

APS NEWS

The official Publication of the Auxiliary-powered Sailplane Association, Inc.

Volume XIX Issue #121

ASA Web Site: <www.motorglider.org>

July-Aug/Sept-Oct 2008



Eric Greenwell leaves contrails over Parowan

In this Issue:

IT'S A DOUBLE ISSUE THIS TIME

Safety Column - Approach to Landing

Tech Talk - Postage Stamp Otto Pilots

Pete Williams - Self-Launch! DVD Available

Tie Me Up, Tie Me Down

Handicap List for 2009

FREE - Get yours now - ASA Decals!!!

and MUCH MORE!!

NEWS FLASH

Hot off of the Digital Presses

Self- Launch Retractable Engine Sailplanes

Pete Williams definitive book on SMG's

is now available on DVD with bonus features

President's Corner

I have been trying to change my outlook to more positive thoughts and what better way than to start thinking of PAROWAN 2009. The dates have been set for 15th – 25th of June. Applications will be accepted with a postmark of January 15th or after, so advise your motorglider friends to download the application and mail the application with deposit January 15th, 2009. The application will be available on www.motorglider.org

Rick Howell

EDITOR NEEDS HELP

Thanks to Peter How, Oliver Dyer-Bennet, Bryan Utley, Eric Greenwell, Terry Edmonds and Brian Utley for contributing to this issue. For the rest of the readers I could really use your help with articles and photos. There's lots of flying being done and a lot of us have digital cameras so it is easy to submit photos. I am always looking for content so please contribute to the newsletter.



SAFETY COLUMN

Oliver Dyer-Bennet, CFI/CFIG
Safety Director ASA

Devoted to the enjoyment and safety of the sport of high performance powered sailplanes and motorgliders.



In the last three safety columns we have covered pre-flight check lists, take-off check lists, and the take off of your motorglider.

Now we will bring the bird home and today's column will cover the approach to the landing phase of the flight.

Using a typical flight manual for a Carat motorglider, we have;

4.5.4 Approach:

The aircraft may be landed in either the glider or powered glider configuration.

An approach in the powered glider configuration is undertaken as follows:

1. Extend landing gear on downwind.
2. Trim for approach speed, 59 kts.
3. Electrical fuel pump on.
4. Carburetor heat on.
5. During final, set engine to idle, and control glide path with the spoilers; in the case of a short approach, retract the spoilers and use the engine as needed.

An approach in the glider configuration, non-powered, would be as follows:

1. Extend landing gear on down-wind.
2. Trim for approach speed, 59 kts, in moderate wind conditions. In strong or gusty winds the approach speed should be increased to 65 to 70 kts.
3. During final, control glide angle with the spoilers.
4. Review wind gradient. On final you may find that even with a constant longitudinal pitch attitude, your speed may decay as you get close to the ground.

A couple of interesting side notes are;

1. When landing, or taking off in light rain, add 5 kts. to the gliders airspeed.
2. When the spoilers of a glider are extended, the nose of the glider will drop and the airspeed will increase, by as much as 13 kts. When the spoiler is retracted the nose will rise and the airspeed will decrease.

The essence of good and consistent landings is good airspeed control.

A steady hand on the spoiler will make for a more efficient, and more consistent landings.

Oliver Dyer-Bennet



TECH TALK

by Gary Evans

The emergence of consumer affordable computerized flight controls for UAV aircraft is accelerating at an amazing rate. This is a soon to be released gps/sensor driven autopilot that is tiny and weighs only 28gms but is capable stabilizing the aircraft in three axis and can fly a waypoint task at altitude of your choice. It also logs flights on a Micro-SD card and has two-way telemetry to ground software with moving map.



And who do you think makes a better Helicopter pilot, a human or a computer? Look at the video link at the end of this article before answering.

Helicopters teach themselves to do aerial maneuvers

By Dan Stober



Photo by Ben Tse

Professor Andrew Ng, center, and his graduate students Pieter Abbeel, left, and Adam Coates have developed an artificial intelligence system that enables “autonomous” helicopters to teach themselves to fly by watching the maneuvers of a radio-control helicopter flown by a human pilot.

Stanford computer scientists have developed an artificial intelligence system that enables robotic helicopters to teach themselves to fly difficult stunts by watching other helicopters perform the same maneuvers.

The result is an autonomous helicopter that can perform a complete air show of complex tricks on its own. The stunts are “by far the most difficult aerobatic maneuvers flown by any computer controlled helicopter.

Stanford’s artificial intelligence system learned how to fly by “watching” the four-foot-long helicopters flown by expert

radio control pilot Garrett Oku. "Garrett can pick up any helicopter, even ones he's never seen, and go fly amazing aerobatics. So the question for us is always, why can't computers do things like this?" Coates said.

