

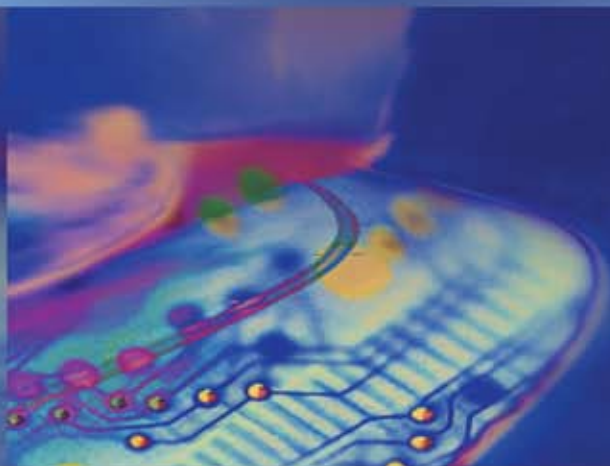
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"Woman Owned Small Business"

Volume 7, Issue 5

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I'm Retiring (Again)

Five years ago I wrote about hitting my term limit as a member of the SMTA Board of Directors and how much I was going to miss it. (<http://www.solderingtech.com/newsletters/October%2003.pdf>) A lot has happened since then including my coming back a year later to begin serving two, two year terms as President of the organization. Now, sadly for me, I've reached the end of that too. It has been a true joy to work with JoAnn Stromberg and her staff who are professionals in every way. It has been an unbelievable honor to be a part of the organization's Board of Directors which as I described five years ago has always been made up of eleven very smart and technically oriented people and me. Although the makeup of the Board of Directors changes every year, its direction and focus doesn't change. We started every meeting by reading our mission statement and every decision made had to reflect that mission. It always did. I have enjoyed working with the Chapters and their leaders whose dedication, energy and creativity never ceases to amaze me. We have shared good meals and good times and bad golf but mostly a commonality in trying to help others in our industry by sharing. Sure we have a selfish reason, we want our industry to grow and prosper by learning from each other because as the industry advances, so do we all. I have enjoyed meeting the members and learning their stories and perspectives. It has truly been a great experience for me both personally and professionally and I thank all of you for the opportunity. I'm going to miss it.

STI's new building is looking good. We've reached the point where most of the outside is finished so we don't see big changes from day to day but the interior work is moving along too. We still plan to occupy it before the end of the year. You'll get information regarding open houses and a grand opening (probably late January) as we get closer. On a side note, we found out last week we don't need a mailbox at the new building. I'm sure those of you who have ever built a house or business can appreciate the fact that for the first time in 8 months of construction we have found out something is going to cost less than budgeted.



On another side note, if you live in the Huntsville area, you've probably seen in the local newspaper (print & online) as well as heard on radio traffic reports for the past four months that you should "expect traffic congestion on Palmer Road in Madison because of construction on the driveway at STI Electronics." While it has been nice to be mentioned in print and on air so many times, the truth is we have caused congestion once (involved two cars, one of them was Mark's) while a piece of equipment was turning around. For those of you not familiar with Palmer Road in Madison, it probably would have been easier to call the twelve people that drive by every day to update them but it is more fun to have it sound like we are building a major interchange instead of a driveway.

I hope you enjoy this issue of our newsletter. If you have questions, comments or suggestions for future issues, we'd love to hear from you. Let us know how STI Electronics can serve you better.

David E. Raby

President/CEO
draby@stielectronicsinc.com

Training Services 2008: *Schedule*

Madison Alabama



September

- Sept. 08-11 IPC-A-610 CIT Certification
- Sept. 08-12 IPC J-STD-001 Certified IPC Specialist CIS Certification
- Sept. 15-19 IPC J-STD-001 CIT Certification
- Sept. 15-19 MSFC/NASA-STD-8739.2/3 Solder Certification
- Sept. 22-23 IPC Rework/Repair and Modification CIT Recertification
- Sept. 22-24 IPC-A-610 CIS Certification
- Sept. 24-25 IPC/WHMA-A-620 CIT Recertification

October

- October 06-07 IPC-A-610 CIT Recertification
- October 08-09 IPC J-STD-001 CIT Recertification
- October 10 IPC J-STD-001DS Update, Space Application Addendum to J-STD-001D
- October 14-17 IPC/WHMA-A-620 CIT Certification
- October 20-24 IPC Rework/Repair and Modification CIT Certification
- October 27-31 MSFC/NASA-STD-8739.4 Cable/Harness Certification



Ann Duncan
Training Coordinator

To register for a course or for additional information go to www.stielectronicsinc.com or e-mail us at training@stielectronicsinc.com.

