NEWS

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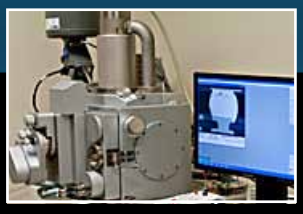
sti electronics inc.®

Leading the way in electronics



DAVE'S WORLD

By: Dave Raby

July 2014

STI Electronics, Inc. became a distributor of Electronic Assembly and Solder Supplies in 1997. As an analytical lab and a prototype/manufacturing company, we had always had a need for consumable products. While we were in California (prior to 1993) there was always someone around to supply the necessary products. When we moved to Alabama, we were so small and all the local sales people were busy with larger customers. As a result, we were still mostly buying from our old suppliers in California. Obviously there was no internet in 1997 so options were few. At some point we realized there were a lot more of us small companies than there were the large ones and they were probably all having the same issues we were. As a result, decided to solve the problem ourselves and become a distributor.

Our goal was to sell to the small guys in the Southeast figuring combined they more than made up the volume of the big guys and as small companies, they didn't have all the pricing and other demands that went along with the large companies. We also believed our support from our training and our technical people would provide valuable and unique support to customers. Through national (and international) friendships, we became a Hakko distributor, much to the consternation of many of their own people in the Southeast and for a while they were our only product line. A little later, AIM Solder was kind enough to let us sell their products and soon afterwards others began to follow. (As of the end of June, we had over 150 lines that we sold.)

Over the past 17 years, we've had a great time but the business has evolved considerably. Like book stores, grocery stores and hardware stores, it has become harder for little guys to compete.

Contact Information:
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President/CEO
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Pricing is key to customers and the internet has made the world a much smaller place so competitive pricing is always a click away. Customers still seem to like our ability to demonstrate products and work with all levels of employees to make sure everything is the right fit. Then they go online and buy it for ½% less. I don't see that changing in the future.

Last Fall, we were approached by HISCO to acquire our distribution business. I get calls every week about somebody wanting to buy us but most are along the lines of "we really love your company and have a

DAVE'S WORLD cont.

client that would like to buy it, now what is it you do?" I'm not looking to sell and I don't waste my time on those. HISCO's approach was different. They had done their homework and the acquisition made sense to them and most importantly, the timing was right for us. After several meetings and phone conferences, STI made the decision to sell its distribution division and signed the final papers on July 8th.

HISCO is a great company. They've been around for 43 years and have 34 branches. They aren't on the largest tier by size of distributors but they are definitely many levels above where we were (at least 34 times). HISCO also has the tools and resources to be competitive. Purchasing STI's distribution division increases their market share in an area they didn't have previously. STI has competed with them since 1997 but I never met their management until this year. I was very impressed with their President, Bob Dill, and his entire team. They are industry veterans and dedicated to taking care of customers. Please give them a chance to take care of your distribution needs.

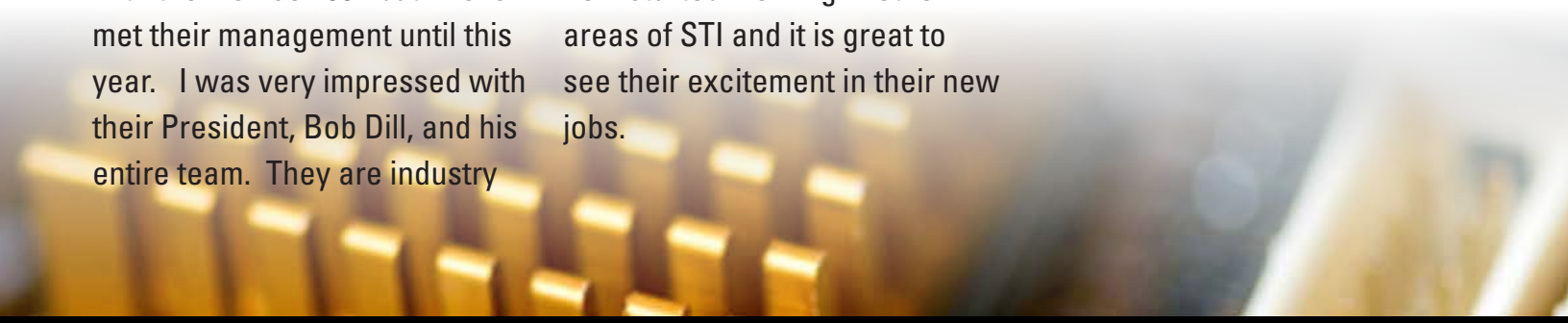
For STI, this is a good move. It allows us to concentrate on the Training Services and Training Materials businesses as well our Contract Manufacturing and Analytical Lab. Most of you bought from more than one of our divisions so we still expect and appreciate your support.