Computers can, it turns out. On a recent morning in an empty field at the edge of campus, Abbeel and Coates sent up one of their helicopters to demonstrate autonomous flight. The aircraft, brightly painted Stanford red, is an off-the-shelf radio control helicopter, with instrumentation added by the researchers.

For five minutes, the chopper, on its own, ran through a dizzying series of stunts beyond the capabilities of a full-scale piloted helicopter and other autonomous remote control helicopters.

"I think the range of maneuvers they can do is by far the largest" in the autonomous helicopter field, said Eric Feron, a Georgia Tech aeronautics and astronautics professor who worked on autonomous helicopters while at MIT. "But what's more impressive is the technology that underlies this work. In a way, the machine teaches itself how to do this by watching an expert pilot fly. This is amazing."

Writing software for robotic helicopters is a daunting task, in part because the craft itself, unlike an airplane, is inherently unstable. "The helicopter doesn't want to fly. It always wants to just tip over and crash," said Oku, the pilot.

To scientists, a helicopter in flight is an "unstable system" that comes unglued without constant input. Abbeel compares flying a helicopter to balancing a long pole in the palm of your hand: "If you don't provide feedback, it will crash."

It might seem that an autonomous helicopter could fly stunts by simply replaying the exact finger movements of an expert pilot using the joy sticks on the helicopter's remote controller. That approach, however, is doomed to failure because of uncontrollable variables such as gusting winds.

When the Stanford researchers decided their autonomous helicopter should be capable of flying air show stunts, they realized that even defining their goal was difficult. What's the formal specification for "flying well?" The answer, it turned out, was that "flying well" is whatever an expert radio control pilot does at an airshow.

So the researchers had Oku and other pilots fly entire air show routines while every movement of the helicopter was recorded. As Oku repeated a maneuver several times, the trajectory of the helicopter inevitably varied slightly with each flight. But the learning algorithms created by Ng's team were able to discern the ideal trajectory the pilot was seeking. Thus the autonomous helicopter learned to fly the routine better—and more consistently—than Oku himself.

During a flight, some of the necessary instrumentation is mounted on the helicopter, some on the ground. Together, they continuously monitor the position, direction, orientation, velocity, acceleration and spin of the helicopter in several dimensions. A ground-based computer crunches the data, makes quick calculations and beams new flight directions to the helicopter via radio 20 times per second.

The helicopter carries accelerometers, gyroscopes and magnetometers, the latter of which use the Earth's magnetic field to figure out which way the

helicopter is pointed. The exact location of the craft is tracked either by a GPS receiver on the helicopter or by cameras on the ground. (With a larger helicopter, the entire navigation package could be airborne.)

There is interest in using autonomous helicopters to search for land mines in war-torn areas or to map out the hot spots of California wildfires in real time, allowing firefighters to quickly move toward or away from them. Firefighters now must often act on information that is several hours old, Abbeel said.

"In order for us to trust helicopters in these sort of mission-critical applications, it's important that we have very robust, very reliable helicopter controllers that can fly maybe as well as the best human pilots in the world can," Ng said.

Stanford's autonomous helicopters have taken a large step in that direction, he said.

Video of an artificial-intelligence helicopter performing acrobatic maneuvers can be viewed here -

<http://tinyurl.com/4ftqrw>

We need articles!

by Eric Greenwell 9/2009

This is an article about articles.

Like many organizations, our newsletter editor, Gary Haynes, faces a nearly empty mailbox, even if he waits two months (the time between issues) to empty it. To fill the remaining newsletter pages, he persuades the directors to contribute articles. This method often gets a respectable newsletter out to the members, but it's not sustainable or desirable for several

reasons:

- despite their high motivation and commitment to the ASA, they don't always have time or inspiration when the plea arrives
- they are a small group that is running out new ideas for articles
- and what ideas they have may not be appealing to all/most of our 300+ members

What can we do about? Here are some of my suggestions:

- 1) You write an article and send it to Gary! He will be delighted to get it, and will almost surely publish it. We looking for content, not the next Steinbeck or Rowling. If you have the slightest doubt that Gary wants your article, send him a brief summary of what you'd like to discuss, and I promise you, he will respond promptly and gratefully!
- 2) You think up an idea for an article and send it to Gary! He will be delighted to get it, especially if you can suggest some people that have the knowledge to write the article. But even if you haven't a clue about a potential author, send it in: Gary has ways of finding that special person.
- 3) You persuade someone else that they have a great story to tell, and get them to send it to Gary! Maybe it's a club member that had a good flight or took some knock-your-winglets off pictures, or had a really interesting posting on a newsgroup, but contact them with your most pandering prose until they agree to it.
- 4) When you come across an article that looks like it belongs in our newsletter, send it (or a link to it) to Gary, so he can contact the author about reprinting it. Even it's not a perfect fit for our newsletter, let Gary know anyway, because he might talk the author into a rewrite that is just what we want.

