when it lands, but tires make very poor conductors of electricity. Along comes the flight line attendant driving the fuel truck.

Unless the aircraft is grounded to both the fuel truck and the earth, a spark will likely jump from the aircraft fuel tank to the hose nozzle, causing an explosion. While most pilots agree that proper grounding procedures should be followed when returning from a flight, many believe these procedures are unnecessary when refueling an aircraft that has not been flying. The very motion of the fuel flowing through the nozzle creates static electricity and may cause a spark between the aircraft and the refueler. For that reason alone, proper grounding procedures always must be adhered to when refueling.

Another refueling concern is contamination. This problem can largely be avoided by simply buying fuel from a high-volume, reliable dealer. Fuel that sits for a long time tends to collect various forms of contamination. And FBOs that obviously don't keep up their facilities are unlikely to be doing a very good job of maintaining their fueling system.

Prudent pilots will always assure that the aircraft is fueled properly by monitoring the fueling procedure and actually checking the fuel themselves. Don't insult the flight line attendant by being too obvious, or the quality of service may diminish rapidly. Instead, talk about the weather or sports, but keep one eye glued to what's happening at all times. Check and double-check fuel pumped in your aircraft; there have been instances where fuel trucks have been misfueled! To help prevent misfueling, have all refueling ports distinctly labeled with the fuel type and install misfueling-preventive hardware available for most aircraft. This two-part system of preventing incorrect fueling requires the installation of restrictors that decrease the size of the aircraft fuel tank opening. All new aircraft will come factory-equipped with the new fueling ports. The other part of the system, an oversized jet fuel hose spout, is being installed on refuelers by FBOs around the country.

Finally, never trust fuel gauges; they are notoriously inaccurate. You should purchase or build your own dipstick for your tanks and always check fuel quantity that way. Even when you tell a flight line attendant to top off the tanks, there is no guarantee that it will happen, despite the best efforts of the refueler. For one, unless the aircraft is sitting dead level on the ramp, the result can be a partially fueled tank. There are also nooks and crannies in most fuel tanks that will trap air. Wherever there is air, there isn't fuel. It's not a bad idea to shake wings after refueling, then top it off again if you truly want full tanks. The point is that you don't always get what you think, so take every possible precaution and build a fudge factor into all of your calculations.

TROUBLESHOOTING

If the engine turns over but simply refuses to start, the cause could simply be no fuel. As simplistic as it may seem, the tanks may be empty or the fuel valve off. Check both before calling your friendly mechanic in the middle of the night. Other, more complicated problems requiring a mechanic's expertise could include inoperative primer, a plugged or ruptured fuel line, an improperly set or inoperative carburetor mixture control, and any one of several carburetion problems.