Personally, I have very mixed emotions. The business side of me knows 100% this is the right thing to do. The emotional side of me will miss the interaction with all the people and product lines we have worked with. I have met some fantastic people on this side of the industry and I hope we still run into each other at trade shows and conferences. Several of our people you have known through Distribution have now started working in other areas of STI and it is great to see their excitement in their new jobs.

As always, if there is anything we can do to serve you better, please let us know. You can contact me or anyone else listed anywhere in this newsletter.

Please follow us on twitter (@daveraby) or facebook (STI Electronics) for more up to date STI information.

All of STI and especially the Raby family extend condolences to the family of Dieter Bergman at his recent passing. Dieter has served the electronics industry for years and will be greatly missed.



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Hisco
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Website: www.stielectronicsinc.com

FOR IMMEDIATE RELEASE

Hisco Inc. Acquires the Sales and Distribution Division of STI Electronics, Inc.

Houston, TX - Hisco Inc., North America's Premier Distributor of Mission-Critical Materials, expands its U.S. distribution footprint with the acquisition of the Sales and Distribution Division of STI Electronics, Inc. (STI), which provides assembly products and soldering supplies to the electronics manufacturing industry.

STI is a full-service partner that delivers advanced engineering and analytical lab support, training materials and services, and distribution solutions for the electronics industry. All other services, including training services, failure analysis, prototyping, and small- to medium-volume PCB assembly, will remain with STI. The STI distribution facility in Madison, AL will operate as a Hisco location to service local customers.

Bob Dill, President of Hisco Inc., says: "We are excited to acquire the STI Sales and Distribution division. Their proven track record of customer service and quality products fits perfectly with the Hisco value proposition. This acquisition enables us to further expand our signature fast, friendly service to customers in the Southeast."

"This is a good day for our distribution customers and for STI," States David Raby, President/CEO of STI. "Hisco has a great reputation for customer service and will continue providing the level of service our customers have become accustomed to receiving. STI will continue to focus on our remaining divisions that provide training services and training materials as well as contract manufacturing, analytical and failure analysis, and prototype work."

For more information about STI Electronics, Inc., visit www.stielectronicsinc.com or call 800-858-0604.

For more information about Hisco Inc., please visit www.hisco.com or call 877-447-2560.

About Hisco

For more than 40 years, Hisco® has delivered value to customers through quality products, process solutions and local inventory. Today, the international branch network includes 34 stocking locations — 23 in the United States (including Puerto Rico), 10 operated by the HiscoMex subsidiary in Mexico and one operated by HiscoCan in Canada. Two converting facilities provide value-added fabrication and custom repackaging. Hisco® also offers vendor-managed inventory programs and specialized warehousing for chemical management, cold storage and logistic services.

About STI Electronics, Inc.

Since 1982, STI Electronics, Inc. (STI) has been the premier full-service organization for training, consulting, laboratory analysis, prototyping, and small- to medium-volume PCB assembly in the electronics industry. STI also produces a complete line of solder training kits and training support products. For more information, visit www.stielectronicsinc.com.

TRAINING BOARD FINISHES

Contact Information:
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Director Training Materials
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Board finish materials and processes have a significant affect 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 skill development created during training.

