sti electronics inc. NEWS

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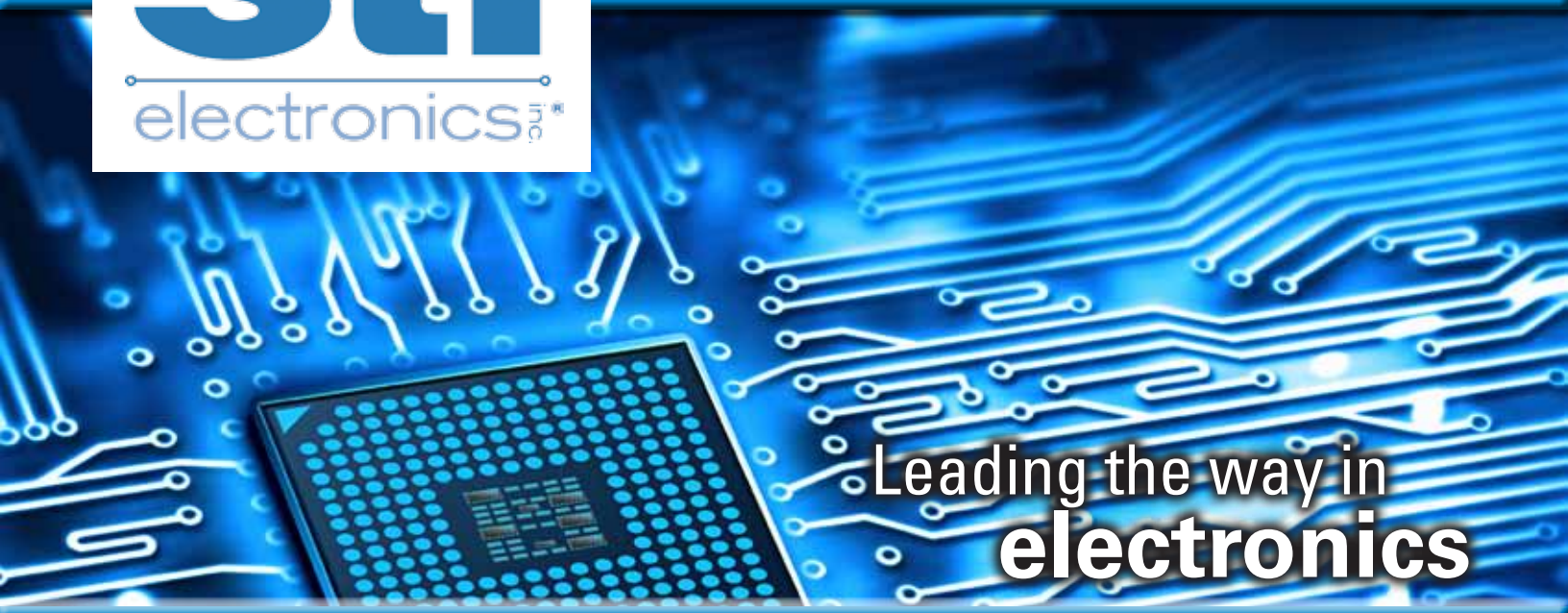

DAVE'S WORLD

By: Dave Raby

June, 2016

In April, I was fortunate to be able to participate in IPC's annual trip to Washington, DC which is appropriately called IMPACT. It was my 2nd year to make the trip and it has quickly become one of my favorites. The purpose of the trip is to encourage the United States Government to help make or keep the United States competitive in electronics manufacturing. (Those are my words; the IPC's are probably a little more politically correct or politically polite.) The IPC staff does a fantastic job of organizing the trip to maximize what can be done in 48 hours and it is pretty amazing.

We started with a networking reception/dinner which featured two speakers, one a long time Democratic policy maker/advisor and the other a long time Republican policy maker/advisor. Most of their talks centered on the presidential election and how they thought it would affect our country/lives/businesses in the near and long term future. Simple stuff to start the program.

We started the next morning with four separate presentations of 30 to 45 minutes each from surrogates of four of the five presidential candidates. (Senator Cruz and Governor Kasich were still in the race at that time. Senator Sanders did not have a representative.) The idea was for them to give us a better insight of their candidate's ideas on manufacturing in the United States as well as other topics. It was interesting hearing directly from people who know the candidates well and while they obviously would like our support, this didn't have the feel of the "made for TV" campaign presentations we are accustomed to. Some were very persuasive and some not so much. Personally, I came out of these sessions with a different ranking of the candidates than I had going in.

