

NEWS

Volume 12 • Issue 7 • April, 2014



Leading the way in electronics



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DAVE'S WORLD

By: Dave Raby

April 2014

I'm back for the April Issue of the STI Newsletter which means I didn't win the billion dollars on the basketball tournament. All I had to do was pick 63 games in a row and I was really optimistic until I missed the first one. (Dayton!) Jason Tynes, one of STI's Engineers, and I tied for 1st in STI's contest so we're each getting an RC Cola and a Moon Pie. If you don't know what those are then #1 you aren't from the south and #2 you need to enter next year's contest to learn about southern delicacies.

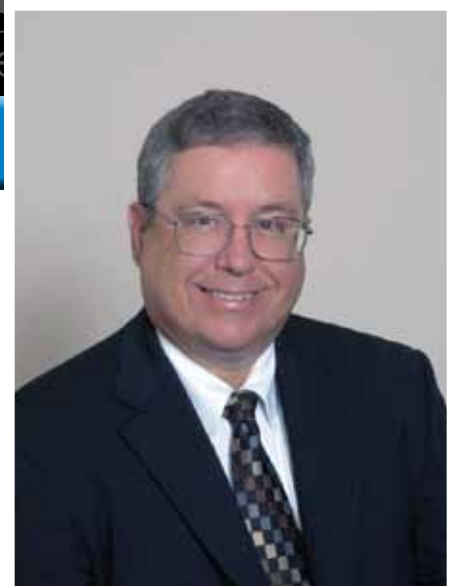
Otherwise, things have been very busy and going great. I made a quick trip to APEX in Las Vegas the end of March. On Monday, I attended the EMS Executive Summit and as always, left with a lot more knowledge than I went in with. It is great to spend the time with others who have the same issues and are willing to share what has worked for them and what hasn't worked for them. Generally, we find we have many of the same issues but we are all at different places on solving them and these meetings always provide an "ah-ha" moment on something we've been trying to solve and hopefully we can do the same for others sometimes.

Tuesday was a busy day with walking the show exhibits and seeing lots of old friends and meeting some new ones. My first major stop on Tuesday was at the Circuits Assembly booth for their presentation of their Service Excellence Awards. Unlike most industry awards, this one is voted on by our own customers so I knew that whether we won or lost, we would get a report with some great feedback we could learn from. It was our first year to enter so I really didn't know what to expect but was quite happy when we won the award for Dependability and On Time Delivery for companies under \$20 million. That really isn't a bad thing to be known for and we did get a lot of feedback that we will use to be even better in the future. My thanks to Mike Buetow and

Chelsey Drysdale and all of the Circuits Assembly people for organizing this award and my thanks especially to our customers who provided the feedback. On a side note, in all my time at SMTA, I always knew Circuits Assembly made a significant contribution every year to the Charles Hutchins Scholarship Fund but I never really realized where the money came from. It is from the entry fees for this award. Thank you Circuits Assembly for making a difference!

My next stop was the IPC Annual Luncheon. I was honored to accept the Stan Plzak Corporate Recognition Award representing STI Electronics. There are so many companies that make up the IPC's membership that it truly is an honor to have STI singled out. We have had many people over many years serve in many different volunteer positions within IPC and it is very nice to see their efforts recognized and appreciated. My thanks go to John Mitchell, Dave Torp, Jack Crawford and everyone else at IPC for this recognition. As I said back in October when STI was selected for the SMTA's similar award, we really do this for completely selfish reasons. We receive a tremendous benefit through our efforts and commitments to these industry organizations that is an investment we are more than willing to make. If you or your company aren't volunteering and participating in supporting our industry through an organization of your choice, I'd love to talk with you about why you should.

On a slightly less serious note, IPC's President John Mitchell presented our award at the luncheon. He has a lot of things to remember and many presentations to make during the week at Apex. Since doing all from memory isn't reasonable, he used a teleprompter like the ones you see in political speeches. When I stepped behind the podium to give the acceptance speech I looked into the teleprompter and saw the last line of his introduction of us. All it said was "STI Electronics, wait for the applause". I liked that. Watch over the coming months to see if I can successfully lobby the smarter people here to use it as a tag line



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in some kind of advertisement.

The rest of the afternoon was back to walking and learning.

At the same time I was at Apex, Mark was at the Design2Part Show in Atlanta and Cathy was at the Dixie Crows Symposium in Warner Robins. Both shows were well attended and I just wish I could have seen everyone at those also.

This month, our big event is our Open House at our new training facility in Houston on Wednesday April 23rd, 2-6:00pm. I'll be there along with Diana, Pat, Ray, and Julio so please drop in and say hello. I hear we are having some pretty fabulous door prizes and snacks. Don't make me eat all the snacks! 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. I'll find the right person to answer.

