

## President's Message

The ASA Breakfast and member meeting held at the SSA Annual Convention at Albuquerque in March had a record turnout; I thoroughly enjoyed meeting those of you who were able to be present.

At the Directors meeting which followed, a number of issues were discussed including the future role of ASA, keeping in mind its resources, both human and financial. This was boiled down to the primary functions of publication of the Newsletter, responsibility for rules for motorglider contests, safety issues, and an information source for motorglider related matters. This last includes establishing a database of qualified MG CFGs, and 2-place motorgliders available for training for self-launch endorsements now required by FAR§61.31(j)(1)(iii). If you are such a CFG, or have a 2-place MG available, please take the time to include this information when returning your ASA membership renewal which you will receive shortly. If you know of any other available 2-place MG, please let me have details at [rdcarswell@aol.com](mailto:rdcarswell@aol.com), or c/o the Newsletter.

Turning to safety matters, three areas were highlighted at the Breakfast. For sustainers (and self-launchers who aerotow) - run your engine frequently both for the benefit of its mechanics and your currency. For mast-mounted engines - practice landing with engine out and off-if appropriate, after a discussion/briefing with an experienced MG pilot or instructor. For all - check how many feet of descent it takes to restart, and make sure that this is factored into your engine-off decision height. Fly smart and fly safe!

Dean Carswell

# Auxiliary-Powered Sailplane **NEWS**

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

**Dean Carswell-President • Bruce Templeton-Vice-President**

ASA IS A DIVISION OF THE SOARING SOCIETY OF AMERICA

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### **ASA Directors meeting Sat. 18 March, 2000 Albuquerque, NM**

Top L-R Pete Williams-Founder; Directors: Bruce Templeton, Rick Howell, Bud Schurmeier, Oliver Dyer-Bennet, Bottom: Brian Utley, Marc Arnold and Dean Carswell, ASA President. Directors not present: Susan Capitano, Stan Nelson,



Summer is just around the corner and its time to think about getting in the air and enjoying soaring in your self-launcher. Max Skovgaard's photo of Pete Williams taxiing for takeoff at Minden-Tahoe last summer says it all.

## ASA 2000 Convention News

ASA's position as the advocate for pilots who are interested in or own and fly powered sailplanes continues to gain momentum. There were over 90 attendees at the Auxiliary-powered Sailplane Assn. breakfast on Saturday March 18th at the SSA Albuquerque Lift 2000 Convention. President Dean Carswell had an interesting and informative agenda including talks by Dr. Reiner Stemme and Karl-Friedrich Weber, President of DG. Special service awards were presented to Stan Nelson, former ASA president and to Bruce Templeton, for his 11 years service as ASA's VP and Secretary.

Brian Utley gave a membership report that showed steady growth toward 400 members. Competition Committee chairman Rick Howell and a newly created competition committee are working on rules revisions which includes opening up the MG National Championships to foreign competitors and the establishment of both an Open Class and a Limited (handicaps) Class. There was also some discussion of a Touring Class that would permit competition entry by fixed engine motorglider pilots.

New ASA Directors and Officer billet assignments were made. The ASA Directors are looking at several avenues to widen exposure and membership including AOPA-ASA coordination and exposure of ASA at EAA's Oshkosh event. All in all, ASA has become a growing and vibrant organization well established as the world leader representing pilots who fly powered sailplanes. If you would like a copy of the minutes of the 2000 Board Meeting, please contact Bruce Templeton.



Left-Top to Bottom: Templeton accepts award from Brian Utley. Pete Williams presents award to Stan Nelson. Speaker Karl-Friedrich Weber, DG President and Brian Utley.



## 2000 Motorglider Nationals!

19-26 July, (Practice 17 & 18)

The 11th U.S. Motorglider Nationals will be held at Midlothian, Texas (near Dallas) in conjunction with the 1-26 Nationals. The contest will use GPS scoring using national FAI Rules with minor additions for auxiliary-powered sailplanes. Open Class & Limited Class (handicaps). International competitors are invited & are eligible to win the U.S. Motorglider Nationals Trophy.

