APS *NEWS*

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

Volume XVI Issue # 100 **ASA Web Site: <www.motorglider.org>** *September-October 2004*

Above: The 15-meter **Pipistrel Sinus** is the world's first Ultra Light (UL) certified 2-place motorglider. A sister ship called **Virus** has a 12.4 meter wingspan and tricycle landing gear. Power options includes a 50hp 2-stroke Rotax 503 or a 4-stroke 80hp Rotax 912. Sinus and Virus are constructed of composite materials according to JAR 22 standards. Both ships are available as fully built aircraft for registration in the Experimental Category and can qualify for registration in the Sport Pilot Category when implemented. According to the manufacturer as of July 2004 over 160 have been delivered to customers world-wide, six in the states. As of August 04 the factory offers "fixed" prices in U.S. dollars for factory built ready to fly Sinus or Virus with Rotax 912 power plant in Standard Configuration- $69,000 + Shipping.

Ready to fly includes:
Flaperons
Wing fuel tanks
Cabin heater
Adjustable Rudder/Brake pedals
Auto Control Connections
Airbrakes on the wings
Independent Hydraulic Disc Brakes
Main Wheel Fairings
Steerable Tail or Nose Wheel
Illuminated Instrument panel with Compass, Tach, EGT or CHT, Altimeter Airspeed, VSI.
Adjustable Pitch Propeller with Spinner.....and more.

Specifications/Performance-Sinus

Wing Span	15 meters
Wing Area	131.97 ftsq
Empty Wt.	626 lbs
MTOW	1200 lbs
MTOW Climb	1280 fpm
Fuel	26.4 U.S. Gal.
Flaps	Pos: 9-18 degrees Neg: 5 degrees
Engine/Pwr	Rotax 912/80 h.p.
L/D @ 51kts	27:1
Stall (Flaps)	34kts
VNE	135kts
Cruise	118.8kts
Range	650 nm

Specifications/Performance-Virus

Wing Span	12.36 meters
Wing Area	118.42 ftsq
Empty Wt.	628 lbs
MTOW	1200 lbs
MTOW Climb	1220 fpm
Fuel	26.4 U.S. Gal.
Flaps	Pos:10-18 degrees Neg: 5 degrees
Engine/Pwr:	Rotax 912/80hp
L/D @ 59.4kts	24:1
Stall (Flaps)	34.6kts
VNE	135kts
Cruise	121.5kts
Range	680 nm

USA Dealer is Robert Mudd EMail: robert@pipistrel-usa.com. The Slovenia Factory website is: <www. pipistrel.si>

Robert J. Mudd Opens a New Glider Repair Facility in Moriarty New Mexico

The facility is on the flight line at Moriarty (0E0), New Mexico airport. Moriarty is located just off interstate 40 about 30 miles East of Albuquerque. The shop occupies a 4800sq. ft. hangar that includes a 14 x 29 ft. paint booth.

Services Offered: Annual inspections. Minor and major repairs. Sealing and other comfort and performance modifications. Painting and refinishing using our paint booth. Canopy repairs and polishing. Design and construction of trailer fittings and general trailer repairs Robert is the dealer for the Apis and Pipistrel line of gliders, self launch gliders and motor gliders, all made in Slovenia. Contact Robert via < www.apisgliders.com> or <www.pipistrel-usa.com>

High Country Soaring Has Moved!

As of mid September Tom Stowers moved his shop from the Minden-Tahoe Airport to 1416-C Industrial Way in Gardnerville, NV. 89460. The phone and mailing address remain the same: 775-782-4944 and P.O. Box 70 Minden, NV 89423. Internet addresses also remain the same: Web: www.greatbasinsoaring.net/`hcsoaring Email: <<hcs@highcountrysoaring.minden.nv.us>>

Tom will continue to work on sailplanes and motorgliders at this new address. This includes annual inspections, glider trailer repairs, installation and repair of flight instruments, radios, GPS flight directors and loggers and oxygen systems. Tom will also offer a limited amount of fiberglass and painting work. He will continue services to assist in importing or exporting sailplanes.

