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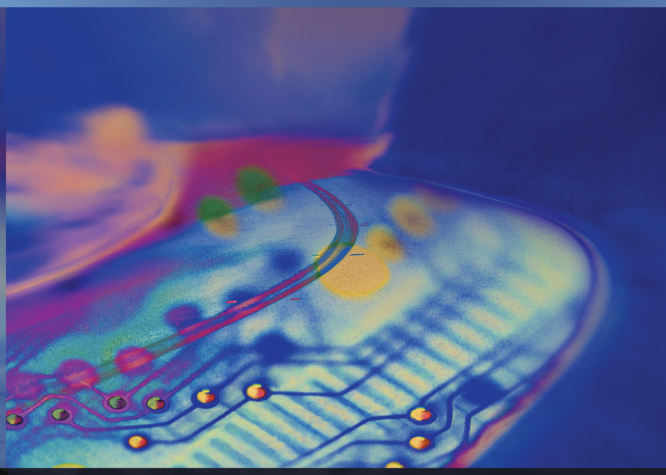
"Woman Owned Small Business"

Volume 8, Issue 2

March 2009



## inside this issue:

# Dave's World

If you've ever wondered where Madison, Alabama was, the past couple of years you could just watch the Weather Channel and we were the center of the circle labeled "Exceptional Drought". Exceptional Drought doesn't mean "it seems a little dry this year", it means "you've only been here 4 years so you don't remember when it used to rain." I mention this only because on the day we began moving in mid-December we had 4.77" of rain. During the next two days of moving, we had almost 5 more inches of rain. It's nice when your furniture gets moved and cleaned but the STI team along with the movers managed to pull it off without complaints and without shutting down our business for even a day. We were completely in the new building (new address: 261 Palmer Road, Madison, AL 35758) before Christmas except for the SMT line. The new SMT line was set up and operational before the existing line moved the week following Christmas. It still doesn't completely feel like home but it is getting there.

We've had two open houses, one with the ribbon cutting and local officials and local press and another with the industry press, and many individual tours (let me know when you want yours) and I've heard the same general comment at least 3 times. "You have a wonderful new building and a great line of new equipment but a lot of companies have those. What is most impressive are the people you have at STI and their knowledge and experience." I love hearing that because it is the same thing I have believed for several years. For a relatively small company, STI has a tremendous amount of talent that can help you solve most problems you will encounter in this industry.


If you've done anything with our Training Services department over the past several years, you've probably worked with Dan Foster. I'm sorry to say Dan has left STI but I am very happy to say that Pat Scott, who you've probably also worked with or met, has been named Director of Training Services. I'm very excited for Pat to take over these responsibilities and we all should be looking forward to some new offerings, updated classrooms, and some variety in schedules. The whole department still falls under Diana Bradford, Vice President of Operations/ Training Resources and what you will not see is any degradation in quality or customer service and we still have the best staff of instructors in the world.

Many of you know my father & mother, Jim & Ellen. This is a special time for them as March 13th will be their 50th wedding anniversary. (Lucky Friday the 13th in 1959 and 2009.) They are celebrating by flying to Sydney and taking a 28 day cruise all the way around Australia. They are scheduled to be over the Great Barrier Reef on their actual anniversary. I don't know of anyone who has ever deserved a trip like this more.

I've been talking in this space for more than two years about the new building. It's no longer the "new building", it is now "home". The reason for the expanded space? So we could serve you, our customers, better. We now have the capabilities to do so much more than ever before. Please call or e-mail and let us know what we can do to help you.

*David E. Raby*

President/CEO
draby@stielectronicsinc.com

# Training Services: What's New with Training Services

## By Diana Bradford, V.P. of Training Services

2009 has brought with it changes, opportunities, and challenges as most of you have experienced as well. For those of you who haven't heard Dan Foster who has been STI's Director of Training Services Department for 8 years left STI in December. Dan decided to follow the proverbial "grass is greener on the other side" and took a contractor position with Defense Acquisition, Inc. (DAI) as a Senior Analyst. Dan did an excellent job at STI and I am sure he will be an asset for DAI as well. We wish Dan all the best in his new adventure.

