

SIROCCO ~

THE NEW ONE !

Story and Photos by Norm Petersen

The ads always read: International EAA Convention, Oshkosh, Wisconsin, U.S.A. To add international flavor to the ultralight scene this year, the Aviasud (translation: Aviation South) Engineering Co. of France brought their new Sirocco ultralight to the convention to demonstrate before the world market and delight the many inquiring people who took time to investigate this beautiful machine. To make matters even better, the Sirocco garnered the Outstanding Semi-Rigid Wing Award for its designers, Francois Goethals and Bernard d'Otreppe.

The Aviasud Company was founded to build and distribute the Libellule (translation: Dragonfly) three-axis ultralight in November 1981; however, the Sirocco was designed in 1982 and made its first flight on July 26. It has been on sale since January 1983. Francois, an engineer in fluid mechanics, combined his skills with those of Bernard, an engineer in composite structures. (Bernard's father, Jean d'Otreppe - EAA 92583 - is an experienced airplane builder from Belgium.) Out of this program, which included a complete flight test and static test, has come what the two designers believe to be the optimum wing profile for the Sirocco, the TK 7315 from Dr. Paul MacCready with 14% chord thickness.



Holding the beautiful award plaque which reads: "Oshkosh '83, Ultralight, Outstanding Semi-Rigid Wing, Aviasud Engineering, Sirocco" is Bernard d'Otreppe, co-designer and technical director for Aviasud Engineering, Puget-sur-argens, France.

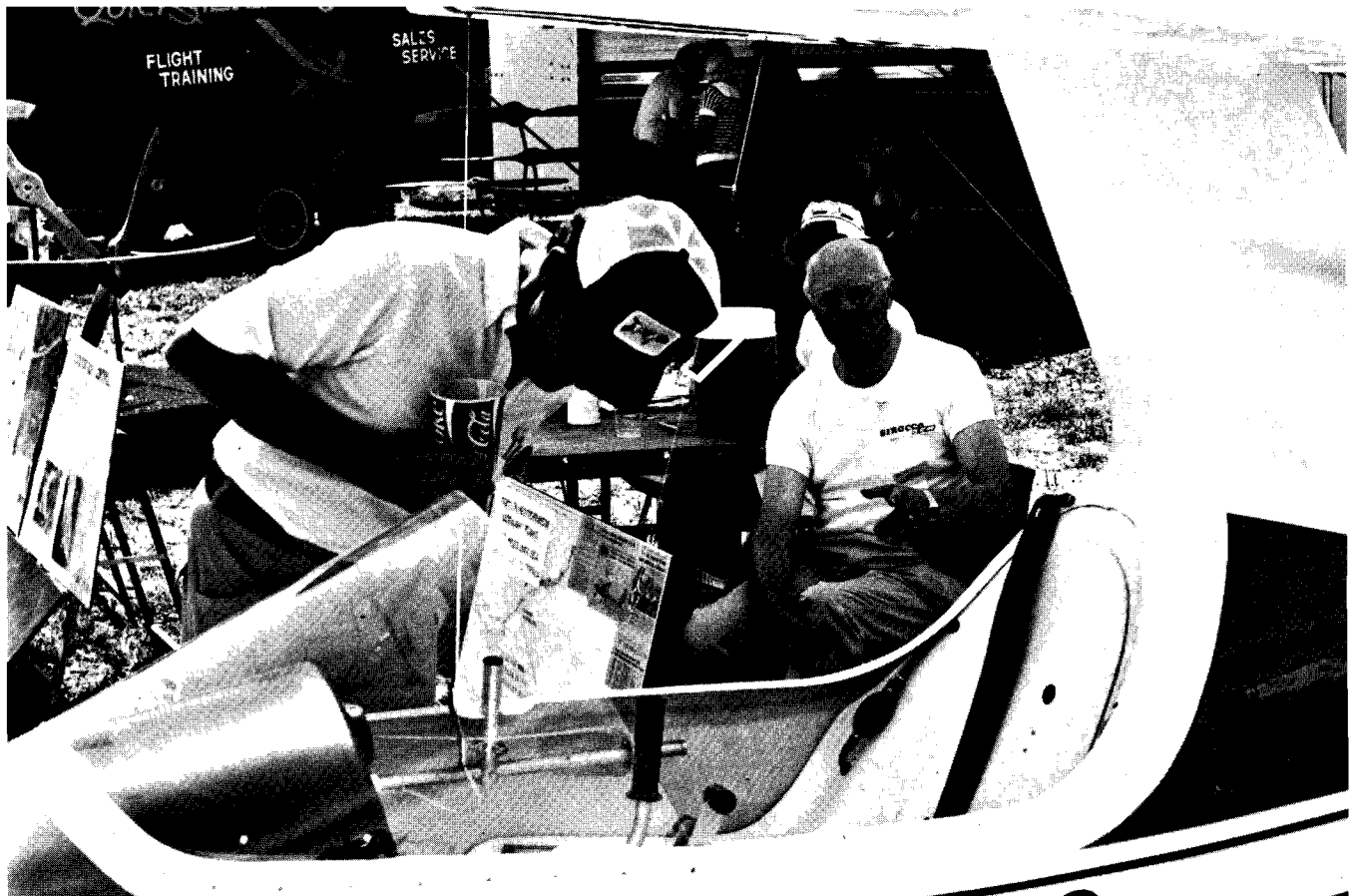
A United States-made "Bainbridge" Dacron fabric of 3.8 ounces/square yard is used for covering the wing and the familiar "sag" between wing ribs is almost nonexistent, due to a simple lengthwise tensioning device located in the wing root. This all translates into better aerodynamic efficiency.