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We then had a presentation from the Counselor to the US Trade Representative on the "Importance of Trade to U.S. Manufacturing Competitiveness". It was interesting to hear the amount of work that goes into negotiating multi-country trade agreements. I don't envy the people that negotiate these agreements because of all the actual issues they entail but also because of all the different interests internally they have to, rightly or wrongly, deal with. I did get the impression that the most protected group in the current negotiations are the US automobile companies (more specifically, US truck

manufacturers) and it makes me suspicious of why this is the case.

We then switched roles and we became the educators for the rest of the trip. The IPC staff had scheduled meetings with key Representatives and Senators for us to visit as a group and ask for their help (in several cases to thank them for their past help) on key issues to the electronics manufacturing industry. IPC had done a great job educating us on the specific issues and our focus was on Promoting a 21st Century Economy and Workforce. This included Comprehensive Tax Reform which was big on last year's list. Some important things we had asked for had been approved, however, there is still work to do and this year we were specifically talking about making our R&D tax credits competitive with the rest of the world. We also discussed Driving Technological Innovation and Advanced Manufacturing (asking for continued funding for the National Network for Manufacturing Innovation (NNMI), and Advocating for Smart Regulation (TSCA, Conflict Minerals, and DOL overtime rule changes were the highlights). These group meetings included presentations in the offices of House Majority Leader Kevin McCarthy (R-CA), Representative Bill Huizenga (R-MI), Chairman, House Financial Services Subcommittee on Monetary Policy and Trade, Representative Steve Chabot (R-OH), Chairman, House Small Business Committee, Representative Kurt Schrader (D-OR), Member, House Energy and Commerce Committee, Senator Orrin Hatch (R-UT), Chairman, Senate Finance Committee, and Senator Tom Udall (D-NM), Member, Appropriations Committee; and the Commerce, Science & Transportation Committee. It was an impressive and fun afternoon.

We then had a reception and dinner where we presented Representative Bill Johnson (R-OH) an award (a circuit board shaped like the Capitol) for the outstanding work he has done promoting our causes. Representative Johnson was very gracious individually and then spoke to our group as a whole. After his speech, I, and I'd guess many others in the room, would have thrown our support behind him for President. While I doubt he'd ever run, it is great to know there are people of his caliber and beliefs representing us.

The next day at lunch, we presented an award to Representative Mike Honda (D-CA) in support of the work he has done supporting our industry. Representative Honda's district covers the Silicon Valley so he was well versed in our technology as well as our objectives.

Before and after lunch, IPC's staff had scheduled individual meetings with Members of Congress that represent our businesses. I was able to meet with the staffs of Senator John Cornyn (R-TX) and Senator Ted Cruz (R-TX) and talk about the items mentioned earlier

along with specifics on our facility in Houston. I met with Representative Larry Bucshon (R-IN) for the first time and covered the regular issues plus talked about STI's efforts in Indiana. And then I was able to meet with Representative Mo Brooks (R-AL) who is a long time friend and supporter of doing what is right.

The individual meetings were great. IPC had a staff member in each to help us with the details. From talking to other attendees, the Congressmen and women were happy we were there as business people and constituents to provide input. They may or may not have agreed with our positions but they listened and I can only hope that makes a difference somewhere down the road. We had one Senator, in a meeting I was not attending (no STI office there), from a state I won't mention but I still have to pay taxes there, say that the business leaders we sent in were the enemy. None of us would have expected anything different there.

As I mentioned earlier, this is an annual event and if you are a business owner or executive, I strongly encourage you to attend next year. You'll meet great people, learn a lot and you'll help make a difference on the future of our industry and our country. Because of lots of moving parts, next year's dates won't be out for a while but if you have any interest, please let me know and I'll get the dates to you as soon as they are known.

A few months ago, I received a call from a nice person from a retirement home. I got excited for a minute thinking I was being offered a spot. Instead, she said that their residents liked to take tours of businesses in the community and would we be able to accommodate one. It sounded like something fun to try so I said yes. Because of scheduling conflicts on both sides, the date was set for a couple of months out. I pretty much forgot about it until a few days before and then I was hit with lots of "what have I gotten us into" fears. I had set aside 45 minutes and I figured it might not last that long. When their bus pulled into our parking lot, some of the nicest people I've ever met joined us for the tour. I quickly realized they wouldn't be slowing me down as we walked through. I also quickly realized that we are in the Huntsville area so about half of them were retired engineers and several of the others were retired Army officers. (One married couple had actually met at China Lake in the early 1950's.) Their questions and comments were better than most of the tours we do and after almost 2 hours their chaperone said they had to leave. I thoroughly enjoyed it. I don't know how many other retirement homes do this kind of thing but if you get asked, do it. I promise you will enjoy it.

iPad mini 2 GIVEAWAY! FROM sti electronics inc

Sign up on our email list and be entered automatically into our drawing for an iPad mini 2. Winner will be randomly selected from our email contact list.

