Abstract:
Minimizing Assembly Defects: Graping, Head-in-Pillow, and Voiding
By Professor Ron Lasky, PhD, PE
Indium Corporation, Dartmouth College

The explosive growth of personal electronic devices such as mobile phones and personal music devices has driven the need for smaller and smaller passive and active electrical components. The smaller solder joints required for these components, challenges the solder paste in that the surface area to volume ratio of the small printed solder paste deposits is so large that some fluxes cannot prevent oxidation of the solder particles during the reflow process. This situation can result in “graping.” Added to this challenge, is the fact that often a solder paste with finer solder particles is needed to print these small deposits. Such finer particle pastes are more prone to oxidation in any circumstance. PWB or BGA board warping and inconsistent printed solder paste volume in the above situations can also cause the Head-in-Pillow defect.

Voiding is another common defect. Voiding can be affected by the solder paste, stencil design, PWB and assembly process. Optimizing these variables can help to minimize voiding. In some extreme cases, solder preforms may help significantly.

This 45 minute presentation will discuss these defects in detail and how to minimize them with materials and process modifications.
Bio-
Ronald C. Lasky, Ph.D., P.E.

Ron is currently an Instructional Professor at Dartmouth College and a Senior Technologist at Indium Corporation. Prior to these assignments, he had over thirty years experience in electronic and optoelectronic packaging and assembly at IBM, Universal Instruments and Cookson Electronics.

He has authored or edited 6 books on science, electronics, and optoelectronics and numerous technical papers and authored articles for *Scientific American*. Dr. Lasky holds numerous patent disclosures and is the developer of the several new concepts in SMT processing software relating to cost estimating, line balancing and process optimization. He is the co-creator of engineering certification exams in electronic assembly and the Director of Dartmouth’s Six Sigma Program. Ron was awarded the Surface Mount Technology Association’s Founder’s Award in 2003.

He owns four earned degrees, including a Ph.D. from Cornell University in Materials Science. Ron is also a New York State licensed professional engineer.

Upcoming Chapter meetings
Sept. Technical Speaker:

Ronald C. Lasky, Ph.D., P.E.
Minimizing Assembly Defects: Graping, Head-in-Pillow, and Voiding

Chapter Calendar 2015/16:

September -
Chapter meeting on the 18th

Chapter Training Program
Sept. 27th to October 1st - SMTAI—Chicago

November -
Chapter meeting on the 13th
ST Jude Medical —“Medical Electronics”- Implantable Electronic Systems

December -
Members Party on the 4th
member and spouse party this year at the Addison Stone Cottage and Theater.

January—2016
Chapter Meeting on the 8th
“Failure Analysis”

February—2016
Hosting SMTA Chapter Leadership Forum

April—2016
April, 5th
Dallas Chapter SMTA Expo
Presidents Message

Greetings to SMTA Dallas Chapter members and guests.

We hope all enjoyed the summer in the sun. It is time to begin the fall season of the Dallas SMTA technical sessions. Ron Lasky is a wealth of knowledge and you will enjoy listening to his presentation September 18th on Minimizing Assembly Defects. Everyone can learn more about this topic. I strongly encourage everyone to try and attend our international annual event in Chicago September 28-30. We have secured a great venue for our chapter’s annual member and spouse party this year on Friday December 4th at the Addison Stone Cottage and Theater. Market your calendars on each of these events.

Gary Tanel
Dallas Chapter President

Dallas Chapter Membership Rolls—141 Members!!

We welcome our newest member to the SMTA family: Chintan Sutaria of CalcuQuote who is joining us as an Corp member and John Stuber, of VLSIP Technologies Inc. who is joining us an an individual member.

Global Members: 7, Individual Members: 70, Corp Members: 36,
Participating Members: 19, Associate/Student Members: 9

Dallas Chapter Volunteers

“One Many Hands Make Light Work” - THANKS!

