

BUILDING THE MAGNI M-16

Lee Blazejewski

This article is a celebration of gyros in general and the Magni gyro in particular. Gyros seduced me gradually over the years, but as I returned the overtures, I was repeatedly frustrated, my love never requited. Like so many before me, I just couldn't get 100% comfortable with those landings. All of my gyro time had been exhilarating; much of it under the watchful guise of talented CFIs to whom I owe many thanks for their patience. But I wasn't soloing, and I wasn't comfortable with the prospects.

Though not feeling up to crowds that day, at my wife's urging, I attended the local annual Rotorfest at the American Helicopter Museum in West Chester, Pa., in October of 2000. The program highlighted autogyros, featuring a flight by Steve Pitcairn in his father's historic PCA-2 autogyro. Other various sport gyros, with which I was familiar, were also in attendance. But it was the Magni on static display that really caught my eye. After Greg Gremminger, the owner/builder, completed a masterful display of aerial maneuvers in the show, I just had to learn more. Eaves dropping on Greg's informative spiel, I learned the Magni flew with the stability of a Cessna, while still maintaining the agility of a gyro, as he had just demonstrated to the crowd.

At the time I was a private pilot with 36 hours of gyro dual, and I never heard anyone favorably compare a gyro to a stable fixed wing plane. Greg found the time to fit me in for an introductory lesson. When he allowed me the reins at altitude, my first reaction was stunning. This isn't a gyro; it's a platform! Steady as a rock, indeed the stability was not hype! I had to learn more.

Two days later bidding good-bye to my wife, I boarded the plane bound for St. Louis, Missouri. Competing for rental cars with the hoards of political insiders at the third presidential debate proved an unexpected rival. No matter. Drawn inexorably to the Magni, I finally arrived on her USA home turf in



What it's all about -- Lee and Debbie Blazejewski in their completed Magni M-16

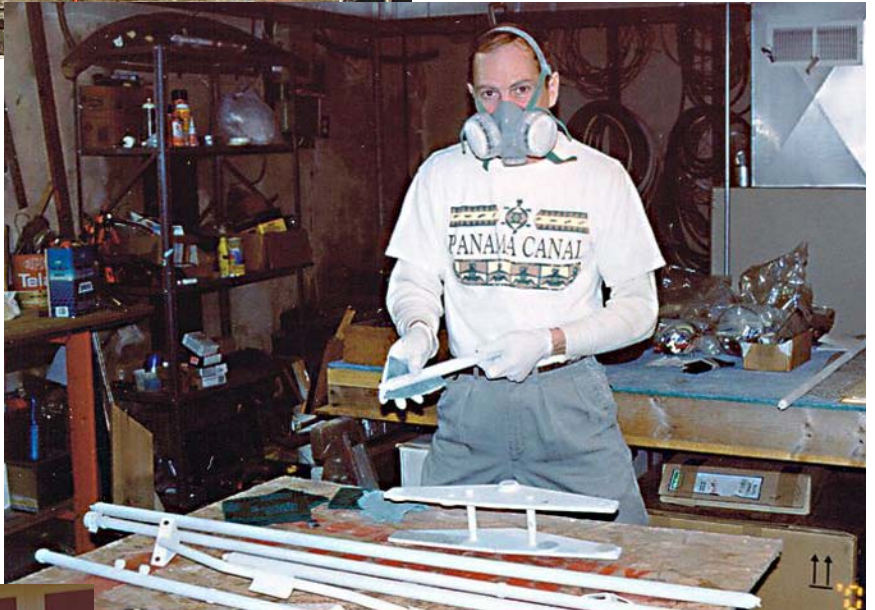
Historic Ste. Genevieve about an hour south, along the Mississippi. The next morning Greg allowed me some quality time with the Magni. After 2 hours of take offs, descending turns, spot landings, slow flight, and ground reference maneuvers, it was clear the Magni was unlike any other gyro I had flown. She made me look and feel good; earning soloing privileges would be assured in this machine!

I didn't fully appreciate it at the time, but what I had experienced that morning was revolutionary. All of Europe had been enjoying the stability and docile flight characteristics of the Italian Magni's design for two decades while many others struggled with Benson clones. I was close to earning my solo in a traditional design gyro. I could stay the course or join the revolution.