Congratulations to William Thomas, our latest winner of an iPad mini 2

SIGN UP NOW!

Surface Finish Selection

Contact Information:
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Director, Training Materials
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The available choices for circuit board surface finish has increased dramatically in recent years. In the past, selections for board finishes were limited to forms of Tin Lead such as Plate Reflow or HASL, emersion nickel immersion gold (ENIG), or Copper with Organic Solderability Preservative (OSP). With the addition of Lead Free options the number of alloys as well as methods is greatly expanded. Combine that with significant alternative flux formulations each with advantages and disadvantages and selecting the right combination can be mind boggling.

Board finish availability for training boards from STI Training Materials is necessarily diverse to represent these variations in the production processes and their impact on skills necessary to produce acceptable product. STI continues to offer the traditional Tin Lead HASL finishes, but now we also offer HASL Sn100, Immersion Sn, Immersion Silver, and ENIG. It is interesting to note that the most popular finish selected for STI Training boards is still Tin Lead. Other finishes react differently to the soldering process and require additional skill consideration to ensure equal success. Knowing what the applied finish is on your board is an important consideration for soldering success and acceptability. This is especially true for the rework processes. Loss of solderability after initial reflow may be significantly reduced from what you might expect with the historical Tin Lead option.

Students attending STI Training sessions for IPC Instructor Certification will typically see the Sn100, HASL Lead Free finish.

Please contact us for the current combinations for the various board designs or any additional finish types you would like.

See the ad in this newsletter for our featured Solder Training Kit. This edition's featured kit is our popular Rework Repair IPC-7711/21 Training Kit.

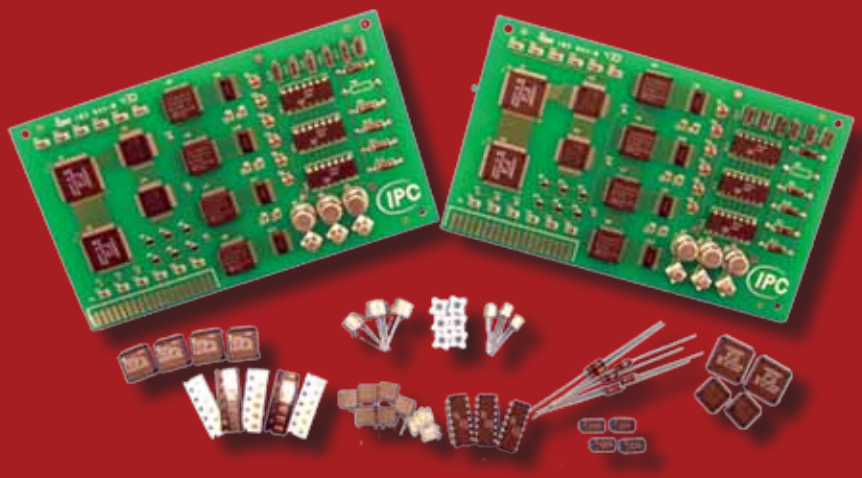
Talk to the Experts...

STI's Training Resources are staffed with people that are experienced with Soldering Skill Training. Many of our personnel originally conducted training in various "Train the Trainer" programs either from the NASA or DoD source programs. We know the challenges of training at all of the necessary levels for production and success. Our Training Materials are created to ensure your success, let us help you with your next challenge.

Many thanks to our loyal customers and friends throughout the industry. We look forward to providing continued support for all of your training projects.

Rework/Repair Training Kit

Rework/Repair training kits are required for certifying rework skills for IPC 7711/21. This kit provides two boards that are fully assembled and soldered with an additional set of component parts for removal and replacement training exercises. This kit is available in either a LEAD FREE or a Tin Lead version. The components are packaged in ESD shield bags to promote ESD awareness. Custom kits, individual boards, unassembled boards and parts are also available.



10% OFF

Mention this Ad and Receive 10% Off of the Regular Price for this Kit

Ask for #405-2435

(800) 858-0604
sales@stielectronicsinc.com

While this kit was specifically designed for use with the IPC 7711/7721 Training Program, the diversity of component configurations allows it to be used for many different applications. It can be used for customized employee training, employment qualification, and even process development.

Why Electronics Failure Analysis?