As many of you know, STI (and in the earlier days Soldering Technology) has been known for over 26 years for being the provider of choice for IPC and electronics assembly and soldering related courses around the world. The training services department was initially started and managed for several years by Jim Raby himself. Over the past several years the training department has operated under several managers but with one constant goal; to offer our customers the best technical training available anywhere in the world with the best instructors, facilities and at the best value. All of these are goals were initiated by Jim and the entire Raby family and as the baton has been handed from one manager to the next, these values have stayed a constant for all departments and divisions within STI but never more evident than in the training department itself.

Having said all of that let me introduce you to our new Director of Training Services, Pat Scott. Those of who have visited STI have probably met Pat or if you have been in the industry a while have probably run into her in one of her previous career "lives". Pat has over 25 years of experience in electronics manufacturing training and related management functions. She started out at Hughes Aircraft Co. as a Technical Trainer and was certified as a Category C Instructor/Examiner. Pat then moved to China Lake, CA and worked for Comarco, Inc. as a Training Manager in support of the Soldering Technology Training Facility for seven years. Pat taught WS-6536D and E, DoD-STD-2000, and Mil-STD-2000 Certification Courses as well while working at Comarco. Pat continued her career with SAIC and ACI as an Instructor and Training Manager in support of the Electronics Manufacturing Productivity Facility (EMPF) and then served ETA (Electronics Training Advantage) as its Director of Training.

Pat joined the STI training team in January 2001 as a Master Instructor and Instructional Systems Designer and Developer. Since joining the STI team, Pat has been involved with the development of the IPC-A-610, J-STD-001, IPC-7711/21 and IPC/WHMA-A-620 IPC Training and Certification Programs. Pat is accredited by the IPC as a Master Instructor for IPC J-STD-001, IPC-A-610, IPC/WHMA-A-620 and IPC 7711/21.

As you can see, Pat brings a tremendous amount of experience to her new position and is working hard at making sure our customers receive the same level of service that they have come to expect from STI over the past 26 years. On a separate note, the experience level of STI's instructors (Frank Honyotski, Tom Borman, Michelle Morring, and Dean Goglin is second to none and as always, Ann Duncan, Training Services Coordinator, is always standing by waiting on your phone call with a training related question or to help you register for a class.

As always we are here for our customers. If we can help you in any way please do not hesitate to contact us at dbradford@stielectronicsinc.com or pscott@stielectronicsinc.com.

Check out our entire 2009 Schedule by visiting our web site at www.stielectronicsinc.com. Sign up to attend the IPC-A-610 CIT Training Course that will be held in Orlando April 28 - May 1, 2009. For more information contact Ann Duncan at 256-705-5512 or training@stielectronicsinc.com.

# Training Services 2009: April Schedule

***Madison, Alabama***

| Date | Course |
|---|---|
| April 06-07 | IPC-A-610 Certified IPC Trainer (CIT) Recertification |
| April 08-09 | IPC J-STD-001 CIT Recertification |
| April 10 | J-STD-001DS, Update, Space Application Addendum to J-STD-001D |
| April 13-17 | IPC-Rework/Repair and Modification CIT Certification |
| April 20-23 | IPC/WHMA -A-620 CIT Certification |
| April 20-24 | MSFC's Cable/Harness couse to the requirements of NASA-8739.4 |

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

## Training Materials: Essential Skill

### By Mel Parrish, Director of Training Materials

Mel Parrish

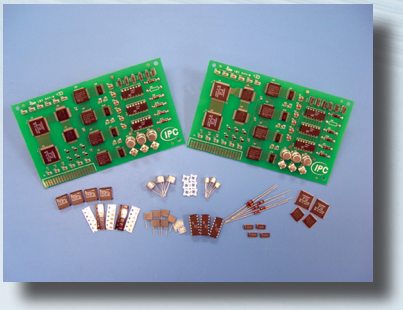
Heard any good news lately?

