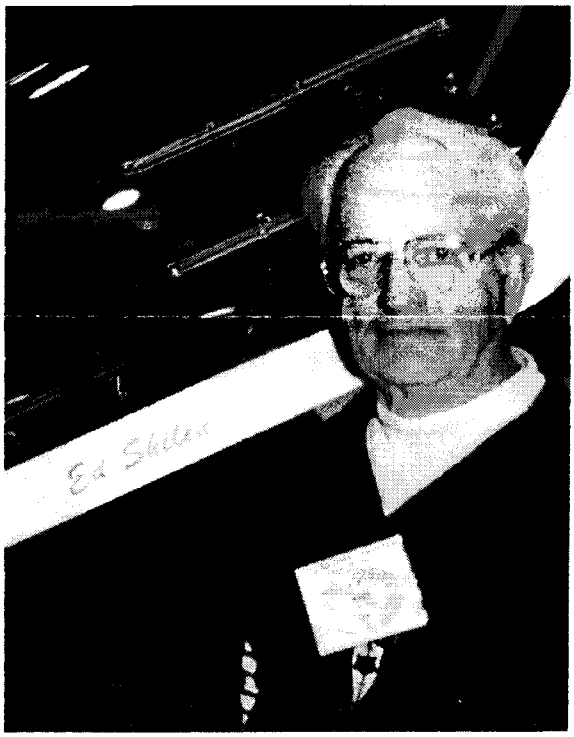
Auxiliary-powered Sailplane Association

Published Bi-Monthly by ASA Inc.- Stan Nelson, President - Bruce Templeton, Vice President - Issue #55 Vol.IX

MARCH-APRIL 1997 NEWSLETTER

SAFETY AND AUXILIARY POWERED SAILPLANES

I have owned two auxiliary-powered sailplanes, a Ventus CT and a DG-800B. Both are superb, high performance sailplanes, and both have delivered a high degree of engine reliability. But unfortunately nothing is perfect. I've had system breakdowns in both airplanes that prevented the engine from running. Happily the problem was discovered on the ground.



Ed Shilen

Sooner or later, anyone flying this type of sailplane will experience an electrical or mechanical problem of some kind, and in full compliance with Murphy's Law it'll occur at the worst possible time. Some failures will be minor inconveniences easily circumvented by a backup or manual system. Others will be major, rendering the engine inoperable until repairs are made.

It's an unfortunate fact that the current auxiliary powered sailplanes do not seem to deliver the same high degree of dependability we enjoy in todays powered light airplanes. I am not faulting the manufacturers. Their engineering and workmanship is superb. Its just that putting as much horsepower as possible into as small a space as possible and at the lightest weight possible is terribly difficult. And then to makes the system totally reliable is virtually impossible.

Neverless the auxiliary powered sailplanes can be just as safe as a "pure" sailplane or a powered light airplane if certain precautions are taken and the correct mental attitude adopted. To demonstrate, lets start with two situations in which a pilot can find himself in extreme difficulty. Bear in mind that problems such as these are usually due to complacency and over confidence inspired by the heretofore satisfactory operation of the engine system.

Situation # 1

You are launching from a 3000 - foot grass strip with a five thousand Density Altitude. You have lifted off here many times before, easily clearing the trees at the departure end of the runway. As you advance the throttle to takeoff power you notice that the engine is running a bit rough. RPM is down a couple of hundred from normal. You dismiss it, since the engine has done this before. It is not unusual for the spark plugs to foul during engine idle, but experience has shown that they always clear out during the takeoff roll. The takeoff roll is longer than normal, but you figure that's OK too. There's plenty of runway ahead. You lift off, confident the engine will clear itself momentarily. After all, it always has. But this time the roughness grows worse. You are no longer climbing. You realize you won't clear the trees at the end of the runway, and there's not enough runway ahead to land.

Situation # 2

At the end of a great soaring day, you are on the final glide for home with a tail wind and altitude to spare. To the left of the course line is an isolated summer thunderstorm that shouldn't interfere with the final glide. Under and ahead of you is typical Texas real estate, bristling with rocks, mesquite trees, brush and cattle. Here and there are cultivated fields.