PART A

Contact Information:
Marietta Lemieux
Analytical Lab Mgr.
mlemieux@stielectronicsinc.com

Failure mechanisms in today's electronics can be the result of complex components and assemblies, harsher lifecycle environments and ever changing material sets. Failures most commonly occur near the beginning and near the ending of the lifetime of the hardware. Whenever they occur, failures can cause costly downtime and delays, product recalls and reputational damage.

Effective failure analysis is critical to product reliability. Without identifying the root causes of failure, true corrective action cannot be implemented and the risk of the problem arising again, increases. Anyone involved in any aspect of electronics failure analysis needs a clear understanding of the failure mechanisms of electronic products as well as familiarity with the tools and techniques used to determine the root causes of failures.

STI Electronics, Inc. Analytical Lab, specializes in failure analysis and material analysis of electronic assemblies, printed circuit boards (PCBs) and electronic components in all stages of the assembly process, for various applications. We use a combination of a wide variety of equipment, appropriate techniques based on the failure information (both destructive and non-destructive) and our accumulated expertise to diagnose the root cause and help resolve customer issues.

In this particular newsletter we will discuss some examples that would apply to the analysis of electronic components. Failure analysis of electronic components would include integrated circuits (ICs), memory chips, transistors, diodes, capacitors, resistors, light emitting diodes (LEDs), power modules and others.

The following analysis example involved evaluation of an IC component that was not functioning correctly and would fail in-circuit testing at the customer site. Figure 1, illustrates part of the writing on the outside of the component, while Figure 2 reveals a SEM (Scanning Electron Microscope) image of the corresponding writing on the die itself, after having been exposed through chemical decapsulation

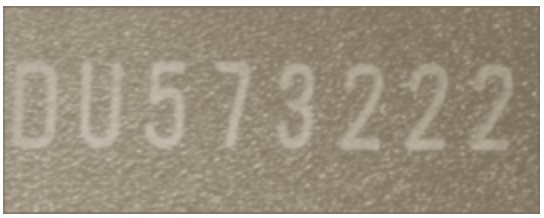


Figure 1: Writing on outside of component

Figure 2: Corresponding writing on the exposed die surface

When comparing the writing in both images, a clear distinction can be observed. The "U" description on the outside of the part corresponds to a 2.5V VDDQ range max power supply support, while the "W" on the

die surface supports a 1.8V VDDQ power supply. The external writing on the part in this particular case does not correspond to the max power supply the internal die can support, which could obviously lead to functionality issues of the component.

The following example is a typical EOS evaluation performed on an IC. Figures 3 and 4 below shows some significant EOS damage on the die surface / wire-bond connections:

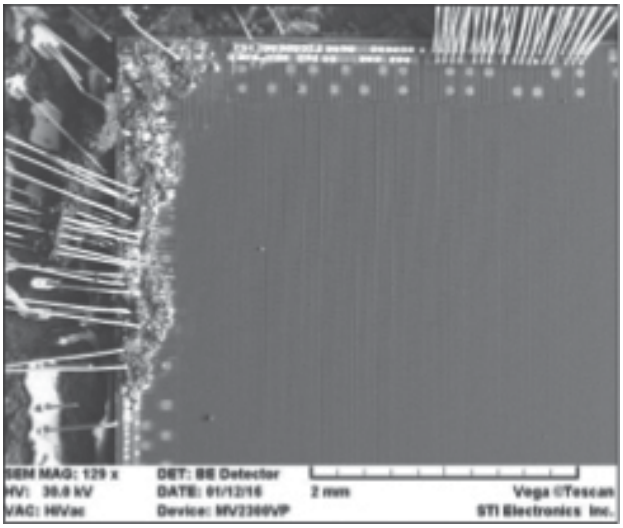


Figure 3: Affected corner of the die

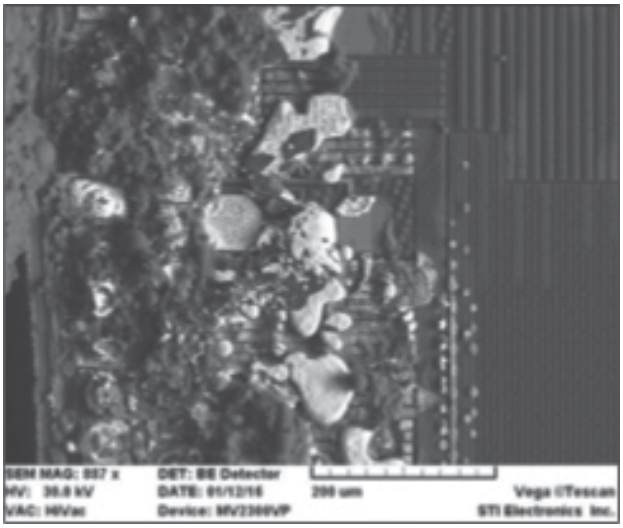


Figure 4: Close-up significant EOS damage

The last example is a micro-sectional SEM evaluation showing a capacitor component with a large fracture through the internal metallization:

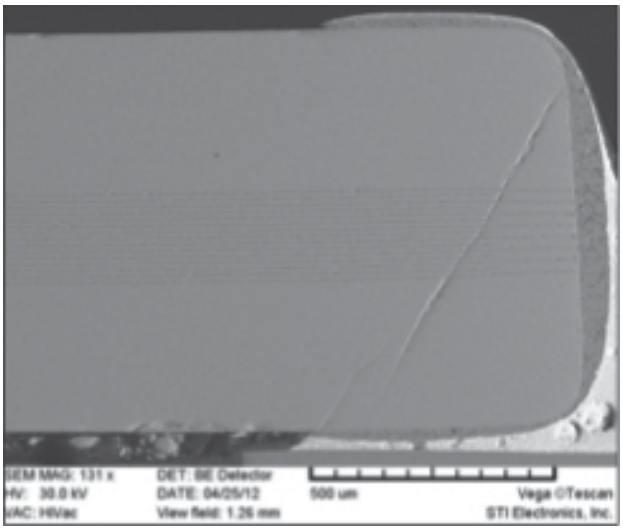


Figure 5: Overall view fractured capacitor

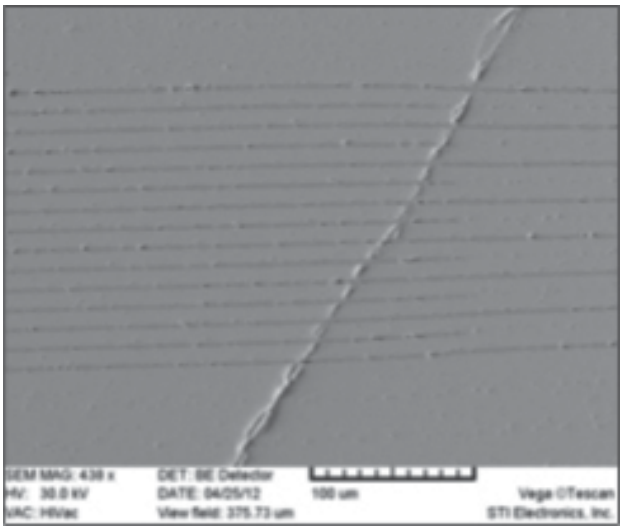


Figure 6: Close-up fracture through metallization

Some analyses typically applied to electronic components would include: solderability/wetting balance testing, ESD/EOS analysis, SEM/EDS surface evaluation, micro-sectional SEM evaluation, electrical testing, visual inspection, real-time x-ray analysis, ionic contamination testing and accelerated aging testing. In part B we will explore further failure modes and examples of why electronic failure analysis is important. If you have any questions concerning techniques or failure modes please call Marietta Lemieux at 256-705-5531.

ENGINEERING SERVICES

You may remember that STI is in the process of upgrading our equipment and capabilities. I'm pleased to announce that one of those upgrades is already in place. It is a new NordsonYESTECH FX-940 ULTRA 3-D Automated Optical Inspection (AOI) system.

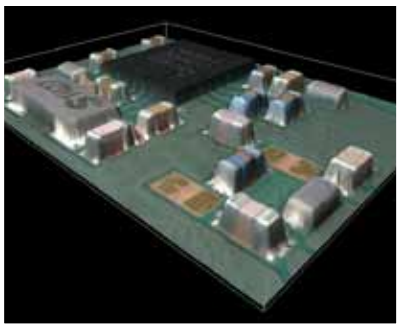
Contact Information:
Mark McMeen
Vice President,
Engineering Services
mmcmeen@stielectronicsinc.com

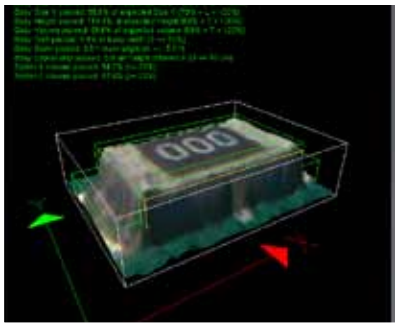
This new AOI system provides STI's Contract Assembly Services with a significant improvement to throughput with the ability to inspect 1.5 million components per hour. The system's accuracy rate will give customers a level of confidence far exceeding that of visual inspection or other AOI systems using older technology.

