Selecting a Pb-Free Solution for Military, Avionic, and Space Applications 1 Day Course

ABSTRACT
As lead (Pb) containing components become obsolete and capability and expertise in lead-based assembly slowly evaporates, the military and avionics marketplace has realized the need to prepare for the eventual conversion to lead free electronics. Numerous suppliers to the Pentagon and major aerospace OEMs are already making the transition, including selecting solder alloys, designing test vehicles, and performing product qualification. Are you ready?

This course will provide a unique perspective for the engineering or management attendee. Critical data and information on the quality and long-term reliability of lead free electronics will be provided, with a particular focus on the most recent developments over the past six to twelve months. Examples of these findings will include why SAC may never be sufficiently reliable for military/avionic applications and how the military/avionics world is missing the boat on mitigating the risk of tin whiskers. Within each challenge presented by lead free, clear and concise approaches will be provided that minimize the risk to high-rel applications. These approaches will be compared and contrasted to the existing GEIA documents that are expected to be the backbone of lead free product qualification for military and avionic applications.

OUTLINE

- Phase I: Dealing with Pb-Free Now – The Challenge of Pb-Free Components
- Tin Whiskers
  - What we know
  - What we don't know
  - Mitigation
  - GEIA documents reviewed
- Mixed Assembly (Pb-Free BGAs and SnPb Solder Paste)
  - What drives success?
  - Reliability
  - What are companies doing now?

- Phase 2: Dealing with Pb-Free in the Future – How to Successfully Transition to Pb-Free
- Scrubbing the Bill of Materials
- Selecting the Printed Circuit Board
  - Which Pb-free solderability plating is the right one?
  - Specifying laminate for Pb-free reflow
  - Capturing long-term reliability issues (CAF and PTH)
- Preparing for Assembly
  - Selecting the right Pb-free solder
  - Avoiding component issues (cap cracking, popcorning, etc.)
  - Inspection criteria
  - Can I rework?
- Validating Reliability
  - High temperature issues
  - Low temperature issues
  - Temperature cycling
  - Vibration
  - Mechanical shock
  - Corrosion

Who Should Attend?
Engineers with a responsibility in one of the following areas: Quality, Reliability, Components, Manufacturing, Product Qualification. Any and all program managers in the avionics and military industry. Directors who want to know what their engineers and managers are worrying about.