally prepared to make a money flight. Still their effort was validated in that their model flew successfully; it didn't break and was sufficiently stable for the experienced pilot to make a smooth and controlled flight. I should be able to get a video of the flight.

As an illustration of the difficulty to successfully build and fly such a model, out of the 37 entries 20 did not make a scored flight.

Dave

# Multiplex MULTIflight Simulator

By Larry Woodward



It's no secret that RC simulators are great tools for learning to fly and for keeping your skills sharp, especially if it's raining outside. For beginners it can mean the difference between a successful first solo and a hobby ending disappointment.

There are a number of excellent simulation softwares available that boast superb graphics, realistic flight simulation and numerous models. However, the price can often be prohibitive, especially as an initial investment by a newcomer not quite "hooked" yet.

But, were you aware that Multiplex offers an excellent free RC simulator? Yes, you can download a free copy of the Windows based Multiplex simulation MULTIflight at:

[www.multiplex-rc.de/service/downloads/multiplex/software.html](http://www.multiplex-rc.de/service/downloads/multiplex/software.html)

Note: if the web site opens in the German language version, look at the top right of the home page for a drop down box to choose the English version.

MULTIflight is designed as a marketing tool for Multiplex and comes with profiles for numerous Multiplex models. The emulated airplane's performance closely mimics the real model. You can even participate in a virtual "Climb and Glide" competition with the EasyGlider 4. The rules are simple, but the challenge is tough!



The simulator does not offer a lot of bells and whistles; however, the graphics and flight simulation are outstanding and the program runs reasonably well on an aging laptop.

If you're thinking about buying a Multiplex model, you can download the simulator and take the model for a test flight. But note, the free version does not run all of the listed Multiplex models. To have access to the full list of models and simulation features you will have to purchase the Plus upgrade.

You can use a wide range of game controllers or joysticks to fly the models.

I have a simple USB six channel "transmitter" from Dynam,, another popular model is manufactured by Volantix. These are essentially empty transmitter cases with the PPM code output generated by the control stick mechanism. There are no radio transmission components. They are full size and give a very good feel just like a normal transmitter. They can be found on the internet for \$15-\$30.



The best training comes from using your actual radio transmitter connected to MULTIflight using a generic USB transmitter interface that is plugged into the radio's trainer port.

Adjust channel assignment

Assign functions to channels or controls on your radio.

Helicopter

Tail rotor	1	2	3	4	5	6	7	8	9	10	11	12	+
Elevator	1	2	3	4	5	6	7	8	9	10	11	12	+
Aileron	1	2	3	4	5	6	7	8	9	10	11	12	+
Pitch	1	2	3	4	5	6	7	8	9	10	11	12	+
Autorotation	1	2	3	4	5	6	7	8	9	10	11	12	+
Gyro sensitivity	1	2	3	4	5	6	7	8	9	10	11	12	+

Aircraft

Aileron	1	2	3	4	5	6	7	8	9	10	11	12	+
Elevator	1	2	3	4	5	6	7	8	9	10	11	12	-
Rudder	1	2	3	4	5	6	7	8	9	10	11	12	+
Flaps	1	2	3	4	5	6	7	8	9	10	11	12	-

General

Throttle	1	2	3	4	5	6	7	8	9	10	11	12	+
Retractable gear	1	2	3	4	5	6	7	8	9	10	11	12	+

