Synthetic Vision For The Masses

Both Aspen and Garmin have add-on software options to enable synthetic vision on their PFDs. Avidyne (top, at right) is about to release a synthetic vision add-on with its R9.3 software, which in my estimation beats the competition hands-down. Its feature set emphasizes terrain features in the runway and airport environment and it will play on Avidyne's retrofit PFD, to be released later this year.

In a nutshell, synthetic vision replaces the traditional blue-over-brown background of the PFD's attitude indicator with a real-time, computer-generated three-dimensional view of terrain, obstacles and overlaid traffic, if interfaced. There's also a full-screen display where the EHSI is overlaid over the syn vis. If this sounds like the epitome of situational awareness, it is. But it's also a setup for information overload.

Part of the problem is that the unfamiliar don't know what they're looking at. Those who've added synthetic vision to their PFDs admit to a new learning curve as they try to digest all the information the screen throws at them. Compounding the struggle is the amount of data that's crammed into a small screen. That alone supports the argument to invest in a two-screen Aspen setup, which gives you the option of configuring the second screen for synthetic vision, cleaning up the busy PFD in certain conditions. (Speaking of cleaning up the screen, synthetic vision systems are highly user-configurable, and there's the option of simply turning it off when things get a bit too cluttered.

And when it comes to clutter, Garmin's synthetic vision (middle, right) has the advantage over Aspen's ESV, given the bigger screen spreading it all out. Garmin's SV won't play on the MFD portion of the system like Aspen's can. However, a PFD field of view can be presented on the MFD's navigation map as a top-down image corresponding to the view shown on the PFD.

Another SV benefit is the ability to overlay traffic targets in 3D. In my view, Garmin's traffic symbology is easier to interpret. Maybe it's the larger traffic tag or larger screen, but 3D traffic can be the savior for those paranoid of a mid-air.

One driving factor for synthetic vision is to get that cool synthetic runway. Some users new to syn vis express disappointment that these synthetic runways don't come into view until the final stages of approach for landing, instead hoping they can see a virtual runway well before the FAF. To be sure, the runway feature of synthetic vision can be a huge aid to situational awareness. Garmin's SV runway shows in green for soft-surface runways, such as turf, and gray for pavement. A runway that's associated with an approach in the loaded flight plan gets an extra outline in white.

The big controversy surrounding Aspen's synthetic vision is the FPM, or flight path marker. The FPM is an integral part of flying any syn vis system and represents the ground track of the aircraft, *not* its actual flight path. Many owners incorrectly fly the FPM as a flight director command bar of sorts, which isn't the way it's supposed to be flown. Instead, the FPM is intended more as an aid in avoiding terrain and obstacles. Look for an article dedicated to flying synthetic vision in a future issue.