I'll kickstart the idea flow with a short list of

articles I'd like to see:

- descriptions of straight-out flights and the powered/soaring retrieve: not just the flight itself, but the planning and preparation needed to make the flight and return
- ditto for safaris with minimal support, meaning no crew, or maybe one person and vehical supporting several gliders over a several day trip.
- flying in cold weather (winter, wave flying to high altitudes): how do you get the engine to start on the ground; how do you make sure the engine will start in the air; or how do you adapt to an engine that might not start because of the cold?

Editors note: You may have noticed that this is a joint July/Aug & Sept/Oct 2008 newsletter. Eric's article is right on point. My mailbox WAS empty in mid-August. Interestingly I got an email only a couple of days ago asking

what happened to the July/Aug issue. I was having computer problems at the time and when I couldn't find my folder for that month I pinged a couple of members and learned I hadn't even published it. Looked a little further and realized that the cupboard was bare.

WE (the members) are the newsletter. The photos and articles you see each issue are from your fellow MG pilots. Don't worry about the words. Photos do a hundred of those. Photos (highest res you have) along with captions allow the rest of us to experience what your flights look like. Don't know about you but flying in Africa looks awesome and if you aren't a subscriber to the BGA magazine most of us would never see the photos supplied by Woody Woodward.

So come on, get involved.

Gary

Get a free ASA Decal.



Additional Decals \$1

Send a self addressed, stamped envelope with postage attached

(remember the new postage rate is 42 cents) to:

**Brian Utley
9541 Virginia Avenue South
Bloomington, MN, 55438**

We have a new website!

Eric Greenwell Oct 2008

The new website began operation Oct. 7, 2008. Your old bookmarks might not work, but you can easily reach it by entering "motorglider.org" in your browser's location bar, or clicking on <http://motorglider.org>.



Why you will like the new site

The main changes are:

- A cleaner, more "modern" appearance
- Improved navigation is by using a longer sidebar menu, shorter pages, links at the top of each page showing you where you are, and a table of contents for lengthy pages like the news or listings of motorglider instructors
- Videos - starting with a live eagle "launching" (Photo Gallery)
- ASA branded "stuff" in the Hats and Decals section (you still have to order by mail - we're not up to "online commerce" yet!)

If you have suggestions for improving the website or find an error that needs correcting, please contact me. Maybe you have some news item or a link to a new owner's discussion group? You can get my email and phone number from the "Contacts" link on the new site's menu.

Why the webmaster likes the new site

Our new site exists on **Google Sites**, a free service provided by Google. Sites are developed and edited on the site itself, using any browser. The editing process is not much more difficult than using a basic word processor, where you can easily see what your document will look like as you edit it. This will make it quicker and easier to maintain and expand the website.

Besides basic text, tables, links, and pictures, the site makes it easy to add "gadgets" like table of contents, videos, slideshows, calendars, spreadsheets, and more from Google. There is plenty of the "more", and these can be also be developed by individuals with just a modest ability in HTML.

Notes from Africa

A note from Peter How

Dear Brian,

Thanks for confirming receipt of payment. Its difficult to pay from here.

I have not done any spectacular flights to write about lately. I base my DG505 Orion (with engine installation) at Magalies Gliding Club about an hour's drive west of Johannesburg. The ICAO airfield designation is FAOI. Its 5100ft above sea level, with thick, soft mowed African lawn, so on a 30 degree C day, my 52hp struggles to accelerate to rotation speed. The lack of flaps means I can't get enough lift quickly, but there is a bump in the runway after 500 meters, and that often increases the angle of attack enough to get me flying - something like a Harrier takeoff ramp. On tarmac its much easier and I can rotate at gross at 350m.

My favourite soaring location is 600km to the south in a semi desert called the Karoo. The small town and airfield is called Gariep Dam, with ICAO designator FAHV. Its a little lower at 4785ft, and the runways are over 1100m and tarmac, but the surface temperature can reach 40 deg C sometimes. But there we have a FL185 ceiling with only a few airways to duck under at FL145, so at these levels we can get some nice high TAS. 150km final glides are not uncommon, as are 1000km triangles (not yo-yos). In my Orion, I've only done 750Km triangles so far, but now that my ship is more in tune, and launching at 750kg, I hope to get the 1000 with it one of these days.

The weather map from Gariep shows conditions on a very good day. From Gariep we fly north west and an out and return to Olifantshoek is about 900km. The biggest triangle flown from there is about 1450km. About 5 containers are shipped in for about 3 months each year, hence the foreign registrations in the photos.

