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Front cover: Cristiano Athayde launches Marco Winter's DG 808 at the 4th RC Soaring Gliders Meeting, held at the Serra da Moeda mountain chain near Belo Horizonte City Brazil. Text and photographic coverage of this event begins on page 4 of this issue.

Back cover: "Volara 2 Wingeron Afternoon" Dan Veres pilots his Volara 2 at Black Mountain Park, San Diego County. Photograph by Neil Armstrong
Motorola MB855, ISO 100, 1/1429 sec., f2.6
The Volara 2 is available from Ward Hagaman Designs <http://www.wardhagamandesigns.com>


Carlo Simeoni's
12 Bowlus Super Albatross
N 33658

Translation by Ferdinando Galè

FOREWORD

Hawley Bowlus, born in Illinois in 1896, became soon a flight fan. At 14 he won a kite competition in Los Angeles. Soon after he started his career by building a single place glider, as well as models based on the basic design of the Wright brothers.

After WW I (1914-1918), he was impressed by the German sailplanes he had seen in France and UK, and decided to organize his company, the Bowlus Sailplane Company. In addition to the construction of airplanes, the company ran flight training at various airfields around the United States. Charles Lindbergh and his wife were among Bowlus' pupils.

Confronted with the problem of building a well flying sailplane, Bowlus decided to take selected parts from two other sailplanes he had already built: the Albatross (18,9 meter wing span) and the Baby Albatross. From the former he took the outer panel of the wing; from the latter he derived the ovoidal shape of the fuselage and the vertical empennage.

The resulting Super Albatross sported the all moving tailplane and the large landing flaps of the Baby Albatross. Another Baby Albatross, with elliptic tailplane, was built by Howard Kelzey, but without landing flaps.

Bowlus, who died in 1967, is rightly considered a pioneer of American aviation.

Carlo Simeoni is a seasoned builder, hailing out of Trento (Northern Italy). His sons Luca and Matteo have greatly helped Carlo in realizing this scale model, a true masterpiece in its class.

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The design of this scale reproduction was started in Spring 2003, upon suggestion by Sergio Mantovani, a dear friend of mine. At that time he was completing the construction of a 1:4 scale replica of the Harbinger sailpane. This was his last model; Sergio died one month after the trial flight.

The book Segelflugzeuge 1920-1945 by Martin Simons exhibits a 3-view sketch, from which I derived files to be used with an electronic design program (Auto CAD): thanks to this electronic marvel, this project slowly started to shape up.

A 1:2 scale ratio was selected, in order to make something which had never been done before neither by Sergio, nor by other members of our model club Gruppo Aeromodellistico Trentino.

My intention was to realize a replica of the Super Albatross, as done by the American John Sinclair in the '90s of the last century. His model sported a white fuselage, while wing and empennages were covered with Solartex Antik tissue. Birch plywood had been used for the structures.

Pictures and other information were taken from the magazine *West Wind*, April 2000 issue. Care has been taken during the design step, in order to easily load the components into my station wagon.

The original Goettingen 549 airfoil, set at 4,5° incidence, has been selected for the wing.

A linear twist ends at the tip with –4,5° and the Goettingen 617 airfoil.

This choice I have arrived at, according to my experience and to suggestions taken from various publications. The well known Duranti program Profili has been used for the definition of the ribs. The root rib resulted to be 68,5 centimeters long, thus ensuring a large Reynolds number, not too far from that of "full size" sailplanes.

Quite an encouragement was obtained by studying some books by Ferdinando Galè: L'Effetto Scala ed i Modelli Volanti (The scale effect and the flying models), Aerodynamic Design of Radioguided Sailplanes, and Structural Dimensioning of Radioguided Aeromodels. The last two have been published in USA by B^2Streamlines.

Both birch and poplar plywoods have been used to cut wing ribs and fuselage formers by means of a CNC cutting

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Noerdlingen 2 June 2011

The extra-large wing in the construction lab.

machine. This has been designed and built by Horst Niederwanger, a club mate of mine.

Spars have been realized with several layers of 2 mm pine wood; the number of layers is decreasing towards the wing tip. The overall height is 9,5 cm; the box spar is completed with poplar plywood. The flexural resistance of both the spars and the joining bayonets has been verified according to the standard rules.

