

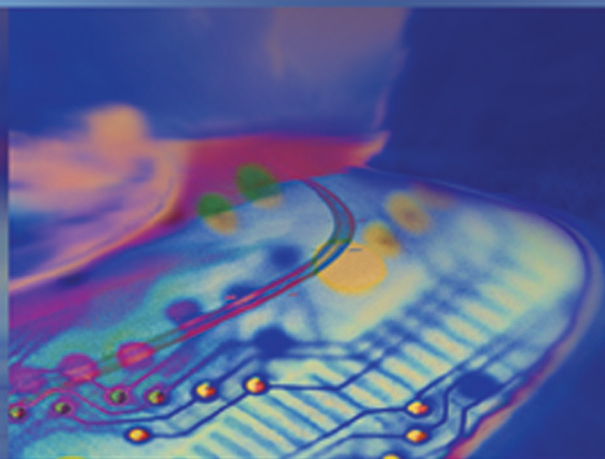
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*"Woman Owned Small Business"*

Volume 6, Issue 4

June 2007



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## Dave's World

As seems to always be the case, it has been an exciting couple of months since I last wrote.

I've mentioned several times about STI's need for more space. We recently acquired 10 ½ acres of land in Madison (approximately a 6 iron from our current location) on which we plan to build a new 30 to 40,000 ft<sup>2</sup> facility. Preliminary plans call for 3 times as much lab space as we currently have, 3 classrooms with all of them being larger than our current largest, double the size of our current warehouse, a 50% larger clean room along with many other improvements. There are still a lot of issues to be resolved as we move through the City, County, and State approval. Little issues, like how in the world are we going to pay for this also are part of the process. If all goes as planned, we should be moving in late next summer or fall of 2008. If it doesn't go as planned, we may be moving in to a big tent with goats and cows to do landscaping. I'll keep you up to date as we go along and you'll also be able to track the progress through photo's on our web site although don't look for many changes until late summer or fall.

Another piece of exciting recent news relates to our patented IC/DT technology. This technology continues to amaze as it survived and functioned during a +19,500 g and -10,000 g test in early May. In addition to making electronics smaller, lighter, and more reliable, it's pretty tough too. I'm sure somewhere there is a limit we'll reach but this is a nice milestone where not many have gone before.

The month of April was a great reminder to me that I have the greatest job in the world. I spent a day early in the month in the beautiful and tranquil environment of Augusta National Golf Club. I spent time in four different states doing the absolute favorite part of my job which is visiting customers. And finally I spent most of a week seeing the world in a whole different

way with a few days in Shanghai. As Randy Newman once wrote, "My life is good."



I was also fortunate recently to attend the Leadership Huntsville/Madison County 20<sup>th</sup> Anniversary Celebration. I am a proud graduate of the program (Class 9 rules!!) and all functions of the organization sponsors are worth attending. However, this 20<sup>th</sup> Anniversary was fantastic. The guest speaker was General Colin L. Powell, USA (Ret.) who spoke for an hour about leadership and his life and career. I've been fortunate in my life time to meet and hear many famous people but General Powell is something special. Regardless of your politics, if you get a chance to hear him, do it.

Congratulations to Kathi Johnson (my long lost sister although that's a whole other article) and all the folks at Hexacon Electric who just celebrated their 75<sup>th</sup> Anniversary. Like STI, Hexacon is a family company with Kathi now representing the 3<sup>rd</sup> generation. I still remember taking a Greyhound Bus from Auburn to Atlanta and then a Delta DC-8 to New Jersey and attending Hexacon's 50<sup>th</sup> Anniversary party during my senior year of college. We were talking about starting STI during that time also. Kathi has led the company through some tough times in the past few years but now the future looks bright again.

As always, we look forward to hearing from you. Let us know how we can help you.