The ongoing improvements to the motor installation never stops. I can just imagine what Wilhelm Dirks went through with the DG400 prototype. My latest addition is a tuned airbox. I had read that one can boost the torque at any point on the RPM range by using a resonating airbox. I eventually found the formula for the box dimensions, designed it for 6500rpm and managed to get 100RPM more on static run up and 50 deg C lower EGT. But before I could test fly this, the "robust" Scandinavian linear actuator disintegrated internally from really sloppy design. I now have a shiny new SKF actuator, as used by some of the other manufacturers.

But its slower than the old one, so Ilec had to reprogram the MCUs, which I got back today. Some of the Apis-M owners might want to check their actuators (the one with the extruded aluminium housing).

I've included some photos of my ship and airbox installation.

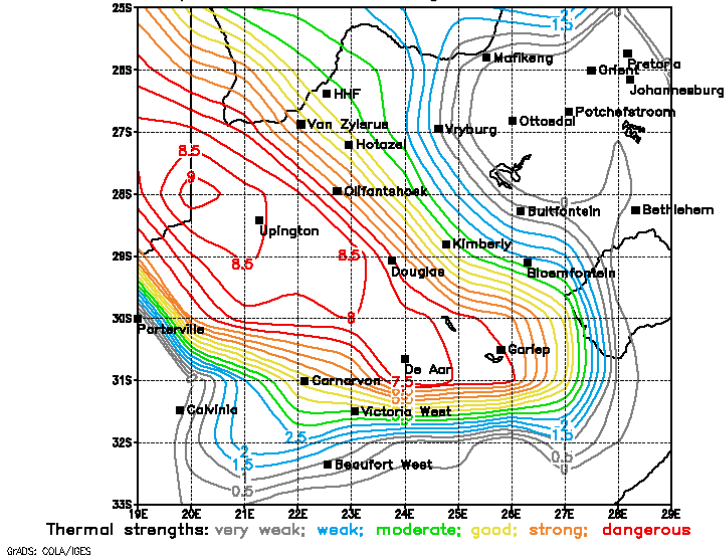
Regards
Peter



Germans arrive in Africa



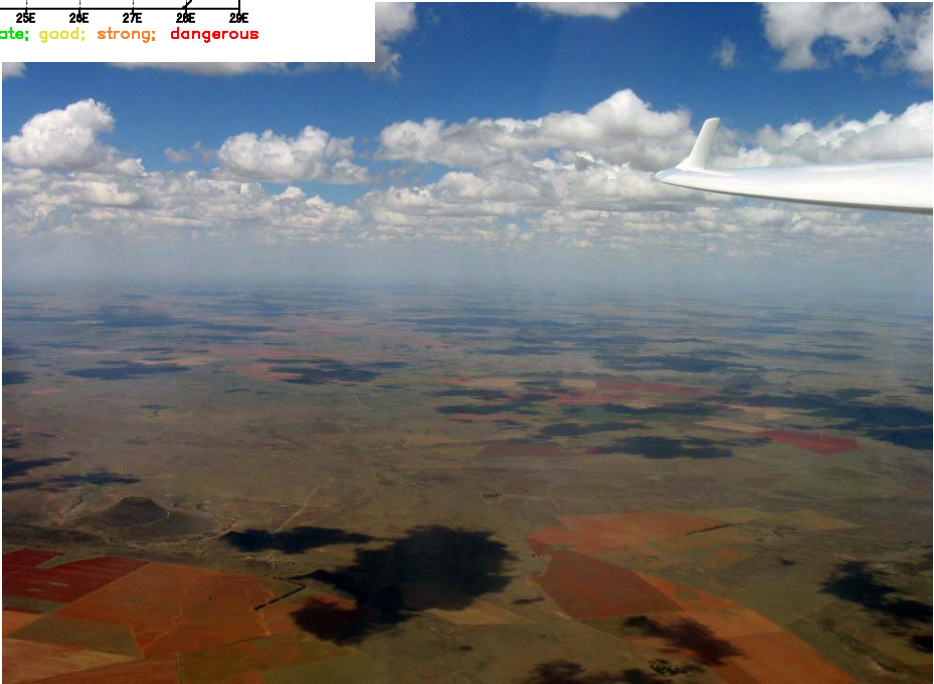
Valid:01 Feb 2003
Expected thermal strengths at 17:00 local



Photos by Peter How

Super Thermals

16K near Gariep Dam



Self-Launch!