Stocks are in the TANK but Essential Skills are still a valuable asset!

In these dire times essential skills may be one of our best allies as something that is required no matter what. Focused training for essential skills such as Rework and Soldering could become one of our greatest assets when we are trying to be as efficient as possible for operations and production. How can we be more efficient? Become better at the things we do best, and training is the essential key to that focus. Let STI help with your focused training projects.

STI can provide custom training kits for your programs or with 30+ standardized training kits there may even be a standard kit that already exists for your purpose.

The featured training kit for this month is the 7711/21 Rework/Repair Kit, a certification kit for IPC Rework Skills. This kit contains assembled boards, as would be the case with most rework projects, and sufficient components to create skills for replacement and also repair of electronics.



Mention this article and receive a 10% discount through April 2009.

# *Engineering Services: Tin Whiskers*

***By Marietta Lemieux, Analytical Lab Manager***

There has been a long history of whisker related electronics failures due to pure tin plating. The lead-free push within the industry driven by the RoHS directive, has allowed these types of failures to increase in number.

Tin whiskers can be explained as needle-like crystalline structures of tin (Sn) that form and grow on surfaces that use pure or nearly-pure tin as the final finish. Whisker growth can vary from seconds to years, and can grow to several millimeters in length. Whiskers are highly conductive and can short out electrical components by bridging gaps between closely spaced electrical conductors.

Although the "why whiskers form and grow" is still not fully understood, it is generally believed that the formation is caused by stress-relief. These stresses may be driven by many sources, including:

- Residual stresses in the tin resulting from the plating process
- Compressive stresses such as trimming and forming of leads
- Bending or stretching of the surface after plating
- Scratches or nicks in the plating as a result of handling
- Elevated temperature storage
- Coefficient of Thermal Expansion (CTE) mismatch between the plating and substrate material
- Bright tin finishes (Bright tin seems to be worse than matte finishes due to some influence of the organic compounds used as brighteners and their smaller grain size structure.)

The best way to avoid the formation of tin whiskers is to avoid parts that use pure tin plating all together. If this is not a viable option, here are some examples of ways to possibly reduce the risk of tin whisker growth:

- The use of a barrier layer (such as nickel) between the base metal and pure tin surface plating may reduce the likelihood of tin whisker growth
- Vary the thickness of the tin plating; thin plating or thicker plating may reduce tin whisker formation
- Fusing or heat-treating parts that have pure tin plating is thought to increase grain size and reduce internal stresses that may induce the growth of tin whiskers
- Selecting a matte or low-stress tin finish would be a better choice, since brighter tin finishes have been found to have the highest density and longest tin whiskers
- Annealing
- Application of conformal coat

The following Scanning Electron Microscopy (SEM) images show examples of tin whisker formation on connector pins. The plating stack-up of these connector pins was specified as tin/nickel/brass. However, in this particular case the nickel barrier layer was never applied, leaving pure tin plating directly on top of the brass base metal, resulting in tin whisker growth:

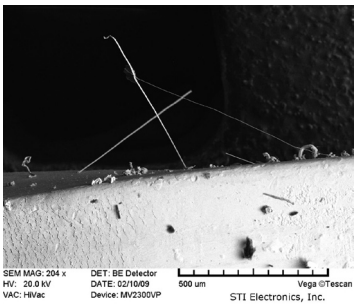



Figure 1

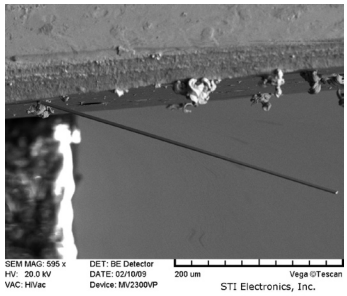



Figure 2

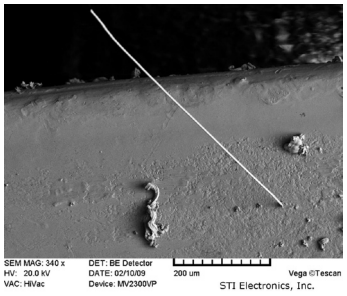



Figure 3

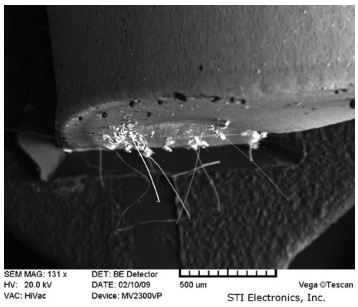



Figure 4

For additional information on this article or analytical services, please contact Marietta Lemieux at mlemieux@stielectronicsinc.com.

# Electronic Sales & Distribution: STI introduces Carpenter Mfg. Company as a new product line

**By Sissie Eckstein, Sales Manager**

Sissie Eckstein


STI introduces Carpenter Mfg. Co as a new product line. Carpenter Mfg. Co. Inc. has been a global leader in Wire Processing Equipment for over 52 years and currently offers over 23 different pieces of equipment for wire processing, material cutting and crimping.

Today, the Carpenter Manufacturing Company, Inc. is still a family owned and operated business that retains the vision and core principles of it's founders and continues to enjoy an enviable reputation for building superior machines, backed by an excellent customer service organization. Applications for Carpenter equipment can range from the typical Harness Shop, Panel Manufacturer, or Medical Manufacturer. Any business that does repetitive cutting of wire or other materials can improve their process through our automated equipment.

Carpenter's new Model 78 Pneumatic Wire Stripper provides a Fast and Accurate way to strip a broad range of Wires and Cables. This compact unit features calibrated adjustments for Wire Diameter, Strip Length and Pull Length, making operation and change-over Simple and Fast. The Model 78 can easily strip Hookup Wire ranging from 10 to 30 AWG and Multi-Conductor Cables up to .250" OD. The Model 78 comes Standard with a durable Powder Coat Finish and 1 Year Limited Warranty.

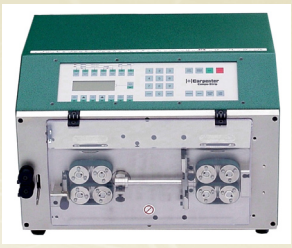
The Model 97A Compu-Strip® is a fully programmable bench top Measure, Cut & Strip Machine utilizing High Torque Stepper Motors, Belt Feed Material Transport and a Precision Ball Screw Blade Mechanism. This Powerful Compact Machine easily processes Stranded Wire from 8 to 32 AWG, Flat Cable up to .520" in width, and Multi-Conductor Cable up to .312". Not only is the M97A easy to operate but dollar for dollar the most capable machine in it's class.

For the magnet wire industry, Carpenter has several machines to strip enamel, varnish, and a variety of coated wires prior to soldering.

The Model 88E is designed to efficiently strip miniature coils and fine magnet wire by the use of rotating cone shaped stripping wheels. Their unique Twincone® wheel design makes close stripping possible on all types of film insulations. Strips to within 1/8" of a component's body are possible. Our Twincone® Stripping Wheels may be cleaned with a Wheel Dresser, plus raised for maximum Wheel life. Every machine comes Standard with (1) pair of Twincone Wheels, durable Powder Coat Finish and 1 Year Limited Warranty.

For more information or to set up a demonstration at your facility, please contact Sales at (800)-858-0604 or sales@stielectronicsinc.com.

Model 78 Pneumatic Wire Stripper



Model 97A Compu-Strip®

Model 88E Magnet Wire Stripper

Check out our Web Site at www.stielectronicsinc.com to see our complete line of products.
Kester, Pace, Hakko, OKI/Metcal, JBC, 3M/SCC, Protektive Pak, Atlas Copco Tools & Assembly, Excelta, Tech Spray, ITW Chemtronics, DEK, Production Basics, Micro Care, Cooper Tools, etc.