Everything is rosy, when you suddenly find yourself in sink. You attribute it to the downside of the storm cloud. GPS now says that you have a head wind, probably from the thunderstorm. Nav computer indicates you have enough altitude to get home, but sink is getting stronger and so is the headwind.

Again glancing at the computer, you note that you're below glide slope and still in sink. You silently complain that it would be a real bummer to have to put the engine out so close to home.

With relief, you note that both the sink and head wind are lessening. Even so, you're now 500 feet under glide slope. There's no sign of lift ahead, but since you're 2000 feet AGL(above ground level) there's no cause for concern. Nevertheless, you decide to play it safe. The engine comes up quickly. You press the starter button and the prop spins. Unfortunately, the engine doesn't start. You go through the engine-start check list: fuel on, ignition on, circuit breakers in. Again you crank the engine, but still it doesn't fire. You're now at 1500 feet AGL.

Maybe you didn't choke it enough. You pull out the choke and crank some more. Then suddenly you realize you've never used this much choke before, so the engine is surely flooded. Muttering dark oaths, you shove in the choke, open the throttle and crank the engine at length. With some concern, you note the battery is weakening. You release the start button. Moments later you hit the starter again, but this time the battery won't spin the engine.

No big problem. You're still 1000 feet AGL. Reviewing your options, you see a nice, spacious cultivated field a mile or so ahead. All you have to do is retract the engine and go for it. Pushing the Retract button, you see the engine move back a few degrees--then stop! You realize that the battery you just depleted is the same battery needed to lower the engine. Now you're in a high- drag configuration and bucking a head wind. Instead of landing in that smooth, cultivated field, you have to settle for rocks mesquite and brush. Bummer.

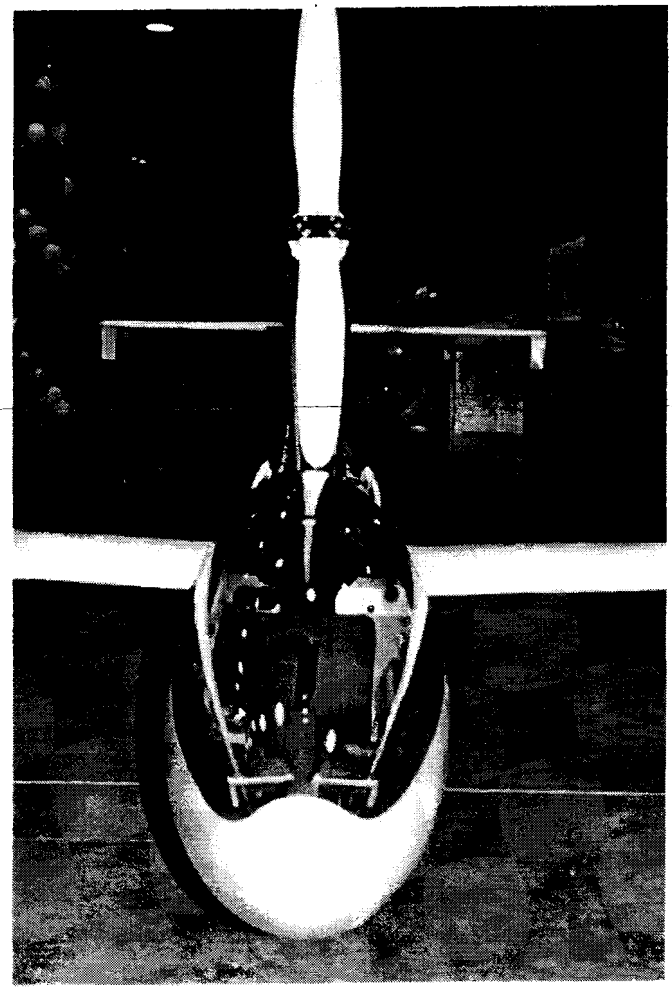
How can the auxiliary-powered sailplane pilot avoid such disasters? The following simple rules will go a long way toward making every flight a safer flight.

Adopt a strict program of inspection and preventative maintenance. Before every flight give the sailplane and engine a **careful** inspection. Engine vibration will loosen some things and break others--a problem pure sailplanes don't have. The manufacturer or importer can tell you which items need to be given the closest scrutiny. Study your maintenance and operating handbook carefully. Be sure you understand all systems. Replace high usage items, such as spark plugs, fuel filters, belts and batteries on a regular basis--**before** they cause problems.