It must be clear to you by now that I am not a gifted gyro pilot. Gyros can certainly be humbling, but persistent training will pay off for most aspiring pilots. The Magni proved itself to be a superior (more forgiving) trainer for me. I wanted to fly for the fun of it, not in trepidation. In the Magni I saw and felt what gyros can do at their best, with the not so best pilots, like me, at the helm who wish to



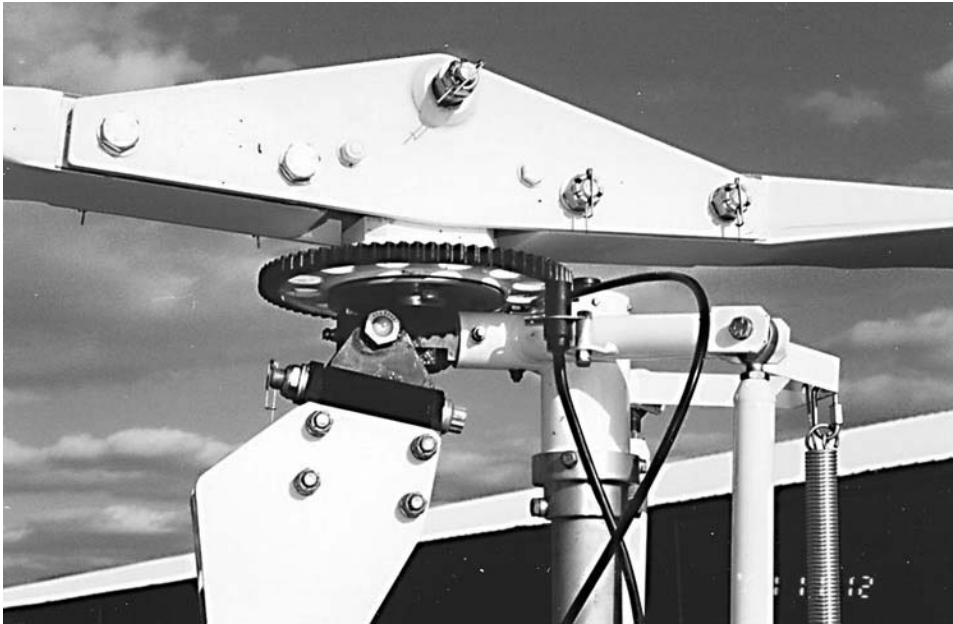
Two Magni kits are a welcome site. This is where the work starts



Prepping the prime coated parts for the Imron painting



Prepping under side of the horizontal stab



The KISS Method (Keep It Simple, Stupid) works for me.

experience their flying magic.

Greg explained that his mission was to introduce anyone interested, to the safer, more stable, and easier to fly gyro designs as embodied in the Magni. The catch hung on its importation from Italy and construction of a new kit, never before built by a USA customer. Oh boy, here we go again, another kit building! And no 51% FAA approval yet!! As I sent it off, my wife informed me I shouldn't be surprised if I never saw my hefty deposit again.

Well, let me say right now that Greg Gremminger, the person behind Magni USA, provided building support and assistance second to none. His electrical engineering background coupled with probing insight and lucid explanations steered me safely through the occasional hang-ups, some unfortunately of my own doing. Though my Italian proficiency is nonexistent, the broken English e-mail translations and emergency overnight shipping of critical parts left no doubt the family run Magni operation in Milan, Italy, takes great pride in customer satisfaction and safety.

Two of us took the Magni building challenge, which provided some friendly competition and builder commiserating through the project. Manfred is in Connecticut and I am in Pennsylvania. Though both kits were two-person machines, mine had dual controls, his a turbo. Greg would have his hands full with two different models to support. We anxiously awaited the kit arrivals. The ship had been delayed. Would everything arrive in time for the FAA inspection in Missouri? Next came land

transport from Virginia to Mo. and back to the East coast. Construction was finally underway! By the way, the 51% letter did indeed come through early in the process.

The Magni is truly a quick build kit. I did everything possible myself, including the panel and radio wiring. Time to completion was 3 months and about 280 hours. That included working through the new factory kit uncertainties and my blunders. The frame is 4130 chromoly steel, completely welded and prime painted. Fiberglass work is exceptional. The fuselage and wheel pants were primed. The amazing empennage is a light yet sturdy one-piece masterpiece of fiberglass workmanship with lots of surface to prep for painting.