THE ASA WEBSITE IS FULL OF INFO ABOUT MOTORGLIDING INCLUDING BACK NEWSLETTERS, BOOKS, COMING EVENTS, LINKS AND MORE. CHECK IT OUT TODAY!
<www.motorglider.org>
Eric Greenwell-Webmaster

Important Notice! If your Jul-Aug 04 or this issue of APS News has a Pink Slip enclosed you need to renew your ASA membership to continue receiving the newsletter. Thanks!!

CARAT DELIVERIES CONTINUE

USA AMS-Flight Dealer Oliver Dyer Bennet has delivered five new Carats as of this writing with more on the way. Pilots include Joachim Stuart, Gary Gammal, Jamey Jacobs, Gary Sullivan and Allan Pratt all ASA Members. Pilots took delivery at Minden-Tahoe Airport where Oliver schooled them in rigging/ derigging , trailer orientation and Take-off, Flight and Landing procedures. On several occasions Oliver has flown Gary Gammal's Carat cross-country from Sonoma Skypark (CA) to Minden-Tahoe Airport. His enroute time was under 1.5 hrs. The new owners all have good reports on the quality of workmanship, fit and finish and attention to details in the production of this new bird. AMS Flight is in the process of ramping up production to meet world-wide demand.

NEW SELF-LAUNCH GUIDE

Guide to Self-Launching Sailplane Operation
Eric Greenwell has extensively revised and expanded his previous edition (written over four years ago), with much more material and pictures. This new edition covers more types of powered sailplanes than before, emphasizing common methods and concerns, rather than things specific to only one model. In addition to Eric's experience, this guide reflects the experience of it's 12 reviewers from the USA and Europe. It is the most complete guide available today. The guide is now available on the ASA web site<http://www.motorglider.org> (click to the "Articles On-line" section). A commercially printed version is planned for the future.

Touring Motor Gliders

Part II

By Allan Pratt

Editor's Notes: This is a hypothetical cross-country flight requiring planning above and beyond a normal flight in a glider. The objective here is to establish the fact that a TMG like the AMS Carat motorglider can be flown just like a conventional powered aircraft for ferry, fun or cross-country at an altitude and speed comparable to many light planes.

Preparation for a Typical VFR Flight in a Touring Motor Glider

In Part I, we discussed some differences among Touring Motor Gliders (TMG), Self Launch Motor Gliders (SL) and Sustainer Motor Gliders (Turbos). In this installment, we will prepare for a flight in a TMG. For our flight, we will use a AMS-Flight Carat which, although atypical of the medium performance TMGs (Carat: Max L/D 38:1, Cruise 81 Kts IAS @ max endurance power, 2200 RPM, 1.8 GPH), will suffice to show the method for flight planning. For you pilots who have a power rating, this will be old news. For pilots who have glider ratings with self-launch endorsements, this may be new and even interesting! As we prepare for a soaring flight, we viewed the weather as an indicator of probable soaring success for the day. As we prepare to go cross-country under power, we must view weather as a possible detractor from the success of our flight. If we assume that the goal of our flight is to go from A to B and arrive safely at our destination, then we must prepare and execute our flight differently.

If you have a computer or access to the Internet, the best and easiest way to get weather information is from DUATS, a free Government service. If you are a member of AOPA or EAA, then you can plan your flight, check weather and even file a flight plan using their resources. If you intend to fly your TMG under power a significant portion of your flying time, it might be worth joining one of these organizations simply for their flight planning capabilities.

Remembering that the Hemispherical VFR cruising rules require you to fly at odd thousand altitudes plus five hundred feet when heading from 000 degrees through 179 degrees and even thousand altitudes plus five hundred feet when heading from 180 degrees through 359 degrees, then choosing your correct altitude to cruise depends on your desired heading and the winds aloft. In slow moving aircraft like TMGs, the winds will have a significant impact on the altitude you choose to fly. Obviously, terrain, weather and the presence of oxygen capabilities will impact your planning, as well.

