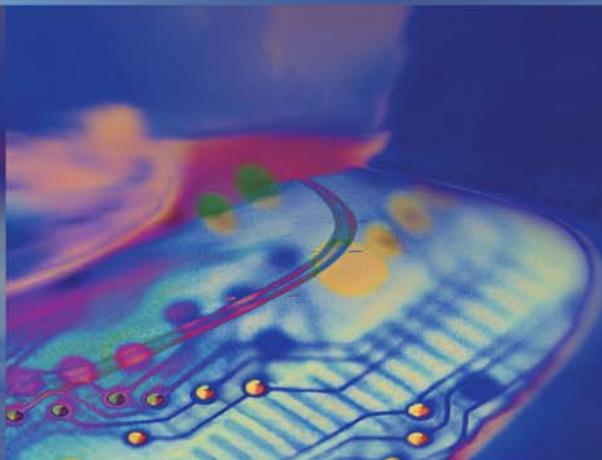


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There's now a sign on Palmer Road in Madison that says "Future Home of STI Electronics" and the earth moving equipment has been doing its thing since early December. The number of people involved in getting the project started has been amazing and so has the number of details to be worked out. We've had to answer a wide range of questions on every level from technical questions regarding power requirements to accounting questions including "should that expense be classified as 'bribery' or 'extortion'?". The State of Alabama has been wonderful to work with and I'd highly recommend them to anyone looking to build a new facility. Hopefully by the time you read this the foundation will have been poured and everything will begin to take shape.



We're excited about the new building because of what it means to STI's future. We're packed into our current facility and our ability to grow has almost come to an end. The new facility gives us the room we need to meet your needs more efficiently. If you count on STI for training, we'll have an additional classroom which will allow us to offer more classes which also allows us to offer different types of classes you have asked for. Each classroom will be larger than our current classrooms and designed to make your training experience the best it can be. If you count on STI for failure analysis or analytical lab work, our new facility will give us more room to add even more equipment

to serve your needs and also the ability to add more people to run that equipment. The same is true for our Microelectronics Lab which will have a much larger cleanroom and the ability to prototype and manufacture our IC/DT technology on a much larger scale. Our Prototype/Manufacturing Lab will see the most dramatic size increase which will allow us to finish much more work without increasing your delivery times. If you count on STI for your manufacturing or training supplies, we'll have a bigger warehouse to be able to keep more inventory and ship even more of your orders on the same day they are placed. You'll hear a lot more about the progress of the building over the rest of the year as I'm sure it will continue to consume my life.

I'm writing this during a break in my favorite conference of any year, the Pan Pacific Electronics Conference which happens to be at Poipu Bay on the Island of Kauai this year. The conference is truly great with presenters from all over the world and unmatched networking opportunities. The location isn't bad either. Next year's event will be on the Big Island of Hawaii February 10-12. Watch the SMTA's web site for more information. Lest you think all my travel in the winter involves sunny Hawaii, by the time you read this I should be on my next trip to also beautiful Minneapolis in February.

I'd like to thank Mike Buetow and everyone at UP Media (Circuits Assembly) for the very nice tribute to Jim recently. (<http://circuitsassembly.com/blog/?p=153>) It was very much appreciated. Also in the same issue of Circuits Assembly, make sure to read Jim's article on our IC/DT technology. (<http://circuitsassembly.com/cms/content/view/6106/95/>) We enjoy producing this newsletter and we always appreciate your feedback. Just like in the entire business, we are always looking for ways to serve you better.

David E. Raby

President/CEO
draby@stielectronicsinc.com

Training Services 2008: *Schedule*

Madison Alabama



March

- March 03-06 IPC-A-610 CIT Certification
- March 10-14 IPC J-STD-001 CIT Certification
- March 17-20 MSFC/NASA-STD-8739.1 Staking and Conformal Coating
- March 17-18 IPC Rework/Repair and Modification CIS Recertification
- March 24-26 IPC-A-610 CIS Certification

April

- April 07-08 IPC-A-610 CIT Recertification
- April 09-10 IPC J-STD-001 CIT Recertification
- April 11 J-STD-001DS Update, Space Application Addendum to J-STD-001D
- April 14-18 IPC Rework/Repair and Modification CIT Certification
- April 21-22 IPC-WHMA-A-620 CIT Recertification



Ann Duncan
Training Coordinator

To register for a course or for additional information go to www.stielectronicsinc.com or e-mail us at training@stielectronicsinc.com.

