

VOLUME 10 ISSUE 2 FALL 2011



sti NEWS

electronics^{inc.}

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DAVE'S WORLD



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COLLEGE ISN'T FOR EVERYONE BUT EDUCATION IS.

BY: DAVE RABY

Dad didn't go to college. He came out of the US Navy and due to expense, time, marriage and me didn't have the opportunity. Instead he went to work for the space program, started at the bottom, learned and worked his way up. He did that incredibly well but that doesn't mean he didn't see the advantages of education. From an early age, there was never any question that I was going to be the first from our family to graduate from college. Excuses were not acceptable nor were they ever discussed. It happened. Now with my daughter, the question isn't "are you going to college?", it's more along the lines of "where do you think you'll get your post graduate degrees?"

STI believes in education. Not just for children but for everyone. Obviously, we believe everyone should receive solder training (probably more than once) but we also try to do some other slightly less self serving deeds in the community. I teach economics (through Junior Achievement) six times per semester to local 7th graders. My lovely (and much younger) wife coordinates SS Kids which is a program through local churches to furnish school supplies to kids in the area. This year they supplied 400+ children with loaded backpacks specific to their teacher's requirements that may not have had them otherwise. STI also serves as the year round storage facility as the supplies are accumulated. We also speak at high school and college events in the area. I'm scheduled to speak at the national Delta Mu Delta (business honor society) in Jacksonville in November.

Seven years ago, as we prepared for his 70th birthday, we started a perpetual scholarship fund at Calhoun Community College in Dad's name. Some of you were kind enough to donate as a birthday gift and we thank you for your generosity. Originally the scholarship was earmarked for an Electronics Manufacturing Program student, which unfortunately Calhoun no longer offers. As a result, the scholarship is awarded to a student in a technical program based on multiple economic factors. (STI helped set the criteria but is not involved in the selection process.) Last week, we received the letter below from this year's recipient and it made our day. (identifying personal features have been removed)

Dear Mr. Raby:

Thank you for awarding me the Jim Raby/STI Scholarship. My name is xxxxxxxx. I am currently a student at Calhoun Community College. My

main focus, while getting my education, has been to keep my grades up and also my attendance. My major is Machine Tool Technology. I enjoy the challenge of producing a part made from a single piece of material.

It has been extremely difficult to return to school after being out for so long. Learning to use computers and learning to study again has been a struggle. I have been very proud to overcome all of these difficulties and be able to come closer to my degree.

I am looking forward to maybe being part of Calhoun Community College Co-Op program to get experience in my field. I am working as a resident manager of a complex currently. I attend xxxx Church and volunteer for Big Brothers/Big Sisters, Keep xxxxx Beautiful and church groups targeting the hungry.

Your scholarship is very important to me. Thank you for helping me to finance my education. Extra money while I am in school really helps to relieve some of the pressures of paying bills. This scholarship is going to make my remaining time in college much better.

Sincerely,
Xxxxxxxxxxx

We have been sending out our newsletter for 10 years now and this one marks a milestone. The last page of this issue is the last regular edition of "Jim's Corner." He hasn't retired (I think it would be the 12th time if he did) but he has cut back considerably on his hours and regularly writing the column is on the list of cut backs. I'm sure you'll see him there occasionally with a great fishing story or travel report or interesting bit of industry history. I know he would also love to continue to hear from you.

I appreciate your comments and support and as always, please let me know how we can serve you better.

David E. Raby

This newsletter is published quarterly but you can follow us on Facebook (STI Electronics) and/or Twitter (daveraby) and get news from us as it happens. <http://twitter.com/#!/search/daveraby> or <http://www.facebook.com/pages/STI-Electronics/221269285375>.

