

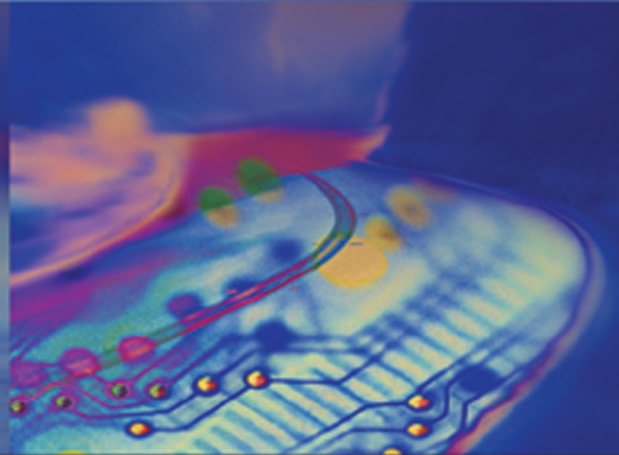
www.stielectronicsinc.com

The logo for sti electronics features the lowercase letters "sti" in a large, bold, blue font. To the right of the "i" is a circular icon containing a stylized circuit board. Below "sti" is the word "electronics" in a smaller, blue, sans-serif font. Underneath "electronics" is a thin horizontal line, followed by a small registered trademark symbol (®). Below the line is the tagline "Woman Owned Small Business" in a smaller, italicized font.

sti
electronics®
"Woman Owned Small Business"

Volume 6, Issue 3

April 2007



inside this issue:

- Dave's World:** 2
- Training Services:**
2007 Schedule 3
- Training Services:** 3
New Courses
- Engineering Services:** 4-5
Component Decapsulation
- Sales & Distribution:** 6
Kester K100LD SnCu based Lead Free Solder & Hakko FR-1012 Bench-Top Heater
- Training Materials:** 7
Lead Free Component/Parts Availability
- Jim's Corner:** 8





After 10 years with our Sales Department, Mike Gainey has left STI to pursue other opportunities. We'll miss Mike and wish him and his family the best in their new endeavor. I'd also like to thank all of you who have called or e-mailed pointing out the photo of Mike in the previous edition of this newsletter holding a sign that said "Bon Voyage." The timing was not intentional.

After almost 5 years with our sales department, Jahnsen Stone has decided to leave STI and start his own manufacturers' rep business. We are going to miss Jahnsen but look forward to working with him in his new role.

The good news for STI, our customers, and our suppliers is that STI is much more than any one or two people and this has given us a good opportunity to change some strategies. I honestly believe our future has never looked brighter.

Congratulations to Sissie Eckstein who has been promoted to Sales Manager. Sissie has been with STI for more than 8 years and has grown up with the Sales Department. She was one of our first Customer Service Representatives (Inside Sales), and then was promoted to Customer Service Manager and now Sales Manager. Sissie brings with her many new ideas for improving how we do things so we can take better care of both our customers and suppliers. I've seen great things from Sissie over the years and look forward to many more in her new position.

Florence Shamburger has recently joined us as a new Customer Service Representative. Florence has been involved in this industry for several years. Please contact Florence and give her an opportunity to help you with your order. I've mentioned in previous newsletters that we were in need of more space and each time we've been able to find a closet or a hallway and convert it to usable space. On two occasions we have leased additional space (our Northern Regional Office). Well, continuing to grow 20% per year continues the need for additional space. We are in serious discussions now for a new facility. I hope I can announce the new location and provide some other details in the next issue.

STI recently lost two friends, Tim Sinky and Joe Sylvester. Tim worked in our kit room counting parts in the early 1990's while we were still in California. Tim had retired from his career job and worked at STI because he enjoyed it. We loved having Tim around because he was always happy and that was infectious. Joe was the founder and long time owner of Omni Training which was/is a competitor in some parts of our business but that never stopped him from helping any time we needed it. They were two good men that will be missed. Our thoughts and prayers go out to Doris and Mel.