OK Cancel

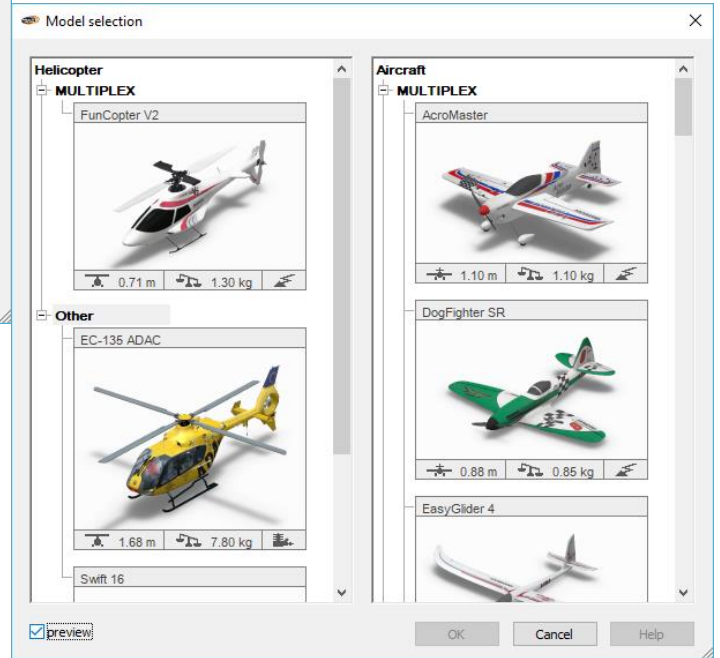
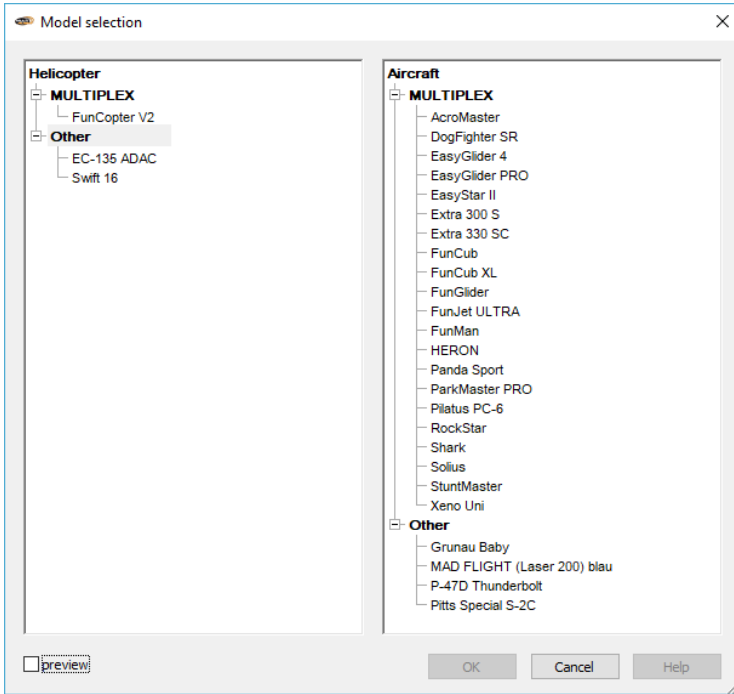
The simulator supports up to 8 channels that can be independently assigned to any of the controller outputs. Servo reversing, and stick centering adjustment are easily accomplished.