Training Services: *What Can Training Services Do For you?*

By: **Dan Foster, Director of Training Services**



Dan Foster

STI Electronics, Inc's Training Services Department offers a variety of courses for you to choose from. We can conduct these courses at our facility or yours to meet your every changing needs. We can conduct a variety of courses due to our diversity and experience.

STI Courses

- Lead Free
- Basic Soldering
- Hands on Cable Harness
- BGA
- MSFC/NASA Soldering, Cable Harness, and Staking and Conformal Coating

We also offer equipment training that can be accomplished using your equipment at your facility to maximize understanding.

Here are just a few:

IPC CIT and CIS Courses

- IPC-A-600 "Acceptability of Printed Boards"
- IPC-A-610 "Acceptability of Electronic Assemblies"
- IPC/WHMA-A-620 "Requirements and Acceptance of Cable and Harness Assemblies"
- IPC J-STD-001 "Requirements for Soldered Electrical and Electronic Assemblies"
- IPC 7711/7721 "Rework, Modification and Repair of Electronic Assemblies"
- J-STD-001DS Update, Space Application Addendum to J-STD-001D

As you can see we have many courses to choose from. We can customize almost any course you need. We also can develop curriculum for you.

STI is unlike any other training facility. We have many talented instructors at our facility and that's not all. We also have an Analytical, Micro Electronics, and Manufacturing Lab, as well as a Sales and Distribution department to assist you in whatever training you may need. NO other Training Center has all of this in one facility.

If you have any questions please do not hesitate to e-mail me at dfoster@stielectronicsinc.com or call me at 256-705-5527.

Engineering Services: Microelectronics Laboratory

By Casey Cooper, Microelectronics Lab Manager



The Microelectronics Lab was established to meet the rising need for advanced systems development and packaging and to address the emerging challenges and issues facing today's electronics assemblies. Advanced design and modeling software enables STI to 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 of the system. The microelectronics lab specializes in establishing state-of-the-art engineering 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 coined Imbedded Component/Die Technology (IC/DT®).

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, and assemble a ruggedized electronics assembly to meet your specifications. With experience in Defense, Aerospace, Space, and commercial applications, STI is adept at designing and assembling a product to satisfy your requirements. Contact us today to discuss your application requirements and submit a request for quote (RFQ).

Design and modeling capabilities include:

- Schematic Design/Import
- PCB Layout Design
- Mixed Technology (TH, SMT, Bare Die, Flip Chip)
- Stacked Die (Wire Bond Optimization)
- 3-D Design Generation
- Coupled Physics Simulation Tool
- Structural Analysis
- Thermal Analysis
- Multi-Field Solver

An ISO Class 6 (Class 1000) cleanroom houses the manufacturing and assembly lab for prototype and low volume production of microelectronics assemblies. Assembly materials such as printed circuit boards (PCBs), component/

unpackaged die, and wire are stored in dry nitrogen cabinets to reduce contamination and degradation. A sophisticated dispenser/placement machine is used for low volume dispense accuracy and repeatability in addition to $\pm 10\mu\text{m}$ component placement. Component pick options include waffle pack, gel-pak, and wafer for high-precision SMT and bare die, as well as flip chip assembly. Wire bond interconnect is accomplished with a fully automatic ultrasonic wedge bonder utilizing aluminum wire over a wide diameter range for low and high current applications. A two-channel mass flow controller plasma system is employed to prepare surfaces for die attach, wire bonding, and encapsulation. Material qualification and process control are accomplished via a wire pull and shear tester coupled with high magnification visual inspection.



STI ensures the integrity of every product designed and manufactured at STI through the implementation of a quality system in accordance with ISO 9001:2000 requirements. Quality control is implemented in the earliest phases of a program beginning with project planning, product design, process development, manufacturing and assembly, and testing/verification documentation.

Continued on next page.

Engineering Services: Microelectronics Laboratory (Cont.)

