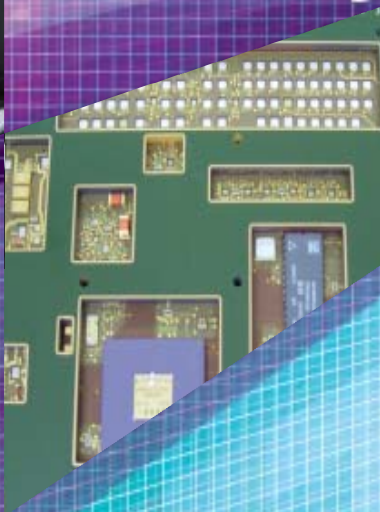


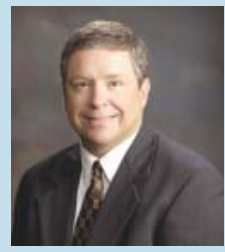
SOLDERING TECHNOLOGY NEWS



INSIDE THIS ISSUE:

- Dave's World
- Training Services Schedule
- Training Materials: Lead Free Rework
- Engineering Services: No Clean
- Sales & Distribution: PACE's TF2500 & XR3000
- Training Services: Update on IPC Standards
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DAVE'S WORLD



2005 is off to a great start here at Soldering Technology International and I hope that is the case for you too. I'd love to explain why things have started with such a bang (Big year for the domestic electronic industry?? All of our ground work for the past few years paying off?? You've discovered we really do what we say we can?? Competitor's phone disconnected??) but I realized a long time ago that I wasn't smart enough to understand the reason why these things happen but I am smart enough to understand that I don't understand them and we have to just keep working harder doing what we can control.

The obvious hot topic for 2005 is the conversion to Lead Free and STI is ready when you are. Our lead

free training kit is off to a good start. Our lab continues to research specific questions and help customers with the entire conversion process. We've been delivering lead free prototypes for a while. Our distribution department offers all the equipment and supplies you'll need. Our training department and lab have teamed up to offer lead free classes that feature the theory behind what's happening and also the hands on experience. That's not the only topic we'll be focusing on this year but right now it looks like it will probably be the most popular.

I appreciate all of the comments we received on the new format for the newsletter. You'll notice another new feature this month as Jim's Corner becomes Division Highlights. Each issue will have an article by one of our three Vice Presidents. Next issue will be by Mark McMeen who is VP of all things technical.

The following will be by Mike Gainey who is VP of making sure you have all of the correct equipment and supplies to build your best product AND that you get those from us. And this issue is by Diana Bradford who is VP of everything else including all things training related, computer related, marketing related, and related to keeping me heading in some particular direction. I hope their articles give you a little more insight into our capabilities and depth.

I also want to tell you about one of our instructors, Mike Bevel. Many of you have met Mike during the 8 months he's been here. Mike has been in the Naval Reserves for several years and his unit has now been activated. By the time you read this, he should

be training in Mississippi and in April he is scheduled to be deployed to Iraq for at least 6 months. We're going to miss Mike being around (although typically he is on the road half the time) and we look forward to him returning to work here later this year or next. We don't know how much communication we'll be able to have with Mike while he's gone but we'll try to keep you posted. Please remember Mike, and all of our other friends, spouses, relatives, and neighbors that are serving our country at this dangerous time. Be proud of them like we are proud of Mike. He'll be over there so we can be free to pursue our dreams here.

David E. Raby

David Raby
President/CEO
draby@solderingtech.com

TRAINING SERVICES 2005 SCHEDULE

MADISON ALABAMA

- February 7-8: IPC-A-610 CIT Recertification
- February 9-10: IPC J-STD-001 CIT Recertification
- February 14-18: MSFC/NASA-8729.2/3 Solder Certification Course
- February 21-25: IPC Rework/Repair and Modification CIT Certification
- February 28 - March 4: IPC-A-610 CIT Certification
- March 7-11: IPC J-STD-001 CIT Certification
- March 14-15: IPC Rework/Repair and Modification CIT Recertification
- March 21-25: MSFC/NASA-8739.4 Cable/Harness Certification Course

LARGO FLORIDA

- February 18: ESD Awareness (Off-Site)
- February 21-March 1: IPC Rework/Repair and Modification CIS Certification
- March 7: ESD Awareness and Prevention (Off-Site)
- March 9-11: IPC-A-610 CIS Certification (Off-Site)
- March 15: ESD Awareness and Prevention (Off-Site)
- March 16-18: IPC J-STD-001 CIS Certification (Off-Site)

TO REGISTER FOR CLASSES VISIT OUR WEBSITE AT WWW.SOLDERINGTECH.COM OR CALL 1-800-767-4919.