Calibrate center position

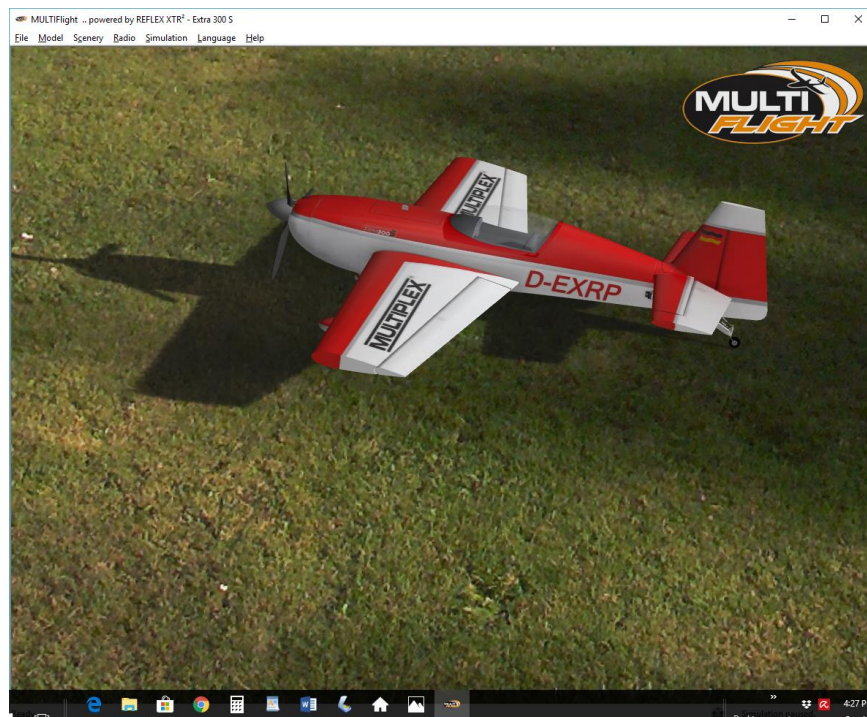
REFLEX XTR PPM  
16:32

Please activate your transmitter and center all gimbals, trims, switch and prop channels!

OK Cancel Help

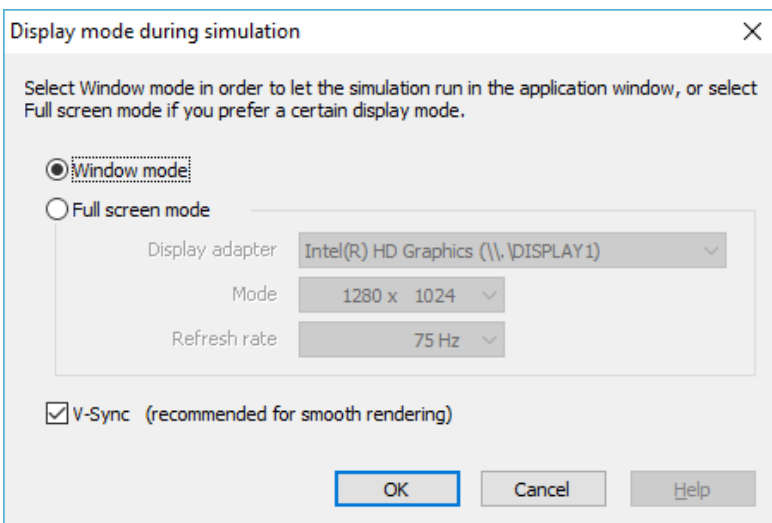
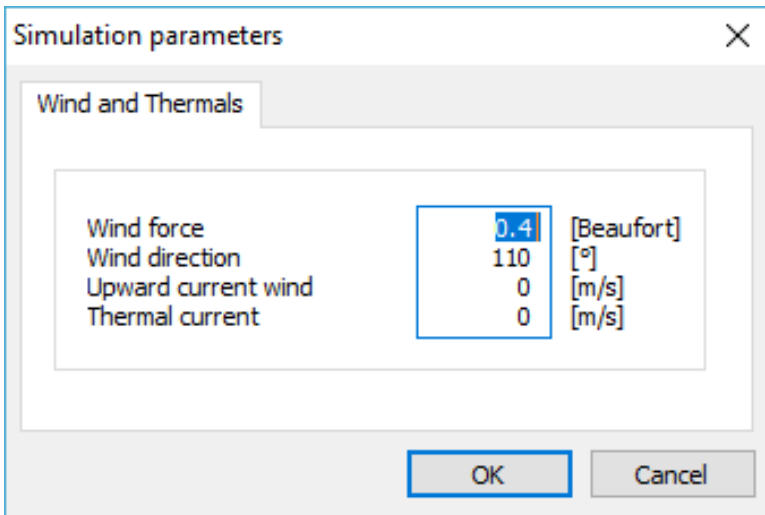


Although all of the Multiplex models are only available in the Plus Edition, there is a reasonable range of model types available in the free download. All are easily previewed and selected in the model selection dialog boxes.