*David E. Raby*

President/CEO

[draby@stielectronicsinc.com](mailto:draby@stielectronicsinc.com)



Congratulations to Pam Amerson who won the drawing for the free American Airlines ticket. Pam works in STI's Prototype and Development Lab as a SMT Assembly Technician. Pam has been with STI for 5 years and plays an integral part in serving the STI lab customers. STI has a drawing each year among the STI employees for American and Delta Airline tickets.





# Training Services 2007: *Schedule*

## Madison Alabama



### July

- July 09-12 IPC-A-610 Certified IPC Trainer(CIT) Certification
- July 16-20 IPC J-STD-001 CIT Certification
- July 23-24 IPC Rework/Repair and Modification Certified IPC Trainer (CIT) Recertification
- July 23-25 IPC-A-610 Certified IPC Specialist (CIS) Certification

### August

- August 06-10 IPC Rework/Repair and Modification CIT Certification
- August 20-21 IPC J-STD-001 CIT Recertification
- August 22-23 IPC-A-610 CIT Recertification
- August 27-31 MSFC/NASA 8739.2/3 Solder Certification

## IVY Tech (Bloomington, IN)

### September

- Sept. 24-28 J-STD-001D Certified IPC Specialist (CIS) Certification

### October

- Oct. 9-11 IPC-A-610 CIS Certification

To register for a course or for additional information go to [www.stielectronicsinc.com](http://www.stielectronicsinc.com) or e-mail us at [training@stielectronicsinc.com](mailto:training@stielectronicsinc.com).



**Ann Duncan**  
Training Coordinator

## Training Services: Why Choose STI Electronics for your Training Needs?

By: Dan Foster, Director of Training Services



*Dan Foster*

With all the choices you have today for training how can you make sure your selecting the right training organization? It's confusing when we all seem to be offering the same things. I've put together a table that may

help you with your decision.

As you can see STI is above the rest when it comes to training and experience. As the saying goes "You Get What You Pay For". Why not get the best for you and your company!?!

Item	STI Electronics, Inc
IPC Involvement	IPC Instructors are chair/vice chair or committee members for all the IPC standards for training 600, 610, 620, 001, 7711/21.
Curriculum Development	STI Instructors have instructed the following beta classes: J-STD-001, IPC-A-610, IPC-A-620, IPC-7711/21, J-STD-001DS.  STI Instructors have been involved with the development of the following courses : J-STD-001, IPC-A-610, IPC-A-620, IPC-7711/21.
Number of Master IPC Trainers (MIT's)	Four
Cummulative Years of Experience (Instructors)	100+ Years
Analytical Lab Resources	State of the Art
Cummulative Years of Experience (Lab Resources)	Over 250 Years
Full Line of Distribution Products	Every Item needed for your instructors or operators. We offer hand tools, materials (solder, flux etc), equipment, training materials, and specifications etc.
Costs	We are the same or less than all our competitors
Jim Raby	Over 50 Years of expereince in High Reliability Specifications and Standards, Training, and Research and Development



Mel Scott

Well, it's my time in the box. I have been able to escape having to write an article for our newsletter now for well over 6 years. They finally caught up with me. I must say I enjoy reading articles a lot more than I do writing them, however, I do enjoy talking to our customers & look

forward to hearing from each of you. Hence, my low profile when it comes time for publication of our next newsletter. Apparently, I need to find new hiding places. Now lets move on to the subject at hand.

Problems caused by electrostatic discharge (ESD) have been with us for a long time. The problems caused by ESD can be very expensive in terms of money and ones reputation. Money spent on correcting failures caused by ESD increases exponentially as one progresses from single, bare component failures to product field returns. Reputation can be impacted when a customer gets a product and it fails the instant it is powered up or after operating for just a short while when it is supposed to last for years. You see, ESD is capable of causing instant failure or latent failure, depending on several factors. If you are going to have a problem with ESD, its best to have the instant failure that can be detected during test. Latent defects can pass test and make it all the way through to the field and your customer.

