

JUST HOW ACCURATE?

by Robert M. Dodenhoff

After transitioning to our first-generation Cirrus SR22 approximately 2.5 years ago, my wife and I have been extremely satisfied with the plane, but not so much with the performance of the original equipment fuel gauge. As an observation, the fuel gauges in most of the older general aviation aircraft I've flown are less than accurate, but I expected more from the system in our Cirrus.

Prior to each flight, I dipstick the tanks to verify the amount of fuel that's present. Before engine start, I set the measured fuel quantity within the Avidyne MFD fuel page. The integrated fuel totalizer keeps track of the amount of fuel that's utilized during the flight, based on fuel flow. I keep careful track

of the time versus fuel burn, while also keeping track of the time I change the tanks to maintain fuel balance. In our plane, I've learned to accept that the right tank fuel sensor can fluctuate in accuracy—anywhere from

as little as two to as much as 10 gallons, while in level cruise flight.

Recently, we were traveling with all of the seats filled, which meant departing with fuel filled only to the tabs in each tank to stay within specified weight and balance parameters. During the planning stage, my calculations revealed there would be sufficient fuel for the trip, plus enough to go to the alternate airport, if necessary.

Approximately five minutes prior to landing, a low fuel warning annunciator came on. It was both disconcerting and distracting. Obviously, several questions arose: did I miscalculate? Was there a fuel leak from one of the sump valves, or was it just the inaccuracy of the fuel gauge? We landed without incident and I immediately dipsticked the tanks again. Turns out my original calculations had been



correct and we had plenty of fuel remaining in the tanks.

Clearly, having the bogus fuel warning lamp illuminate was not a welcome distraction during the time of a high-workload approach and landing. The experience was enough to commit to the sizable investment of the CIES digital sender retrofit, (which also included the FL202G digital gauge.)

First, the presentation. There's far more useful data on the digital display than what's on the mechanical stock gauge. For instance, I like the dual-page presentation, including the page that simply reveals the fuel in each tank, measured to the tenth of a gallon. The other page includes a graph that outlines the fuel burn of each tank. Overall, the system is much better than the OEM setup. But it's not perfect.

A recent flight revealed a 1.7-gallon gauge discrepancy than what was computed from the fuel totalizer and from a crude measurement taken with the measuring stick. There are a few variables that could account for at least some error, including the need to extrapolate in-between readings taken with the fuel tank measuring stick.

While relying on fuel gauges shouldn't be a substitute for performing preflight and inflight calculations, the tighter accuracy of the CIES sensor in the Cirrus is a better resource than what we had before.

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