Training Services: *IPC-A-600 Acceptability of Printed Boards*

By: Dan Foster, Director of Training Services



Dan Foster



Do you know if the bare boards your receiving meet acceptable industry standards? If not, STI's Training Services department offers training to IPC-A-600, "Acceptability of Printed Boards". The IPC-A-600 Training and Certification program provides the Certified IPC Application Specialist the skills and information necessary to do a better job at performing incoming inspection. Knowing acceptable conditions means that boards are not needlessly scrapped; knowing nonconforming conditions (defects) saves the assembler from a potentially expensive component mounting operation.



What if a bare board was found to be defective after you've assembled it? We can help! STI is also an IPC Training Center for IPC-7711/7721. We offer training in rework and repair of damaged boards or conductors. We use the IPC-7711/7721, "Rework, Modification and Repair of Electronic Assemblies" to accomplish these tasks. STI is willing to conduct any of these courses at your facility or ours. Please contact us today to schedule a course that best fits your needs at training@stielectronicsinc.com or 800-767-4919.

Engineering Services: PCB Constructional Analysis

By Marietta Lemieux, Analytical Lab Manager



Marietta Lemieux

Although the subject of PCB constructional analysis has been discussed before in the Analytical Lab section of the newsletter, we feel the need to re-emphasize the issue. A good fifty percent of all the failure analysis that finds its way into STI's

Analytical Lab, are due to PCB manufacturing related issues. Unfortunately, most of these failures are not detected until after the product has been fully assembled and has been through testing or even out in the field for a certain length of time. By performing constructional analysis of a sampling of the virgin PCBs prior to the assembly process, often the high cost of materials/production can be prevented.

The sample size to be evaluated is usually determined by the customer, but we would recommend a minimum of 2-5 samples per date/lot code. Some of the non-destructive testing that can be performed is XRF testing to determine plating thickness and low-voltage SEM surface analysis, to evaluate the overall surface quality of the plating.

Destructive testing would include solderability testing, to test the wettability of the surface conductors and Plated Through Holes, and micro-sectional/SEM evaluation. Cross-sectional analysis provides a general understanding of the overall quality of the internal features of the board, such as: plating stack-up measurements, plating thickness measurements, inner layer separation, plating cracks, mis-registration, laminate voids or cracks, resin recession etc. Several random locations per board would be selected for analysis, to include Plated Through Holes of varying hole sizes.

All analysis would be performed per the latest revision of IPC-6012B, "Qualification and Performance Specification for Rigid Printed Boards", IPC-A-600, "Acceptability of Printed Boards" and J-STD-003, "Solderability Tests for Printed Boards".

Should you have any questions or would like to have additional information, please feel free to contact us: Marietta Lemieux (256-705-5531) or Aaron Olson (256-705-5544).