Retractable Engine Sailplanes

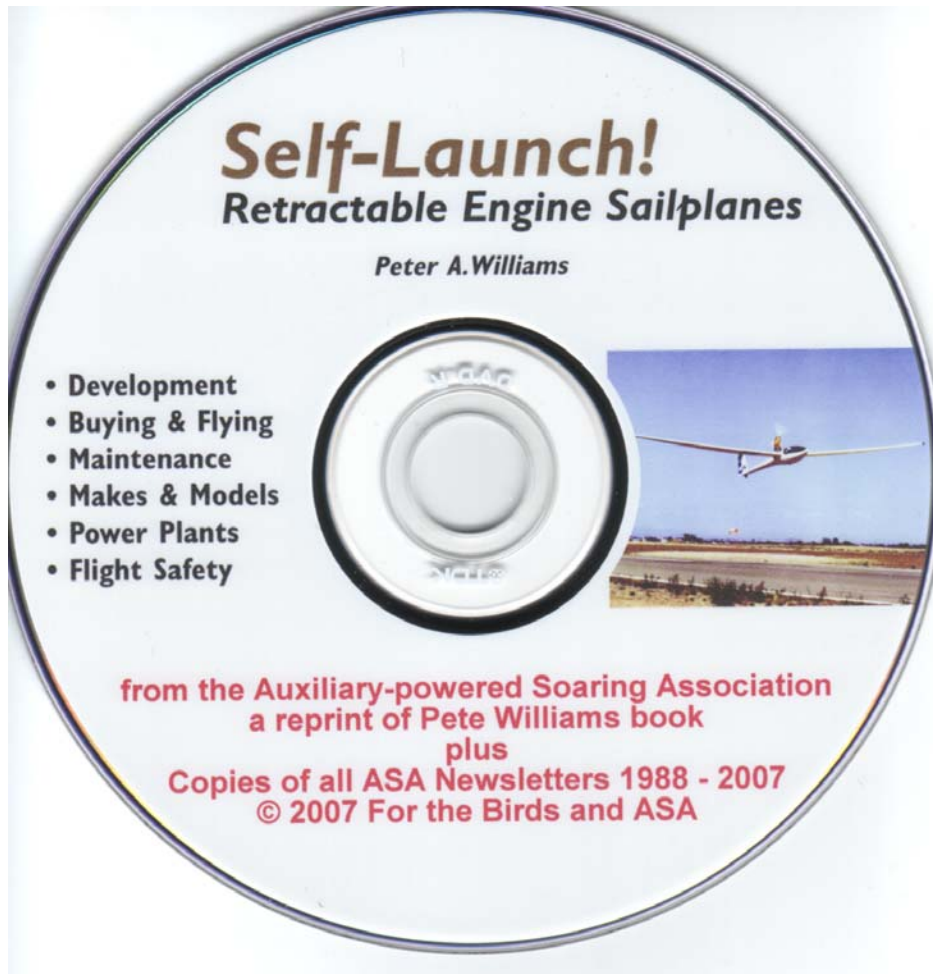


- Development
- Buying & Flying
- Maintenance
- Makes & Models
- Power Plants
- Flight Safety

Foreword by Donald D. Engen, Current Director,
Smithsonian Institution National Air and Space Museum

Peter A. Williams

ASA with permission of Charm Williams is re-publishing Pete Williams definitive book on Self Launch Motor Gliders.



This DVD has the complete book, cover to cover, as well as an added bonus of every ASA newsletter ever printed through the fall of 2007.

You can get your copy for only \$14.95 + \$4.05 in postage/handling by sending a check to:

**ASA - Pete Williams DVD
c/o Eric Greenwell
222 Thayer Dr
Richland, WA 99352**

Also available from Cumulus Soaring.



TIE ME UP, TIE ME DOWN

What does your tie down look like?

Parowan 2008

photos by Eric Greenwell





Parowan 2008

Photos by Eric Greenwell



DG-1000M – The New Self-Launcher in Development.

“When will the DG-1000M self-launcher ever be ready?”

This question has been posed to us frequently in the past few years, and our answer has always been the same:

If we have suitable propulsion!

We can now announce that the real construction phase of the DG-1000M has begun. The first airplane should be ready for first flight in the spring of 2009, and production should commence in the course of 2009.

Engine:

It is well known that there is an engine from the company Solo with a double carburetor and 64 HP for the larger glider. We are familiar with this unit and have already installed it in the DG-505MB, however there were certain issues.

We tried looking everywhere for a replacement, if possible for a four stroke model, with dry sump lubrication, and fuel injection. You may not believe it, but, in our opinion, such a thing doesn't exist! Then we considered modern motorcycle engines, but they are too heavy, and a gearbox is always attached, which we don't need, not to mention the fact that these engines are not certificated for aerospace use.

It is a unique situation, as we need something which is light and small enough, only needs to run for short periods, and when doing so must perform at its best. Once retracted, it must also become invisible.