Protection from ESD has become so important that an entire industry has grown up around the phenomena. This leads me to the reason for this article: ESD specifications. ANSI/ESD S20.20, *Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)* was published by the ESD Association in 1999. This document covers the development of a complete ESD control program.

The primary areas of any ESD program must include ESD Training and Instruction along with ESD Protective Products (wrist straps, heel straps, floors, ESD bags, etc). The ESD program must also consist of the monitoring of all of the above items. To be included in the program are:

1. All conductors in the environment, including personnel, shall be electrically connected and attached to a known ground or contrived ground. This attachment creates an equipotential balance between all items and personnel.
2. Necessary non-conductors in the environment cannot lose their electrostatic charge by attachment to ground.

Ionization systems provide neutralization of charges on these necessary non-conductive items (plastic housings, packaging materials and some device packages are examples of necessary non-conductors). Assessment of the ESD hazard created by electrostatic charges on the necessary non-conductors in the work place is required to ensure that appropriate actions are implemented when necessary, commensurate with risk to electrostatic discharge sensitive (ESDS) items.

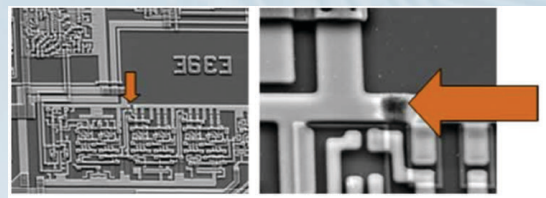
3. Transportation of ESDS items into or outside an ESD Protected Area (hereafter referred to as "EPA") requires enclosure in static protective materials, although the type of material depends on the situation and destination. Inside an EPA, low charging and static dissipative materials may provide adequate protection. Outside an EPA, low charging and static discharge shielding materials are recommended.

Any relative motion and physical separation of materials or flow of solids, liquids or particle-laden gases can generate electrostatic charges. Common sources of ESD include personnel, items made from common polymeric materials, and processing equipment. ESD damage can occur when:

- a. A charged object comes into contact with an ESD sensitive (ESDS) device, or
- b. An ESDS device is grounded while exposed to an electrostatic field.

ESD S20.20 requires that the Organization shall prepare an ESD Control Program Plan that includes:

- Training
- Compliance Verification (Auditing)
- Grounding/Equipotential Bonding Systems
- Personnel Grounding
- EPA Requirements



Source: Rohm Electronics

Several samples of this IC were rejected as low input resistance (leaky) at a particular input pin. Sectioning the device revealed the partial short circuit through the silicon from the top. The top of the short circuit is shown by the small well on the track.

Continued on next page



# Engineering Services: Electrostatic Discharge

By: Mel Scott, Lab Manager

Many of the ESD control programs that are out there have been developed to the requirements of ANSI/ESD S20.20-1999. However, in March of this year the ESD Association released a revised version of this standard, ANSI/ESD S20.20-2007. This standard also covers the requirements needed to design, establish, implement and maintain an ESD control program to protect electrical or electronic parts, assemblies and equipment susceptible to ESD damage from Human Body Model (HBM) discharges greater than or equal to 100 volts.

As stated in *THRESHOLD™*, Volume 23, No.3, May/June 2007, the ESD Association newsletter, the primary differences between the versions are:

- 1) "The recommended limits in the 1999 version now become required limits.
- 2) The guidance sections have been removed for the ANSI/ESD S20.20 standard. Further information on process design, controls and materials can be found in TR20.20 (ESD Handbook).
- 3) Compliance Verification procedures are now specified and can be found in TR53 (Compliance Verification of ESD Protective Equipment and Materials), which is available from the ESD Association."

Both the 1999 version and the 2007 revision are available for download from [www.esda.org/s2020.html](http://www.esda.org/s2020.html).