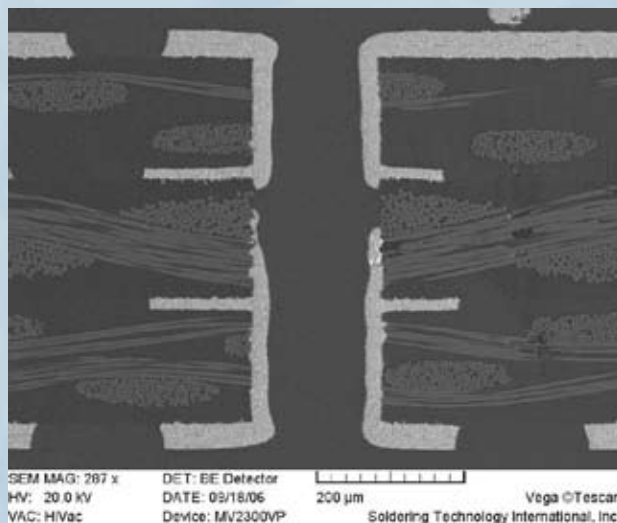


Figure 1: SEM Image cracked PTH walls

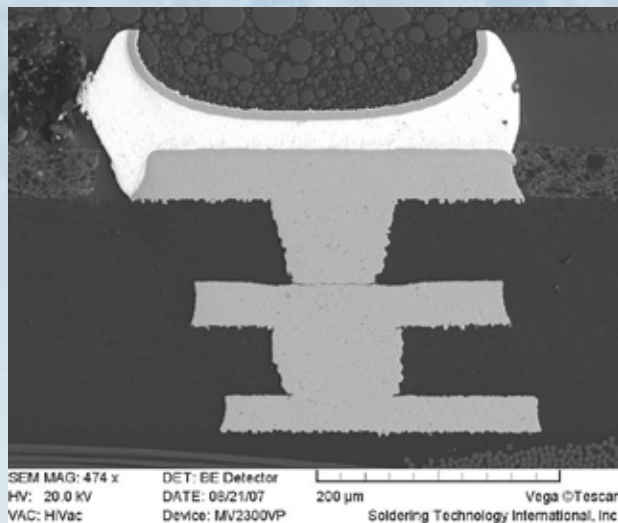


Figure 2: SEM Image open buried micro-via

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Engineering Services: PCB Constructional Analysis

By Marietta Lemieux, Analytical Lab Manager

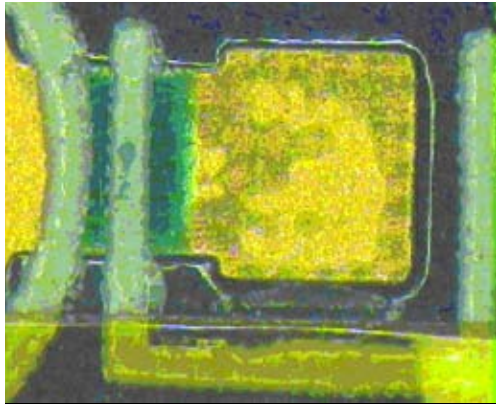


Figure 3: Optical image ENIG plating issues

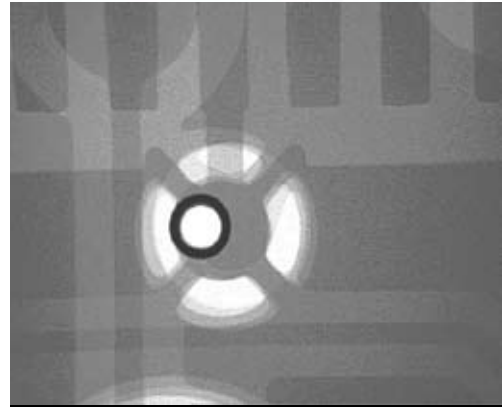


Figure 4: X-ray image hole breakout

ANALYTICAL LABORATORY

STI's Analytical Laboratory provides a wide range of services designed to characterize materials, defect failure modes and perform exploratory analysis of products and processes.

The analytical services we have to offer include, but are not limited to the following:

- Scanning Electron Microscopy (SEM)
- Energy Dispersive X-Ray Spectroscopy (Elemental Analysis)
- Ion Chromatography
- Omega Meter Ionic Cleanliness Testing
- FT-IR (Organic Spectral Analysis)
- Real Time X-Ray
- X-Ray Fluorescence Spectroscopy
- Wetting Balance Testing
- Dye-Pry Testing
- Chemical Decapsulation
- Shear/ Pull Testing-DAGE
- Failure Analysis / Constructional Analysis
- Electrical Testing (Component Level)
- Environmental Testing (E.G. Thermal Shock Testing, Temperature/Humidity Cycling and Vibration Testing)
- SIR Testing

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please go to www.stielectronicsinc.com.**

Sales & Distribution: Features OKI's PS-900 Soldering System

By Sissie Eckstein, Sales Manager



PS-900 Soldering System Buy Three - Get One Free!

Now it's easy to cut soldering costs in two ways. First, the PS-900 Soldering System has better performance with incredibly low ownership costs. Quite simply, it's designed to cost you less. Less frequent tip changes. Less training investment. Less consumables cost. Even less energy used.



Sissie Eckstein

How? Just like our popular Metcal Soldering Systems, the PS-900 maintains a constant temperature, via powerful SmartHeat® Technology, that never overshoots. So you won't damage components or substrates.

