

LOCATION:

Haywards BBQ
11051 S Antioch
Overland Park, KS 66210
www.haywardsbbq.com



Heartland
SMTA
Surface Mount Technology Association

July 22 '09

5:00 - 8:30 PM

Map and directions posted on www.heartlandsmta.com

Haywards BBQ



COST (includes BBQ Dinner):

\$ \$25 SMTA Registered Members
\$ \$15 Full Time Students
\$ \$30 Employee of Corporate but
not Participating Member
\$ \$35 Non-Members
(cash or check to Heartland SMTA)

RSVP By July 20th

Dwight Nelson
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(email preferred)
(913) 469-1312

Stencil Design Guidelines and Technology Review

OUTLINE

1. Overview of the Paste printing process
 - a. Defects and how they are associated
2. Stencil Technology
 - a. SS / Datum technology
 - b. Plating
 - c. E-Fab
 - d. Processing of stencils
3. Area and Aspect Ratio
 - a. Solder paste powder size / stencil thickness
4. Review of the IPC 7525 stencil design
 - a. Review and cover some of the issues
5. Differences in design guidelines
 - a. Sn/Pb vs Pb-free
 - b. No-clean / Water soluble
 - i. Solder beads
 1. Stencil Design changes
6. Intrusive reflow (Pin-in-hole)
 - a. Volume calculations
 - b. Over printing
7. Step Stencil
 - a. Up or down (Max set size)
 - b. Keep out areas
8. Fine pitch or Ultra fine feature printing
 - a. What technology to use
 - b. Board and stencil designs
 - c. Stencil Technology
 - d. Solder paste
 - i. Wetting issues / graping
9. Stencil Cleaning / Maintenance
 - a. Typical wear of stencils
 - b. Proper storage
 - c. Cleaning methods
10. Stencil Manufacturers
 - a. Characterizing their manufacturing process
11. Making the printing process work
 - a. Characterize the process
 - b. Board set up
 - c. Gasket of the board to the stencil
12. Summary / Conclusions

The presentation will review and discuss all the aspects of the paste printing process that utilize stencils to transport the solder paste onto the printed circuit board. We will review the different stencil process technologies (etching, laser cut and E-Fab) along with the various stencil materials (SS, Datum, Invar, etc.) and platings (Ni). The importance of Area and Aspect ratios will be discussed and the limits at which the stencil should be designed. The presentation will also review the IPC 7525 stencil design guideline standard and how it can be applied to the manufacturing process. Various topics on stencil design will be covered including step-up or step-down stencils, intrusive reflow (pin-in-hole) soldering and ultra fine pitch feature printing. Additionally, the presentation will cover the difference in stencil designs when considering the different manufacturing processes like, Sn/Pb and Pb-free or Water-wash and No-Clean soldering.

Stencil manufacturers must also control the manufacturing process of the stencil; as such the stencil user must qualify each supplier to guarantee consistency, repeatability and quality of the stencils. We will discuss some of the important factors for the different stencil manufacturing processes.

Once the stencils are made and placed into production, they must also be maintained properly to insure consistency in the printing process and therefore the process for proper cleaning, maintenance and storage will be discussed.

Finally, the presentation will review the importance of the printer set-up and stencil-to-board gasketing in order to obtain maximum paste transfer efficiency and an optimum print process.

Speaker: Richard Brooks; Richard Brooks holds degrees in both Chemistry and Chemical Engineering from the University of Florida and he has worked in the electronics industry for the past 20 years. He began his employment at Motorola in 1988 and was apart of the Advanced Manufacturing Technology Group. His responsibilities included the development and implementation of new technologies, with a focus on new product size reduction within the surface mount process. These technologies included the implementation of: new PCB technologies, ultra-fine pitch printing, chip component size reduction, flip-chip technologies, etc. Rich also was the Chairman of the Corporate Motorola Reflow Center of Excellence Committee for seven years. The committee developed corporate Component Pad Stack geometries and implemented Best-in-Class processes across the corporation. For the past seven years, Rich was working for the Indium Corporation as the Global Technical Manager, where he managed the resolution of all technical issues related to the soldering process within the Global Accounts. In 2009, he began working as an Independent Technical Consultant within the Electronics Industry.

Door opens at 4:30 - come early and network!

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