There is no better engine for this than a two stroke, everything else is at least 30 kg heavier and therefore is not a consideration.

Luckily development hasn't stood still with Solo engines. To the contrary, the well known engine with the dual carburetors has really evolved, which has made it much more suitable for us:

- It has a programmable injection unit for two strokes, which together with larger intakes increases power to about 70 HP;
- The start and exhaust systems have improved leading to lower fuel consumption;
- There is altitude compensation, which means that the powerplant runs more efficiently and quieter at elevated altitudes;
- A new crankshaft reduces vibration;
- A torsion damper reduces engine vibration and the risk of gear failure;
- And finally a coarse pitch propeller is used for a lower engine speed, to prevent high frequency vibration.

All of the above cannot be quantified at present. The exact performance data can only be given after the completion of testing and development.

The Aircraft.

As with the current production DG-1000T, the DG-1000M will have a wingspan of 20 m.

This is very positive, because:

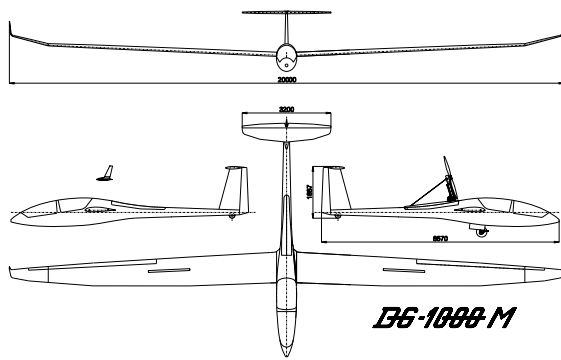
Flaps are not required, as the tried and tested standard large landing gear already allows sufficient angle of attack for take-off.

The new DG-1000M will also offer the following:

- Full operation of the engine from both seats, which is therefore more useful for passenger flights;
- Steerable tail wheel, electrically retractable main gear;
- A DEI-NT in much the same fashion as the DG-808-C, which will offer stall warning, and all the monitoring functions available;
- Naturally the full range of options which also exist for the DG-1000T;
- And a host of other developments, which will surprise and delight when unveiled.

Availability/Price/Distribution.

First deliveries are scheduled for the end of 2009 or beginning of 2010.



With regards to the cost, we cannot say much yet, but we can examine the experience gained with the DG-505MB, and reuse as many suitable components as possible, to keep the cost of development within reason.

Our sales manager Volker Halbe is already taking options, with which one can secure an early delivery date with a refundable deposit of 3,000 Euro. The first options have already been taken.

DG-1000M – Three Dimensional Side View

DG-505MB during Take-off

Please let me know if you have any questions or if there is anything else you might need.

Best Regards,

Christian Klix



2009 Motor Glider Handicaps by Oliver Dyer-Bennet

Back in the late 1990s and early 2000's, Stan Nelson, past president of the Auxiliary-powered Sailplane association and Oliver Dyer-Bennet, ASA safety director, worked out a formula for handicapping high performance self-launchers, sustainers, and motorgliders.

At that time we based the formula on our experiences and observations flying Regional and National contests. Mixed with our observations was the basic Carl Herold formula for all gliders.

The fun of the formula is that it makes all high performance self-launchers, sustainers, and motorgliders, close to equal on a sailplane XC flight.

You simply multiply your speed around a course and compare it to a buddies multiplied speed around the same course.

If you go around the course at 62 mph in your DG-400/17, the base norm for calculations of the formula, and your buddy goes around the course at 44 mph in his Lambada/13, the Lambada wins the bragging rights at a handicapped speed of 62.92 mph, the DG-400 driver buys the beer.

It makes for a lot of Saturday afternoon sailplane entertainment.

Enclosed is the formula, much as it was in the early 2000's,

Please feel free to contact us at, //amsaero@aol.com//, with any additions, new high performance powered sailplane / motorglider performance information, or comparison observations that you may have made.

The 2009 Aux-Powered Handicaps is enclosed, so lets have some fun with it.