Add in a compact footprint, faster results, a wide range of soldering tips and an auto-sleep workstand that extends tip life and what do you get? Fully productive soldering that saves you money. And now, to make sure you have high performance at maximum savings, when you buy three PS-900 Systems, you get one free! It's that easy.

To place an order contact one of our customer service representatives at 1-800-858-0604.

Offer valid July 1, 2008 – December 31, 2008.

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Available!



CSR's from left to right: Julia Adamczyk, Kelli Smith, & Dottie Grantham



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to receive your FREE

Catalog!

Training Materials: Variation in Board Finishes

By Mel Parrish, Director of Training Materials



Mel Parrish

production operations will add considerably to the transfer of skill development created during training.

STI offers many different board finishes for the training projects as well as matching termination types for solder skill training. Some of the current kits offer ENIG (Emersion Nickel Immersion Gold), Immersion Tin, Immersion Silver, in addition to the common HASL Tin Lead. HASL Tin Lead is by far the most preferred finish for hand solder training boards still today. The STI ENIG boards are only used in Fine Pitch Surface Mount applications since the surface finish is very flat and planar as required for the technology.

Similar to the training scope, assembly process development or resolution is better served with an equivalent board surface finish. Variation and performance of the surface finish requires process adjustments to accommodate solution rates, appearance, and wetting properties.

Board finish materials and processes have a great deal of effect upon the soldering process and degree of success achieved with nominal process definition. For the solder training environment, selection of a finish that is comparable to those encountered in production

operations will add considerably to the transfer of skill development created during training.

Should you require or desire another surface finish or component technology that you cannot find on the STI web site, please contact us for additional availability.

We still have a good supply of FREE Lead Free demo kits. You can receive one by requesting it from the STI web site. This board has an Immersion Tin finish.

Our feature kit of the month is the Lead Free Mixed Technology Kit which features an Immersion Silver finish board and is available with two different component counts. This is a good representation of a typical production board with the flexibility of both or either SMT and Through Hole components. Receive a 10% discount from the advertised price by mentioning this newsletter article.



Surplus Inventory Sale

STI Electronics, as one of the largest distributors of electronic assembly and solder supplies, occasionally has overstock on some items. We have created a surplus inventory list with prices drastically reduced. The surplus inventory list is available at our website, www.stielectronicsinc.com, and is updated monthly. Please call (256) 705-5545 and ask for Sales or (800) 858-0604. Quantities are limited so don't delay.



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STI is a Resource for Training Services, Training Materials,
Engineering Services, and Product Distribution.
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Jim's Corner

By: Jim D. Raby, PE, Technical Director



When Pat starts emailing me that it is time for my article again, it seems like it comes at the most inconvenient time. There are so many things that need to be accomplished at the same time; watching the new building go up; working on new technologies or a new twist for an existing technology. However, it is a joy to be able to write this small article since I am communicating with people that are important to me and STI. I haven't been fishing since you saw the photo of the brown. It has been too hot for me to get out on the lake. I think about fishing a lot and am looking forward to the next opportunity.

I must get back to an old subject of cleaning. I know that you are probably tired of hearing this but it is an important issue. When no clean flux residue is left under and around components, one has generally encapsulated active ingredients that when subjected to high temperature and humidity will begin to come alive again or become active. These residues, under these conditions, set up a plating circuit and grow dendrites that will bridge between circuits causing leakage, shorts, and failures. It is easy to

say "Jim is full of crap and is wrong", but look at your failures. STI does lots of failure analysis for people all over the world. The root cause of failures that we find most often are dendrites due to flux residue and the lack of cleaning. I know that the flux formulators tell you that this doesn't happen, but they are selling flux not using it. Nor are they responsible for keeping your hardware in the field.

I have been asked to be involved in a cleaning conference later this summer in the Chicago area and you can believe that the above issue will be my theme. I am sure that this will not be popular with people that do not wish to implement an extra step in their production line, but, if they value their name, reputation and clients' success, as well as product longevity, they will clean. So why use a no clean flux if you need to clean it? Don't, go back to a flux that can be cleaned easily, a water-soluble or rosin that will do the job and is cleanable.

STI cleans every circuit board assembly we make and will continue to do so for both military and commercial applications. We have never had a return. Our clients are happy and continue to bring work to us.

I look forward to hearing from you regarding this article. Please direct any comments to jraby@stielectronicsinc.com.