Stop by and see us at the Atlanta SMTA Expo, May 7 at the Gwinnett Civic Center. There are rumors that we will have cookies in the booth.

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

STI's Training Services

STI's Training Services Department has been very busy the first quarter of 2014. Along with our busy training schedule STI has established a new Training Center in Houston, TX. STI will be hosting an Open House April 23, 2014 see page 4 for details. Additionally, STI has developed a new J-STD-001 Inspection Kit see page 6 for details. If you want to view the instructional video for the kit please contact Kelli King at kking@stielectronicinc.com or 256-705-5541.



Training Services and Classes Available at STI Electronics, Inc.

Apex 2014 News

Apex Expo 2014 Conference & Exhibition was held March 25-27, 2014 in La Vegas, Nevada. The Standards Development Committee Meetings started on March 22 and ended March 27, 2014. Both the IPC-A-610 and J-STD-001 Task Groups met along with the Synergy – J-STD-001 & IPC-A-610 Task Group. All comments were addressed and resolved. The IPC-A-610F and J-STD-001F documents should be ready for Ballot by the end of April. Remember that you can download a draft copy of both documents by visiting IPC's website/Knowledge/Committee Home Pages.

With the new standards almost complete both the J-STD-001 and IPC-A-610 Training Task

Groups met to discuss what currently works with the current training and certification programs and what doesn't. Here are a few key comments that were discussed:

- J-STD-001 Training and Certification Program
 - Make sure that all information covered on the closed book exam is covered in the Instructor Guide/ Curriculum.
 - Remove the CIS Closed Book Exam (Module 1). This comment was rejected. There will continue to be both a closed and open book exam.
 - Increase the workmanship grading percentage from 70% to 80% (Modules 3 & 4). This comment was accepted. IPC-A-610 Training and Certification Program

CIS exam answers need to be clearer and simpler.

- Need to add reference information on each slide.
- Should have a test question for every major change in the 610F document.
- Highlight changes (Rev E to F) made to clauses in the instructor guide. It was brought up that IPC typically has the redline version of the document available to show these changes.
- More time needs to be added to the CIS Course. This will be looked at during the development of the new course.

So along with the new standards that will be available, in the near future, the training and certification programs will not be far behind.



Our 2014 Texas Training Schedule is available in this newsletter and on our website at

www.stielectronicinc.com



**TRAINING
CENTER**



1-800-858-0604
www.stielectronicinc.com

*Join Us For Our
Open House!*

STI's New Training Center

Please stop by and join us at our open house for a chance to win multiple door prizes including an iPad Mini!
Hors d'oeuvres and beverages will be served.

**Wednesday April 23rd
2:00 – 6:00 p.m**

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



Corporate Office
261 Palmer Road
Madison, AL 35758
1-800-767-4919



2014 Houston, Texas Schedule



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



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

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

May 5-9 July 7-11
November 3-7 December 1-5

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

April 17-18 May 12-13
August 14-15 November 10-11
December 8-10

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

May 14-15 November 19-20

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

April 14-16 June 11-13
August 11-13

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

May 16 November 14

**All classes will be conducted at
9920 W. Sam Houston Pkwy., Ste 420
Houston, TX 77099**

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

STI's J-STD-001

Inspection Kit

Part No. STI-INSP-001-E1

NEW!



This training kit was designed by the Master IPC Trainers (MIT's) at STI Electronics to assist MITs and Certified IPC Trainers (CITs) with an easy way to administer the physical inspection requirements of Module 5 of the IPC-J-STD-001 training program. These materials can also be used for other training programs that reference the IPC J-STD-001 Criteria.

Kit Contents:

- DVD
 - Instructional Video
 - Board Layout Form
 - Student Terminal Inspection Worksheets
 - Student PCA Inspection Worksheet
 - Instructor Answer Keys
- Encapsulated Inspection Samples
 - (6) Printed Circuit Assembly (PCA) Samples
 - (8) Soldered Terminal Samples



Cost: \$400.00



To place an order contact sales at (800) 858-0604 or sales@stielectronicsinc.com.

261 Palmer Road • Madison, AL 35758 • (800) 858-0604 • Fax(888) 650-3006

www.stielectronicsinc.com

TRAINING SERVICES

Best Practices in Electronic Assembly Processes

Course Title:
Understanding and Implementing Best Practices in Electronic Assembly Processes

Course Instructor: Phil Zarrow &
Joe Belmonte

Duration: 2 Days

When: May 20-21, 2014

Where: STI Electronics, Inc.