After weather, the second most important planning variable is the range of your TMG. It will determine if you have to stop for fuel during your flight and may also influence your route of flight.Good flight planning software will help tremendously with the selection of your route of flight and avoidance of restricted areas. The aforementioned AOPA and EAA sites also feature route planning services for members. Also there are commercial route planning packages available. *Air Plan*©, *Destination Direct*© and *Voyager*© are examples. The route diagram and the Flight Pan Data Chart are from Air Plan by Razors Edge Software <www.razorsedgesoft.com>

To complete our flight successfully we need at least the following:

1. Sectional charts for our route of flight.
2. An Airport Flight Guide for all airports along our route of flight.
3. A built in or handheld GPS with an up-to-date aviation data base.
4. Oxygen sufficient for the duration of the flight – if cruising at high altitudes
5. Water for hydration.
6. Overnight Kit and Money.

In today's political environment, airspace can be a veritable mine field waiting to trip the unwary. TFRs spring up with little notice and lie there waiting to introduce you to an encounter with a F16. You must have a way to avoid restricted areas and TFRs. A thorough preflight briefing will take care of the latter; an up-to-date aviation database GPS will take care of the former. The AMS Carat we will fly on this adventure does not have a built in GPS, so we will take along a Garmin GPS Map 295 with a current database.

The flight will be from Truckee, CA (KTRK) to Sedona, AZ (KSEZ). The Carat can go the entire distance without refueling. The winds at higher altitudes will help this flight. Also, since our route will take us over the Grand Canyon, we will plan to fly at 15,500 feet. The Grand Canyon has a minimum altitude for over-flight of 14,500 feet. Because a direct route between TRK and SEZ will take us over restricted areas, some slight modifications are in order. By adjusting our route a bit to the North, we can avoid these restricted areas. The commercial flight planning software mentioned before can accomplish this by simply dragging the direct route line until it avoids all restricted areas. (See Image 1). We can ow go to the route information in our program and see what the difference is between our direct route and our new avoidance route. .....*Continued on Page 6*

Debris in a Ventus 2cM Fuel Tank

by Jerry Kaufman

I had occasion to drain some fuel from my V-2cM recently and then pump it back into the glider. After I did this, I noticed some small silver colored flakes in the bottom of the fuel jug. I had carefully inspected the jug before I used it and knew these flakes where not in the jug when I began and so must have come from the glider.

The V2 does not have a filler port to pour fuel into, but pumps fuel into the fuel tanks via an auxiliary electric fuel pump. The suction side of this pump has two fuel filters, one in the fueling line that goes into the fuel jug and another by the pump. Examination of the fueling line filter showed a considerable quantity of the same silver flakes. The electric fuel pumps are under the seat pan, so I pulled the seat pan and examined the second fuel filter in the fueling circuit - it was clean. I examined the fuel filter in the carb supply circuit (on the suction side of the carb supply electric pump, between the pump and the fuselage fuel tank); it had considerable debris in it.

I pulled the fueling line filter and the carb supply filter and flushed the debris out of them. I captured most, but not all of it. The photo is a picture of the material I captured. The material is non-magnetic. Examination under a 10x optical comparator show the particle to be of various sizes, with many of them on the order of 0.5 x 2 mm. Many are helical segments; under magnification they look just like shavings from a drill bit.

My Mikuni carburetor manual and the exploded view of the Mikuni carb in the Solo engine manual both show a fuel filter in the carburetor. Since I had debris in the fuel system I thought it would be prudent to check this filter as well. The only way to get at this filter is to remove the carb from the intake manifold and then remove the access plate to the integral diaphragm fuel pump. I did that only to find there was no fuel filter installed. Now since the Solo maintenance manual indicates a filter and there was none in my carb, either my carb was assembled incorrectly or the Solo manual is in error. Take your pick.