STI offers many different board finishes for these 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 Hot Air Solder Level (HASL) Tin Lead. HASL Tin Lead is by far the most preferred finish for all hand solder training projects today as it has for many years past. The STI ENIG boards are available for Fine Pitch Surface Mount applications since the surface finish is very flat and planar as required for this technology.

Similar to the training, process development or resolution is better served with an equivalent board surface finish. Variation and performance of the surface finish requires significant process compensation to accommodate various solution rates, appearance, and wetting properties to mention a few.

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

Our feature Training Kit of the month is the commonly used IPC J-STD-001 Certification Kit which is available in either Lead Free (Immersion Tin) or Tin\Lead HASL finished board. 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 during the release month of this article.
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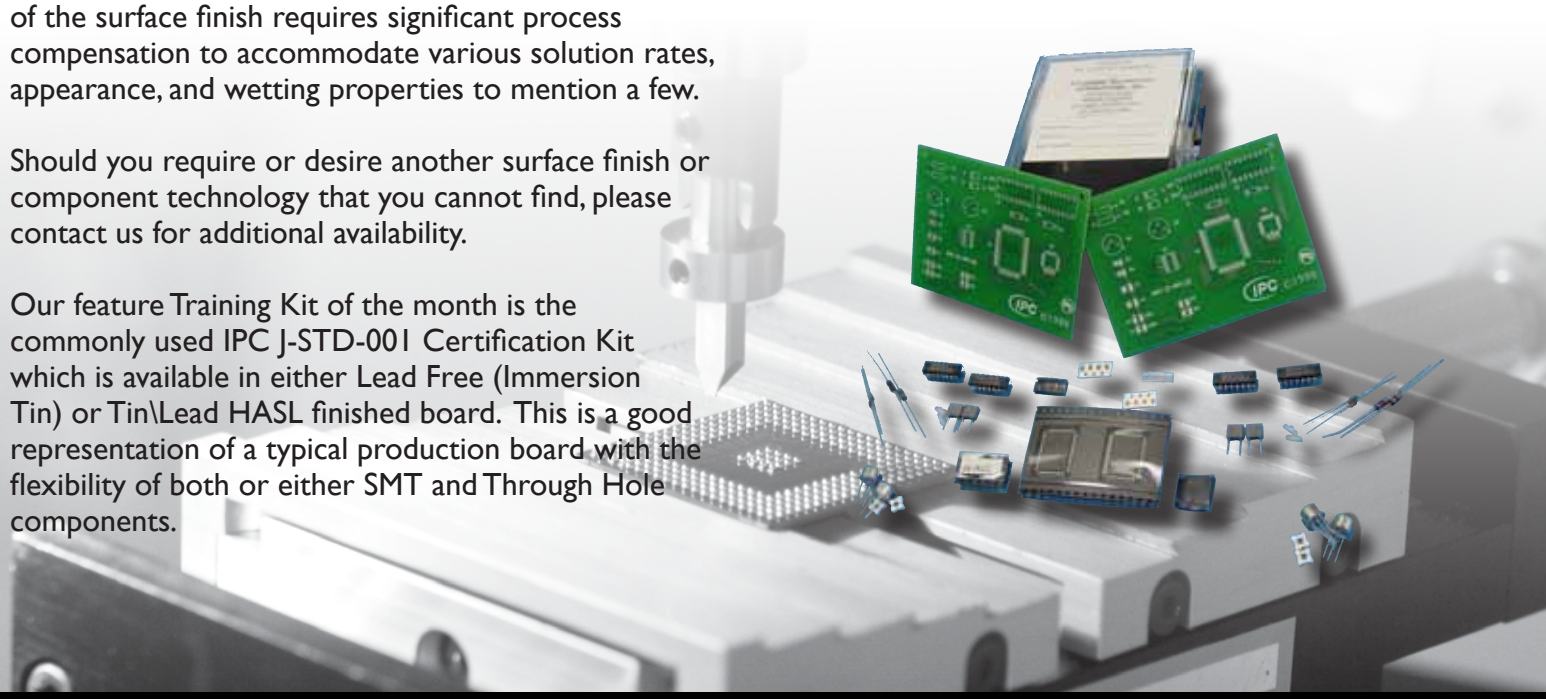