By Casey Cooper, Microelectronics Lab Manager

Microelectronics Lab Capabilities Include:

- Quality Control
 - Incoming Materials Inspection
 - Inventory Parts for Traceability
 - Dry Nitrogen Storage for all Materials
- Surface Modification/Plasma Cleaning
 - 13.56MHZ Plasma Etch
- Die Attach
 - Automatic Volumetric Dispenser
 - Epoxy Attach
 - Solder Attach
- Component Placement
 - High Accuracy Placement
 - Single Chip, Multi Chip, Flip Chip
 - Programmable Bond Force
 - Wafer, Waffle Pack, and/or Gel-Pak Handling
 - Oversized Substrate Working Range
- Curing/Bakeout
 - Programmable Temperature Profile - Microprocessor Controlled
 - Hermetically Sealed Thermocouple Access
 - Oversized Vacuum Chamber
 - Nitrogen Purge
- Interconnects
 - 60kHz Ultrasonic Wedge Bonding
 - Fully Automatic Small Wire Bonder (1.2 to 3 mils Wire Size)
 - Fully Automatic Large Wire Bonder (4 to 20 mils Wire Size)
- Final Inspection
 - Manual Inspection
 - Automated Inspection (AOI)
 - Die Attach Accuracy
 - Component Placement Accuracy
 - Real Time X-Ray
 - Flip Chip Bump Analysis
- Package Seal
 - Underfill dispense
 - Glob Top
 - Dam and Fill/Encapsulation
- Electrical Testing
 - 500MHz, 4-Channel Oscilloscope
 - Multi-Point Continuity/Component Testing
 - Data Logging
 - Function/Arbitrary Waveform Generation
 - General Lab Equipment
 - Strain Gage Testing
- Materials Qualification
 - Bond Testing (Wire Pull, Bump Shear, Ball Shear, Die Shear)
- Surface Insulation Resistance (SIR) Testing
 - Customized Materials Evaluation Test Method
 - Voltage Bias during Environmental Testing
 - Continuous Monitoring Durikng Environmental Testing
 - Insulation Resistance Failure Detection/Hipot Testing

Each new year brings new beginnings and new opportunities. In following with STI's expansion into a new facility, the Microelectronics Lab will also expand in size in the new building and in scope with the acquisition of additional equipment and engineering expertise. The Microelectronics Lab's ISO Class 6 (Class 1000) square footage will increase 100% over the current lab's footprint including a new staging/preparation lab in addition to the main assembly lab. Additional manufacturing and assembly equipment, as well qualification and test equipment, will be purchased to complement and expand the lab's current services and capabilities. The Microelectronics Lab will continue to focus on providing the size (form and fit), weight (mass reduction), power (integrated thermal design), and reliability (robust design) solution to meet your electronics requirements.

For additional information please contact Casey Cooper at 256-705-5511 or ccooper@stielectronicsinc.com.

Recent Promotions

Congratulations to Mattie Birdsong who was recently promoted to BGA Rework & Repair Specialist in our Prototype/Manufacturing Lab. Mattie has been with STI for 5 years as a SMT Assembly/Solder Technician. Congratulations are also in order to Josh Wilhoit who was recently promoted to 2nd Shift Supervisor in our Prototype and Manufacturing Lab. Josh has been with STI for 4 years and most recently has been responsible for the operation of the AOI and BGA rework/repair.

Sales & Distribution: Capabilities

By Sissie Eckstein, Sales Manager



The Sales and Distribution division of STI has experienced some changes in the last year but everyone has worked together to make the most important aspect, customer satisfaction, a constant. STI offers several programs that benefit our customers. As always we offer the consignment tool cribs. With the cribs in place we work to reduce cost for our customers by reducing the number of purchase orders as well as cut down on shipping costs. In the last year we have added local delivery capabilities. We now have the ability to deliver within the Huntsville area. This helps us keep our customers up and running during emergency situations and helps with shipping costs.

STI is also a distributor for over 100+ different product lines supporting the electronics industry. As a complete source for all your business needs, we carry a diverse array of products ranging from solder, fluxes, solvents and chemicals to EDS protection products. We stock several lines of soldering, desoldering and rework/repair equipment along with consumables and accessories. We also stock video inspection systems, hand tools, chairs, and workbenches.

Currently we are working hard to complete our product catalog. You'll find that we've added many new products. We're confident that it will be worth waiting for.

Our sales staff is also very knowledgeable. We have endless resources available to answer any question. We work with the other departments within STI to understand and answer questions from processes to equipment and training. STI is more than just a distributor. We are a "Total Solutions Partner."



STI Electronics, Inc. Features SureHold Adhesives



Our complete line of industrial adhesives are more cost effective than our competitors, but still has the quality you demand.