Follow the manufacturers recommendations on carburetor settings and fuel mixtures. The people who made the sailplane know these things better than anyone else. Ignore Joe Know-It-All when he swears there's an oil that is twice as good and half the cost.

Use a self-launch check list. Faithfully follow the manufactures instructions for warming up the engine. Variety of engine types are in use, including two-stroke, four-stroke, water cooled and air cooled. Some need a thorough warm-up, others requires none.

Probably the most important check is for engine RPM at full power settings. If the engine isn't delivering correct RPM during the initial take-off roll, **Abort Immediately.** Less than normal RPM is usually a forecast of worse to come. Pay strict attention to the handbook information on take-off performance under various conditions of weight, altitude, field conditions, temperature, etc. To that, add a safety factor. I have never flown an airplane that performed **better** than the handbook figures. If these guidelines are faithfully observed, self-launching can be every bit as safe as aero-towing.



Ed's DG-800B

When an in-flight start is required, never, ever depend on the engine to actually start. Always try to position yourself above the terrain suitable for landing before you even initiate the process. Use the same procedures you would employ if you were a pure sailplane. Then if the engine fails, you simply land to fly another day. If it starts, consider it a bonus--a wonderful bonus that either carries you home or else propels you into a thermal.

WITH A KNAPSACK ON MY BACK

German pilots call it a knapsack but I call it freedom. Freedom to fly far from home in search of good soaring conditions. Freedom from the undoubted hazards and frustrations of out-landings. Freedom to be home in time for that social occasion in the evening. These blessed freedoms are of course, given by the knapsack on your back-the glider fitted with a self-retrieve engine.

The insurers are delighted with the decreased underwriting risk of such machines and offer reduced premiums accordingly. What a nonsense it seems therefore when you arrive at a competition and are obliged to disable the engine and carry out any outlanding retrieves by road.

While this is a conscious decision that an individual competitor takes, one can imagine that the insures are scarcely happy with the situation. Nor perhaps are the RAFGSA totally at ease with the principal of buying very expensive turbo gliders and the disabling the turbo just when it is most needed, ie in marginal, competitive low situations when the glider is at most risk from a field landing. Scarcely a competition goes by without some unfortunate pilot damaging his glider in an outlanding.

It has been argued that allowing such self-retrieving in a competition is "unfair", and of course from the domestic side such as a competitor does enjoy the advantage of making do with little or no crew.

Flyingwise, however, it can be argued that the turbo/glider actually suffers a disadvantage.

First there is in the inability to jettison his "ballast" for a low wing loading on a weak day. More significant, however, is the need for the motorized pilot to start his engine (with a suitable field selected below him in case of failure to start) at a much greater height than his traditional opponent would finally commit himself to a field.

the height advantage given away by a prudent turbo pilot in this way is probably 800ft or so-perhaps as much as 10km which is a significant scoring distance when final gliding on a dead evening.

It was precisely this self imposed disadvantage for the aux powered gliders which persuaded the Australians to permit such gliders in their Championships on an equal footing and score them to "engine on" position.

Similarly in Germany it is understood that aux powered gliders compete on this basis-the principle having been adopted mainly for reasons of insurance and outlanding safety.

This year the BGA has adopted the GPS logger system for scoring. It is of course, a simple matte to note from the logger the exact position where the engine was deployed.

The integration of such motor gliders into competitions may be to radical for immediate adoption by the BGA Competitions' committee. However, with the increasing numbers of such machines in he UK, might not a one year experiment be tried in 1997 whereby pilots may compete with their motors enabled?

If some genuine "unfairness" (Whatever that may be) is perceived, then let the BGA Competitions" Committee terminate the experiment at the end of 1997.

By Rod Witter in Sailplane & Gliding,Aug/Sept 96

FROM THE PRESIDENT

The 1997 SSA Convention in Arlington, Texas, was attended by over 1500 soaring enthusiast's. The Convention Hall featured three auxiliary-powered sailplanes, a Ximango, DG-800B, and a Windex. Gerhart Waibel of Schleicher, Tilo Holighaus of Schempp-Hirth, Wilhelm Dirks of Glaser Dirks, and Marc Arnold of Stemme spoke about engine design and installation at a Manufacturers session which concluded with a question and answer session Representatives from Ximango, Windex were on the floor to answer questions about their products.