MATERIAL & FAILURE ANALYSIS

As an analyst it is of utmost importance to ensure accuracy at all times. We have to thus recognize that using multiple observations of a specimen increases the probability of a successful identification. Let's take elemental composition analysis, for example. STI can perform such an analysis via either scanning electron microscopy-energy dispersive spectroscopy (SEM/EDS) or x-ray fluorescence (XRF) analysis.

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

VARIATION IN DEPTH OF PENETRATION IN XRF AND SEM/EDS ANALYSIS AND ITS AFFECT ON THE ELEMENTAL COMPOSITION RESULTS

Both of these analysis techniques rely on the theory that when an x-ray strikes atoms with sufficient energy, they can knock out inner shell electrons, leaving a vacancy left in the lower shell. Since energy can neither be created nor destroyed, the energy must manifest itself in some form and this can result in the creation of a photon. The energy of the photon will be equal to the delta of the two energy levels. Due to the fact that these energy levels are characteristic of the type of atom involved, the energy of the released photon can tell something about the atom it came from and thus the elements of which the sample is composed.

When the inner shell electrons are knocked out of their position by a beam of electrons, the analytical technique is called scanning electron microscopy-energy dispersive spectroscopy (SEM/EDS).

When the inner shell electrons are knocked out of their position by x-rays, the analytical technique is called x-ray fluorescence (XRF).

Both analytical techniques can provide information on the elemental composition of a specimen, but how do they differ? Recent evaluation of an 90%Sn/10%Pb electroplated terminal via SEM/EDS analysis revealed a Pb-content averaging 1.5%, when XRF analysis of the same terminal sample revealed an average Pb-content of 9.5%. A small difference could be expected, but what caused the large discrepancy between the two method types?

The techniques differ in the depth to which they can analyze materials. This depth is determined by the attenuation of the beam as it goes into the material. The depth of analysis of the SEM/EDS technique is determined by the mechanics of the electron and its trajectory through the material. When an electron enters the material, it bounces from atom to atom and eventually comes to a stop. It is during the first phases of this process, while the electron still has a lot of energy that it can knock loose an inner shell electron. The resulting x-ray photon is detected by an x-ray detector. This can result in reduced accuracy in inhomogeneous and rough samples. In XRF however, photons do not slow down, they are either scattered or absorbed. As a beam of photons travels through a material, a certain percentage of the photons are absorbed per depth of the material it travels through.

This explains why SEM/EDS, is considered a surface analysis technique, with a penetration depth of approximately 40-120 µinches (1.02-3.05 µm), while XRF is considered a bulk measurement and has the capability of measuring a depth up to 3,000 µinches (76.2 µm).

Micro-sectional SEM evaluation of our terminal sample, described above, clarified the discrepancy in measurement:

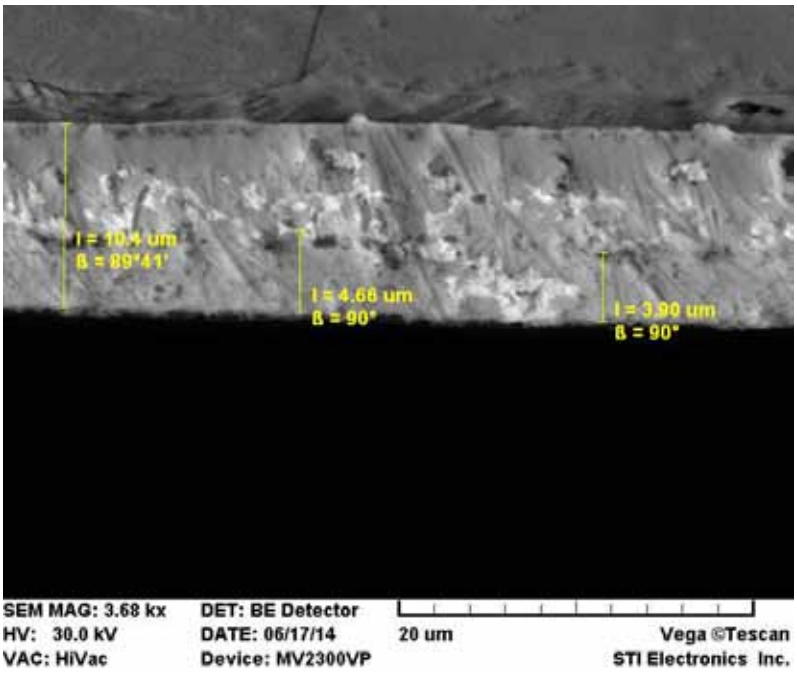


Figure 1: Pb-rich area present approximately 4µm from the surface of the contact.

In the above backscatter electron images, the lead (Pb) is represented by the bright regions within the alloy mix. In both cases a concentrated Pb (lead) area was found below 4µm from the contact surface.

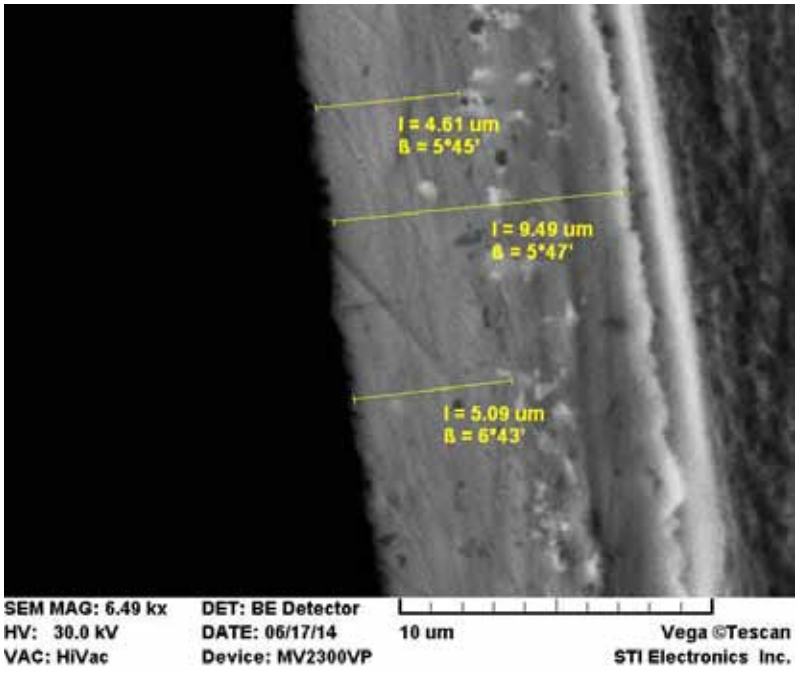


Figure 2: Pb-rich area present approximately 4.5-5µm from the surface of the contact.

ENGINEERING SERVICES

STI's involvement in research and development programs, both in component packaging technologies and electronics assembly manufacturing, has brought about the installation of the latest and most advanced equipment and the acquisition of the top people in this field.

MANUFACTURING

STI Electronics' manufacturing lab encompasses 26,000 sq ft of floor space containing two surface mount lines, automated through-hole processing, and multiple flexible work cells for final assembly, 7711/7721 certified rework and repair, box build, and test. The facility and equipment is complimented by a highly skilled and trained work force of electronic technicians and associates, all of whom are certified to the highest standard of IPC J-STD-001 ES (Space Addendum).

MATERIAL FAILURE ANALYSIS

STI'S Analytical Laboratory's enhanced capabilities are the result of the recent addition of several new analytical tools and equipment. The analytical equipment includes some of the industry's newest and most advanced tools.