SureHold line consists of:

- All Purpose
- Low Odor and Low Bloom
- Metal
- Rubber Toughened
- Surface Insensitive
- High Temperature
- The flat bottom allows the tube to stand up



SureHold's patented applicators, used on many of our adhesives, allows for a cleaner job with no messes or spills



Our Threadlockers are also available in the Drip Proof Applicator:

- (Red) Permanent Strength
- (Blue) Medium Strength
- (Purple) Removable Strength
- (Green) Penetrating Strength



Call STI at 1-800-858-0604

To receive future issues of STI's newsletter electronically,
please go to www.stielectronicsinc.com.

Training Materials

By Mel Parrish, Director of Training Materials



STI Training Materials provides 34 different Standardized Training kits (not considering custom kits), but if that doesn't cover your training project needs, chances are we can make it and have made it before. To support these many kits, STI

Training Materials maintains an inventory of 17 different Printed Circuit Boards for various types of training projects. The bulk of STI Training Materials focus is admittedly directed toward structured training and certification programs. STI is also an authorized distributor of IPC Standards and Documents, Desk Reference Manuals and Training DVD's.

Beyond that purpose we have many customers that use the STI capability to create custom versions of kits for their training projects thus focusing skill development on the production capability most desired for their training project.

STI BGA Reballers allow the capability to recover BGA packages with the addition of new sphere patterns and the Reballers can be used many times over. Since they are reusable, they are provided as a kit with 10,000 spheres of the correct size for package that the kit is made for. Each reballer is matched to the exact component dimensions so the spheres are placed as intended for the original component.

We also provide tools and production resources that can be used in the production as well as training environment. The STI Terminal block and Wire Holder are well suited and widely used for both purposes.

STI Training Materials is offering a special discount for Training Resource tools like the Wire Holder and Terminal Block. Mention this edition of the newsletter and receive a 10% discount for the purchase of these items during February & March 2008. It would be a good time to replace the worn terminal holders in your classroom. Also it might be a good time to replace your FREE STI Component ID poster. Check out our web site for the poster request.



Part No. 405-2492



Part No. 405-1026

Surplus Inventory Sale

STI Electronics, as one of the largest distributors of electronic assembly and solder supplies, occasionally has overstock on some items. We have created a surplus inventory list with prices drastically reduced. The surplus inventory list is available at our website, www.stielectronicsinc.com, and is updated monthly. Please call (256) 705-5545 and ask for Sales or (800) 858-0604. Quantities are limited so don't delay.



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Fax: (256) 461-9566

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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

By: *Jim D. Raby, PE, Technical Director*



Did you ever notice that when it is cold (extremely) you don't want to go fishing, but we continue to make plans and think about the fish we haven't caught? I have never caught a brown trout and that has bothered me more than a little bit. So, I have been searching the web and found a place called Flippen, Ark where I can hire a guide and go after the browns. I have called this person and made arrangements for a trip with the specific thought that this will be my brown trout year. The guide stated that everybody he takes out catches brown trout, but he hasn't taken me out yet. You might ask why I started this article out this way; well first the above is all true and I think that it would just improve my status in the world if I were to be able to say I had caught a brown.

I have made contact with a number of old friends in the past year, lost a few to death, but re-established some old ones. The Engineering Department Head; Burrell Hayes when I first went to China Lake, and Technical

Director when I left and I have been exchanging e-mails and it is a privilege to continue contact with him, He was a good and honorable person to work for and enjoyed seeing success. In addition, Roger McCullough, a person that I was privileged to work with for a while at China Lake has emerged through e-mail. I look forward to seeing both of these persons this spring.

Now to get to the building that is on our mind. It will be a very nice building, one that we can all be proud of, and one that I have dreamed of for a lot of years. A building designed with the work and goals of STI in mind, one that has all the bells and whistles required to do the job like it has never been done before. The equipment will be in place with plenty of floor space and the correct people talent to get the job done. I must stop on the building at this time and tell you that the site preparation is taking place as I write this and they are moving dirt from side to side, and packing and unpacking and piling and un-piling to the point that there will not be a grain of dirt large enough to pick up. It is beginning to take shape now, one can see where the building pad will be, the driveways and parking lots. So, I guess we just wait a time and soon they will be pouring concrete. By the time the concrete is poured, it will be time for a break to go after the Brown's. See you on the river.

May God continue to Bless all of us and you.

Jim D. Raby, P.E.