Course Objectives:

You have the responsibility and resources to improve the productivity of an assembly operation....What do you do? This course drives awareness and solutions to the adverse impact that non-optimal assembly practices and processes have on the product quality and financial success of electronic assembly businesses. A comprehensive perspective on problem issues is developed for the most currently critical electronic assembly process, materials (both existing and emerging), equipment, procedures, and methods. Most importantly, practical solutions are presented. Key issues that consistently result in assembly problems and low yields are identified and resolved. This seminar is intended for anyone involved in directing, developing, managing and/or executing assembly line operations including managers, line supervisors and line engineers involved in manufacturing, design and quality engineering.

Topics Covered

- Introduction
- Optimization Objective
- Getting the most productivity from an existing line
- Definition of "Best Practices"
- Some "Deadly Sins" of SMT Assembly
- Best Practices in the Assembly Process
- Solder Paste Printing Process Best Practices
- Pick and Place Best Practices
- Re-Flow Soldering Best Practices
- Wave and Selective Soldering Best Practices
- Conformal Coating Best Practices
- Best Practices Concerning "Challenging Technologies"
- QFNs
- Ultra-Miniature Components (0201s, 0100s, ultra-fine pitch BGAs and CSPs)
- Process Optimization Best Practices
- Data Driven Process Design
- Practical Use of Design of Experiments (DOE) in Electronic Manufacturing
- Practical Use of Statistical Process Control (SPC) in Electronics Manufacturing
- Manufacturing organization best practices
- Q & A

Who Should Attend:

This course is intended for Manufacturing, Process, Design, Text and Quality Engineering personnel as well as Management who are involved in the production of surface mount or mixed technology assemblies.

Course Price: \$950.00 per person. 10% discount for multiple attendees.

Email STI Electronics, Inc. for more information or to register for the class (training@stielectronicinc.com).

2014 STI's Training Schedule

May - June - July



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

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

June 2-6

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

May 29-30 June 25-26 July 30-31

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

May 2 June 27

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

June 23-27



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

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

June 9-12

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

May 27-28 June 23-24 July 28-29

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

July 30-Aug 1



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

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

May 19-22 July 8-11

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

May 8-9 June 30-July 1

IPC/WHMA-A-620 B Certified IPC Trainer (CIT) Space Addendum Course - Madison, AL

Prerequisite: IPC/WHMA-A-620B CIT Certification or Recertification Course.

May 12-16 July 14-18



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

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

July 28-29

MSFC/NASA-STD-8739.4 Cable Harness Certification Operator/Inspector

April 28- May 2

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

May 12-15

To see a complete schedule of courses or to register for a class visit our website at www.stielectronicsinc.com.



261 Palmer Road • Madison, AL 35758 • (800) 767-4919 • Fax (256) 705-5538

www.stielectronicsinc.com

TRAINING MATERIALS

Planning for Training Resources



Contact Information:

Mel Parrish

FSO, Director Training Materials
mparrish@stielectronicsinc.com



The STI Mixed Technology Training Kit provides a realistic training source with an excellent representation of a typical production board. It is a favorite for many of our customers for skill training for their company.

Mention this article and receive

10% off

on Mixed Kits for your training program.

It'll Be Your Favorite Also.



The majority of Classroom Certification Training is conducted in support of IPC Specifications. Recent changes in pricing policy for IPC Standards will impact the cost associated with that Training Material Resource. In addition to price increases, all of the volume purchase discounts have been eliminated. Most trainers purchased these in numbers to decrease cost and that is no longer available. Trainers should plan for the increased cost of standards that may be required for future classes.

Many of the trainers purchase their IPC Standards through STI to support training projects.

While we will continue to provide standards as a distributor, we will no longer be able to offer quantity discounts for IPC Materials.

STI Training Materials will however, continue to offer great quantity discounts for our Training Kits in support of Hands-On Solder Training projects. We have also held prices as consistent as possible to simplify planning for training costs over the years. One exception has been kits containing large quantities of wire since that material cost has been very unstable and our price required adjustment due to significant increases. This impacts our NASA Cable Training Kit since it contains over 150 feet of quality wire.

Please let me know if you have any specific needs that you haven't found on our web or in our catalog. It is difficult to put it all up there and we are good at creating custom options for trainers, being trainers ourselves.

ELECTRONIC ASSEMBLY

STI Electronics, Inc. is one of the largest stocking distributors in the USA. STI is located in Madison, AL with sales staff covering the entire Southeast. STI's friendly Inside Sales Team in conjunction with our Outside Sales Staff work hand in hand to make sure the customer receives the technical support necessary to make informed purchase decisions at the best prices possible.