Everything you need is included, even the EIS (engine information system from **Grand Rapids**

Technology); radios and transponder of course not included. My engine is the reliable **Rotax 912** ULS high compression 100 hp. It is more than adequate for most everyone. The more powerful 914 with turbo is an option. The complete wiring harness with professional connector plugs and protective braiding is consistent with the high quality materials that comprise the kit's make up. Mostly, you



Well supported enclosure



Laying out the real panel from the card board pattern

need to assemble it according to the simple assembly manual text and expanded diagrams provided by Greg, along with hundreds of

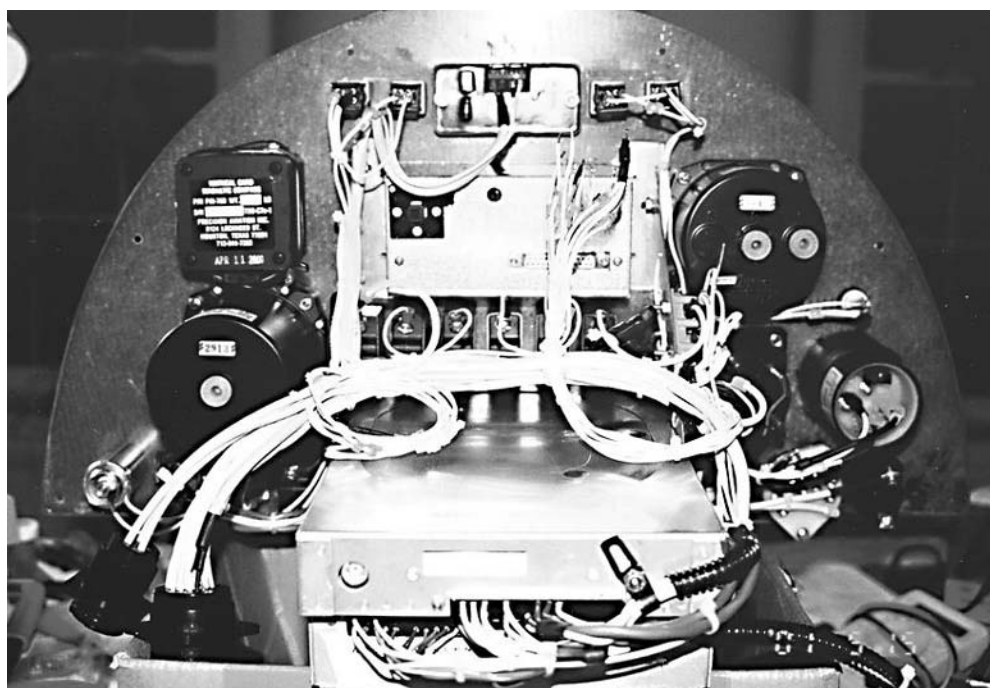
Wiring almost complete

photos on the computer CD that permit enlargements for those hard to visualize components. You can't make it easier than this!

Magni wishes to maintain

its excellent safety record and insists on uniform construction to be monitored by Greg. For instance, you cannot purchase a frame and retrofit another engine. Having this requirement was of great comfort to me and to my wife. Someone wanted to make sure I got it right the first time! Even the wiring and hose routing is suggested in the manuals, so you need not worry about conflicts later on.

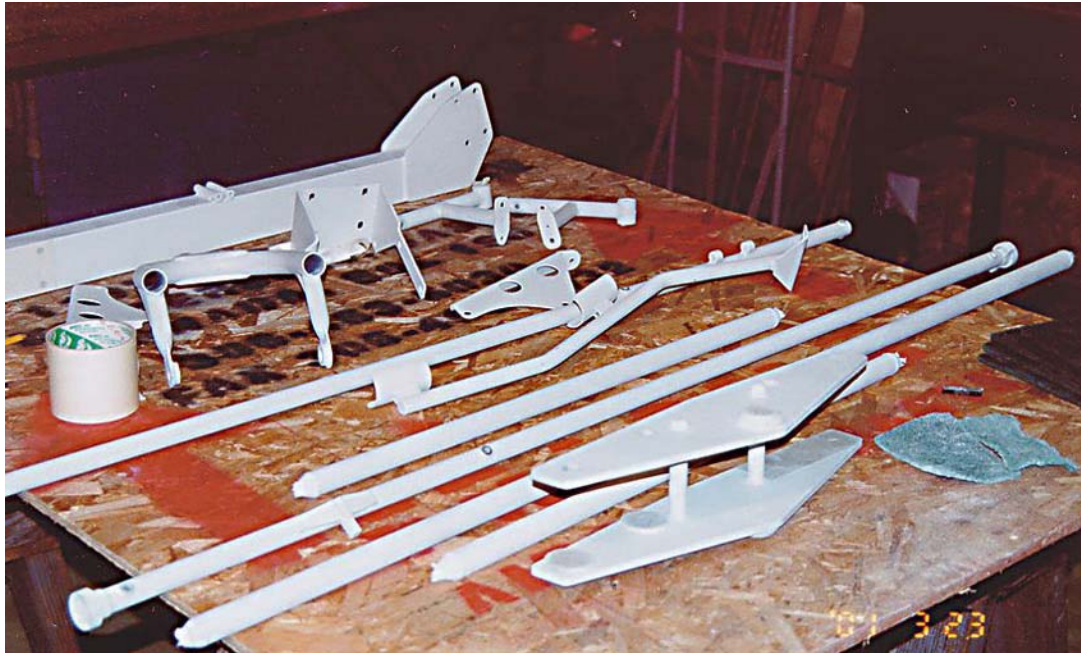
Notice the unique rotor design. The all steel head appears too small and simple at first, compared to a conventional head. You can keep looking for tracking adjustments. They are absent; because the rotor balance is so carefully calibrated at the time of construction, they are not necessary. That alone speaks tons about the attention to detail by the Magni