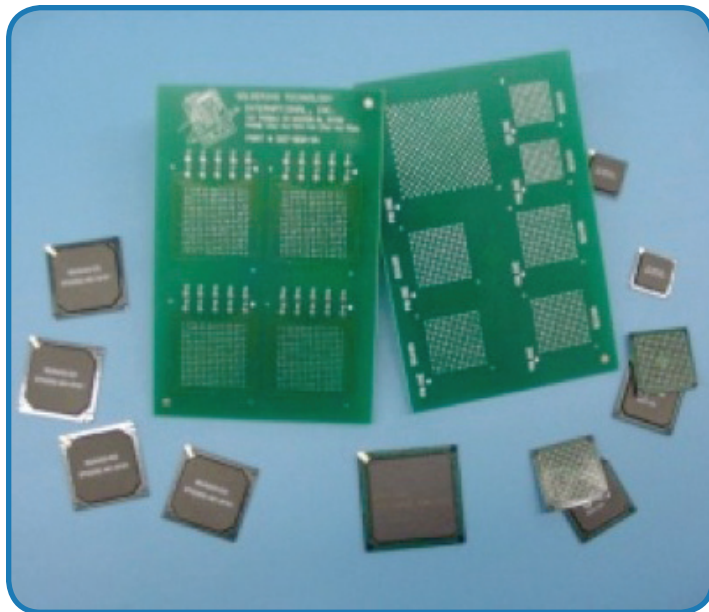
STI FEATURES TWO CUSTOMIZED TRAINING COURSES

BY: PAT SCOTT

STI is pleased to announce the offering of a new BGA (Ball Grid Array) rework training course and Lead Free Overview course. The following is a brief description of the two courses.

BGA Rework Course

During original manufacturing, BGAs are some of the easiest, highest yield components to place on electronic assemblies. If, for some reason, a BGA has to be removed and replaced, special equipment and knowledge is required. There are many areas of concern that must be identified and considered prior to performing a BGA replacement. This course focuses on all aspects of BGA removal and replacement including BGA identification, laminates and land patterns, solder alloys, and thermal profiles. In addition to four hours of classroom based training, there is an additional four hours of hands-on training which not only includes BGA replacement, but also includes BGA reballing. Analytical options (destructive and non-destructive methods) are explored as well, with hands-on X-Ray inspection and processing and evaluation of dye and pry. This course typically runs two days.



Lead-Free Overview

It has been five years since the RoHS (Restriction of Hazardous Substances) Directive has been in place in the European Union. Most companies that have attempted to transition to lead-free solder have done so successfully. Other companies have not been so lucky. Albert Einstein said, "the only source of knowledge is experience". Unfortunately, experience is a hard teacher. If you have to start using lead-free solder STI can prepare you for the transition by explaining the many issues to consider for lead-free processing. STI's Lead-Free Overview course covers all the major differences and hurdles that need to be considered when changing from a tin lead process to a lead-free process. Some of the topics covered include alloys, equipment, acceptance criteria, and reliability. This course is approximately six hours in length allowing plenty of time for discussion and questions.



Both the BGA Rework and Lead-Free Overview training courses are offered at STI and can also be taught at your facility. To request a quote for this training please contact Pat Scott at 256-705-5528 or email at pscott@stielectronicsinc.com.

Pat Scott

TRAINING SERVICES



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TRAINING SCHEDULE



TO REGISTER FOR A COURSE OR FOR
ADDITIONAL INFORMATION GO TO
WWW.STIELECTRONICSINC.COM
OR E-MAIL US AT
TRAINING@STIELECTRONICSINC.COM.