Please contact Rick Howell for more information. Call 972-245-0830 or you can Email Rick at: PatRick HOWELL2@compuserve.com



Wayne Martin in his PIK-20E. Wayne has recently taken delivery of a PIK-30 which he purchased from Bud Schurmeier. His PIK-20E is For Sale. If you are interested in purchasing Wayne's 20E, contact him at 775-265-6356 (Gardnerville, NV). Image by Max Skovgaard

### Web Site Numbers

NAA- <http://www.naa-usa.org>

SSA- <http://www.ssa.org>

ASA-<http://ssa.org/affiliates.asp>

FAI- <http://www.fai.org>

EAA- <http://eaa.org>

Eric Greenwell is the ASA Web Master. You can email him at [egreewell@prodigy.net](mailto:egreewell@prodigy.net)

### The Ideal Conditions for Carb Ice

Not much has been said or written about the possibility of carburetor ice in carbureted engines used by self-launchers. Fuel injected engines do not have this problem. Carb ice forms as result of the sudden cooling of the fuel/air mixture as it is vaporized and expanded while passing through the venturi throat of the carb. If sufficient moisture is present in the air, it will be deposited as frost or ice in the carb passages. The basic symptom will be loss of RPM and/or a rough or uneven running engine. Below are some temperature and dew point situations that could lead to carb ice:

- High relative humidity at outside air temperatures as high as 77°F.
- When temperature and dew point approach 68°F.
- At temperatures between 20° to 70°F with visible moisture or high humidity.

Pilots are encouraged to check their engine operating manuals and be aware of the possibility of carb ice. Since most engines in powered sailplanes do not have a carb heat system, the only remedy would be to descend to warmer air.

Source: AVEMCO Approach Magazine

### AIRSPED INDICATOR MARKINGS

#### A QUIZ

Most of us look at but sometimes fail to see what the airspeed indicator is telling us besides indicated airspeed. Name the color code significance of the below markings and check answers on page 5.

1. White Arc \_\_\_\_\_
2. Green Arc \_\_\_\_\_
3. Yellow Arc \_\_\_\_\_
4. Red Line \_\_\_\_\_
5. L (in yellow) \_\_\_\_\_
6. Blue Line \_\_\_\_\_
7. Yellow Triangle \_\_\_\_\_

### SIERRA SOARING ADVENTURES !!

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- with Dan Matzke - Flight Instructor/Guide, a Winner of the Barron Hilton Soaring Cup, and a Factory Authorized Demonstrator for the Diamond Xtreme.

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Or write: Sierra Soaring Adventures, P.O. Box 793 Leona Valley CA 93551.



ASA member Dan Matzke accompanied by his wife, Julie, took delivery on 22 November 1999 of a Diamond Xtreme in London, Ontario. They flew back to their home field at Lancaster, California, a distance of 2,000 miles, in 2 1/2 days (1/2 day weather delay in Kansas). The total flight time was 15 hrs. The average leg was 400 miles at an average speed of 135mph. Dan has owned a Grob 109A, DG-400 and DG-500M. His reasons for getting a Diamond Xtreme are versatility, reliability and good factory support. Dan will use the new bird for business (Sierra Soaring Adventures) and pleasure (Cross-Country and Powered Touring).

### Book Review

*Self-Launching Sailplane Operation, 2nd Edition* by Eric Greenwell, ASA Publications, 2000, 28pp, 8.5X11, \$4pp.

Greenwell's #2 Edition is packed with useable information covering most all the aspects of flying and servicing a retractable engine sailplane. While emphasis is on the ASH 26E, the techniques he recommends are applicable to most self-launchers. This booklet is a must for pilots who already fly a self-launcher and can be especially helpful for prospective owners.

Order from ASA Publications c/o Pete Williams, 1033 Dresslerville Rd., Gardnerville, NV 89410, Tel: 775-265-3877, Email [ftb@pyramid.net](mailto:ftb@pyramid.net). Please make check out to ASA Publications.