In any case, I am certain I did not put the debris into the fuel system, both because I keep my fuel jugs scrupulously clean and because the particles are big enough to be caught by the fueling filters. All the evidence points to this debris being aluminum chips from a machining operation on the fuselage fuel tank that was in the tank when I took delivery of the glider. My V2 is s/n 122, manufactured 7/02. It had 6.5 hr total on the engine at the time of this exercise.

I had previously completely drained my V2 fuel system at least twice, so these two drainings were not enough to flush all the debris from the system. Further, since I've drained the system, I don't know how much debris I've flushed out. But a reasonable guess from the available data is that there was sufficient debris in the system at delivery to completely clog the small carb circuit fuel filter, with consequent loss of power.

Swarf in a lawn mower fuel tank would be a disappointment and cause for complaint to the manufacturer. Swarf in a motorcycle fuel tank is unacceptable. Swarf in an aircraft fuel tank could be fatal. V2 owners may wish to carefully inspect their fuel filters. Schempp-Hirth may wish to have a little heart-to-heart chat with whoever makes their fuselage fuel tanks.

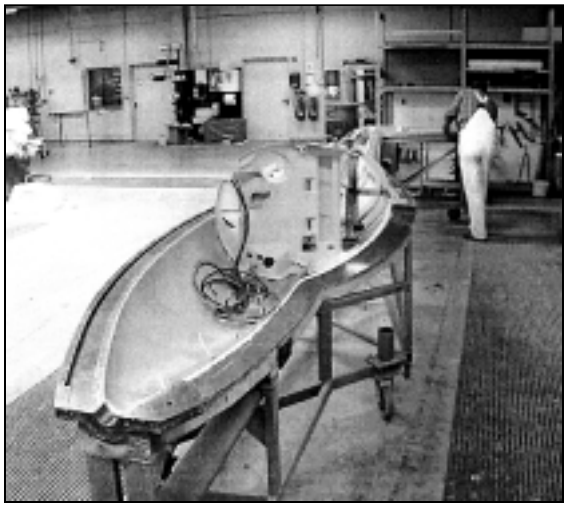
Submitted by Jerry Kaufman and Edited by Pete Williams

A Visit to the DG Factory

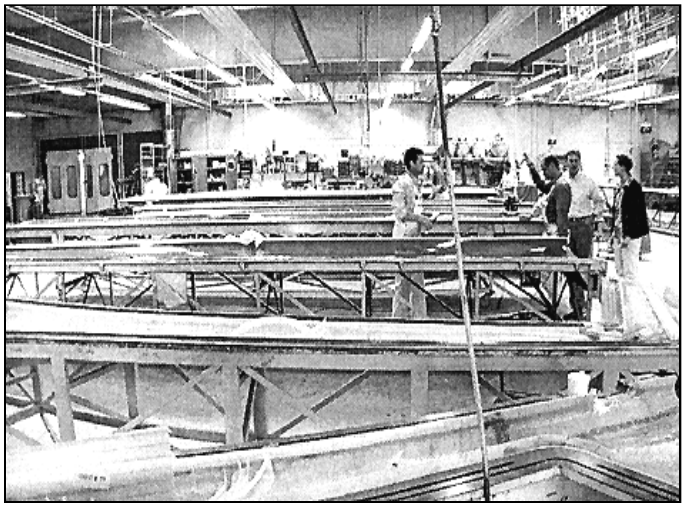
by Gary Haynes

I had the opportunity to spend a morning at the DG factory in Bruchsal followed by an afternoon visit to Spindleberger to talk about trailers while on a business trip in late April. The DG factory is truly a modern manufacturing facility with lots of room to grow. And with all of the current projects they have going on they will need the room. I spent the morning with Volker Halbe, DG's sales director . After finalizing the options list for my 808B I had a tour of the factory.