FALL 2011

MONTH	DATE	CLASS	LOCATION
OCTOBER	03	MSFC/NASA 8739.4 Cable/Harness Certification Course	Madison, AL
	03	IPC/WHMA-A-620 Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	03	IPC-A-610 Certified IPC Specialist (CIS) Certification Training Program	Madison, AL
	05	IPC Rework/Repair and Modification Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	17	IPC/WHMA-A-620 Certified IPC Trainer (CIT) Certification Program	Madison, AL
	21	IPC/WHMA-A-620 Instructor (CIT) Hands-On Lab	Madison, AL
	24	IPC Rework/Repair and Modification Certified IPC Trainer (CIT) Certification Program	Madison, AL
	24	IPC J-STD-001 Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	24	IPC/WHMA-A-620 Certified IPC Specialist (CIS) Training Program	Madison, AL
	26	IPC-A-610 Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	31	MSFC/NASA 8739.1 Staking and Conformal Coating Certification Course	Madison, AL
NOVEMBER	07	IPC-A-610 Certified IPC Trainer (CIT) Certification Program	Madison, AL
	14	IPC J-STD-001 Certified IPC Trainer (CIT) Certification Program	Madison, AL
	14	IPC-A-610 Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	16	IPC J-STD-001 Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	18	J-STD-001ES Update, Space Application Addendum to J-STD-001E	Madison, AL
DECEMBER	05	IPC/WHMA-A-620 Certified IPC Trainer (CIT) Recertification Program	Madison, AL
	07	IPC Rework/Repair and Modification Certified IPC Trainer (CIT) Recertification Program	Madison, AL

HAKKO FM-206 3-PORT REWORK SYSTEM

BY: KELLI KING

The Hakko FM-206 3-Port Rework Station can power any Hakko FM Series handpiece, thus offering the ability for the operator to tailor the station to fit their specific rework needs. The station's sleek, compact design minimizes loss of bench space and its powerful ports allow the use of the Hakko FM-2029 single hot air handpiece, and coming in the near future, the Hakko FM-2030 heavy duty soldering iron.

- Graphic User Interface for easy setup and operation
- 3 simultaneous powered ports
- Self-contained pump for vacuum and air flow
- Digital airflow indicator
- Hot air handpiece ramps up to max temp in less than 20 seconds
- Integrates with the Hakko FR-830 and FR-870 Preheaters
- Manual or Automatic profile for hot air
- Low cost composite hot air nozzles
- Optional footswitch for pump operation
- Option for external gas supply for hot air
- Desoldering delay timer
- Configurable display in °C or °F
- Capable of hot air rework of 0201 and 01005
- Meets or exceeds ANSI J-STD-001
- ESD safe by design



CONTACT OUR SALES DEPARTMENT AT
sales@stielectronicsinc.com or (800) 858-0604 TODAY FOR A QUOTE!

SALES



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KELLI KING

INSIDE SALES MANAGER

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Please make plans to attend our annual OKI BGA Seminar, November 3rd 2011. The seminar includes a 30 minute presentation, 2 ½ hours of hands-on demonstration and instructions, and a Question & Answer session. Limited seats are available, register today!

**BGA, CSP & MLF/LLP
REWORK & REPAIR
MINI-SEMINAR**



DATE: Thursday, Nov. 3, 2011

LOCATION: STI Electronics, Inc. / 261 Palmer Road / Madison, AL 35758

TIME: 9:00 am to 12:00 pm OR 1:00 pm to 4:00 pm

Free Lunch served at Noon

Fee \$10 per Attendee. Check or credit card payments accepted.

Registration is required.

Contact Dottie Grantham at dgrantham@stielectronicsinc.com or (800) 858-0604.

ENGINEERING SERVICES



CONTACT INFORMATION:

MARK MCMEEN

VP OF ENGINEERING

256-705-5515

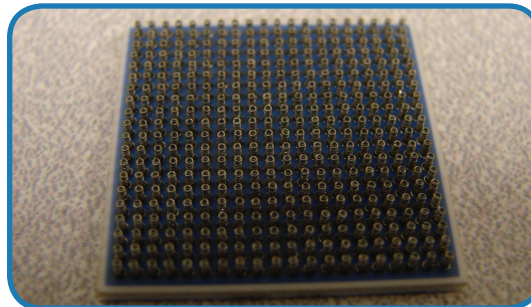
MMCMEEN@STIELECTRONICSINC.COM

MICRO-COIL SPRING ARRAY

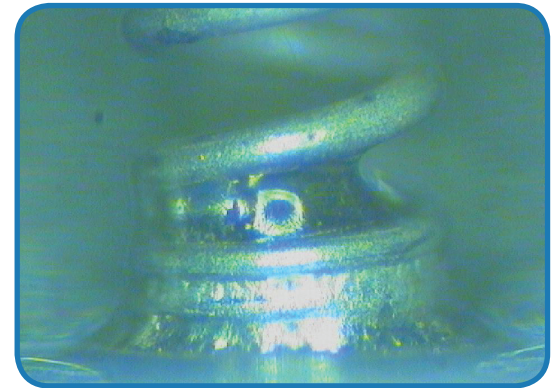
BY: MARK MCMEEN

INTRODUCTION:

Micro-Coil Spring Array is being introduced as an improved alternative to standard rigid arrays to replace the Column Grid Array (solder columns) commonly used on Integrated Circuits (IC) with a very high lead count. The Micro – Coil Spring Array was developed by NASA for higher degree of reliability over conventional Column Grid Arrays and this technology was licensed to STI Electronics, Inc. for its commercialization and production capability.



Micro springs will form a more robust solder joint. The interconnect of the spring to the substrate consists of the wire on one side of the spring resting on the solder pad in a circular pattern. The result is two separate solder joints along the length of the circular pin, one internal to the spring and one external to the spring.



INNOVATION:

The Micro-Coil Spring Array consists of an IC connected to PC Board via micro springs. The springs are soldered to the IC substrate then the package is mounted to the PC substrate using conventional Pick and Place equipment.

The flexibility of the micro springs provide a robust interconnect from the IC substrate to the PC substrate that is much more reliable than rigid interconnects such as Column Grid Arrays. The ability to be compliant and not rigid aids in long term reliability.

SPEED/ THROUGHPUT IMPROVEMENTS:

Micro-Coil Spring Array is installed using conventional Surface Mount Pick and Place equipment. This technology allows for the elimination of underfills because its capability for handling and distributing stress – compliance under loading allows the stresses to be negated.

QUALITY CONTRIBUTION:

The use of the micro coil springs provides conformity from the PC substrate to the IC substrate. The flexing of the springs will prevent solder cracks from forming by absorbing thermal or mechanical stress that would normally transfer to the solder joint via rigid interconnects.

COST BENEFITS:

Competitively priced to be lower than column grid array solder columns as well as lower production assembly costs for manufactured of the column grid array package.

ENVIRONMENTAL CONSIDERATION:

The objective from day one was to develop a solder column that could be compliant to environmental loading such as mechanical and thermal stress and thus create a more robust solder connection. The end of objective is greater reliability by surviving longer thermal cycles and minimizing fatigue fracturing.

EASE OF USE/IMPLEMENTATION:

The Micro-Coil Spring Array is a drop in replacement for a BGA column grid array packaging applications that want greater reliability and long term robustness.

MAINTAINABILITY/REPAIRABILITY:

The Micro-Coil Spring Array can be easily repaired using a standard BGA rework station and reworking of the column grid array. High temp solder is used for attachment to the component BGA package and then one can use leaded or lead free solder when attaching to the printed circuit board itself.

USE ALL OF THE TRAINING ADVANTAGE YOU CAN GET

BY: MEL PARRISH

Working in Curriculum Design over 30+ years provides some perspective on what works and also what doesn't when it comes to training. First attempts in automated training aids and training simulators generated limited success. Presentation methods and information storage resources were just not up to the task required for effective learning experiences. Early application of automated training techniques such as programmed video and similar training aids were initiated in the 1960s with a significant degree of success to communicate concepts and perspectives typically for larger audiences necessary to offset the tremendous development cost. Today you can find training through resources like "You Tube" for almost any topic imaginable. They are certainly cheap and readily available. You can learn how to rebuild an engine and there is even some for soldering! A word of caution, some of them didn't come from our "Hi-Rel" discipline.