## Pilot Profile



Bruce Templeton has been a member of ASA since its founding as SLSPA. He assisted materially in establishing the Bylaws of ASA as a non profit corporation and has served as Vice President and Secretary since 1989. He is a corporate lawyer with an international practice and travels worldwide. Bruce lives in Washington DC. He first soloed a glider in 1990 and is checked out in self-launchers including the Grob 103SL and the Stemme S10. His flight background is as a power pilot with over 1,500 hours. He is a rated Beech Baron and King Air pilot and holds current pilot ratings of ATP, CFIAI, MEI, AG and IGI. His most memorable flight was in a Stemme at the factory in Berlin. Bruce was recently honored with a plaque for his services to ASA at the SSA-2000 Convention in Albuquerque, New Mexico.

### Are You Missing Some Newsletters?

ASA newsletters are now being mailed from Gardnerville, Nevada. During the changeover from the Taos mailing address some members may have not received an issue or two. If this is your case, please advise Pete Williams and he will forward the missing copies.

775-265-3877 or Email [ftb@pyramid.net](mailto:ftb@pyramid.net)

### Publications Available from ASA

Rotax 501/505/535 Pilots Manual.....\$2ea  
 Rotax 501/505/535 Repair Manual.....\$3ea  
 Rotax 501/505/535 Parts Manual.....\$4ea  
 Self-Launching Sailplane Operation.....\$4  
 DG-800 Pilot's Brief.....\$3  
 Flying the DG-400 .....\$3  
 Safety Survey of Motorgliders.....\$3  
 Powered Sailplane Maint/Service/Repair & Defect Survey.....\$3  
 Incident/Accident Survey.....\$3  
 Safely Flying Self-Launch Sailplanes.....\$3  
 SOLO 2350C Engine Service Manual.....\$4  
 FAA AC61-94 Checkout in Motorglider.\$1  
 Send check to ASA Publications c/o Pete Williams 1033 Dresslerville Rd. Gardnerville, NV 89410



## AC-5M Flight Tests Begin



The first detailed AC-5M flight test evaluations were accomplished in Moscow in December 1999, following a month-long series of tests using the MZ-34 and MZ-35i motors from Zanzottera. As expected, it was decided to proceed with the MZ-34 for the detailed testing and the production program. The prototype motorglider shown utilizes a 3.6ft propeller and a 1: 2.2 reduction ratio for a propeller speed of about 2,772 rpm at max throttle. Maximum engine speed on the ground for the 26 hp motor is 6,100 rpm. Maximum engine speed in flight was clocked at 6,600 rpm.

Field elevation at AviaStroitel's test site is 825' MSL, temperature was 40 degrees Fahrenheit, the wind conditions were a variable crosswind at six to eight mph and a hard surface runway was used. The flight tests employed an electronic altimeter with a precision of about +/- 3 feet.

The prototype's takeoff weight is listed as 260 Kg (575 lbs). Takeoff roll under full power was an excellent 140m (462 feet) with an initial climb rate of 3.7 m/s (732 fpm). Time to minimum safe altitude for thermal sniffing (200m or about 660 ft) was just 54 seconds. Climb rate above 4000' MSL tapered off to about 3 m/s (594 fpm).

Handling is said to be what one would expect of the AC-4C flying at 575 pounds: stall at 40- 41 knots, minimum sink of 148 fpm, best L/D of about 35:1 @ 52 knots. The test flights were done without fairings and our information did not include any high speed data to substantiate the benefits of our new angle of incidence. We hope for a much more detailed analysis of soaring characteristics as soon as the ice melts.



Photos courtesy AviaStroitel



The majesty and beauty of the Sierra Nevada Mountains as seen in July, 1999 about 60 miles South of Minden near Yosemite National Park. Image by Pete Williams



1. White Arc: Positive Flap operating range.
2. Green Arc: Normal operating range.
3. Yellow Arc: Caution Area
4. Red Line: Vmax
5. L: Max Speed for landing configuration.
6. Blue Line: Best climb speed-Vy
7. Yellow Triangle: Approach Speed at Max Wt. (No Ballast)

PILOTS CHECK YOUR  
GLIDER'S FLIGHT MANUAL.