Unique hollow landing gear leg shows well in this picture. Note very smooth finish on fuselage.

The rather unique wing design utilizes two spars with single bracing. The front spar is a patented leading edge D-section box made of glass epoxy which is half the weight of aluminum! Not only is it extremely strong, but it also gives the wing the proper profile for top performance. The rear spar is made of aluminum, rectangular in cross-section, to produce optimum strength in bending and compression.

Curved aluminum tubes form the top and bottom of the wing ribs. They are slipped into sheaths sewn into the wing fabric and in so doing, provide chordwise tension (that's from front to back, folks) on the wing covering.



Helping an interested party with details of the Sirocco is Mr. Jean d'Otreppe (EAA 92583), father of designer Bernard d'Otreppe. Jean is a most delightful gentleman with a lifetime interest in aviation. He lives in Borlez Faimés, Belgium.

Roll control is achieved through the use of spoilers on the outer third of the wing. These were decided upon following exhaustive studies and tests with all types of roll control devices. The lightweight, easily folded spoilers are very effective right down through the stall in addition to no adverse yaw characteristics. You literally have to fly the Sirocco to discover how well the spoilers do their job.

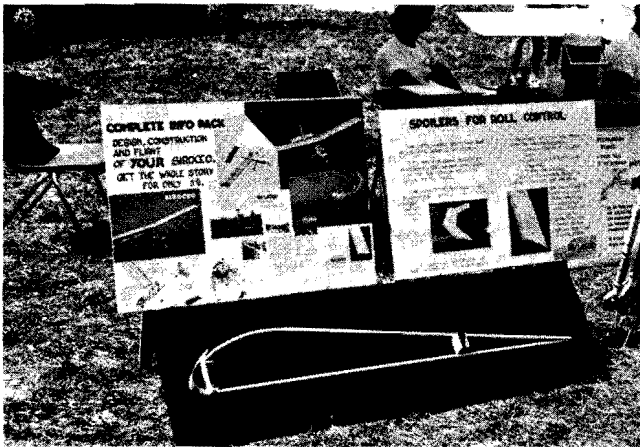
Taking a cue from the sophisticated glider builders of Europe, the two Sirocco designers have come up with a glass fiber composite fuselage that is hand-laminated in a female mold to produce a light, strong structure with an absolutely smooth finish on its sleek, compound curves. Molded into the fuselage at the same time is a wing pod that utilizes unidirectional rovings in the fiberglass to handle compression stresses from the cable rigging and a tapered tail boom that employs Kevlar fibers for strength. In addition, a tail fin is moulded integrally with the fuselage and stiffened with ribs of PVC "Klegecell." A further advantage of the moulding process is a glossy white finish that is ideal for reflecting the sun's heat rays.