The Plus version offers four different flight environments including windy ocean side and mountain areas for glider flying, and park flyer fields for 3D and trainers.

You can set wind parameters and thermals, and with the Plus upgrade, you can also control screen display parameters and performance.





Another useful option allows you to choose whether or not to display a view of current Transmitter stick positions superimposed on the flight screen

All in all, the Miltiplex MULTIFlight simulation software is a very useful tool for beginner and veteran alike. Although the free version does limit choices in model and flying site, the experience available from the simulation algorithm is fully operating, and at a price that can't be beat.



# DLG Flies Over 200 Miles!!!

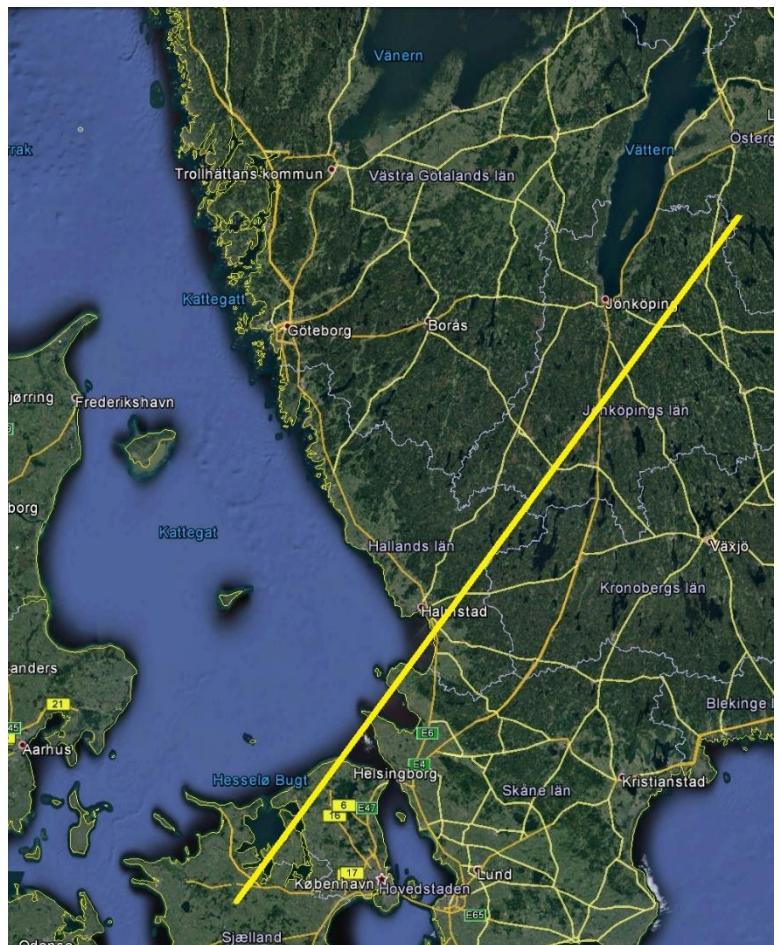
News by Jason Cole: RCGroups, April 05, 2018, 02:16 PM



## How Far Can Your Plane Fly?

Two years ago RCGroups member MStauning was out flying his JJ Edge DLG and he lost it. He thought it was gone forever, but as the saying goes, "if you love something, set it free. If it comes back it was meant to be." Well two years later, it did come back and you won't believe where it was found.

Someone found his DLG [in Sweden] 350Km away from the original launch site [in Denmark]. That's over 200 miles and one heck of a long flight for a little glider. How did this happen, [especially considering it was RC equipped]? The prevailing theory is that a boomer of a thermal grabbed it and sucked it up [out of sight, and eventually out of radio range] all the way into the jet stream which then carried the plane aloft for the rest of the journey.





"BREATHING THAT STUFF IS DANGEROUS AND CRAZY FOR SURE . . . . BUT WE'VE GOT TO GET HIM OUT OF THERE BEFORE HE TRIES TO TAKE OFF ! "