Ruud Rozendaal photographs his DG-400 during a flight over the French Alps.



Slingsby T38 "Grasshopper" piloted by Sandra Gillmeister near Kalkar, Germany. After WW2, the RAF used this glider in its Air Cadet training program. Image: J Ewald.



## A Motorglider for the Homebuilder Enthusiast!

By Jukka Tervamäki

For the past 27 years I have flown a lot of hours with 2-cycle power, first a Solo Hirth in an [ASK-14](#) and then a [Rotax in my JT-6 \(PIK-20E prototype\)](#). While the 2-cycle power plants are simple I would hardly say they are reliable. I have never dared to fly long distances with 2-cycle power, the maximum being about 100 km in situations like retrieval flights in deteriorating soaring weather. There are other reasons, too, like high fuel consumption and noisy cockpit. But I enjoy dreaming. For years I have been longing for reliable 4-cycle power in a new simple motorglider concept with no retractable engine or propeller belt drive but with good enough soaring performance to fly a 500 km triangle. Tinkering led me to a **3D modeling project, the Virtual Motorglider JT-8**. It is a pod and boom concept with a pusher engine installation with an automatically folding 2- or 3-blade propeller. I modeled and rendered the virtual JT-8 using [formZ RenderZone software](#).

**Advantages of the JT-8 concept:** JT-8 is not the first pod and boom motorglider concept with a pusher propeller but I feel there has not been one with a modern laminar airfoil and low drag fuselage with high refinement in engine installation details. L/D of 35 should be possible with this concept using a 15 m wing and from 38 to 40 using an 18 m wing. You may feel this a bit low compared to retractable engine motorgliders, but the JT-8 concept offers a number of other advantages:

**1) Safety!!** The airplane total drag with the JT-8 concept would be equally low in all the three important flight regimes:

- Soaring
- Powered flight
- Engine restart phase!

The last one of these three is the most important. I know of several accidents where a retractable engine glider was destroyed by failing to restart when too low. The drag increase with the engine extended is very high (L/D drops from 40 to 14). With the JT-8 the pilot could continue engine restart attempts down to the last moments of final approach since there is no drag penalty and high sink rate when restarting the engine.

**2) Economy by power!** Long distance flights could be made with really low fuel consumption.

**3) Simplicity!** No time wasted to extend or retract the engine. No complicated mechanism required to do that. Just push the button to restart the engine, the propeller unfolds automatically!

**4) Reliable 4-cycle engine!** The engine of choice for the JT-8 would be a [Japanese HKS 700](#). With dual carbs it has a 3 min take off power of 60 hp at 6200 rpm and a continuous power of 56 hp at 5800rpm. Since 40 to 50 hp would be enough for a single seater I would use a single carb for simplicity. The HKS 700 has a dry sump and requires a separate oil tank. Since the HKS cylinder heads are oil-cooled a separate oil cooler is necessary, too. Both are supplied with the engine. The engine package weighs 53 kg (116 lbs) without the prop. A separate air intake for the oil cooler may be necessary. A low drag NACA type, flush with the cowlings, would be the best choice. HKS is a geared engine with gear ratios of 2.5 or 3. This results in a propeller rpm of 2400 which is low and requires a 3 bladed (may be 4-bladed) folding propeller to absorb the power with a diameter of 1.2 m but offers the extra benefit of very low propeller noise.

The propeller tip speed would be only about Mach 0.4. A more suitable gear ratio for JT-8 would be about 2 resulting in a max prop rpm of 3100 and max tip speed of Mach 0.57. A two bladed folding prop could be used. If suitable gears are not available from HKS they could be specially made. Gear machining shops can be found in all industrialized countries.