MICROELECTRONICS PACKAGING

The Microelectronics Lab was established to meet the rising need for advanced systems development and packaging to address the emerging challenges and issues facing today's electronics assemblies. Advanced design and modeling software enables STI to design and develop highly integrated hardware to meet shrinking form and fit factor requirements as well as increasing thermal loads. Emerging packaging materials are continuously evaluated to optimize electrical and thermal performance. The microelectronics lab specializes in state-of-the-art packaging design and assembly including current technologies such as Chip-On-Board (COB) and Multichip Module (MCM) as well as emerging technologies such as STI's patented packaging technology termed Imbedded Component/Die Technology (IC/DT®).

CIRCUIT DESIGN

STI's involvement in research and development programs, both in component packaging technologies and electronics assembly manufacturing, has brought about the acquisition of the top people in this field and the installation of the latest and most advanced equipment and design tools. STI is US-based, ITAR registered, and staffed with engineers to design, develop, and assemble a ruggedized electronics assembly in compliance with our customer's specifications. With experience in Defense, Aerospace, Space, and commercial applications, STI is adept to designing and assembling a product to satisfy our customer's requirements.

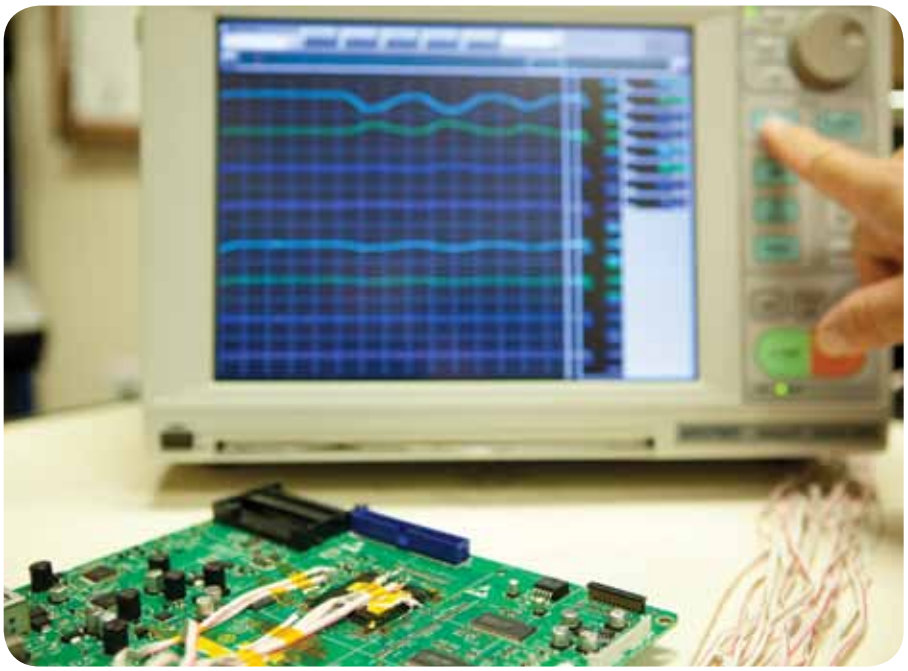
STI is staffed to design, develop, assemble, and test a ruggedized electronics assembly in an advanced cleanroom labratory (Class 1000/ISO Class 6 certified) to meet our customer's specifications.

ELECTRICAL TEST SERVICES

STI offers a variety of electrical test services from component-level testing/characterization to system-level testing. Electrical testing is offered to validate values in accordance with component manufacturer's performance specifications, a customer's test specification, as well as standard test methods.

- Analog and Digital Designs
- High Frequency RF Layouts
- Controlled Impedance Designs
  - Design Attributes
  - Rules Management
- Design Library Generation
  - Part, Package, and Electrical Symbols
  - Full Forward/Back Annotation

- Thermal Shock
  - Temperature Cycling
  - Moisture Resistance
  - Humidity Cycling
  - Shelf Life
  - Accelerated Aging
  - Vibration Testing
  - Mechanical Shock Testing



STI Electronics Inc.'s Engineering Department serves the aerospace, military, and commercial sectors of the electronics industry offering test and evaluation services for component-level and system-level electronics hardware. STI offers customized test protocols as well as performs testing in compliance with various EIA/JEDEC, IEC, AEC, ASTM, IPC, and MIL standards.