**Ann Duncan
Training Coordinator**

COME SEE US AT:

Trade Show	Start Date	End Date	Location	Booth #
SouthCon	February 16, 2005	February 17, 2005	Orlando, FL	309
APEX	February 22, 2005	February 24, 2005	Anaheim, CA	2424
Atlanta SMTA Expo	April 21, 2005	April 21, 2005	Duluth, GA	TBD
Assembly Technology Expo	September 27, 2005	September 29, 2005	Rosemont, IL	5334
Defense Manufacturing Conference	November 29, 2005	December 01, 2005	Orlando, FL	TBD

TRAINING MATERIALS

LEAD FREE REWORK KITS

We live in an imperfect world.

Even in our best electronic production operations, we occasionally need to replace parts that are wrong, defective, or misplaced. Sometimes they need to be resoldered to reach acceptance per our requirements. For whatever reason, we occasionally need to rework the assemblies and if they are built with Lead Free alloys and component/board finishes the skills are complicated by reduced solderability and extended heat ranges. In general, the rework process requires new and extensive rework skills. The new STI Lead Free Rework Training kits will soon be available based upon our successful IPC-7711/21 Certification Training Kit. The standard kits are comprised of Lead Free components and boards soldered with Lead Free alloys. The kits are also available "not soldered" so that the original soldering can be implemented by the rework technician. This may allow the use of specific solder alloy that is implemented in production operations.



Upcoming modifications to the J-STD-001 and IPC 7711/21 Certification and Training Programs will require Instructors to demonstrate their skill using Lead Free materials. To get more information or to purchase these kits please contact Mel Parrish at 256-705-5530 or 1-800-858-0604.

No Clean: Does it really mean No Clean???

No clean fluxes are mainstream process chemistries used today in electronic circuit card manufacturing. Why then do we continue to see corrosion activity and in some cases dendritic growth on hardware that has used no clean chemistries? The answer is straightforward, but the solution is less clear. True understanding of the variables leading to these problem issues is less understood. The easy answer is that the hardware has ionic contamination present in and around the solder joint interconnections and the presence of moisture triggers the chemical reaction. The presence of anions: chlorides, bromides, sulfates, etc.; weak organic acids: adipic, succinic, msa, etc.; and cations: sodium, ammonium, potassium, etc., are the main contaminants present that can have a negative reaction on the surface of the circuit card assembly.

The following case study shows that receipt of bare printed circuit cards is a classic entry point for chlorides and bromides. Components, especially wire wound components, can introduce chloride and adipic acid into the process. Improper assembly and handling processes are classic entry points for sodium, potassium, and chloride (the most damaging of the ionic contaminants). STI performed a very interesting analysis on the different process steps and assembly stages that used no clean flux chemistries on a finished circuit card assembly to understand where ionics were introduced. In addition, analysis was performed at various ion chromatography extraction temperatures to understand where and at what temperatures ionics would likely be measurable.

The standard IPC-TM-650 Test Method for Ion Chromatography (Method 2.3.28, "Ionic Analysis of Circuit Boards, Ion Chromatography Method") extraction temperature is 80° C. STI's Analytical Lab performed testing at 25, 40, 55, 65 and 80° C to understand where ionics are located and at what temperature these ionics became measurable. The idea is to understand the introduction points and how encapsulating no clean flux residue seals off contaminants from the environment.

