AOPA 2010 FUN TO FLY SWEEPSTAKES


# Panel with a PUNCH

## Sharp, easy-to-use avionics complement the Fun to Fly Remos

**BY JILL W. TALLMAN**

Do you love glass cockpits? Do you avoid them? I was one of those "last one on Earth to give up steam gauges" pilots until my boss figuratively (and literally) handed me the keys to the 2010 Fun to Fly Remos last year. I still don't love glass, but I've made my peace with it, and I have Dynon Avionics to thank.

If you don't know the Dynon name, that might be because you fly a certified aircraft. Dynon is much better known among the light sport and experimental/homebuilt communities. The Woodinville, Washington, company designs and manufactures electronic flight information systems and engine monitoring systems (of which it has sold 10,000 units) as well as angle of attack, autopilot, and integrated glass panel systems (see "Avionics: What's the Difference?" March 2009 *AOPA Pilot*). Dynon contends it is the biggest of the experimental avionics manufacturers and says it ships more glass panels for single-engine piston aircraft than Garmin. Thirty percent of its business is overseas, purchased by LSA manufacturers in Europe as well as homebuilders in the United Kingdom, France, and Brazil, among others.

Dynon's EFIS-D100, EMS-D120, and autopilot make up the Remos's ultramodern panel. For the pilot who's flown glass, Dynon's seven-inch EFIS-D100 and EMS D-120 displays won't hold any surprises. The EFIS shows airspeed on a tape to the left, altitude to the right. Headings tick across the top of the screen rather than in an arc; your current heading is a digital readout. Parallel lines above and below the artificial horizon

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are pitch indicators; each line indicates 5 degrees of pitch. Just above these lines is a roll scale. Small clusters of data to the right include winds aloft and outside air temperature/altitude/true airspeed. You can customize the display to a certain extent—for example, you can add a horizontal situation indicator to the mix.

The EMS displays engine rpm, manifold pressure, oil temperature, exhaust gas temperature, cylinder head temperature, fuel level, fuel pressure, and fuel flow. Color gauge depictions are accompanied by precise numerical readouts. The EMS tends to hog my attention, but I like having a fuel gauge that tells me not only how many gallons per hour are being burned, but also how much fuel remains and how long it will last at the current power setting. I can verify this by checking the clear fuel tube that runs behind the passenger seat. Got fuel? You'll see a corresponding level on the tube. If that tube and the gauges are in cahoots, all is good. Another plus for the EMS: You can split the screens into two-thirds/one-third configurations and use that one-third to display time, flight and trip timers, and engine times. All of the units can be programmed to display a series of checklists.

My introduction came in the cockpit at 7,500 feet msl, flying back to Frederick, Maryland, from Tampa (see "Jewel in the Crown," February 2010 *AOPA Pilot*). We all know the cockpit isn't a good classroom, and I've since spent some time on the ground with my nose in the manuals to discern the finer points of the system. But really, it doesn't take much study.

The units are self-contained, so there's no additional learning curve to figure out how to set radio and VOR frequencies on the Garmin nav/comm. From there, it's a matter of getting to know the EFIS and EMS through the menu systems, which are accessed and navigated through six buttons at the bottom of the screen.

The controls for the two-axis autopilot run vertically on the left side of the displays. You can use EFIS menus to set heading and altitude bugs, change modes, or turn the autopilot on and off. It can be operated in heading, ground track, GPS navigation, and altitude modes. Push on the 180-degree turn mode and the airplane will engage in altitude and track hold modes and will turn 180 degrees from your current ground track, and will remain in track and altitude hold mode.

The Dynon system is modular, which means that upgrading might consist only of adding a module instead of a whole new cockpit instrument. That keeps costs down for the owner, says Nick Boger, vice president of engineering and chief operating officer. The system is expandable, too. A synthetic vision package, known as SkyView, was introduced in November 2009 (see "Synthetic Vision for a Non-Certified World," below). Other options under development include weather and ADS-B. When contemplating any such modifications, bear in mind that S-LSA aircraft require a Letter of Authorization from the factory/importer, and an authorized service center must do the work.

Glass panels can be a distraction at first. That's because they provide an incredible amount of information, and if you aren't careful, you tend to fixate on them instead of looking outside. AOPA E-Media Director Alyssa J. Miller, another glass neophyte, got caught in that snare when she was getting her Remos checkout. "There is so much information available on the screen, so many moving numbers and lines that it immediately draws your attention," she says. She continued to chase the numbers for the first three hours. "Then, on short final, Senior Editor Dave Hirschman, who was flying with me, said 'Stop looking inside, just fly the plane!" From that moment on, I was able to treat the glass panel in the same way I fly with traditional gauges."

Hirschman has undergone a sort of trial by fire with the Dynon as well. While he's spent many hours flying glass—most recently the Avidyne system in AOPA's 2009 Let's Go Flying Cirrus SR22—he had never instructed a student pilot in a technically advanced aircraft like the Remos until he began working with U.S. Marine Sgt. Michael Blair (see "Turning Bulldog Loose," July 2010 *AOPA Pilot*).

"Dynon is showing student pilots the value of glass-panel avionics and ensuring they will never voluntarily revert to analog gauges in their future flying careers," Hirschman says. "The display is bright and easy to read, even in the direct sunlight, and maneuvers such as steep turns can be performed with great accuracy because the 'instrument lag' inherent in analog gauges is a thing of the past." He also praises the angle-of-attack indicator, calling it a helpful reference when showing the approach to a stall. "The only problem with the Dynon is that its screen is so eye-catching and mesmerizing that the pilot's eyes are constantly drawn to it, and it takes effort to look away," he adds.

The Dynon display didn't mesmerize Associate Editor Ian J. Twombly because he has flown aircraft with glass cockpits designed by several different companies, including the ubiquitous Garmin G1000 and the Aspen Avionics EFD1000 installed in AOPA's 2008 Get Your Glass Archer. These systems, designed for certified aircraft, offer more than the Dynon display, he points out—but then again, "it doesn't cost nearly as much, either. It's so capable that it's a bit of an overkill in an LSA, but the display attracts new pilots who feel that aviation technology should at least marginally match that which can be seen in everyday life." Twombly has a minor quibble with the look of the display, which he calls "pixilated."

No matter where you stand on glass, there's no denying Dynon brings an incredible amount of information to the Remos's cockpit, and the autopilot eases workload on long trips. Overkill for a light sport airplane? I disagree. Once you, future winner, have flown a few times with this setup, and put it to work on even one long trip, you may find yourself joining the ranks of the glass revolution. AOPA

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### Synthetic vision for the non-certified world

**At last year's AOPA Summit in Tampa, Dynon rolled out another addition to its product line: SkyView, a system that offers a primary flight display, synthetic vision, and a terrain map as standard features. An engine monitoring system and engine sensor kit can be added to make a complete glass-panel system. Components are priced individually, but an "ultimate system" consisting of two 10-inch displays, a redundant ADAHRS (air data attitude and heading reference system), engine monitor, and back-up battery, costs $9,980. Synthetic vision for IFR-certified experimental/homebuilt aircraft? Of course. But for the LSA market, flown in VFR conditions? Yes indeed. "There are a lot of folks out there who want it in their back pocket [who] never plan on flying in IFR conditions," says Nick Bogner, chief operating officer and vice president of engineering. And, he adds, synthetic vision isn't simply a tool for instrument flying. "You can know with our instrument if you are going to clear a mountain or a ridge or a valley. It's actually a bit broader than cloud avoidance."**