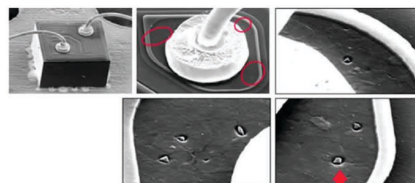
For the rest of this year companies will be certified to ANSI/ESD S20.20-1999. In 2008, companies will have an option to become certified to either ANSI/ESD S20.20-1999 or ANSI/ESD S20.20-2007. Beginning in 2009, certification will only be granted for the ANSI/ESD S20.20-2007 version.

The ESD Association will allow downloading of the 1999 version of the standard until December 2008.

There is a lot of good information on ESD to be had at the ESD Association's web site. There are also regional chapters of this association, for example the Midwest chapter.

If you are interested in ESD and would like to make a difference, check out the ESD Association. They offer memberships and an opportunity to volunteer in standards development groups. They also offer grants to academia for ESD Research.

Having said all that, let me tell you some of the things we can do to help you with your ESD program. We can develop your ESD Control Program Plan; we can develop your training program or provide training of your personnel in ESD protection/prevention according to your ESD Control Program Plan. Also as an independent third party we can perform an audit (verification) of your plant or manufacturing area to determine compliance with your Plan. If there are short comings, we will make recommendations that will help satisfy your requirements. We have provided the above services for others in the industry and would be pleased to provide them to you. Give us a call and let's talk.



Source: Rohm Electronics

*The transistor was also confirmed failed by ESD. The discharge found the weakest point(s) and punched through an oxide passivation layer to underlying silicon. Bipolar devices are becoming very small and susceptible.*

Well, that's about it for now. Hopefully we'll communicate again before another 6+ years passes by, if they can find me. Thanks for reading.

If you have any question regarding this article please feel free to contact me at [mScott@stielectronicsinc.com](mailto:mScott@stielectronicsinc.com) or 256-694-5759.

To receive future issues of STI's newsletter electronically,  
please go to [www.stielectronicsinc.com](http://www.stielectronicsinc.com).

## Sales & Distribution: JBC HD4700 Heavy Duty Station

By: Sissie Eckstein, Sales Manager

The HD 4700 is the ideal solution for prolonged heavy duty soldering. It is specially designed to solder on multi-layer boards and on parts requiring high amounts of heat. The temperature on the tip is strictly controlled by a micro processor through the sensor-heating element integrated to the tip itself.

Aside from the sleep mode, this station also includes the hibernation mode, extending tip life. The HD4700 also offers high reliability for applications such as high frequency technology.



Sissie Eckstein



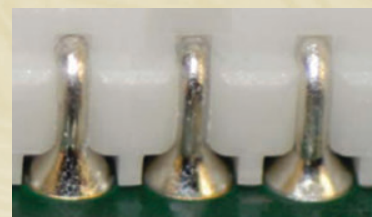
For more information, contact one of our Sales Engineers or Customer Service Representatives at 1-800-858-0604 or [sales@stielectronicsinc.com](mailto:sales@stielectronicsinc.com).

### Kester K100LD Solder Wire - Lead Free Ultrapure®

K100LD solder wire is designed for lead-free hand-soldering and rework applications. K100LD is a new patent pending alloy developed for hand-soldering operations; the alloy is composed of tin-copper-nickel and another element to reduce leaching of metals during soldering and to give enhanced wetting performance.

K100LD solder wire is available in the following no-clean and water washable fluxes to tackle any lead-free assembly with ease and reliability:

- Kester flux 275 no-clean, core 66 with 3% flux concentration
- Kester flux 48 rosin activated, core 66 with 3% flux concentration
- Kester flux 331 water washable, core 66 with 3% flux concentration



K100LD will perform well with all types of component and board metallizations. This reduces de-wetting or non-wetting defects and offers good spread and wicking of solder. It also offers exceptionally bright and smooth solder joints with very low shrinkage effects.