Breakfast was served to a packed house of Auxiliary-powered Sailplane folks who heard Tilo Holighaus speak of the advantages of flying auxiliary-powered sailplanes in the European environment, where in many cases an engine allows the soaring pilot to fly to good soaring conditions and then to power home after a successful soaring flight. A very informative question and answer session followed

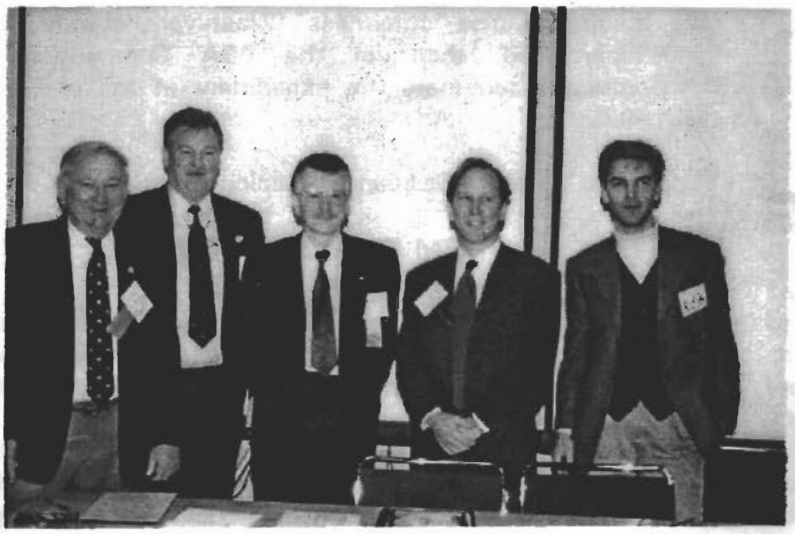
Continued discussions were held by ASA Board members and SSA officials as well the IGC motorglider representative, Prof. dr. ing. Piero Morelli, concerning the proposed integrated 18 Meter Class. Steady progress is being made toward this goal. The IGC meeting in March 1997 may clarify this issue. Meanwhile the SSA may approve a waiver to allow auxiliary-powered sailplanes to fly in the Open Class Nationals in 1997 to obtain data and experience to evaluate the integration process.

The ASA Board has approved the creation of an advisory committee to develop a policy which would state how the ASA could encourage and support the development of a low cost auxiliary-powered sailplane by a established manufacturer or persons with the resources to follow through and market such a project.

Next year's Convention will be held in Portland, Oregon.

See you there!

SCENES FROM THE 1997 DALLAS SSA CONVENTION



S. Nelson President | G. Waibel Scheichler | W. Dirks DG | M. Arnold Stemme | T. Holighaus Schempp-Hirth

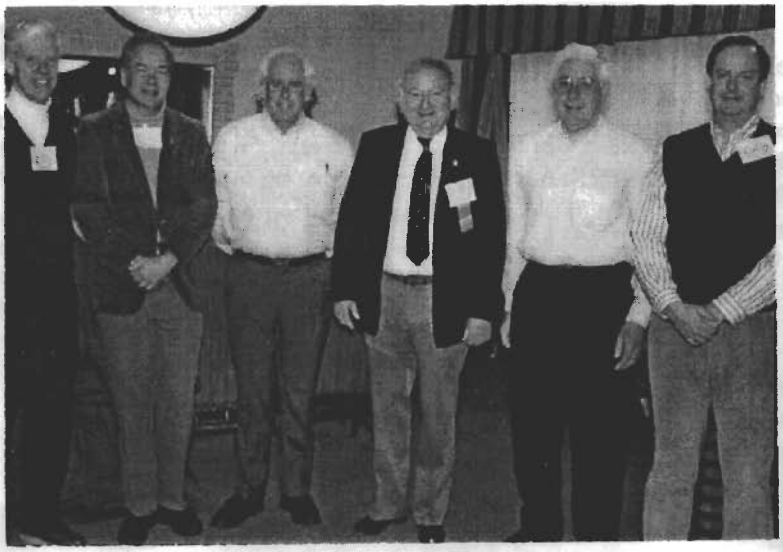
D. Nadler B. Utley J. Gregg

Stemme Group

Oliver Dyer-Bennet B. Utley S. Nelson

Oliver Dyer-Bennet and Jayana

SCENES FROM THE 1997 DALLAS SSA CONVENTION



D. Aitken Records | E. Greenwell Treasurer | S. Lipe Safety | S. Nelson President | B. Utley Membership | B. Templeton Vice President

