

## **Title: Taking Terror out of Lead Free Circuit Board Surface Finishes and Assembly**

**Description:** Transition to Lead Free Circuit Board Surface Finishes for Fine Pitch, Area Array Technologies and SMT is demanding. Presenter will share his experience in this transition to Double Sided, Fine Pitch & Area Array Technology using Lead Free Materials while taking advantage of new, mixed and emerging technologies. Technical Workshop to cover different Lead Free Surface Finishes - Hot Air Solder Level, Organic Solderability Preservative, Electroless Nickel Immersion Gold, Immersion Tin and Immersion Silver. With Lead Free Initiative in progress with volume production globally, experience with Fabricators, OEMs and Assemblers in successful use of Lead Free surface finishes and challenges will be shared to improve your assembly yields will be discussed in detail including three different Lead Free Solder Pastes alloys used and assembly issues.

**Duration:** Half Day

**Level:** All (beginner, intermediate and advance)

### **Who should attend?**

Recommended for designers, process and quality engineers, managers, process operators, technologists, component manufacturers, PCB fabricators, equipment vendors and suppliers. Participants encouraged in bringing their samples and issues for hands on discussion.

After completing this course, you will be able to:

- Understand different Lead Free Circuit Boards Surface Finishes
- Be able make choice of Lead Free Circuit Board Surface Finish for your application
- Successfully implement Lead Free Assembly Process
- Eliminate repetitive defects through Stencil design and process improvements
- Identify double reflow process and component issues quickly
- Select materials and design use to eliminate tombstoning, solder balls, solder fines, shorts
- Distinguish between different Lead Free Reflow Profiles and Optimization of reflow process
- Utilize preferred operating parameters for screen printer, placement and reflow and wave solder.
- Optimize Lead Free Wave Solder to achieve higher yield.

### **Topics:**

- Introduction to Lead Free Surface Finishes, worldwide use and comparison.
- Process Sequences for finish deposition including equipment types.
- Solderability Comparison with multiple reflow, Solder Joint formation, Wire Bonding capability
- Acceptability Criteria @ PCB fabrication.
- Handling and packaging @ PCB fabrication and assembly facility including shelf life.
- Lead Free assembly process and equipment
- Stencil Design - Solder Beading, Tombstoning , shorts etc.
- Solder Paste Printing highlight finish with ease of fiducial recognition
- Solder Paste Inspection for yield improvement
- Component Placement (Placement Skewing)
- Reflow (Profiles / Void Minimization / Component Damage/ PCB Distortion and Delamination)
- Wave Solder (Dual Wave + Selective) with case studies on yield improvement including hole fill.
- Solder Spread comparison of surface finishes
- Three different Lead Free Alloys in Solder Pastes with examples of Issues.
- Solder Paste and Flux compatibility for Surface Finishes.
- OEM use of surface finishes and selection.
- Lead Free Defects and how to overcome.



## **Bihari Patel**

Applications Manager, OEM & Assembly Applications, World Wide Advanced Surfaces Group for MacDermid Inc., of Waterbury, Connecticut, U.S.A. He has over 30 years experience in SMT Assembly and PCB Manufacture with Nortel Networks (Canada) and Leicester Circuits (England). His presentations and projects, has taken him around the globe. Few places worth mentioning are Australia, USA, UK, Hong Kong, China, Taiwan, Singapore, Thailand, Brazil, Mexico and India. He is an International Speaker and Presenter on Lead Free Surface Finishes & Assembly, SMT, Solder Paste Printing, No Clean Process, BGA, Outsourcing, and Continuous Improvements. He has conducted Workshops and Tutorials for SMTA, IMAPS, SMCBA, ABRACI, JEDEC and IPC. He is Fellow of Institute of Circuit Technology, Institute of Metal Finishing, and Institute of Manufacturing. and also a Distinguished Toastmaster.