ENVIRONMENTAL TEST SERVICES

All electronic hardware is susceptible to the damaging effects of moisture, temperature, and contaminants. STI understands the criticality of reliability testing and test-to-failure. Improper selection of assembly materials and manufacturing processes can result in field failure returns which can lead to high warranty reserves thus affecting long-term profitability. STI's environmental testing capabilities include replicating environments such as Humidity/Moisture Resistance, Thermal Shock/Thermal Cycle, Steam Aging and Vibration/Shock testing. Coupled with the ability to perform in-situ electrical testing as well as a full range of post-test analysis of samples, these tools allow for rapid "aging" of components and prediction of operational life of hardware.

Training Services

IPC/WHMA-A-620B - Space Applications Electronic Hardware Addendum to IPC/WHMA-A-620B

Training and Certification Program for Certified IPC Trainers (CIT) and Certified IPC Application Specialist (CIS)

Contact Information:
Pat Scott
Director of Training Services
pscott@stielectronicsinc.com

The IPC/WHMA-A-620B Space Applications Addendum provides additional requirements over those published in IPC/WHMA-A-620B to ensure the performance of cable and wire harness assemblies that must survive the vibration and thermal cyclic environments getting to and operating in space. This five-day course covers both lecture and hands-on workmanship. The lecture portion of this class covers the requirements that are changed by the IPC/WHMA-A-620B - Space addendum followed by a written exam. The required hands-on workmanship includes the building of three individual cables that are installed into a chassis. This involves wire stripping and tinning, soldering to cup terminals, crimping of wires to lugs and IDC connector, stripping of coax cable, assembly of TNC and BNC coax connectors, installation of shield braid, floating shield, lash and butt splices, crimping of wires to machined contacts, and testing (continuity, shorts) of completed assemblies.

Prerequisite: Successful completion of the IPC/WHMA-A-620B Certification or Recertification Course.

Day 1:
- Introduction
- Lecture: Requirements changed by IPC/WHMA-A-620B-Space
- Exam (Multiple-Choice)
  30 Questions/Open Book
  Minimum passing score of 80%

Day 2-5:
- Hands-On Laboratory
- Workmanship (Fabrication/Inspection/Testing)
  All cable/harness fabrication steps must meet the requirements of IPC/WHMA-A-620B - Space

All IPC/WHMA-A-620B-S Certified IPC Trainers will receive instructional materials for conducting Application Specialist training. These include:
- A CD-ROM of visuals illustrating the additional requirements of the IPC-WHMA A-620B-S over those published in IPC/WHMA-A-620B document, all reports and forms required for conducting Application Specialist training
- An Instructor Guide, providing complete instructions for conducting the Application Specialist training, workmanship and testing
- The IPC/WHMA-A-620B-S Requirements and Acceptance of Cable and Wire Harness Assemblies
- Application Specialist Written Examinations (Open Book)
- When published, A CD-ROM, IG and Exam set for IPC/WHMA-A-620B Space Addendum

To register for this class please visit our website at **www.stielectronicsinc.com**
If you have any questions please contact me at **(256) 705-5528 or pscott@stielectronicsinc.com.**

2014 Schedule

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

IPC J-STD-001 Training Center

J-STD-001 Certified IPC Trainer (CIT) Certification Course - Madison, AL

August 11-15	December 1-5

J-STD-001 Certified IPC Trainer (CIT) Recertification Course - Madison, AL

July 30-31	August 27-28
September 24-25	October 29-30
November 19-20	

J-STD-001 Certified IPC Trainer (CIT) Space Addendum Course - Madison, AL

August 1 & 29	September 26
October 31	November 21

J-STD-001 Certified IPC Application Specialist (CIS) Certification Course (Modules 1-6) - Madison, AL