**5) Easy maintenance!** With hinged engine cowlings the engine would be easily accessible, see picture. In some of the newest retractable engine motorgliders the engine is not so easily accessible.

**6) From the soaring drag point of view** a pusher engine is a better arrangement than the one in RF-4, Motorfalke, Grob 109 and Carat. The engine and prop (even feathered) on the nose destroy the laminar air flow around the fuselage right from the start. Turbulence and drag caused by engine cooling requirements could be further reduced by designing sliding doors for the trailing edge of the engine compartment (see picture). To operate the doors by a mechanical hand lever takes a mere second. Microswitches to prevent inadvertent engine starting when the doors are in out position should be installed in the lever mechanism

**7) Good visibility!** In the JT-8 the pilot is sitting forward of the wing. This is not so with gliders having the engine on the nose. Compared even to the normal gliders, the visibility would be better, too, because the seating is more upright in JT-8 due to the bigger vertical dimensions necessitated by the engine and propeller.

**8) Good taxiability!** My present JT-6 motorglider is fully taxiable and I am happy I designed it like that. However, there are two circumstances where JT-6 is not so good for taxiing, namely on soft ground and on taxiways with tall lights. The JT-8 has a low propeller thrust line which should prevent tipping over on soft ground when the throttle is pushed forward. There are three possible landing gear configurations:

a) The [JT-6 style wing tip wheels and tail wheel](#) would be quite acceptable for taxiing on normal glider ports. The drawbacks of this configuration are that you cannot use taxiways with tall lights and the main landing gear tyre wears rapidly on one side.

b) For operations on bigger and busier general aviation airports I would install an electrically operated retractable main landing gear. The type shown was used by Molt Taylor in his "Mini Imp". The drawback of this configuration is the added complexity and weight. c) Retractable outrigger wheels under the wings are another possibility. They could be operated together with Schempp Hirth air brakes. This type of system I had in my JT-6 for many years. Its drawback is the drag increase although very small.

Continued on page 7.....

**How could it be made?** The JT-8 concept could probably be worth small scale production but it would be a time-consuming and risky project. A faster way to realize a proof of the concept aircraft would be to modify an existing glider. But new gliders are expensive and too old ones are not up to date in aerodynamics. So how could one be made? One method is as follows:

1) Buy a "kit." Every now and then insurance companies get damaged gliders which are offered for sale to anyone willing to start a repair project. A glider with a badly damaged fuselage but with wings and tail section intact (or having only minor damage) would be an "economical kit" to start with. You have to build a new fuselage anyway. The best choice would be a 15 meter glider with 17 or 18 meter wing extensions. You would not use the extensions but they guarantee that the wing spar is strong enough to carry the extra load of the HKS engine and fuel. Extensions indicate that wing roots have been designed for higher bending loads.

2) Strip all undamaged metal parts, fittings, landing gear, control system and instruments from the damaged fuselage. Remove even damaged parts to use as templates, you may have to reproduce a copy of them. Repair parts as necessary.

3) Redesign the control system to fit the low wing position by using as much of the old parts and fittings as possible.

4) Build a fuselage plug using a wooden frame with plastic foam covering for proper shape. Use filler for finishing. The tail boom could be made of metal sheet. Add the original vertical tail to the boom. Use part of the fuselage plug to make a canopy male mold