PRODUCTS



- 3M
- 3M ESD
- ACL Staticide
- AIM
- American Beauty
- APEX
- ASG
- Aven
- Beautech
- Bio-Fit
- Bonkote
- Botron
- Brady
- Chemtronics
- Conductive Containers, Inc.
- Creative Global Solutions
- Dantona
- DEK
- Easy Braid
- Edsyn
- Erem
- Excelta
- Fancort



- General Tools
- Gordon Brush
- Hakko
- Hunter Products
- Ideal
- Identco
- Janpak
- JBC
- Jensen Global
- Kahnetics
- Kester
- Lewis Bins
- Liberty Packaging
- Lindstrom
- Lista
- Lufkin
- Luxo Lighting
- LW Scientific
- Metcal
- Micro-Care
- Nicholson
- O.C.White
- Pace
- Panavise



- Plato Products
- Production Basics
- Puritan
- QRP
- R & R Lotion
- Scienscope
- Simco
- Static Tech
- Steinel
- Swanstrom Tools
- Tech Spray
- Tech Wear
- Technibilt
- Utica
- Virtual Industries
- Weller
- WIHA
- Wire Wrap
- Wiss
- Xcelite



Phone: 800-858-0604
Fax: 888-650-3006

E-STORE

For the convenience of our customers, all products available at STI can be purchased from our E-Store accessible at www.stielectronicsinc.com

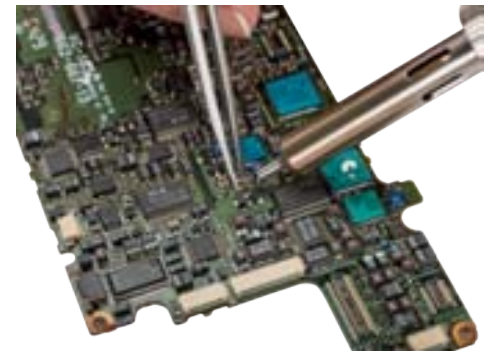


New Metcal HCT2-120 Digital Hot Air Pencil



The new HCT2-120 Hot Air Pencil is the latest addition to Metcal's offering of convection rework tools. This digital handheld convection tool is ideally suited for applications, which use smaller components and integrated circuits.

As component miniaturization continues, the ergonomics of a pencil allow a user more freedom to access and rework components on the board without affecting adjacent parts.



FEATURES AND BENEFITS

- **120 Watt Ceramic Heater and Dual Stage Air Pump:** Provides the power and performance needed to deliver the right amount of thermal energy.
- **Digital Airflow and Temperature Controls:** Two LED displays provide a graphical and numerical representation of the desired airflow and temperature.
- **Fast Response and Performance:** A microprocessor controlled, closed loop feedback system provides fast heating, precise and stable temperature control.
- **Standby Mode:** When the hand-piece is placed into the workstand, the temperature will drop prolonging heater life.
- **Universal Power Supply:** Automatically senses the input line voltage and adjusts accordingly, which allows for worldwide operation without adaptors or a change in performance.
- **Ergonomic and Light Weight Hand-Piece:** Slim and ergonomic design hand-piece that feels like a pencil, with a rubber grip.
- **Nozzles:** Six nozzles (1.5 mm – 4.0 mm) are included in the unit with a nozzle plate holder inside the workstand.
- **Easily Change Heaters and Nozzles:** Both can be changed in seconds.



HAND HELD CONVECTION REWORK

www.metcal.com

METCAL

New Metcal HCT2-120 Digital Hot Air Pencil



APPLICATIONS



DIPs



SOICs



PLCCs



0201s



1210s

Other applications: Reflow of fine pitch QFPs, removal and placement of chips

PARTS AND ACCESSORIES

HCT2-120	Digital Hot Air Pencil includes: Power system with hand-piece and heater, pack of 6 nozzles, workstand with nozzle plate holder and a nozzle removal pad
REPLACEMENT PARTS	
HCT-HTR120	120W Heater
HN-120KIT-6	Pack of 6 nozzles (1.5mm, 2.0mm, 2.5mm, 3.0mm, 3.5 mm and 4.0 mm)
HCT-WS120	Workstand with nozzle holder
AC-CP2	Heatproof nozzle removal pad



