

On the ‘Wing... #139

## Nemesis

*An all molded hollow core F3B machine by Vern Hunt.*

Vern Hunt has been involved in building and flying tailless models for about ten years, and we’ve been corresponding with him for some time. Late last year he sent us a photo of his various renditions of Hans-Jürgen Unverferth’s CO8. The CO8 design incorporates flaps and has a broad speed range and very low landing speed. Vern’s aircraft retain these flying characteristics.

Vern reiterates what we have been saying for many years, “Flying wings, if designed properly, can be extremely stable and can core out a small thermal with the greatest of ease. The ability to stand on a wing tip and tightly turn is a flying wing's greatest asset.”

As you’ll note from the included photos, he wound up building several of these machines - a 60 inch span hand launch, one with two meter span, and a few full size versions. All but one fly extremely well. The one exception required a rearward CG because of insufficient wing twist, and this created a very twitchy aircraft which was difficult to pilot.

Based on his experiences with those several variations of the CO8 design, eight in all, Vern set out to design and construct the killer thermal ‘ship, Nemesis, which would be capable of participating in the F3B environment. The eight predecessors turned out to be wonderful learning tools, as Vern became a more proficient builder with each one constructed. He finally came to the conclusion that



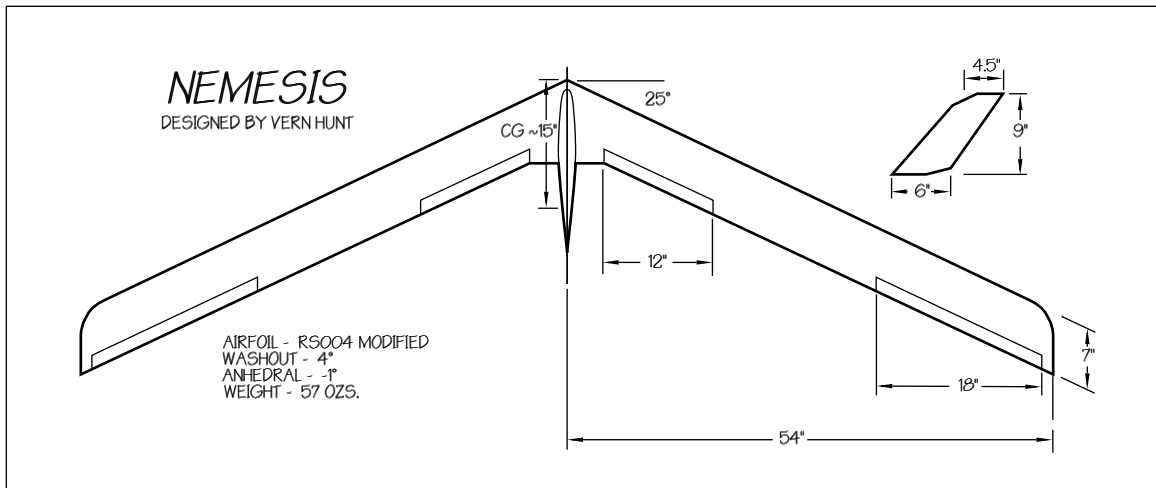
Vern Hunt and a few of the various Nemesis predecessors.



LEFT: Vern Hunt and his Nemesis. Note the high aspect ratio.

BELOW: Vern's Nemesis on the ground. The fuselage is faired into the wing root, and the winglets are mounted near the trailing edge of the wing tip. Beautiful!





producing an all molded carbon and Rohacell® wing would be faster than foam and balsa, requiring less time in the shop and giving him more time to fly. (The time saving aspect of this plan did not come to fruition, but read on.)

Vern completed construction of the Nemesis plugs in December, and began manufacturing molded parts in January. After the molds were made, another six weeks were spent in experimenting with various fabrication techniques to obtain a light strong structure. After several attempts, Vern felt he had arrived at the proper mix of carbon, Rohacell®, and S-glass.

The result of all of this time and energy is an all molded hollow core swept wing glider which could easily be a small scale prototype for a full size glider. He admits the molding process has taken substantially longer than anticipated, but the pictures of the first flyable model which are included here show that all of that extra effort paid off. This Nemesis is still a bit heavy for Vern's taste, but he's sure some adjustments to the layup schedule will result in weight savings for future models.

The planview contains most of the necessary data, and Vern shared some of the finer points of the design. The fuselage has an elliptical cross-section and is based on the NACA 65,3-019 airfoil (used as the root airfoil on the Northrop N-9M.) The control system consists of elevons and flaps, with one servo for each surface. Two tow hooks are on the under surface of the wings, 25 inches out from the center line and 1/4" ahead of the CG. Winch launching is with a V bridal. The anhedral is necessary - without it the 'ship will not turn.

Flight testing of the Nemesis is going on now, and the 'ship seems to be fulfilling all of Vern's expectations. He's excited about the prospect of flying some cross-country with the Nemesis and has promised to keep us updated.