Panel space is ample for radios and the other supplied gauges.

factory. Notice the low carriage of the rotor head. This along with the rigid 28' carbon fiber blades results in a small coning angle minimizing stick shake.

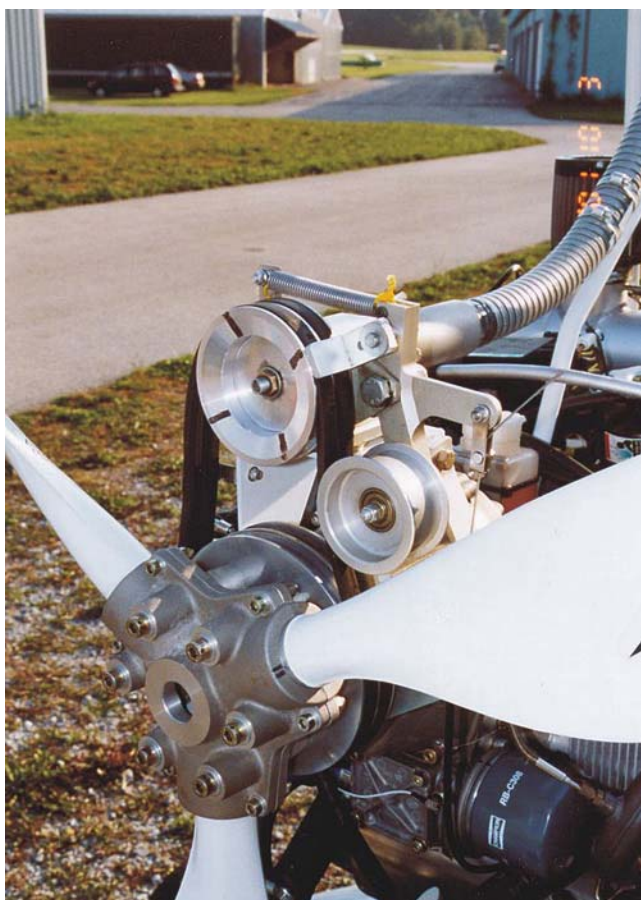
Ask Greg about how the "large volume horizontal stabilizer



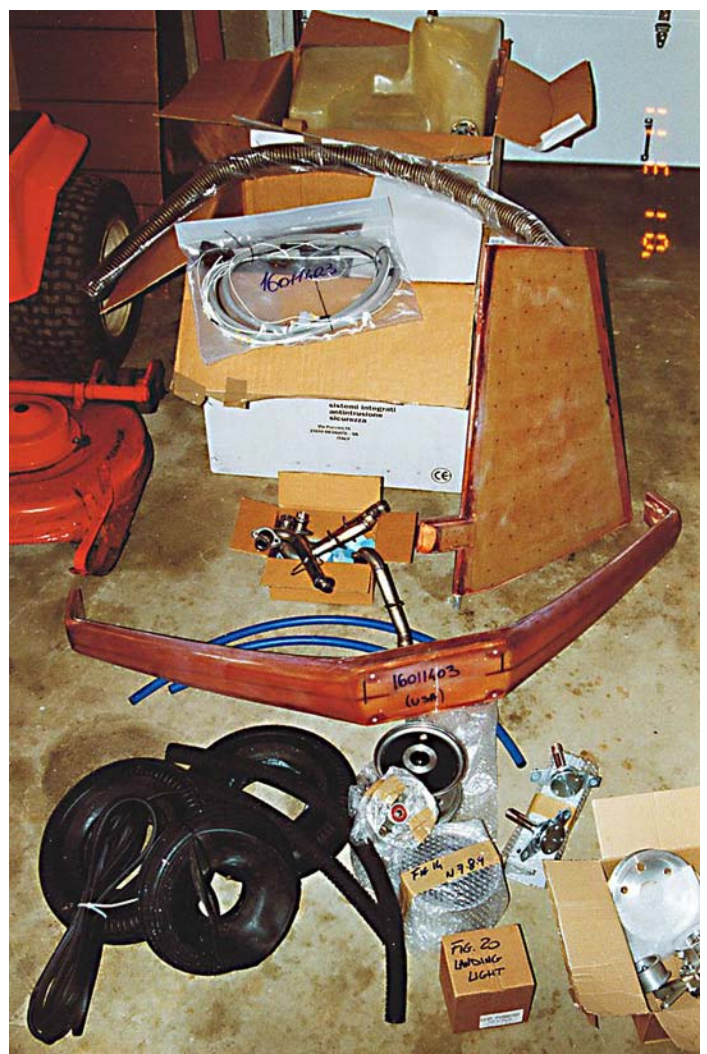
Metal parts are prime coated.