TECHNICAL SPECIFICATIONS

Ambient Operating Temperature	10 to 40°C
Input Line Voltage	100 – 240 VAC, grounded circuit
Input Frequency	50/60 Hz
Rated Power	75W
Air Flow	1.5 – 7.0 LPM
Noise Level	Typically under 52dBA at max airflow
Output Temperature Range	100°-450°C
Temperature Stability	10% of display value
Certifications / Markings	cNRTLus, CE, RoHS + WEEE
Surface Resistivity	10 ⁵ Ω - 10 ⁹ Ω /sq
Power Supply Dimensions w x d x h	10.6 cm (4.2") x 21.3 cm (8.4") x 17.0cm (6.7")
Workstand Dimensions w x d x h	7.6 cm (3.0") x 16.8 cm (6.6") x 8.6 cm (3.4")
Weight of the Power Supply	5.8 lbs. (2.63 kg)
Weight of the Workstand	0.9 lbs. (.4 kg)

The heater can easily be removed and replaced from the hand-piece



www.metcal.com
10/2013

MATERIAL FAILURE ANALYSIS

Product and Process Qualification and Verification

Reliability is the ability of a product to perform as intended, without failure, for a specified time. Process validation ensures that a process consistently produces a product that meets its specifications. It is an important component, from design through the manufacturing process, and if done correctly, can save a considerable amount of time, money and resources.

STI's Analytical Laboratory, provides customers with such validation testing continuously in the form of: PCB qualification testing, component verification testing, PCBA qualification testing and/or long-term reliability/warranty testing.



Contact Information:

Marietta Lemieux

Analytical Lab Manager

mlemieux@stielectronicsinc.com

PCB Qualification testing:

- Visual Inspection
- Pad dimension verification
- Solder mask adhesion test
- X-ray for pad-hole registration verification
- Plating analysis via SEM/EDS
- Plating thickness verification via XRF
- PTH via and PCB stackup verification via micro-sectional SEM evaluation

Component Verification Testing:

- Counterfeit part analysis;
- Visual inspection;
- Encapsulant resistance to solvents inspection
- Leadtracer X-ray inspection
- SEM/EDS surface analysis
- Real-time X-ray analysis

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.

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

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.

TESTING

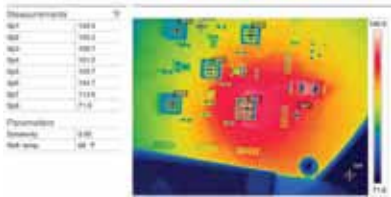
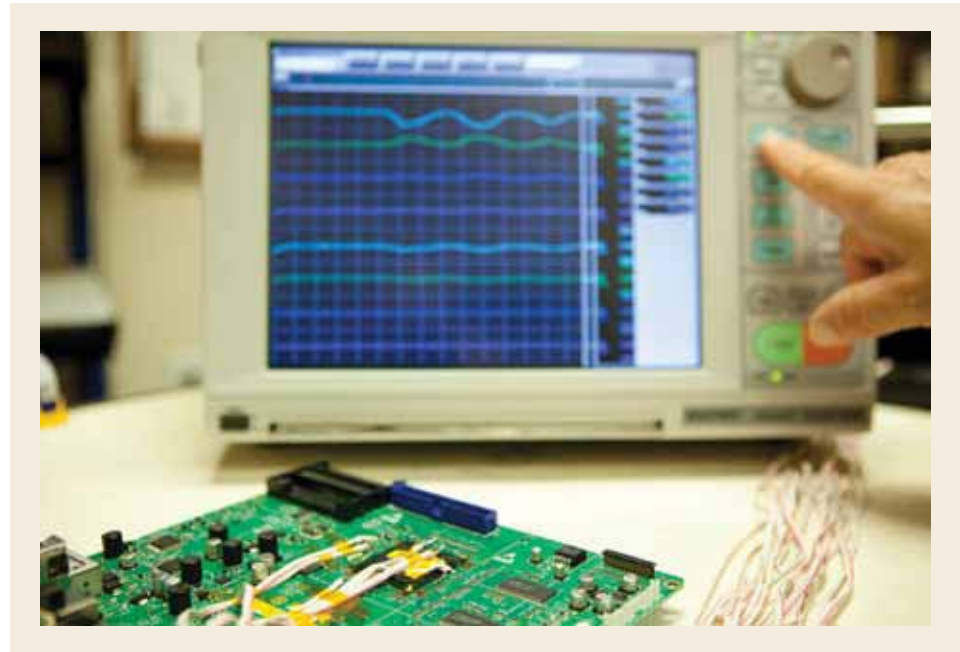
STI Electronics Inc.'s Engineering Department serves the aerospace, military, and commercial sectors of the electronics industry offering test and evaluation services for component-level and system-level electronics hardware. STI offers customized test protocols as well as performs testing in compliance 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.



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

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



*Happy Easter
to You and
Your Family
from*