2008 Aux-Powered Handicaps Edition 2					
Sailplane	Span meters	K1 Index Factor			
Racing Class:					
Eta	30.9	0.860	Nimbus 3DT	24.6	0.905
ASW 22/BM/WL	26.4	0.875	ASH 25E/M	25.0	0.910
ASW 22/BE	26.4	0.875	Nimbus 3DM	24.6	0.915
Nimbus 4T	26.4	0.875	Antares 20E WL	20.0	0.925
Nimbus 4M	26.4	0.880			
Nimbus 4DM / 750 kg	26.4	0.880	DG-800/808 WL, A/B	18.0	0.930
ASH 25M/WL / 750 kg	25.6	0.880	Ventus 2CM WL	18.0	0.930
Nimbus 3T	25.5	0.885	LS10-st WL	18.0	0.930
Nimbus 4DT	26.4	0.890	ASH 26E WL	18.0	0.935
Nimbus 4DM	26.4	0.895	DG-800/808 A/B	18.0	0.940
ASH 25E/WL	26.4	0.895	Ventus 2CM	18.0	0.940
ASH 25E/M/WL	25.6	0.900	Ventus 2CT	18.0	0.940
Nimbus 3T	22.9	0.900	LS6 CM	18.0	0.940
			ASH 26E	18.0	0.942
			DG-1000 Turbo	20.0	0.945
			Duo Discus Turbo	20.0	0.945
			Stemme S-10 WL		
			/ 750 kg	23.0	0.950
			Nimbus 2M	20.0	0.955

DG-600M Evolution	18.0	0.955
LS6 CM	17.5	0.960
Ventus CT	17.6	0.960
Ventus CM	17.6	0.970
DG-600M	17.0	0.975
DG-500/505M / 750kg	22.0	0.975
Ventus CT	16.6	0.980
Ventus BT	16.6	0.985
Janus CT	20.0	0.985
Janus CM	20.0	0.990
Caproni A-21Jet	20.4	0.990
DG-400M	17.0	1.000*
DG-800/808 WL A/B	15.0	1.005
LS 6CM	15.0	1.010
Ventus 2CT	15.0	1.010
DG-800 A/B	15.0	1.010
Ventus CT WL	15.0	1.010
Ventus BT WL	15.0	1.010
Ventus 2CM	15.0	1.010
Ventus CT	15.0	1.015
Ventus CM WL	15.0	1.015
DG-600M	15.0	1.020
Ventus BT	15.0	1.020
Ventus CM	15.0	1.025
DG-400M	15.0	1.030
ASW 24E WL	15.0	1.045
Pik 30E	17.0	1.050
ASW 24E	15.0	1.050
Carat A WL	15.0	1.055
Pil 30E	15.0	1.055
Pik 20E	15.0	1.055
Carat A	15.0	1.060
Apis Bee WL	14.97	1.120
Taurus WL	14.97	1.120
Russia AC5M	15.0	1.120
Silent 2 Targa	13.3	1.130
Grob 103 IIISL	18.0	1.145
Silent 2	13.0	1.150
Nelson Hummingbird	16.5	1.170
Silent Club	12.0	1.180

*WL = winglets

*Base norm

Touring Class:

Ximango Super WL	17.7	1.290
Taifun	17.0	1.295
Grob 109B	17.4	1.310
Katana Extreme	16.6	1.320
Grob 109A	16.6	1.330
Diamona H-36	16.5	1.330
Fournier RF-5B	17.0	1.380
Vivat	16.8	1.380
Scheibe SF 28	16.3	1.380
ASK 14	14.3	1.400
Lambada	15.0	1.410
Sinus	14.97	1.415
Silent-IN	12.0	1.420
Monerai M	12.0	1.420
Lambada	13.0	1.430
Virus	12.46	1.450
Virus SW	10.40	1.650



A Technical Support Website for Your Glider

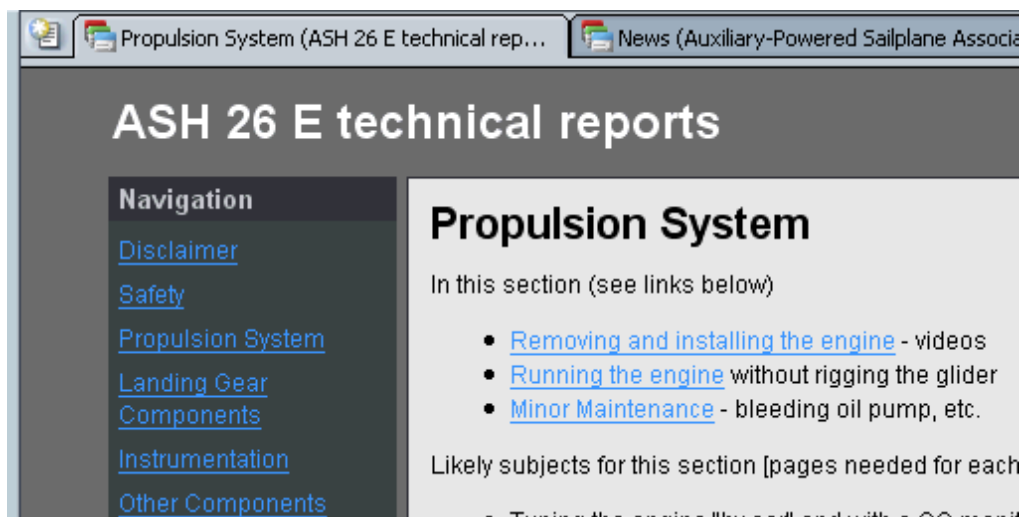
Eric Greenwell Oct 2008

Owners groups, like the DG 800, Stemme, and the ASH 26 E groups, generate a lot of useful information over the years. Problem is, it's scattered through thousands of postings, making it difficult and time consuming to dig out what you need. Often, you give up looking and ask the question on the group, a question that's likely been answered several times in the previous months or years. You usually get an answer, but it takes time to get the responses, the response may not be as good as previous answers, and the repetition becomes tedious.