An all-flying stabilator, controlled by a push-pull tube handles the pitch axis. A trim tab, working as a servo tab gives a constant, positive feel to the stick as well as taking care of trim adjustments while flying. Both the stabilator

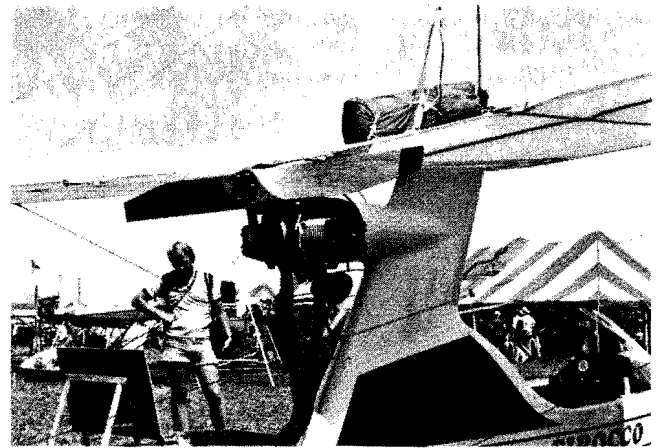
and rudder are constructed of thin glass laminate with foam ribs inside.

For especially rough landing fields, a cleverly designed flexible landing gear made up of two curved glass-epoxy shells joined as a hollow section by wet bonding and rows of rivets, has been engineered to soak up the bumps. The 5-foot, 9-inch track gives a wide margin of safety and lateral stability, even in a crosswind. The nosewheel is centered behind a glass-epoxy fork that gives it proper suspension plus nosewheel steering at low speeds. This unit is locked for takeoff and landings. There is also a brake on the front wheel controlled by a lever in the cockpit.

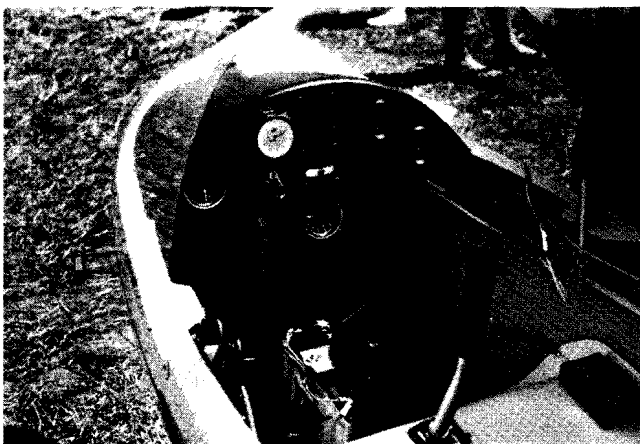
It is obvious that Messrs. Goethals and d'Otreppe have done their homework in the layout of the Sirocco cockpit. Each appointment is functional and tastefully done. The flight instruments are grouped on the left side of the instrument panel while engine instruments are grouped on the right side. The rudder pedals are adjustable for three different pilot heights while the left-hand throttle and trim handle feel natural to the pilot. The control stick in the center of the comfortable seat "fits the hand" to inspire confidence. Other right-hand controls are the lever



Well designed information panel tells the complete story on the Sirocco. The wing rib display clearly shows the glass fiber "D" section on the nose and the aluminum rectangular rear spar.