David E. Raby
President/CEO
draby@stielectronicsinc.com



Training Services 2007: *Schedule*

Madison Alabama



Ann Duncan
Training Coordinator

May

- May 01-02 IPC Rework/Repair and Modification Certified IPC Trainer (CIT) Recertification
- May 07-10 IPC-A-610 CIT Certification
- May 14-18 IPC J-STD-001 CIT Certification

June

- June 04-08 IPC Rework/Repair and Modification CIT Certification
- June 11-14 IPC/WHMA-A-620 CIT Certification
- June 18-22 IPC J-STD-001 Certified IPC Specialist (CIS) Certification
- June 25-26 IPC J-STD-001 CIT Recertification
- June 27-28 IPC-A-610 CIT Recertification

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

Training Services

By: Dan Foster, Director of Training Services



Dan Foster

Training Services is continuing to offer new courses. As some of you may know the new IPC/WHMA-A-620A CIT and CIS Certification programs are currently available. The 620 recertification courses for both CIT and CIS are due out in May. If you cannot wait until that time, please call us and we can schedule you for a 620 recertification challenge course.

On another note, STI Electronics Inc. is proud to announce that we will be conducting classes at IVY Tech State College in Bloomington, Indiana. We are starting with the IPC-A-610 and IPC J-STD-001 courses. We will also offer additional classes at Ivy Tech in the future. Please watch our schedule for these upcoming classes.

Another new class that we are offering is a hands-on cable harness class. This class is four days in length. Some of the subjects covered are wire preparation, crimping, solder terminals, spot tie, lacing, pin extraction and insertion, etc. Don't miss out on this great class.

To receive future issues of STI's newsletter electronically, please go to www.stielectronicsinc.com.

Engineering Services: Component Decapsulation

By: Marietta Lemieux, Analytical Lab Manager



Marietta Lemieux

Component decapsulation is necessary sometimes to determine cause of component failure. Failures occur either during the useful life phase of the component or after the useful life phase of the component. "During life phase" failures are commonly caused by external stresses such as

high temperature, Electro Static Discharge (ESD), Electrical OverStress (EOS), humidity, vibration and mechanical or thermal shock. Examples of "after useful life phase" failures are corrosion, stress induced bond wire fractures, insulation breakdown and electrical leakage.

The component decapsulation procedure is undertaken when all applicable non-destructive analysis has been performed (e.g. radiography). The goal in decapsulation is to expose the failure and internal construction of the device without altering the failure mode, which could potentially lead to a faulty analysis.

Depending on the suspected failure mode and packaging materials used, the appropriate techniques for opening a device are mechanical, thermal or chemical:

- Metal lidded packages can be opened mechanically or thermally.
- Ceramic and Glass packages can be opened mechanically
- Plastics can be chemically etched by the use of acid, such as sulfuric acid, fuming nitric acid, hydrofluoric acid, phosphoric acid or hydrochloric acid. Most acids are not very selective and will attach materials indiscriminately.

In all cases, care should be taken to ensure that the tool does not damage the interconnections to the die during the decapsulation process.

Following decapsulation, optical microscopes or Scanning Electron Microscopy (SEM) can be used to evaluate physical anomalies, damages areas or electrically overstressed areas. With chemically decapsulated components, care should be taken during the post-etch evaluation, since the acids for etching a plastic package could lead to corrosion of metallic parts in the device.

Figures 1 and 2 show SEM images and figures 3 and 4 show Optical Microscopy images of an ESD damaged area on a non-functional die versus the same unaffected area on the properly functioning die.