Jimmy Fallin—Meeting setup and Audio
Carol Primdahl—Name Badges
Alicia Hamby—Web site and Linkedin updates
Tiao Zhou—Technical Committee

Dallas Chapter Corporate Member List - August 2015

ACD
ASSET InterTech
Barry Sales, Inc.
BBM, Inc.
Circuitronics
Conecus LLC
CVInc.
DG Marketing Corporation
Dragon Circuits
E.T.S. Group, Inc.
Electrolab Inc.
EWD Solutions
FHP Reps
Fujitsu Network Communications
GSC (Garland Service Company)
JTAG Technologies
Keysight Technologies
Krypton Solutions
Mek Americas LLC
Morgan Newton Company
National Circuit Assembly
NPI Technologies, Inc.
One Source Group
PAC Global, Inc.
Philips Entertainment
Precision Technology, Inc.
Roper Resources, Inc.
Southwest Systems Technology Inc.
SPEA America
Sunshine Global PCB Group
SVTronics, Inc.
The IPS Group, LLC
Trilogy Circuits, Inc.
Variosystems, Inc.
VI Technology
Just wondering…

Are these the real facts of life?

The Fallin Philosophy:
"Smile. Tomorrow will be worse."

Baruch's Observation: "If all you have is a hammer, everything looks like a nail."

Harris' Law: "Success always occurs in private, and failure in full public view."

Todd's Law: "All things being equal, you lose."

Thompson's Theorem: "When the going gets weird, the weird turn pro."

Primdahl's Conundrum: "When you dial a wrong number, you never get a busy signal."

The Unspeakable Law: "As soon as you mention something...
• if it's good, it goes away.
• if it's bad, it happens."

Baker's Law of Debate:
"Anything is possible if you don't know what you're talking about."

Hecht's Law: "There is no time like the present to procrastinate."

Tanel's Theorem: "If you hit two keys on the keyboard, the one you don't want shows up on the screen."

The Larson Principle: "The longer you wait in line, the greater the likelihood that you are standing in the wrong line."

Doebbert's Law: "If you miss one issue of any magazine, it will be the issue that contained the article, story or installment you were most anxious to read."

Brown's Law of Progress: "A shortcut is the longest distance between two points."

Ginsberg's Theorem:
1. You can't win.
2. You can't break even.
3. You can't even quit the game."
Page 5 Technology Corner

Designing Flex Circuits for Domestic Prototyping

Designing a flex circuit to be prototyped domestically? No problem. Designing a rigid-flex circuit for production offshore? Got it. Designing a part that will be prototyped domestically with a seamless transition to offshore production? That can be a little more challenging.

For the full article go to

http://www.iconnect007.media/index.php/article/92215/designing-flex-circuits-for-domestic-prototyping/92218/?skin=pcb#92215
REASONS TO JOIN YOUR LOCAL SMTA CHAPTER

- Do you have something to share such as new technologies or new products?
- Are you new in a sales territory – do you know all the players? Do they know you?

Be informed and involved on the Local Chapter level:

- Take advantage of technical information provided at local meetings Get to know colleagues in your local area
- Network for technical information and get to know companies and people in your local area
  - Share information with colleagues on new products and services

THE MISSION OF SMTA

The Surface Mount Technology Association (SMTA) membership is a network of professionals who build skills, share practical experience and develop solutions in electronic assembly technologies and related business operations.

MEMBERSHIP DUES

Participating: $50 - If your company (same location/division) holds a Corporate Membership it’s employees are eligible to receive the full range of benefits at a discounted price.

Individual: $75 - This membership is designed for individuals who wish to join SMTA to receive all the benefits independent of a Corporate Membership.

Corporate: $450 - A corporate membership in SMTA provides discounts to employees located in the same location/division where the Corporate Membership is held.

Student/Retiree: $5 - The Student/Retiree Membership is available to all full-time post-secondary students and retirees at a discounted rate.

HOW TO JOIN

On-line at www.smta.org