The incoming bare printed circuit boards showed levels of chlorides in the 5 to 7 microgram per square inch range. Certain wire wound components on the assembly were adding or releasing 4 to 7 micrograms per square inch of chlorides. Improperly cured no clean wave solder flux present on the topside of the printed circuit card introduced high levels of adipic and succinic acid, greater than 100 micrograms per square inch. These introduction points are in excess of the chloride limit, which is 3.0 micrograms per square inch according to customer specification. After the circuit card assemblies were cleaned the following Ion Chromatography tests were performed at various temperature levels to understand where the contaminants were located. SEE CHART 1 for chloride level analysis. The 20 and 40° C extraction temperatures clearly show a clean assembly but as the extraction temperature goes up in the Ion Chromatography test the contaminate level increases showing that as the flux residue is removed from the board surface the contaminate is released that was trapped in the flux residue. It is almost a linear

ENGINEERING SERVICES (CONT.)

No Clean: Does it really mean No Clean???

equation due to consistent release of ionics from the board surface as the extraction temperature increases from 25 to 80° C. This gives a whole new meaning to insuring that all process materials are clean before using no clean chemistries, because one cannot rely on no clean chemistries to solve all of your cleaning or customer cleanliness requirements for finished hardware.

Please contact Mark McMeen at 256-694-1293 or e-mail at mmcmeen@solderingtech.com if you have any questions concerning this article. Visit our web site at www.solderingtech.com to obtain a complete copy of this article.

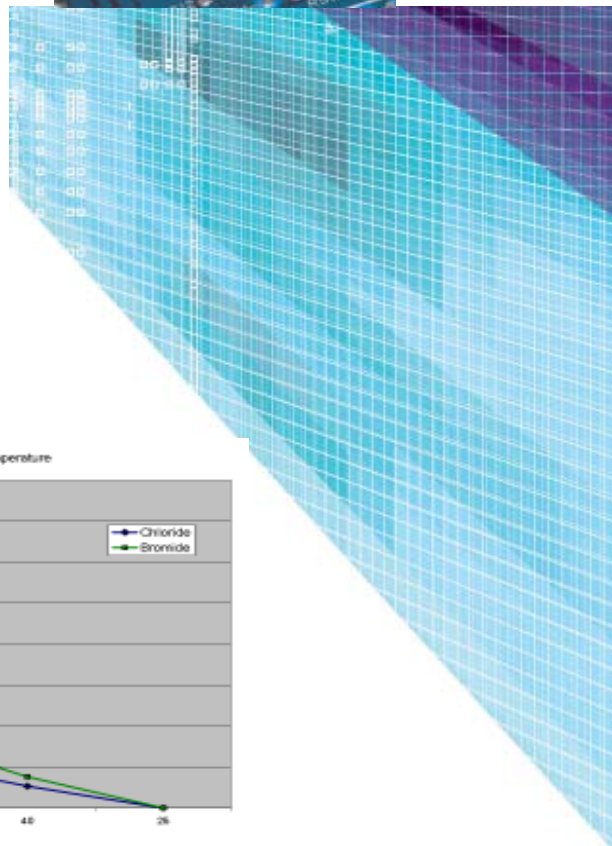
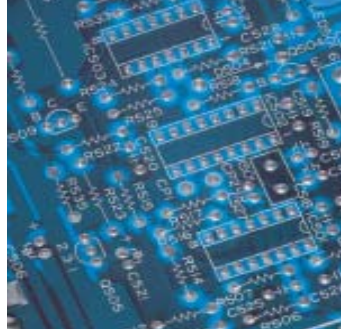
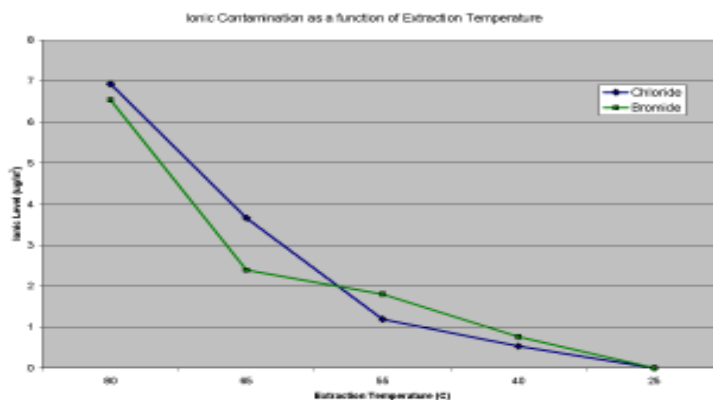


Chart 1



Surplus Inventory Sale

STI, 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.solderingtech.com, and is updated monthly. Please call (256) 461-9191 and ask for Sales or (800) 858-0604. Quantities are limited so don't delay.