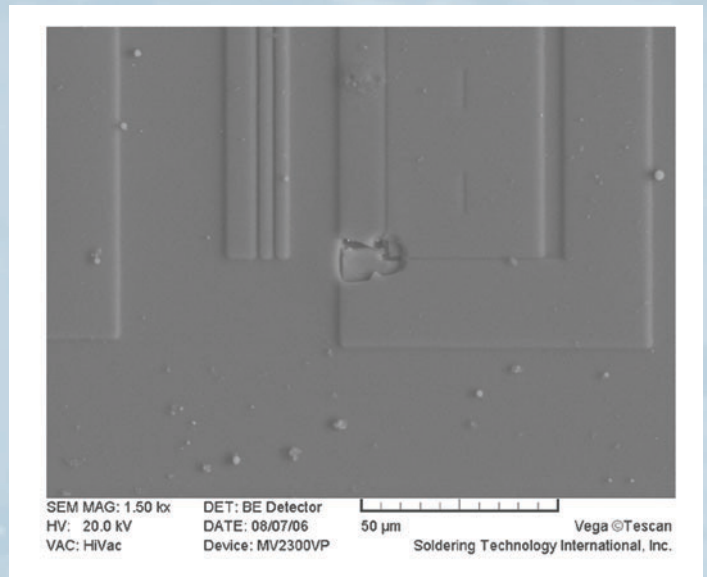


Figure 1: SEM image of ESD damage non-functional die

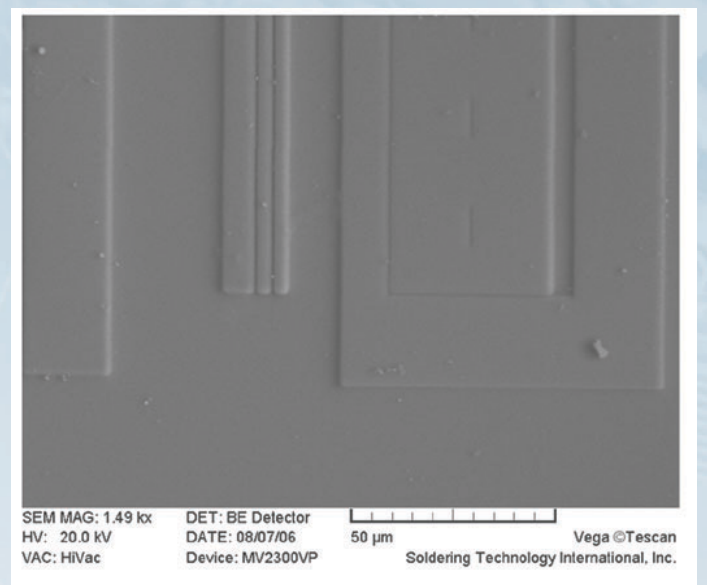


Figure 2: SEM image of same area of functional die

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Engineering Services: Component Decapsulation