The new image processing integrates 3D inspection, color inspection, normalized correlation and rule-based algorithms. Coupled with advanced LED lighting it provides complete inspection coverage with an unmatched low false failure rate.

The majority of STI's customers require high reliability for their products. This new system will help STI provide its customers with the manufacturing quality they desire and the built-in SPC will help STI maintain tight control of our processes.

Stay tuned for our next upgrade and feel free to contact me about any of our engineering services and capabilities.





STI Announces New Training
SHOP FLOOR SERIES

STI has been diversifying its training courses by including process and management training. The Shop Floor Series is designed to provide process and management training for individuals involved in Electronics Manufacturing. The Shop Floor Series is modular allowing students to pick and choose modules most closely related to their operations.

SHOP FLOOR SERIES: Problem Solving

Madison, AL **September 7** **$150.00**

Students will learn the basic techniques for problem solving.

TOPICS INCLUDE:

- Continuous Improvement methodology: Plan-Do-Study-Act
- What is Problem Solving
- Do's and Don'ts
- Problem Solving Tools

SHOP FLOOR SERIES: Supervisor 1

Madison, AL **September 8** **$150.00**

Students will learn topics such as communication, conflict resolution, and how to provide effective feedback to others.

TOPICS INCLUDE:

- Role of a Leader
- Boss vs. Leader
- Maslow's Hierarchy of Needs Application
- Personal Strengths-Weaknesses-Opportunities-Threats

Register for Problem Solving

SIGN UP NOW!

Register for Supervisor I

A-600 TRAINING SPECIAL

IPC-A-600 Certified IPC Trainer (CIT)
Certification/Recertification Program
SPECIAL OFFER

All Attendees Will Receive the IPC-A-600 Sample Boards Kit

FREE

ONE CLASS ONLY

September 27, 2016
Madison, AL

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Florida Training Centers

Nights and Weekend Classes

STI realizes that many potential students have schedules or commitments that prevent them from attending classes with a traditional 8:00am to 4:30pm Monday through Friday schedule. With this in mind, STI is now offering some of its training programs on nights and weekends at our Florida training centers.

These classes still maintain the required class hours, but the hours include 5:30 pm to 8:30 pm Monday through Thursday and Saturdays from 8:30 am to 4:30 pm.

We are also pleased to announce the addition of the IPC-A-600 "Acceptability of Printed Boards" program to our Florida locations. Please check the website for dates in 2016.

Pat Scott
Director of Training Services
pscott@stielectronicsinc.com
(800) 858-0604

Click Here to View Classes with Alternative Schedules

For additional information on these classes you may contact our Customer Service Department

1-800-858-0604
or
sales@stielectronicsinc.com

STI's Training Services - Madison, AL

2016 Schedule

J-STD-001 "Requirements for Soldered Electrical & Electronic Assemblies"

J-STD-001 Certified IPC Trainer (CIT) Certification		J-STD-001 Certified IPC Application Specialist (CIS) Certification	
June 13-17 August 29 - September 2	October 3 - 7 November 28 - December	2 June 2 - 24	September 19 - 23

J-STD-001 Certified IPC Trainer (CIT) Recertification		J-STD-001 Certified IPC Application Specialist (CIS) Recertification	
June 29 - 30 July 27 - 28 August 24 - 25 September 21 - 22	October 26 - 27 November 16 - 17 December 7 - 8	June 1 - 3 September 29 - 30	November 7 - 9
		Additional dates available upon request.	

J-STD-001 Certified IPC Trainer (CIT) Space Addendum		J-STD-001 Certified IPC Application Specialist (CIS) Space Addendum
July 1 July 29 August 26 September 23	October 28 November 18 December 9	November 9

IPC-A-600 "Acceptability of Printed Boards"

IPC-A-600 Certified IPC Trainer (CIT) Certification/Recertification	IPC-A-600 Certified IPC Application Specialist (CIS) Certification/Recertification
September 27 - 30	September 12 - 14

Course dates subject to change based on class capacity and demand.