Today we have the advantage of training support resources that the early designers only dreamed would be possible. Enormous gains in information storage, presentation, delivery media, instantaneous feedback, and gratification for the student, are only a few of the critical enhancements that are currently available to the training requirements.

As successful as they have become, when it comes to dexterity skills training (like soldering) nothing can replace a knowledgeable instructor guiding practice through repetitive application to achieve touch skill competency. The instructor can solve problems through individual observations during skill application. Conceptual or knowledge topics can certainly be enhanced through the application of automated training resources such as CD, DVD, Online Video, etc.. Good instructors will use all of the tools to their advantage in addressing as many of the sensory perceptions of the students as possible. The combination

of a qualified instructor with enhanced training resources can't be beat. Unfortunately, for the average instructor, development of your own automated resources is not very cost effective unless there is a large enough audience. Not very practical for most companies, but there certainly are some very good resources available that have created high quality productions that are ready to go. They are focused, logically organized, technically correct, and optimized through expert review. Also they are fairly economical. The challenge is to make certain that they directly support the objectives of intended training and techniques used in your facility. Remember that it is much harder to un-teach something than it is to teach it correctly the first time.

STI has automated Training Resources that address most of the general knowledge topics that could come up in the Electronic Manufacturing environment such as ESD, Safety, etc.. They can't do it all but they can sure round the edges off of a hard topic to make it easier for the instructor and student to succeed in the training program. Use all of the training advantage you can get!

Revision time is upon us once again for the J-STD-001F and IPC-A-610F and the first development meetings were held at the IPC Midwest. Get your comments and recommendation for changes or additions in as soon as possible but realize the development historically takes about three years. As always our objective is to make these the very best documents they can be.

Our feature Hands-On Training Kit for this newsletter edition is the J-STD Certification Training Kit available in either tin lead or lead free. A favorite among the industry for many facets of Hands-On solder skill training. Mention this article and receive a 10% discount during the publication month.

TRAINING MATERIALS



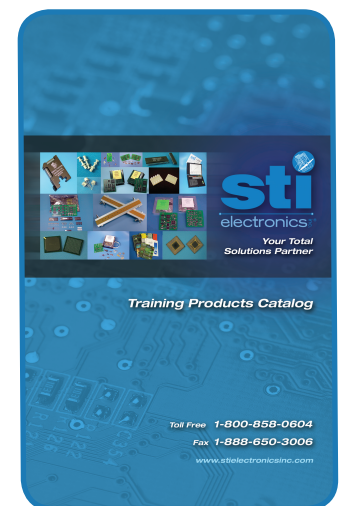
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STI is a Resource for Training Services,
Training Materials, Engineering Services,
and Product Distribution.
Visit www.stielectronicsinc.com

JIM'S CORNER



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JIM D. RABY, PE, TECHNICAL DIRECTOR

When time comes to write this page, I can only think of how industry was in the past and how it is now. We had industry experts that everyone knew and depended on.

These experts depended on test data to keep them ahead of the problems and they were not afraid to share the data and their analysis. People that I think of that were known experts are John DeVore, Richard Johnson, Fred Disque, Dennis Bernier, Jim Baker, Roger Wild, David Hillman, Carl Buchanan, Kathi Johnson (there were many others)—and these people would support others free, just for the asking. I find that today every shop has its own experts that feel they already have the answers and therefore do not need to consult with any other source. I don't see this sharing today, nor do I see people searching for answers, they simply do something, and sometimes it may work, sometimes it may just delay the problem.

Very few people understand the basic flux, solder, and heat management requirements. Many just run the same profile on every thing. The IPC training (although affective in many other ways) does not spend time on the basics. If one is on the assembly line, they should be trained before going there.

STI has been very good to me and is a company that will continue to grow under the direction of my son, David Raby. In the future, I will be contributing to the newsletter as the notion strikes me but will not be writing for every edition. There are places to see, fish to catch..... I will however, still be available if you need me. I look forward to hearing from you.

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