# *Industrial Sales & Distribution:* A Complete Screwdriver Range to Support Your Needs

***By Ryan Kirk, Industrial Sales Manager***

Ryan Kirk

STI Electronics, Inc. offers a complete range of electronically powered assembly tools. With Atlas Copco Tool capabilities, STI can provide its customers with tooling that better "error proofs" their assembly processes, provides better durability in tooling, better ergonomic benefits, data collection capabilities as well as many other features. STI also provides committed support to set up your tooling and help with your assembly needs.

Pictured you can see Alas Copco Tool Screw Driver Range - all ESD certified.

EBL System - Covers ranges from (.4 - 31in lbs.). The EBL provides unique ergonomics that provides comfort for the operator. A brushless motor provides long durability in the life cycle of the tool. This system also provides two speed settings with push to start and lever start capabilities. The RE model is capable of batch count features to ensure all screws tighten. Soft stop model available for sensitive electronics and plastic components.

MicroTorque System- Is a great tool for low torque ranges (.04 -70.8in lbs). The MT can be programmed to do 16 different programs - which means you as a customer can replace 16 tools in the torque range of the MT. This system is also capable of torque, angle and speed control - fastening stragegies, configurable display, operator feedback, along with other error proofing accessories.

DL System - Offers ranges from (2.6 to 88.5 in lbs.) - This system provides great ergonomic tool design to function in high volume production. This durable tool is designed to provide long service intervals. This system is capable of torque, angle and speed control - fastening stragegies, configurable display, operator feedback, along with other error proofing accessories.

SL Sytem - Offers a range from (2.7- 180in lbs.) - This tool provides the total package. This system is similar to the DL, but the SL goes further providing data collection and more integrated operator feedback. It is transducerized to provide very tight tolerancs.

From your basic EBL brushless driver to your SL system, STI can improve your assembly process.

For more information or to set up a demonstration at your facility, please contact Ryan Kirk at (256) 278-8957 or rkirk@stielectronicsinc.com.

**EBL System**

**MicroTorque System**

**DL System**

**SL System**

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# *Jim's Corner*

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

Well now, we are in the year of 2009 and the year that Ellen and I will celebrate our 50th anniversary with a 28 day cruise around Australia. Been wanting to see some of the cities other than Sydney, Melbourne and Adelaide so we decided to begin in Sydney and do a cruise that will put us in all the other coastal cities like Darwin and Perth and many others that we have not been to. We have a few friends down under that we will also see.

We are in our new building, that was more than a year of activity, drawings, dirt work and then the building. Since I was responsible for watching over the building and making sure that it met our needs, I took the liberties to put in several "change orders" as we went along to get things just right. David is now facing the task of paying for those extras that he nor I had originally planned on. He was not exactly happy with all the changes that he had not planned on. I am sure that by the time I get back from Australia he will be over it.

It is an extremely nice facility, inside and out, well landscaped, great parking, outside lighting that will run up tremendous bills. It is the most modern facility in the industry that can be built exactly for what we do. The clean room is tremendous, the Failure Analysis lab is top of the line and the manufacturing floor can hold 6 complete lines. We currently have 2 so we have a little growing room. We have 3 training rooms that are large and of a design that makes the students feel comfortable for a good learning experience. Pat Scott, our new Director of Training Services seems to be happy with them. The distribution of consumable supplies is larger than before and has plenty of space. The kit room looks great and is well managed.

You might think that I am proud of the accomplishments of building this facility and you are right, I am. It is as I never dreamed of for STI. Dreams can come true.

So, after Australia, it is fishing for rainbow and browns in the White River of Arkansas and Bass on Lake Guntersville.

It is an exciting time.

Jim D. Raby
Technical Director
jraby@stielectronicsinc.com