

WHEN BATTERIES GO BAD

Just about everyone who has an in-flight electrical failure blames the alternator or generator, but my experience shows that many failures are caused by other items capable of bringing down the electrical system.

Take the lead-acid battery, for example. In the typical light airplane, the battery plays two main roles: 1) It supplies current to the alternator's rotor field windings to produce a magnetic field; 2) It acts as a capacitor to both draw and smooth the rectified power (current) from the generator/alternator.

If a plate in your battery shorts out, it can create more demand on the electrical system, forcing the voltage regulator to push the alternator to put out as much as it can—the alternator will try, but ultimately will drop off line because the overvoltage relay shuts it down.

It happened to me once on an IFR flight in a Piper PA-28 Cherokee. The battery shorted and quite suddenly all my nav/coms went dead, as did my turn coordinator and lighting system. But the alternator was working: The draw was 60 amps, which made no sense if I had no power. I shut down the system to reset any breakers, but even with just the master switch on the system showed 60 amps being drawn off the alternator. No good.

I shut it down immediately, and, lacking instruments in instrument conditions, did what the FAA tells us all to do: turned 180 degrees and flew myself back to the marginal VFR airport I came out of. Once on the ground, I called ATC and told them what happened. They were happy I was safe. As for the battery? It was misshapen—bowed and ready to spill acid all over the airplane. The voltage regulator? Fried. Alternator? Okay. Caught it just in the nick of time.