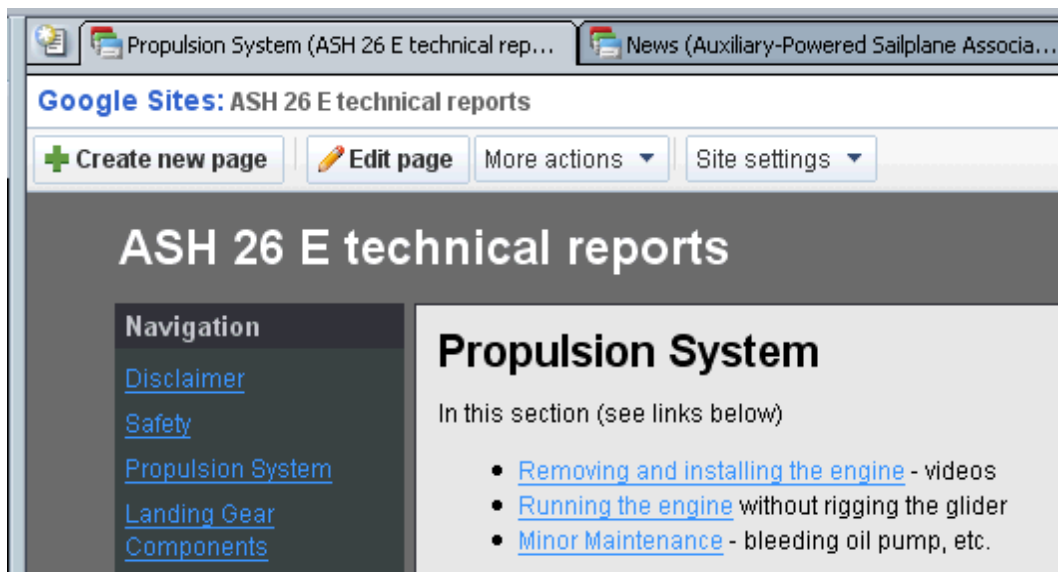
There is a solution to this: set up a support website to hold the answers and related pictures in an organised way, with clear menus to navigate to the information, and a search function that can find anything on the site (and only on the site).

"Right!", you say, "but what a pain to set up, and who's going to maintain it?" **Google Sites** to the rescue!

I've set up a such a support website for the ASH 26 E owners' group. Here's a corner of it, as it would appear in your browser:



When it's being edited, it looks like this (this is all done in your browser - no other software required):



The four buttons (“Create new page”, etc) across the top of the site page are all you need to add to and modify your website, once it’s created. The “owner” (the person who initially creates the site - a ten minute task) can add “collaborators” (people allowed to create and modify pages), so that other people can add to and modify content on the site. That way, one person does not have to put all the information on the site, and site can continue to grow and adapt, even if the original contributors leave the group.

Most people are reluctant to try something new like this because they are afraid they will damage the website by accidentally deleting things, or make additions that look poorly done. To let people learn how to work with the site without these concerns, I set up a “practice” site. It’s similar to the support site, including a few pages copied to it from that site, and other pages with examples of techniques. This site is totally disposable, so no matter how badly things go, no other site will be affected in any way.

But, even if the worst happens and something important gets deleted or “broken”, it’s still not lost. Google Sites automatically keeps previous versions of a page, so you can pick any one of these earlier versions to use in place of the current page.

The ASA website is an example of a Google Site. Visit Google Sites at

<http://www.google.com/sites/help/intl/en/overview.html>



ASA Mission

The Auxiliary-powered Sailplane Association, Inc. was founded in 1988 as a non-profit organization to encourage the design, development and safe use of motorgliders, self-launching and sustainer engine sailplanes.

ASA Membership

Membership in ASA is open to anyone interested in powered sailplanes. Write or call: Brian Utley, ASA Membership Chairman, 9541 Virginia Ave. South Bloomington, MN 55438
Ph: 952-941-5683 email: <Utleyb@aol.com> USA Dues \$20/yr, \$38/2 yrs, \$55/3 yrs. International Dues \$25/yr, \$48/2 yrs, \$70/3 yrs.

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