Congratulations to David Raby as he embarks on a two year term as President of the SMTA. We know David will be as successful moving the entire SMTA organization forward as he has as President and CEO of Soldering Technology International.

SALES & DISTRIBUTION

PACE'S TF 2500 & XR 3000

Are you sending your BGA rework out for repair? BGA rework is affordable as ever with Pace's TF 2500 & XR 3000.



PACE's ThermoFlo 2500 Systems are the next generation in automated, cost effective solutions for area array package rework. No other system on the market has all of the advanced features found on PACE's TF 2500 systems or is easier to use, ensuring operator acceptance and success! Designed for today's PCBs, the TF 2500 can safely install and remove a wide variety of CSPs, FCs, PBGAs, CBGAs, MLFs, LCCs, and other SMDs.

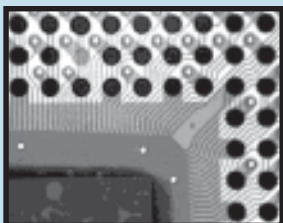
The TF 2500's PC based software is so advanced that creating profiles has never been easier! The PC software guides the operator through an intuitive interface that virtually automates the process. All operations: component pick-up, alignment, placement, and reflow are completed in a single axis, eliminating the risk of component movement after placement. The PCB holder features fine micrometer adjustment for the most delicate X and Y axis alignments. Precise and accurate, within 25 μm (.001"), Z axis movement is ensured through the use of twin rail, linear bearings, similar to those used on automated placement equipment. The optics system utilizes advanced digital, color cameras and the highest quality prism available for amazing image clarity. The TF 2500 combines convective top-side heating with powerful IR bottom-side heating for the most effective, repeatable heating process available today. The system is self-contained and does not require an external air supply or vacuum connection. Upgrade your area rework capabilities and throughput with the TF 2500 today!

The XR 3000 is ideal for inspecting BGAs, CSPs, and other electronic components. The XR 3000 provides immediate feedback on your process using real time images. Images can be viewed through PACE's ThermoFlo software or through an optional, flat screen, LCD monitor (P/N 7015-0010) when used as a stand-alone unit.

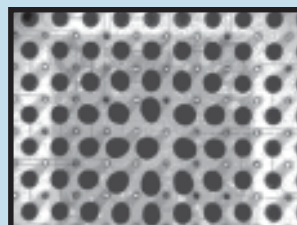
The XR 3000 has been designed with rework in mind so it is able to fit easily on the benchtop and can be relocated quickly. Featuring patented camera technology and outstanding zoom capability, the XR 3000 is able to identify a wide range of anomalies, as small as .025mm (.001"). Using PACE's ThermoFlo software (via TF 1500 & TF 2500), images can be viewed, stored electronically, and managed. Defect analysis reports with images can be easily created.



Area array interconnection anomalies identified by the XR 3000:



Missing solder balls can be identified easily.



Solder balls in the center of the package are oversized due to delamination and compression under die area.

Please contact one of our sales staff for demos and pricing at (800) 858-0604.

TRAINING SERVICES

DAN FOSTER, DIRECTOR OF TRAINING SERVICES

What is happening with the latest revisions of the IPC Standards and Curriculum? I often get a call from individuals asking about the status of a revision or availability of the new curriculum. I figure it is the New Year so lets get up to date. As you may know STI has the contract to write the curriculum for the IPC-A-610D and IPC J-STD-001D courses. I can tell you we are working very hard on completing this in a timely manner for you. We will also be conducting some beta classes so stay tuned for additional updates.

Before I get into the different standards let me give you some of the items that may have changed since you last attended an IPC course. We now have some new terms for Instructors and Operators. Instructors are now called Certified IPC Trainers or CIT. What we used to call Worker Proficiency and Operators are now Certified IPC Application Specialist or CIS.