The main highlight was the large amount of in-stock parts DG has. I found it comparable to the parts departments in other airplane manufacturing companies I have been able to tour (Mooney, Cessna and Beech). In the general layup area several moulds were being polished in preparation for the first part of wing layup. The top of the wing has all of the hardware components bonded in place. The bottom is later bonded to the top portion and is placed in a huge bonding oven, basically a large box that is suspended from the ceiling and lowered over the moulds, for heat curing.



After one half of a fuselage is laid up the interior bulkheads are installed including any lines, controls and other interior components.



All of the aileron hardware is installed in the top wing mould, the two halves are bonded together and at a later stage the aileron is cut out of the wing.

The next step is wiring and instrument installation. Compared to a pure glider the 808B has a lot of wiring for all of the various controls and sensors. Wiring is bundled and very neatly installed. And every bit of available space is being used. There is a 20,000 square feet area, where engines are assembled, gliders are given annual inspections and repairs, and there was a storage area for all of the moulds from the acquisition of LS.

The engines are pretty bare when they arrive. The only physical difference between the 808 and 505 engines are the dual carbs on the 505MB. The entire engine assembly is built up and then installed later into the finished gliders. The final steps are the installation of the engine unit into the glider, several test flights and then fitting to the customer's trailer prior to shipping. *Editor's Note: Gary took delivery of his new DG-808B in Houston in early September.*

15th National Auxiliary-powered Contest Report

Twelve pilots attended this contest at Gillespie Airport, Fredericksburg Texas between 23-28 August. Low cloud bases and rain resulted in only three contest days. Bob and Jo Ann Dittert were the CD and Manager of the event. Ed Salkeld flying his ASH-26E won the event in what was possibly the lowest total score ever at a National Contest -1150 points. The maximum distance tasked was 123.19 miles which was on **Day 1** and Ed Salkeld was the only finisher. **Day 2** was a 92.15 mi task and of the 10 who flew nobody finished. **Day 3** (105.19 mi) resulted in 8 pilots launched and four completing with Salkeld's 30.71 mph the fastest.

1	1150	5S	Salkeld	ASH 26E/WL
2	1008	DUO	Knauff	Duo Discus
3	961	JL	Lubon	Ventus CM
4	836	DX	Chapman/Zivley	Duo Discus
5	654	FD	Howell/Gross	VentusBT
6	532	TM	Shilen	DG-800B
7	383	GS	Sanders	DG400
8	301	UF	Utley	DG-800B
9	286	F8	Gawthrop	ASH 26E/WL
10	194	E4	Eddy	DG-800B
11	193	2BK	Kibby	Discus 2T
12	94	GE1	Evans	DG-800B

Image 1 – Route of flight – KTRK to KSEZ Airplan© Program

We can see MOAs (Military Operation Areas) outlined in white and restricted areas outlined in dark grey. They may be hard to see in this image translated from color but we are avoiding all restricted areas. Having already established that the weather is suitable for our flight, (trust me) and discovered the average winds to be from 251degrees at 23 kts. Using these values and planning to cruise at 2200 RPM using about 68% power our program will calculate the table shown in Image 2 below.

Image 2 – Route data for Carat Flight

Note that it with the forecast winds and conservative power settings, it will take us 4:29 and we will use 8.5 Gallons of fuel. Beat that in your Ford Excursion! We now have weather, a route and a flight plan. All we have to do at this point is to load our route information into the Garmin 295, gather our gear and go! END second installment

Hats Off to our Motorless Brothers!

By Jim Herd

Editor's Notes: This years Ely event covered two one week periods back to back (July 10 - 25 2004). I checked with Tom Stowers on attendees and gliders and found that 22 pilots attended both weeks and 16 pilots one week. That's a total of 38 participants flying 34 sailplanes 15 of which were motorgliders.