Click here for Class Registration

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STI'S Training Services - Madison, AL

2016 Schedule

IPC-A-610 "The Acceptability of Electronic Assemblies"

IPC-A-610 Training Center

IPC-A-610 Certified IPC Trainer (CIT) Certification		IPC-A-610 Certified IPC Application Specialist (CIS) Certification/Recertification	
June 13-16 August 23 - 26	October 24 - 27	July 6 - 8	September 7 - 9

IPC-A-610 Certified IPC Trainer (CIT) Recertification	
June 27 - 28 July 25 - 26 August 22 - 23 September 19 - 20	October 24 - 25 November 14 - 15 December 5 - 6

IPC/WHMA-A-620 "Requirements and Acceptance for Cable and Wire Harness Assemblies"

IPC/WHMA-A-620 Training Center

IPC/WHMA-A-620 Certified IPC Trainer (CIT) Certification*		IPC/WHMA-A-620 CIS Certification Recertification*	
August 1 - 4	October 11 - 14	June 6 - 8 September 26 - 28	December 12 - 14

IPC/WHMA-A-620 Certified IPC Trainer (CIT) Recertification*	
June 9 - 10 July 25 - 26	September 12 - 13 October 17 - 18

IPC/WHMA-A-620B-Space Certified IPC Trainer (CIT) Certification	
October 17 - 21	August 8 - 12

IPC/WHMA-A-620B-Space Certified IPC Trainer (CIT) Recertification	
July 27 - 29	September 14 - 16

***Prerequisite for IPC/WHMA-A-620B Space Certification/Recertification**

Course dates subject to change based on class capacity and demand.

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STI'S Training Services - Madison, AL

2016 Schedule

IPC-7711/7721 "Rework, Repair and Modification of Electronic Assemblies"

IPC-7711/7721 Certified IPC Trainer (CIT) Certification		IPC-7711/7721 Certified IPC Application Specialist (CIS) Certification (Mods 1-7)	
June 27 - July 1 September 12 - 16	October 31 - November 4	July 18 - 22 October 3 - 7	December 12 - 16

IPC-7711/7721 Certified IPC Trainer (CIT) Recertification		IPC-7711/7721 Certified IPC Application Specialist (CIS) Recertfication
September 8 - 9 October 19 - 20	November 7 - 8	July 7 - 8 September 26 - 27

MSFC/NASA Courses

NASA-STD-8739.4 Cable/Harness Certification Operator/Inspector		NASA-STD-8739.1 Staking and Conformal Coating Certification Operator/Inspector	
August 22 - 26	November 28 - December 2	August 29 - September 1	December 19 - 22

NASA-STD-8739.4 Cable/Harness Recertification		NASA-STD-8739.1 Staking and Conformal Coating Recertification	
November 2 - 4	December 12 - 14	October 31 - November 1	

Customized Training Courses

Basic Soldering		ESD Awareness	BGA Rework
July 5 - 8	November 14 - 18	Dates Available Upon Request	

Click here for Class Registration

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To Register for a Class Visit our Website

www.stielectronicsinc.com

STI'S Training Services - Houston, TX

2016 Schedule

J-STD-001 "Requirements for Soldered Electrical & Electronic Assemblies"

J-STD-001 Certified IPC Trainer (CIT) Certification		J-STD-001 Certified IPC Application Specialist (CIS) Certification	
August 1 - 5		July 25 - 29 September 26 - 30	November 7 - 11
J-STD-001 Certified IPC Trainer (CIT) Recertification		**J-STD-001 Certified IPC Application Specialist (CIS) Recertification**	
October 13 - 14	October 31 - November 1	July 7 - 8 September 15 - 16	October 10 - 11 December 8 - 9

IPC-A-600 "Acceptability of Printed Boards"

IPC-A-600 Certified IPC Trainer (CIT) Certification/Recertification	IPC-A-600 Certified IPC Application Specialist (CIS) Certification/Recertification
Course Available Upon Request	August 24 - 26

IPC-7711/7721 "Rework, Repair and Modification of Electronic Assemblies"

IPC-7711/7721 Certified IPC Trainer (CIT) Certification	IPC-7711/7721 Certified IPC Application Specialist (CIS) Certification (Mods 1-9)	
Course Available Upon Request	September 6 - 14	November 28 - December 6
IPC-7711/7721 Certified IPC Trainer (CIT) Recertification	**IPC-7711/7721 Certified IPC Application Specialist (CIS) Recertification**	
July 21 - 22	October 20 - 21	July 18 - 19

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To Register for a Class Visit our Website

www.stielectronicsinc.com

STI'S Training Services - Houston, TX

2016 Schedule

IPC-A-610 "The Acceptability of Electronic Assemblies"

IPC-A-610 Certified IPC Trainer (CIT) Certification		IPC-A-610 Certified IPC Application Specialist (CIS) Certification/Recertification	
June 27 - 30 August 9 - 12	October 4 - 7	September 20 - 23	November 15 - 18
IPC-A-610 Certified IPC Trainer (CIT) Recertification			
August 22 - 23	November 2 - 3		