statically balances the propeller thrust line and airframe center of gravity, and how the longitudinal CG is aerodynamically held forward of the rotor lift vector to maintain dynamic longitudinal stability," if you dare. I can just tell you it is darn easy to fly.

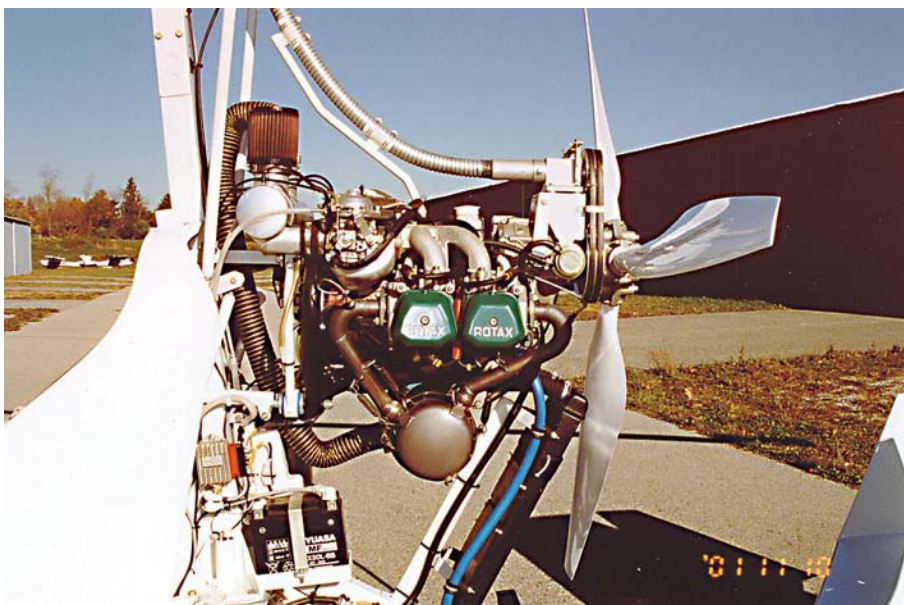
Forget the long wheel-balancing taxi to carefully load the rotor blades as you nurse in the power. Magni only flies off grass in Italy, so a soft field takeoff is the standard. The brakes easily secure your spot on the runway, permit-



The robust prerotator can spin the rotor above 220 rpm before you even start taxiing.



Note fiberglass leaf spring landing gear.



I have thoroughly enjoyed every gyro flying experience, learned many valuable lessons from all my instructors, and don't regret any of my training. But I am really glad to be flying in my own Magni gyro, and my wife enjoys it too!

Contact Greg Gremminger at www.Magniusagyro.-com to learn more about the Magni gyro.

View Manfred Leuthard's gyro web site for a photo gallery of the M-14: www.mleuth@acelosangeles.com

Lee Blazejewski can be reached at Blaze@CCIS.net

The 100 hp 912 ULS Rotax is a perfect match. With an oil radiator, water cooled cylinder leads and air cooled cylinder, it is virtually impossible to over heat.

ting rotor prerotation well above 220 rpm! With stick full aft, release the brakes. Smoothly but quickly bring in full power; and before you know it, the ground is disappearing below you. (Don't try this without training.) To put it bluntly, when Greg disembarked for my first solo, I quickly shot almost straight up at 70 mph before taking stock in the situation, throttling back and leveling out! The Magni is very forgiving to novices!

Of course it is not necessary to use maximum performance take offs every time. Also enjoy varying the types of landings. Magni will let you try it all, even in the early going.

As my tires will testify, not every landing has been textbook; some were down right scary. No matter what I have thrown at it, the Magni has never let me down. Never once after 110 hours, much in strong gusty crosswinds, has the wheelbase ever felt unsteady.



The completed Magni M-16 fuselage, waiting for the next step.