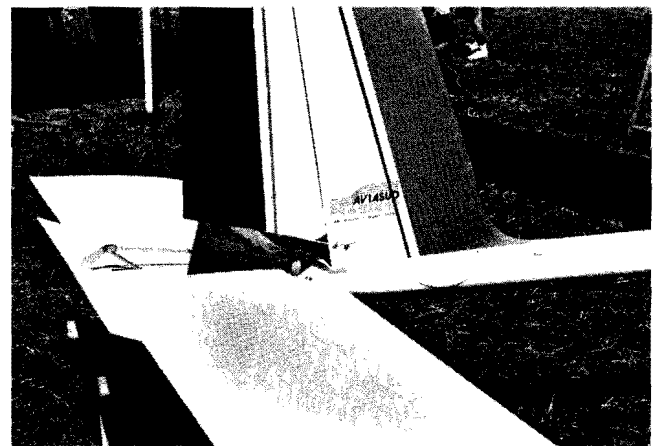


Engine pylon mounts the KFM 107ER engine with electric start and reduction. Exhaust system and muffler are very effective. Note ballistic parachute on top of wing. Wing fabric is well tensioned for a really smooth fit.



Instrument panel and cockpit of Sirocco. Handle on right unlocks for nosewheel steering. Chrome handle is squeezed for front wheel brake. Button on box at lower right is for ballistic parachute. Throttle and trim are on left side.

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Molded tail surfaces are very smooth and close fitting. All-flying stabilator has trimmable servo-tab which is operated by the rod just under the rudder. Fin is molded with the fuselage boom for strength.

for steering and locking the nosewheel and operating the nosewheel brake. The three-point safety harness uses one shoulder strap from right to left where it hooks on the seat belt, much as the newer American cars use. The rather large windshield is made from polycarbonate and really does its job on cool mornings! Even the seat is nicely upholstered and very comfortable for a large person. The area behind the seat is used to enclose the five-gallon fuel tank (optional 10-gallon where allowed).

The Sirocco displayed and flown at Oshkosh featured the electric start KFM 107ER flat twin of 24 hp and using the reduction system with a wood laminated propeller. Alternate engines for the Sirocco are the French made JPX PUL 425 engine of 27 hp and the German made Konig 430 RD three-cylinder radial. Performance with each engine is almost identical except for noise. The Konig is the most quiet of the lot - rated at less than 60 dB at 500 feet at full throttle. The designers feel the electric start KFM will find the best acceptance in the U.S. as it can meet the 254-pound weight limit with the full electrical system intact. Turn-key starting is, in many ways, a safer operation and notably easier for female pilots. Normal TBO on all three engines is 500 hours.

Dismantling the Sirocco for trailer transport requires less than 30 minutes by one person. The wing folds into a 19-foot zippered bag and mounts on the trailer next to the fuselage. The horizontal tail also detaches and in no time, the trailer and machine are ready to roll. Assembling the machine for flight is likewise a quick operation. Because of the type of materials used in construction, maintenance is a simple task and the long life of the machine is assured. Full assembly, maintenance and flight manuals are furnished with each new Sirocco. Even a spare parts catalog is included which, combined with Aviasud's after-sale service, will allow the owner to maintain and upgrade his machine as he desires.

Options available to the owner include VHF or CB radio equipment, additional instrumentation, a wingstand

to assist folding the wings and a ballistically deployed parachute system.

Designed to the specifications of U.S. FAR Part 23, the Sirocco is built to ultimate load factors of +6.7g and -3.6g. In short, this is one tough hombre! From its 12-inch-diameter tires to the top of its kingpost and from the front of the nose pod to the cable operated rudder, the Sirocco is the very latest state-of-the-art in ultralight design and certainly brings credit to the two designers, Francois Goethals and Bernard d'Otrepe of France. Congratulations again for winning the Outstanding Semi-Rigid Wing Award at Oshkosh '83. All of us look forward to your return in 1984.



Specifications for the Sirocco:

Wingspan	33 ft. 2 in.
Wing Area	151 sq. ft.
Aspect Ratio	7.4 to 1
Length	19 ft.
Empty Weight	232 to 254 lbs.
Gross Weight	461 lbs.
Wing Loading	3.05 lbs./sq. ft.
Ultimate Load Factor	+6.7g, -3.6g
Fuel Consumption	1.1 to 1.8 gal./hr.
Fuel Capacity	5 U.S. gal.
Rate of Climb	600 fpm
Stall Speed	24 mph
Cruising Speed	59 mph
Top Speed	63 mph
Takeoff	115 to 150 ft.
Glide Ratio	12 to 1
Min. Rate of Descent	260 fpm
Range	150 to 300 miles

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