By: Marietta Lemieux, Analytical Lab Manager

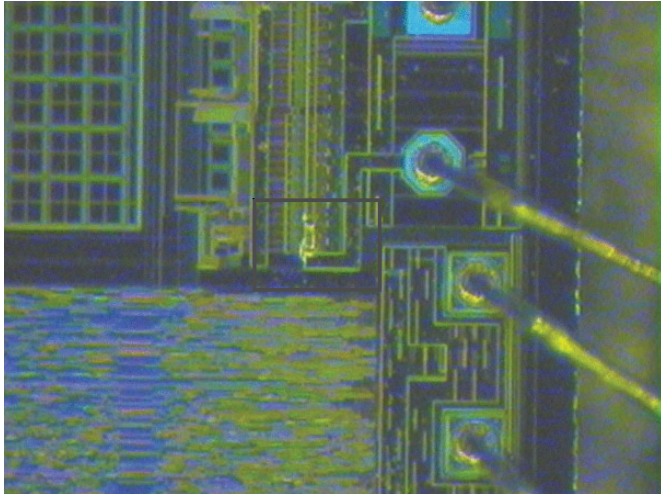


Figure 3: Optical image of ESD damage non-functional die

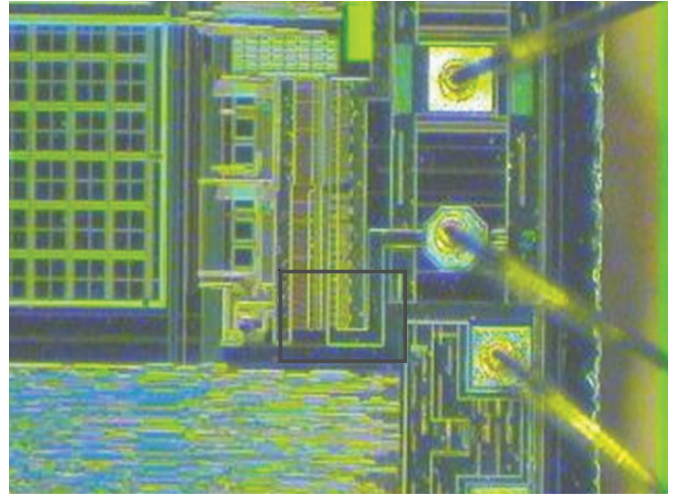


Figure 4: Optical image of same area of functional die

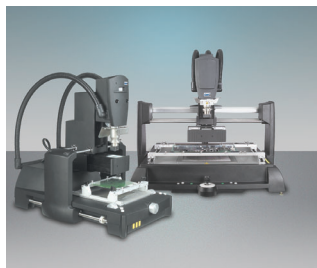
If you have any questions about this article or need further information on the Analytical Lab's capabilities, please give Marietta Lemieux a call at 256-705-5531.

BGA, CSP & MLF/LLP Rework & Repair Mini Seminar

Presented By: **OK International & STI Electronics, Inc.**

Seminar Timing

- 30 min. Multi-Media Presentation
- 1.5 hour Hands-on Demonstrations & Instructions
- Question & Answer Session



APR-5000 Array Package Rework System

Applications/Topics

- Repair
- Rework
- Low Volume Assembly
- Prototyping
- Placement
- Screen Printing for Single Components
- Flux Gel Deposition for BGA/CSP Rework & Repair
- Temperature Profiling for Rework & Repair
- Rework & Repair Site Preparation

- Date:** May 30, 2007
- Location:** STI Electronics, Inc.
102 Tribble Drive
Madison, AL 35758
- Time:** 8:00 am to 12:00 pm
Lunch will be served
- Fee:** \$20.00 per attendee

LIMITED SPOTS AVAILABLE ACT NOW!!!

To Register Contact:

Ann Duncan
PH: 256-705-5512/Fax: 256-461-9566
aduncan@stielectronicsinc.com

Sales & Distribution: Kester K100LD SnCu Based Lead-free Solder

By: Sissie Eckstein, Sales Manager



K100LD is a new patent pending lead-free solder alloy that can be used in wave soldering, selective soldering systems and dip tinning operations.

It's the Only Lead-Free Alloy that Diminishes the 5D's

- 1. Lowest Dissolution of Copper**
Prevents Copper Erosion, Reduces Pot Maintenance and Increases Reliability
- 2. Low Dullness**
Produces Shiny, Smooth Solder Joints
- 3. Low Defects**
Bridge-Free with Excellent Top-Side Fillets
- 4. Low Dross**
Anti-Drossing Additive Results in 20% Less Dross than Untreated Sn63Pb37
- 5. Low Dollars**
Silver-Free Alloy is Approximately 50% Lower Cost than SAC305



Sissie Eckstein

To receive a free technical paper comparing Tin-Silver-Copper (SAC) & Tin-Copper Based Solders, send an e-mail to sales@stielectronicsinc.com. For more information, contact one of our Sales Engineers or Customer Service Representatives at 1-800-858-0604 or sales@stielectronicsinc.com.



Hakko FR-1012 Bench-Top Heater



The Hakko FR-1012 is a bench-top board heater designed to elevate the temperature of printed circuit board assemblies so that components on them can be soldered and de-soldered more easily, and with improved results. This is particularly useful on medium to high-mass board assemblies, which can "heat-sink" a significant amount of energy being supplied by a soldering iron tip, or handheld hot-air tool.

The Preheater operates in either of two modes, Power Mode or T/C (Thermocouple) Mode. Power Mode allows the user to set the output of the unit manually. When running in this mode, the unit will output the set percentage of power, regardless of the T/C actual value. A thermocouple is not required in this mode, but may be used to monitor the actual board temperature.