IPC/WHMA-A-620 "Requirements and Acceptance for Cable and Wire Harness Assemblies"

IPC/WHMA-A-620 Certified IPC Trainer (CIT) Certification		IPC/WHMA-A-620 CIS Certification/ Recertification
August 16 - 19	October 25 - 29	Course Available Upon Request
IPC/WHMA-A-620 Certified IPC Trainer (CIT) Recertification		
July 7 - 8	October 17 - 18	

Customized Training Courses

Basic Soldering		Shop Floor Series - Print Reading
July 11 - 15 August 29 - September 2	December 12 - 16	Course Available Upon Request
Shop Floor Series - Problem Solving		**Shop Floor Series - Supervisor 1**
Course Available Upon Request		Course Available Upon Request

Course dates subject to change based on class capacity and demand.

To Register for a Class visit our Website at www.stielectronicsinc.com

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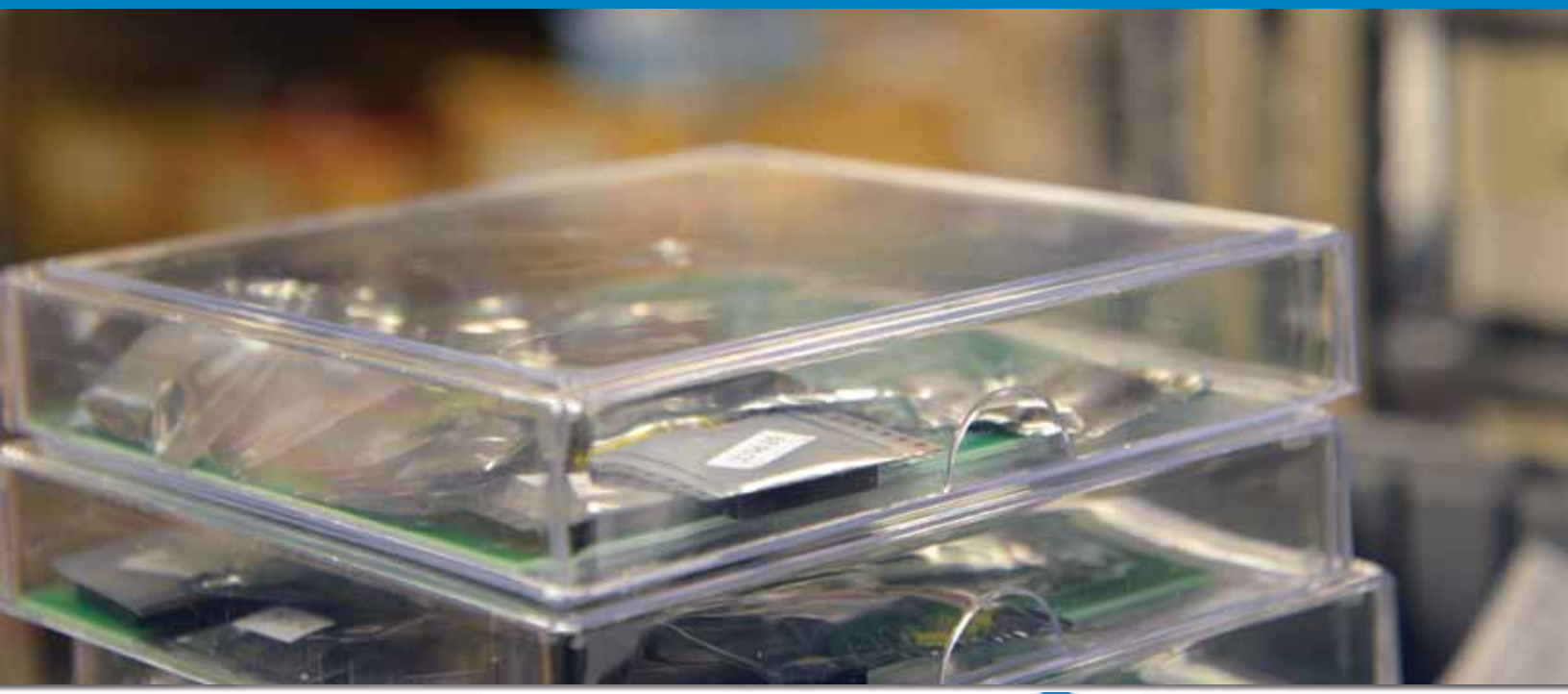

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Thank you for your interest in STI

Stay Tuned for our Fall Newsletter