The wing has been assembled onto an expanded polystyrene tray, while the fuselage has been constructed onto a marble plate, which ensures an excellent precision.

The tail boom is made with an Ergal alloy tube. Although its diameter is a few millimeters smaller than the true scale aluminum tube I had initially selected, it is 50% lighter.

This minimal deviation from the true scale principle is just a minimum toll to be paid for sake of weight saving.

The fuselage is sheeted with balsa, then covered with 160 g/m2 fiberglass tissue.

The wing is covered with 0,4 mm birch plywood by means of a hot pressing iron.

Once a thin layer of glue has been applied to the structure and to the plywood covering piece, I wait for about 30 minutes before joining the two elements. Once the plywood is positioned, it is pressed with with the pressing iron, set at average temperature

Carlo Simeoni with sons Matteo (at left) and Luca (far right) at Noerdlingen Germany after the first flight, 2 June 2011.

and protected by a rag. Gluing is thus rapidly completed. In case of misfit, the plywood can be detached again by applying some heating. Of course this procedure must be first tested on scrap pieces.

Karl Eberhartd, a German friend of mine, belonging to the MFG club (Noerdlingen), was quite instrumental as far as the cockpit cowling is concerned. He addressed me to Herr Ulmer, who is a professional artisan of medical pieces, as well as a keen model builder. He gave me practical suggestions and produced several formed pieces for me. He produces plenty of pieces for major European firms of medical pieces. He did show his collection of over 1000 templates in order to explain to me why he could not keep also my 35 kg template.

Due to the large size of the model, all incidences and settings were controlled in the large laboratory of Horst Niederwanger, a club member of mine, before the finishing operation.

Two Multiplex receivers, RX-12-DR and RX-9-DR are interconnected with an adequate cable, in order to use four antennas. Also, a GPS device has been installed. A total of 13 Hitec 645 analog servos are used. By means of V and Y-type electronic cables made by SM Modelbau, a maximum of five servos with different settings can be connected to a single channel. The whole system

Noerdlingen 2 June 2011; Danilo Boselli (see text), Matteo and Luca Simeoni after the first flight.

includes a PowerBox System BaseLog, powered by two LiPo batteries (8,40 V, 2800 mAh).

Before the test flight, the position of the center of gravity was calculated by means of the Crocco method and a simple computer program. Both systems gave similar results, requiring a 400 gram ballast.

The test flight took place on June 02 2011 at Nördlingen, Bayern, Germany, after having fulfilled all the safety requirements requested by Werner Leidel, security officer on duty that day. These included servo excursions, center of gravity location, and radio guidance range. Danilo Boselli, a friend of mine, and my sons Luca and Matteo have been quite instrumental in this respect.

At the take off, there was a light wind, at about 30 degree from the runway centerline, but without any problem. Climbing was easy, without need of touching the trims.

At about 350 meter the release was soft, while the RC Piper tow model went quietly to land.

After ten minutes of flight, I succeeded in landing the sailplane, in spite of strong side winds.

Also my sons succeeded in piloting the Super Albatross, without any problem.

In subsequent flights, several performance data were recorded, with help of the GPS, namely:

Super Albatross landing at the Cremona (Italy) Vintage RC Sailplanes Meeting (25 September 2011).

Thermal speed	55 to 60 Km/h
Dive speed	100 Km/h (with an elegant overhead loop)
Stalling speed	35 to 40 Km/h
Landing speed	45 to to Km/h

Relevant videos can be found on he following web sites:

<http://www.youtube.com/watch?v=51HPXzAI_9o>

<http://www.youtube.com/watch?v=USuAhSog67E>

All in all, the Super Albatross has been defined “a very slow model.”

By the same token, I am extremely satisfied with this modeling experience, the most demanding in my aeromodelling career. It took over 3000 hours in study, design and construction. My thanks go to friends and my family, particularly to my wife Gemma, for her continuous encouragement.

Carlo Simeoni, Trento Italy
Gruppo Aeromodellistico Trentino, Trento Italy

SPECIFICATIONS

	“Full size”	Model
Wing span, b	13,20 m	6,60 m
Wing area, S	11,61 m^2	2,50 m^2
Length, L	5,76 m	2,88 m
Weight, W	292.500 g	24.800 g
Wing loading, W/S	25.200 g/dm2	9.920 g/dm2
Scale ratio		1:2