RETROFIT GLASS AND SINGLE-POINT FAILURES

We've covered the PFD's potential for single-point failure before but it's worth reviewing again because it comes up in every glass retrofit consultation. Recently, I ran into an owner who had considerable experience flying a Piper Meridian turboprop with Avidyne's Entegra glass cockpit and now had to ferry an Aspen-equipped Cessna Centurion across the pond. Our discussion turned toward PFD-system failures and how the two airplanes differed.

For starters, the Meridian has dual PFDs fed by separate pitot and static systems. One pitot/static system drives the pilot's display while the other feeds the screen on the copilot's side. That's a lot of redundancy in both data source and hardware, but it's rare in the retrofit world.

Aspen's air-data computer takes a single pitot and static input plumbed directly into the back of the display. Even dual-screen Aspens configured for reversionary fail-safe are vulnerable when it comes to pitot/static failure.

And so it goes with a pitot-static blockage. Theoretically, an iced-up pitot tube could disrupt the source to the system and remove the airspeed and altitude data. But to the unsuspecting pilot, it also can deep-six heading and attitude. Aspen says they are working on a way around this single-point failure.

Garmin's PFD with remote and independent air data, heading and attitude resolution doesn't exactly come without worry in the paranoid minds of belt-and-suspender types, either. That's because a single G500 offers no backup for single-point display failure. If the screen fails, you're now on your steam-gauge backup instruments.

It doesn't matter if it's an electrical failure or equipment failure. When the juice stops flowing to the G500, it'll go dark, leaving your peepers on those strategically-placed backup instruments, right?