Sept. 29 - Oct. 3

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

IPC/WHMA-A-620 Training Center

IPC-A-610 Certified IPC Trainer (CIT) Certification Course - Madison, AL

August 18-21	December 8-11

IPC-A-610 Certified IPC Trainer (CIT) Recertification Course - Madison, AL

July 28-29	August 25-26
September 22-23	October 27-28
November 17-18	

IPC-A-610 Certified IPC Application Specialist (CIS) Certification Course - Madison, AL

July 30-Aug 1	November 12-14

IPC-A-600E" Acceptability of Printed Boards"

IPC-A-600 Training Center

IPC-A-600 Certified IPC Trainer (CIT) Certification/ Recertification Course - Madison, AL

October 15-17

261 Palmer Road, Madison, AL 35758 • (800) 858-0604 • Fax (256) 705-5538

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2014 Schedule

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 Course - Madison, AL

July 8-11 October 20-23

IPC/WHMA-A-620 Certified IPC Trainer (CIT) Recertification Course, Madison, AL

June 30 - July 1 September 11-12
October 15-16

IPC/WHMA-A-620 B Certified IPC Trainer (CIT) Space Addendum Course - Madison, AL
Prerequisite: IPC/WHMA-A-620B CIT Certification or Recertification Course.

July 14-18 September 15-19

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

IPC-7711/7721 Training Center

IPC-7711/7721 Certified IPC Trainer (CIT) Certification Course - Madison, AL

July 2`-25 October 6-10

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

IPC-7711/7721 Training Center

IPC-7711/7721 Certified IPC Trainer (CIT) Recertification Course - Madison, AL

July 28-29 September 4-5
November 13-14

IPC-7711/7721 Certified IPC Application Specialist (CIS) Certification Course - Madison, AL

August 11-19 December 8-16

IPC-7711/7721 Certified IPC Application Specialist (CIA) Recertification Course - Madison, AL

December 17-18

Basic Soldering - Madison, AL

Available upon request.

MSFC/NASA-STD-8739.1 Staking and Conformal Coating Operator/Inspector

November 3-6

To register for a class visit our website at www.stielectronicsinc.com.

Training Services • Curriculum Development • Highly Skilled Staff

2014 Houston, Texas Schedule

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

J-STD-001 Certified IPC TRainer (CIT) Certification Course

July 7-11 November 3-7
December 1-5

J-STD-001 Certified IPC Trainer (CIT) Recertification Course

November 19-20

J-STD-001 Certified IPC Trainer (CIT) Space Addendum Course

November 14

J-STD-001 Certified IPC Application Specialist (CIS) Certification Course (Modules 1-6)

August 4-8

J-STD-001 Certified IPC Application Specialist (CIS) Recertification Course (Modules 1-5)

October 13-14 November 17-18

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

IPC-A-610 Certified IPC Trainer (CIT) Certification Course

July 21-24

IPC-A-610 Certified IPC Trainer (CIT) Recertification Course

August 14-15 November 10-11
December 8-10

IPC-A-610 Certified IPC Application Specialist (CIS) Certification Course

August 11-13

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

IPC/WHMA-A-620 Certified IPC Trainer (CIT) Certification Course

September 2-5

IPC/WHMA-A-620 Certified IPC Trainer (CIT) Recertification Course

July 17-18 November 12-13
December 11-12

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2014 Houston, Texas Schedule

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

IPC/WHMA-A-620 Certified IPC Application Specialist (CIS) Certification/Recertification Course

July 14-16

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

IPC-7711/7721 Certified IPC Trainer (CIT) Certification Course

September 15-19

Basic Soldering

September 8-12

Address
Beltway 8 Office Center
9920 W. Sam Houston Parkway S., Suite 420
Houston, TX 77099

Please note that additional course dates can be added to the schedule upon request.
Contact Pat Scott
Director of Training Services at:

pscott@stielectronicsinc.com
256-705-5528 (Direct) or 256-527-6758 (Cell)

To register for a class, visit our website at www.stielectronicsinc.com.