Piero Morelli
IGC Motorglider Chairman

ASA Breakfast Meeting

Super Ximango

Tilo Holighaus
Schempp-Hirth

Auxiliary-powered Sailplane Maintenance and Inspection

The winter months are the choice months that glider owners choose to perform maintenance and inspection procedures on their ships. Maintenance requirements are spelled out by the manufacturer in the manuals issued with the glider. Inspection requirements are
spelled out by Federal Air Regulation. Lets have a look at what the regulations require.

A glider may be issued either a Standard Category U.S. Airworthiness Certificate or a Special Airworthiness Certificate-Experimental. Most Auxiliary-powered sailplanes operate with an Experimental Airworthiness Certificate.

Gliders having a Special Airworthiness Certificate-Experimental-are issued Operating Limitations, in accordance with FAR 91.319, that spell out inspection requirements. These Operating Limitations are in the form of one or more pages under FAA/DOT letterhead that specify the glider by "N" number, type, and manufacture. A sample of how most Operating Limitations read is as follows: "This aircraft shall not be operated unless within the preceding 12 calendar months it has had a condition inspection performed in accordance with appendix D of part 43 and found to be in a condition for safe operation. This inspection will be recorded in the aircraft maintenance records." "Condition inspections shall be recorded in the aircraft maintenance records showing the following or similarly worded statement: "I certify that this aircraft has been inspected on (insert date) in accordance with the scope and detail of appendix D of CFR part 43 and found to be in a condition for safe operation."

There are some key words in these statements quoted from the Operating Limitations of a typical glider with a Experimental Airworthiness Certificate. The statement,"scope and detail of appendix D of 14 CFR part 43" means that a "condition inspection" must meet the same inspection requirements of an "annual" or a "100 hour" inspection. The reason for this is that although part 43, para 43.1(b) Applicability, specifically states that part 43 'does not apply to any aircraft for which an experimental airworthiness certificate has been issued', the FAA directs that the 'condition inspection' itself be conducted in accordance with the same scope and detail(as applicable to the particular aircraft) that an 'annual' or '100 hour' inspection is conducted on a power plane.

The parenthesis(as applicable to the particular aircraft) means that some of the scope and detail of appendix D may not apply to a glider, such as 'floats and ski's' and 'deicing equipment'. An A&P (Airframe and Powerplant) mechanic may perform this 'condition inspection' and sign the logbook.

Auxiliary-powered Sailplanes with a Standard Airworthiness Certificate must be inspected by an A&P mechanic who, possesses 'Inspector Authorization'(IA). This inspection must have been accomplished within the preceding 12 months and must comply with part 43. Once the IA has completed the inspection and signed the log book, you're ready to fly for another year

Submitted by Stan Nelson

Jochen Ewald Flies New VENTUS CM and DG-800B

Jochen Ewald reports in the October/November issue of Sailplane & Gliding that he has flown the new Ventus 2CM and the DG-800B, both having newly designed SOLO engines of different displacement and power. The Ventus 2CM has a SOLO 2489, two cylinder, two stroke, water cooled engine of 489cc and 40hp. The engine has an automatic choke and starts immediately regardless of conditions. The engine may be removed in less than one hour. Because of the ingenious folding propeller, the engine bay is reduced in size and the doors are relatively short and narrow. The propeller is larger than the original Ventus CM and turns at a slower RPM. The ship climbs at approximately 600fpm in the 18 meter configuration. With optional 15 meter tips the ship is certified as a glider only. The ship weighs 772lbs empty and with Jochen, fuel and no water, take-off weight was 957lbs. Maximum gross weight is 1102lbs. A small steerable tail wheel and wing wheels are an optional extra.