Ok back to the standards, IPC-A-610D "Acceptability of Electronic Assemblies" will be published by the time you read this. The curriculum for both certification and recertification of CIT and CIS individuals will be available in the May timeframe. The main change to the standard is an update of technology, including lead free. There was also a reformat to group like-items together. For example, if you want to find something about wires and terminals it will be in section 6. You will not have to search four or five sections to find the

information you need on wires and terminals. Pictures of lead-free are added along with new criteria. The BGA section has also been expanded.

IPC J-STD-001D "Requirements for Soldered Electrical and Electronic Assemblies" is also being published at the same time. The training courses for both certification and recertification of CIT's and CIS's are due in the June timeframe. The changes are similar to the IPC-A-610 including BGA criteria, lead-free, and reformatting. It is important to remember that these documents work well together but have entirely different scopes and purposes.

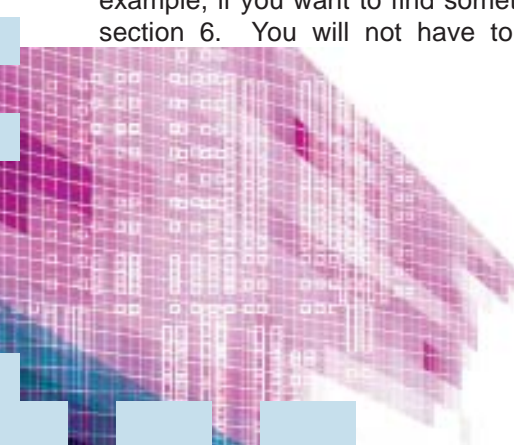
IPC A-600G "Acceptability of Printed Boards" Standard was published July 2004 and the updated curriculum is ready.

IPC/WHMA-A-620A Requirements and Acceptance of Cable and Wire Harness Assemblies is currently in the draft mode. The document is getting a new section on test methods and being updated since its release in January 2002. The standard is due to be released mid 2005 with the updated curriculum to follow shortly thereafter.

IPC-7711A and IPC-7721A Rework of Electronic Assemblies and Repair and Modification of Printed Boards and Electronic Assemblies is published. The course materials for lead free and other updates are in process. The curriculum is expected to be released Spring 2005.

In addition to the specification, IPC-A-610D handbook committee is looking at updating the current 610 handbook. The IPC Handbook 001 is also being revised.

I have tried to give you a snapshot of all the changes that are happening with these documents. Many things can change over a year. You will want to keep up to date on all of the latest documents so visit our website at www.solderingtech.com or IPC's website at www.ipc.org or contact us we would really enjoy hearing from you and getting your input.





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Division Highlights

By: Diana Bradford, VP of Operations/Training Resources



As you can see from the previous pages, STI is prepared to serve our customers in 2005. As VP of Operations/Training Resources, I am proud to say I work for Soldering Technology International, Inc. and I am especially proud of the Training Resources division. Our Training Services staff is unsurpassed in the industry in regards to technical experience and you certainly will not find any group of people more committed to customer service anywhere in the world. We are prepared to continue to help with your training needs in all aspects of electronic assembly including our new courses on Lead Free and BGA Technology. We can train and certify your employees to any of the IPC Training and Certification programs both at the CIT and CIS levels. Also, we have *the* best Instructional Designer/Developer on staff so if you aren't interested in IPC certifications, we can design a training program to fit your specific needs or desired skill sets. Our Training Materials staff, as always, is standing by to help with any training materials you may need such as solder training kits, BGA Reballers, Dummy Components, IPC Materials, Solder Terminals, Terminal Blocks/Wire Holders, etc. We have just added a new line of Lead Free Solder Training Kits to help companies transition their internal manufacturing processes to lead free. In addition you will soon be able to purchase any of these training materials on line at Soldering Technology's E-Commerce Store. As you can see we are busy trying to make sure that we have the services and products to serve you and as always we are eager for your call. Also, if you have any suggestions for new products or services you would like to see us offer please let us know. You can reach me at dbradford@solderingtech.com or (800) 767-4919. Here's to a prosperous Happy New Year! We look forward to hearing from you soon.

Note: *If you would like to receive this newsletter either electronically or by mail, log onto our website at www.solderingtech.com and fill out the form. The newsletter is published bi-monthly.*