To receive a free K100LD wire solder sample, send an e-mail to [sales@stielectronicsinc.com](mailto:sales@stielectronicsinc.com). For more information, contact one of our Sales Engineers or Customer Service Representatives at 1-800-858-0604 or [sales@stielectronicsinc.com](mailto:sales@stielectronicsinc.com)



## Training Materials: Wire Holder Special Offer!

By: Mel Parrish, Director of Training Materials



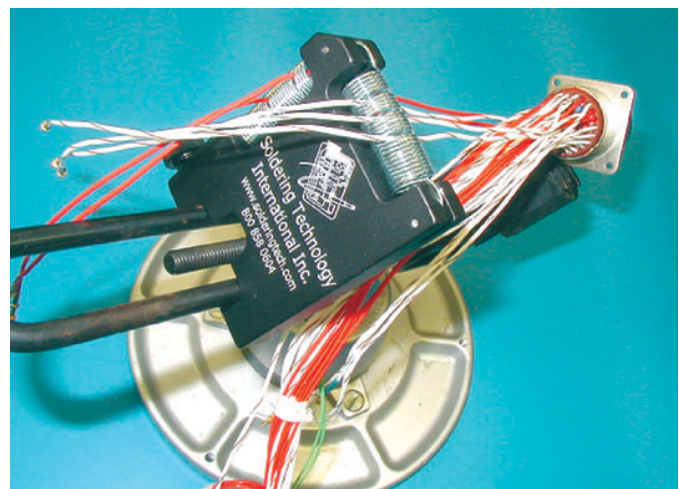
Mel Parrish

Mention this article when you order your Wire Holders during **June** 2007 and receive an additional 10% off the advertised price.

STI Wire Holders make routing of cables and wires for assembly much easier to handle. Like a third and fourth hand, they have steadily increased in popularity with the production assemblers as well as training classrooms over the years despite very limited exposure. If you haven't tried one yet now is a good time to order one for assessment. The spring tension holds wires with just enough tension to assure correct placement while not damaging the insulation or connection placement. There is enough space for multiple wires and angles, it also makes an easy task of sorting wires for attachment.

Please be aware that if you put them in the classroom they will migrate to the production floor once the operators get a chance to try them.

Let us help you make the job easier and quality better, our primary goal for Training Resources. If you have any questions regarding this wire holder, contact Mel Parrish at [mparrish@stielectronicsinc.com](mailto:mparrish@stielectronicsinc.com), 256-705-5530.



### 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](http://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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## Jim's Corner

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



Mr. William (Bill) Fenner. I thought about him and then put his name in the Google search and find, found his address and telephone number, called, and we have since had dinner.

Bill and I worked for Mr. Albin Wittmann during the late days of the Army Ballistic Missile Agency (ABMA), and then NASA. We had a great time in the early development of the soldering and assembly specifications and school program that went through-out the industry. We worked together on many projects and programs including the Pegasus Satellite. The thing that I remember most about those early days was that Bill had an inventive mind and he also had that magic touch when it came to the use of the soldering iron. Bill was great at the development of holding devices, and some of the devices that he invented are still on the market today. Catalogs that sell consumable supplies to the soldering and assembly

world still market the Little Joe heat sink that prevented solder wicking up stranded wire. Bill developed numerous versions of that.

In case you wonder who Mr. Albin Wittmann was; he was one of the people that came over with Dr. Werner Von Braun and was a member of that famous team of rocket scientists that made a difference in our world and the space program. Mr. Wittmann was the instigator of the solder school idea. Bill and I carried out his plans by putting the necessary equipment in place, staffing the program and traveling through the country teaching methods and techniques that were known to produce solder terminations of the strength and reliability desired for the space applications. We had a great working relationship that produced a sense of security throughout the industry that we dealt with, and encouraged others within the contractor world to do the same. We never had an adversarial relationship with our contractors, it was always a team approach.

I am so pleased to have found my friend Bill Fenner and look forward to the opportunity to revisit our past under a shade tree in a swing with a good glass of iced tea. I am sure that the work will be easier, and just as successful as in the past and without all the travel. We waited too long for Mr. Wittmann since he has now passed on, but I am sure Bill and I can have many good memories of him and our past.