



TONY TAYLOR

Nuts, Bolts, and Electrons

Do You Know Where Your Parts Are Coming From?

I was repairing some cylinders from a Continental C-85 engine, and I had to replace two of the exhaust seats, which cost about \$22 each. After I returned the cylinders, the owner sent me a package containing two seats. His enclosed note said he found “the exact same seats” from a “west coast supplier” for \$5 apiece, and he wanted me to accept those instead and return his \$44.

The seats he sent me were clearly unapproved parts. The machine work was bad. There were no markings, and the color of the material told me it was not the correct alloy for the job it was intended to perform. I returned them with a letter explaining that they were unapproved, poorly made, and would probably fail way short of their usual lifespan. I questioned whether the owner felt his (or anyone’s) life was worth the \$34 difference!

A Bit of History

Forty years ago, aircraft manufacturing and parts companies produced about 90 percent of their components within their own factories. Now, most only produce about five percent of their parts on site. These companies have become “assemblers” of components that have been produced by external suppliers.

This practice lowers costs because the manufacturers, called Production Approval Holders (PAH), contract with specialized companies that can build products faster and cheaper. With proper oversight and a robust quality control program, PAHs can develop a list of suppliers who consistently produce parts that meet their approved design, as required by 14 CFR. Supplier control audits, which became a requirement in 2011, help determine if PAHs are providing the correct technical and quality information to their suppliers.

Trust but Verify

Ronald Reagan once said to trust but verify, and it’s a great bit of wisdom. When a new supplier ships parts to a PAH for the first time, the PAH does a thorough job of inspecting those parts to ensure they meet the approved design. A history of compliance

is established. PAHs can perform on-site audits and inspections of the supplier, and have the supplier provide a Certificate of Conformance stating that the parts meet all of the requirements. If there are no problems after several delivery inspections, the inspection rate can gradually be decreased.

The FAA has developed a category parts list which assigns a “criticality score” to certain types of parts, because, as you might guess, a landing light lens is less critical than a high pressure turbine disk. Those parts deemed “Critical to Flight Safety” require stricter auditing.

Aircraft parts that don’t meet design and cannot be reworked are scrapped. When this happens, regulations require that the part be rendered unusable. Quite often, this process is contracted out. Without proper oversight, it’s not too much of a stretch to envision some of these scrap parts being cleaned up, repackaged, and sold via your favorite online auction venue. That’s how unapproved parts are born.

How Do You Know?

So how do you know if you’re buying a certified part? If you don’t do your own maintenance, know your mechanic. If you don’t, then get recommendations or research one online. Only do business with those who come highly recommended and have an established history of ethical, quality work.

If you do your own maintenance, the cost of the parts can be very telling. Legitimate parts companies do a lot of market research on their competitors. The point is to keep prices low and fairly consistent. If you find a company selling a particular part at 50 percent less than everyone else, *caveat emptor*, as they say. BUYER BEWARE!

If the deal sounds too good to be true, it probably is. And it’s definitely not worth your life.

Tony Taylor is a manufacturing Aviation Safety Inspector working in the San Antonio Manufacturing Inspection District Office. He has 32 years experience as a mechanic and machinist in both the aircraft manufacturing and maintenance fields. Taylor oversees manufacturing facilities and designees in Texas and Louisiana.