T/C Mode allows the user to set the desired temperature (50-180°C/122-356°F) of the PCB for closed-loop control of the temperature using the T/C input. When running in this mode, the unit will apply 100% power until the board reaches 10°C below the set temperature. The unit will then start to regulate the power output of the heater to hold the PCB at the set temperature.

For more information, contact one of our Sales Engineers or Customer Service Representatives at 1-800-858-0604 or sales@stielectronicsinc.com.

Training Materials: Lead Free Component/Parts Availability

By: Mel Parrish, Director of Training Materials



Mel Parrish

It's a changing world. Component part availability as many of you are aware has taken an abrupt turn in the opposite direction from even last year. Just a short time ago Lead Free components were difficult to source but the new reality is now the opposite. Lead Free components are available but Tin Lead is very difficult to locate or in many cases nonexistent.

Even the historical sources for surplus/unused parts have dried up. In the past, common components might be available as surplus to requirements but those that have the parts are hesitant to dispose of them since they may not be available if there should be a later change in production requirements. For example, Tin Lead finish on TO-39 can transistors are just not available.

The difficulty that arises for some of our producers occurs when contracts may restrict the introduction of Lead Free components, not all that uncommon for Class 3. Do you try to purchase a production lot with the right finish? If you can find a vendor that's willing, it might require quantity of several million, and what do you do with the extra ones that you really don't need? Some producers are replacing the solder surface finish with Tin Lead by pretinning before production, but that isn't all that simple either. It adds another production operation which costs money and time, there's an additional thermal cycle for the components. Even after pretinning, surfaces other than the leads may also have Lead Free or high tin content surface plating that could cause the same concerns with regard to issues such as tin whiskers, tin pest, etc.. that were the original concern.

Some customers will accept Lead Free only if the producer can assure them that the components and associated processes will be as good or better than historical Tin Lead production. That's difficult to sign up to without extensive research and test scenarios which again relates to time and money.

It's a scary perspective, but the standard finish for some common components has been in effect Lead Free without general knowledge before it became a popular term and a compliance issue. In these cases, the norm has been and still remains Lead Free.

STI training kits are still available in Tin Lead and Lead Free versions but the task of sourcing Tin Lead Parts is becoming more of a challenge with each passing day. If you are Lead Free, it's easier to find the components that you need these days.

To receive a free Lead Free Sample Kit visit our web site at www.stielectronicsinc.com and fill out the request form.

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. Visit www.stielectronicsinc.com

Jim's Corner

By: Jim D. Raby, PE
Technical Director



It is important that as we bring in a young and inexperienced work force that we spend some quality time with them and train them in the things that we expect them to do. STI Electronics offers IPC certification programs that provide training to the specifications that guide how

work is to be performed and includes inspection criteria. These courses however do not train the young work force in the basics of flux, heat management, how the good solder termination is made and what to expect when one does certain activities. It does not teach the why, how and what.

It is important that the work force understands why we use flux, what it is made from, what happens as we apply heat, and why solder flows and wets at the selected temperature. It is important for them to understand what happens if one does not clean the flux residue, or do an analysis on the solder pot, or have the proper profile for the wave solder machine, oven and select the correct temperature for the soldering iron tip. Lets go over some of these now so you will be in a position to help the younger work force,

I know that you know these things but it helps if we are all on the same page.

1. Flux, generally a rosin base with a natural activator, removes light metal oxides and prevents re-oxidation during the solder process. There are other fluxes that claim to do the job better, but that is debatable.
2. The solder iron tip should be of a size and shape that will transfer maximum heat into the termination in minimum time. Applying pressure does not speed up the heat transfer, it only damages circuit pads and board laminates.
3. The soldering iron tip should be placed on the heel or side of the termination, no pressure, form a small heat bridge, then move the solder to the side opposite the tip and let the solder flow back through the termination toward the heat source. This makes sure that solder wets the entire termination.
4. Stay on the termination long enough so that the solder has flowed through, around and across the entire termination. Remember no pressure.
5. When these simple steps have been completed one can believe that they have a perfect termination.

If you have questions on any of the above subjects please contact me via e-mail, jraby@stielectronicsinc.com.