Ely, Nevada is an absolute treasure for soaring pilots! First made popular by Tom Stowers of High Country Soaring at Minden, Nevada. Tom has led an exodus to Ely, Nevada each summer for the past eight years or so. Prompted by this, and the warm welcome from the locals, Ely has grown to become a Mecca for serious soaring pilots from all over the world. Why you say? Well, it simply has stunning thermal soaring conditions! Each year, many records have fallen at Ely – state, national, and world records! For July and August, I believe there is simply no soaring place better on this earth.

Here's the rub. There are very few landing strips in the Ely arena, and the very weather that offers thermal soaring flights up to and beyond 1250 km., can also punish any class of soaring pilot. The power in the air can quickly turn to massive overdevelopment. Sure, there are thunderstorms, virga, lightening, and gust fronts. But these are local effects. With excellent lift usually surrounding them, it is relatively easy to circumnavigate such phenomena. But the residual overdevelopment can often extend 50 to 100 miles in any direction, and it often blows up within an hour. Thus, widespread sink, or even zero lift, can make it almost impossible to return to base camp in the evening if you are caught on the wrong side of one of these regions. Final glides from over 100 miles out, arriving at 7 to 8 p.m. or even later, are the norm for many world class pilots.

A case in point would be the week of 7/17 to 7/24, 2004. The monsoon flow made it's way up from the Gulf of Mexico unusually early and unusually stubbornly. The result was "scattered thunderstorms" all week long. Don't get me wrong – this isn't bad. It guarantees thermal markers (cue) and very strong conditions, 10:00 a.m. till dusk. But widespread overdevelopment often accompanies such conditions as cells go out of control. During this week, Debbie Kutch (in Al Martini's Stemme, with Al as ballast) achieved a national record. Steve Fossett and Terry Delore (ASH 25E) beat the world record for speed around a 1250 triangle (but less than 2% better than the previous record, so no new record). And Ray Lynskey (Nimbus 3 turbo) achieved multiple flights in excess of 1000 km. (Ray doesn't actually keep count any more.) Several other "big wing super-ships" were out there cracking off 1000k's as if they were free with the morning cereal. (Note that all of these folks had an engine.) A very good week, right?

But here's the rest of the story – from that same week. There were 30 ships in the Camp – about half had an engine (self-launch, sustainer, or cruiser). One day, there were 7 land outs and countless relights by the motorheads. One day, the first land out had occurred before Noon – 60 miles West in an alfalfa field. One day, two motorless gliders landed in wet "dry" lakes, and it took 1 ∏ days plus extensive crew, equipment, and ingenuity for recovery. One day, a very aggressive motorless pilot skirted the weather for hours and ultimately landed over 200 miles away as darkness loomed! He was retrieved by road and arrived back at 7 a.m. the next morning!

So here's the point to all this. In such powerful conditions, with huge distances flown, and with such a remote location, the motor makes a huge difference! It's not so much a safety thing, it is a convenience thing. No personal injury occurred in this week, with only minor scrapes to gel coat. This is fundamentally big-time soaring with big-time pilots. Our motorless brothers deserve great respect and admiration when they knowingly take on such challenges. Repeatedly! And whether they achieve their goal or not, the challenges and inconveniences remain. In this environment, it is an immeasurably greater challenge and accomplishment to even attempt a big flight <u>without</u> an engine! My hat is off to our motorless brothers! And no, I will not be trading in my DG-800B for a pure glider any time soon!

Jim Herd
Minden, Nevada

<jim@herdware.net >

Ely Airport/Yelland Field N39-17.98 W114.50.51 Elev 6,259ft msl
Runway 12/30 4,814 x 60 asphalt , 18/36 6,018 x 150 asphalt

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 Pho: 952-941-5683 EMail: <Utleyb@aol.com> USA Dues: $20-1 yr, $38-2 yrs, $55-3 yrs. International Dues: $25-1 yr, $48-2 yrs, $70-3 yrs.

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