

Critical Process Training

As a manufacturing engineer who has written many assembly procedures, I thought I'd touch upon a topic that is often neglected yet is crucial to maintaining consistent product quality. Many companies do have workmanship standards/ SOPs (Standard Operating Procedures), and other similarly described documents. Some focus on critical processes that are not necessarily relevant to only one product line. Rather, they are particularly important for assemblers, technicians, and engineers to know for every product line. **Periodic training is essential.** Some examples of topics are:

1. Hardware and torque
 - 1.1 Identification of commonly used hardware
 - 1.2 Thread-locking compounds and washers
 - 1.3 Using torque screwdrivers and pattern torquing
2. Bonding and encapsulation
 - 2.1 Types of adhesives and encapsulants
 - 2.2 Surface cleaning and other critical preparation steps
 - 2.3 Curing and the effect of ambient temperature on curing time
 - 2.4 Personal protective equipment (PPE)
3. Static electricity and its damaging effect upon circuit board reliability
 - 3.1 Hardware and clothing used to dissipate static electricity
 - 3.2 Testing instruments
 - 3.3 Avoidance of certain materials near the workspace

These are just a few topics that can be included in a comprehensive training program. Offsite assembly-related personnel should also be trained. Subsequently, site trainers should be, if possible, designated to continue to conduct training on a consistent basis. Multiple choice testing is a great way to encourage personnel to pay attention. Supervisors should receive trainer-corrected tests and then follow up with each test taker to ensure he or she knows the correct answers to any incorrectly answered questions.

As a manufacturing engineer, you can and should bring to the attention of management, the suggestion of creating (if necessary) both a comprehensive critical process document and a training plan.

Don't wait for product quality to decline. Take the lead; it will make your job and your company's bottom line better than it ever was. Feel free to contact me about any questions you may have.

(sulli2@hotmail.com)

Dave