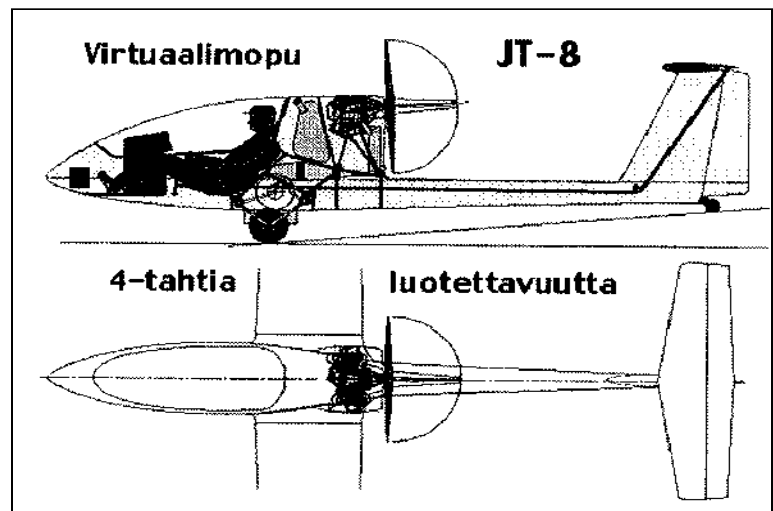
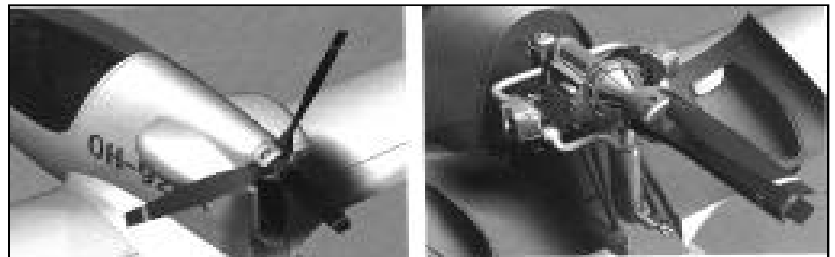
5) An important detail is the wing root fitting. Try to remove one from the old fuselage and use it in the new fuselage or in the fuselage plug. Make weight and balance calculation and carefully check the wing and horizontal tail angle of incidence and position before bonding. Battery placement can be used to fine tune CG position in the finished aircraft.

6) Carefully wax your finished fuselage plug and laminate two mold halves onto the plug. The mold can be quite light weight and disposable, if you only make one fuselage in the mold. For other items like the pilot seat and instrument panel, temporary molds made of plastic foam or metal sheet will do the job.

7) Make a strength analysis and determine the required number of fiberglass fabric layers on various parts of the fuselage. A good set of computer programs would help in this process, but you can learn a lot from the damaged old fuselage by cutting sample pieces on different areas and by measuring, weighing and counting the number of fabric layers.

8) Power plant design. You have to design and make an engine mount and a folding propeller, take a look at point 4) above. Once you have made the two fuselage mold halves, the work continues like any fiberglass/epoxy aircraft project made in female molds. It involves a lot of know how but the details of that process are quite another story.

*An article on the JT-8 was published in December 1999 issue of the Finnish aviation magazine ILMALU. For more information contact Jukka Tervamaki at Email <tervis@topias.pp.fi> or you can write him at Hamaapaadentie 12A, 00930 358-9-33422, HELSINKI, FINLAND*



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### ASA Mission

The Auxiliary-powered Sailplane Association, Inc. was founded as SLSPA 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, 1930 S.W. 8th St., Boca Raton, FL 33486-5205  
Tel: 561-750-6876 Fax: 561-393-7458  
Annual Dues: \$20 USA, \$25 International

### ASA Officers

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Pete Williams, ASA Publications Manager, is the Editor, and Print Production Manager for the newsletter. As such, he supervises and coordinates with a printer located in Minden, Nevada. The Newsletter is mailed from Minden.

Contributors are requested to submit hardcopy typewritten or keyboarded text . 12pt font size is best for accurate scanning. If submitting text on a floppy disk, please advise the word processing program used. Text may be edited as required to fit the newsletter. The newsletter is produced on a Macintosh G-3 using AppleWorks word processing software. Photos are always welcome and will be returned promptly.

The newsletter is delivered to the printer the last week in Jan; Mar; May; July; Sept & Nov. ASA desires input on what the members want in this newsletter and we are doing all we can to keep it informative and interesting. *It's your newsletter, so please let us hear from you!*

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INSIDE.....

ASA Activities at SSA Convention

JT-8 Motorglider Concept

AG5M Flight Tests

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