The new DG-800B is fitted with new SOLO two cylinder, two stroke, water cooled engine with dual ignition. The engine displaces 625cc and delivers 55hp. The engine is attached to the bottom of the propeller boom and swings up with it so that the cylinder head just reaches the top of the engine bay. The engine has one carburetor for easy maintenance. The empty weight of a competition instrumented aircraft is approximately 730lbs and maximum gross weight is 1157lbs. According to Jochen, at a takeoff weight of 924lbs. the takeoff acceleration was enormous and nearly like a winch launch. He reached 3280 feet in 3 1/2 minutes. A steerable tailwheel and wing wheels allow easy taxiing. Compliments of Sailplane & Gliding

Editors note: It is my understanding that a version of this engine with even higher horsepower will be fitted to the new Schempp-Hirth Nimbus 4DM which will increase climb performance by 10%.

INTERNATIONAL GLIDING COMMISSION
Subcommittee report on categories of world records

In a letter in the October/November 1996 issue of Sailplane & Gliding magazine, Ross MacIntyre(Chairman of the IGC World Records Review Committee) states that the world records categories will be reviewed. The question of continuation of women's records and "possibly the motor glider categories should be done away with now that motor gliders have developed into a glider with a different form of launch mechanism. When motor gliders were set up that was not the case"- are some of the issues that will be examined by the committee. Acknowledgement to Sailplane & Gliding

---------- ~ ----------

Memorial Day Auxiliary-powered Fly-In!
Where: Richland,Washington
When: May 24,25,26, 1997

For additional information, contact Dr. Jim Leedey at 2318 Camas Ave., Richland, WA 99352. Phone (509) 375-4268, FAX (509) 943-5249, Email: jeleedy@aol.com.

---------- ~ ----------

MOTORGLIDER/SELF LAUNCH CERTIFICATES (FAA FLIGHT EVALUATIONS)

Self launch certification for Private and Commercial Glider Ratings, are now available from Shawn Knickerbocker, an FAA Designated Pilot Examiner, located in Jacksonville, Florida. Pilots that are applying for their **initial** certification in gliders, and their flight evaluation is conducted in a high performance self launching sailplane(G-103SL, etc.) or a touring motor glider(Ximango, Vivat, etc.) may have the exam administered in those gliders with the following restrictions, 'Glider-self launch'on their certificate. When certified with the above restriction, aero-tow flights are not authorized. A training certification course is also available. This training complies with Advisory Circular 61-94. If requested, I will travel to your location to provide training and certification. For additional information, please contact Shawn Knickerbocker, 904-269-5861 or Email at K1604@aol.com

---------- ~ ----------

Chicho Estrada Home

Former Auxiliary-powered Sailplane National Champion Ernesto(Chicho) Estrada is on the mend and recuperating at home. He competed in his ASH-26E at Hobbs in July and expects to be back flying soon.

AFFORDING A MOTORGLIDER

If you already own a glider, then YOU may already be able to afford a self-launching, high performance motorglider! Let me show you how.

The first thing to realize is the motor is about a $20,000 to $25,000 premium over a 'regular' glider, whether you are buying a used one or a new one. Check the ads for gliders that are available both ways, such the PIK20E, VentusCM, DG-400, and so on. Here's an example of what might cost an active pilot living in Seattle.

Additional costs:

$1250.00	Opportunity cost(interest not earned) on the $25,000.00 that you could have invested @ 5% after taxes.
100.00	Annual maintenance etc. on the motor
300.00	Insurance increase
100.00	Fuel and oil/50 launches
$1750.00	Total additional costs

Avoided costs:

$720.00	35 regular tows at $16/tow(Ephrata)
200.00	5 tows @ 40.00/tow(Sun Valley)
150.00	3 aero-retrieves at $50 each
60.00	2 car retrieves plus dinner for crew
$1130.00	Total avoided costs

Net cost: $1750-$1130 = $620

As you have guessed, using a motorglider exactly as you used your unpowered glider is more costly, though you are spared the inconvience of outlandings.

Submitted by Eric Greenwell

Newsletter Editor ---- Suzie Capitano in Taos