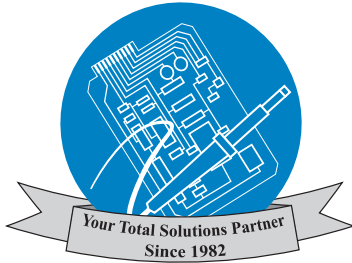


# Soldering Technology International News



## Special Points of Interest

- Dave's World
- Trade Show Schedule
- Training Schedule
- Engineering Services: Year In Review
- Training Services: Hints, Tips, and Solutions
- STI's Sales Department Announces the addition of "The Eraser Company"
- Low Cost Skill Evaluation
- Jim's Corner

## Trade Show Schedule

**SouthCon**  
Orlando, FL

January 14-15, 2004

### Commercialization of Military & Space Electronics

Los Angeles, CA  
February 9-12, 2004

### Pan Pacific

Kahuku, Oahu, HI  
February 10-12, 2004

### APEX

Anaheim, CA  
February 24-26, 2004

**Atlanta SMTA Expo**  
Gwinnett Civic Center  
April 22, 2004

## Dave's World

Another year is almost over and what a year it has been. We had our goals for 2003 and for the most part we've been successful in reaching them. First, we survived which makes everything else possible. Each of our three divisions is now much stronger than it was a year ago and on its way to being much stronger at the end of 2004.

### Engineering Services

In 2003, we were able to add three important people in our lab (AJ Orames – equipment operations, Mattie Birdsong – hand operations, and Jason Zimmermann – analytical lab) to strengthen an already strong team and we've also been able to add more than half a million dollars worth of leading edge equipment at the same time. In the coming year, we look forward to continued growth in all areas including R&D where we hope to build off of successful programs of the past two years (see Jim's article on the back page); in the Analytical Lab where we continue to benefit from follow on work and referrals from satisfied customers; and in the Prototype area where, once again, happy customers keep coming back. We plan on purchasing over a million dollars worth of capital equipment to further enhance our capabilities in the first quarter of 2004.

### Sales

The big piece of news from sales for 2003 was the long anticipated release of our catalog. The catalog was released in July and the response has been tremendous. One goal we did not meet in the Sales Department was adding to the territory called on by our direct sales people. What we did instead was continue to get stronger and gain market share in the existing territories (especially Florida) but you can look for geographical growth in 2004. We now offer more than 80 lines and truly can be a one-stop shop for all of your assembly equipment and supply needs. In January, you'll be able to purchase items directly from [www.solderingtech.com](http://www.solderingtech.com).

### Training Resources

2003 saw the continued growth of Training Services as additional IPC certification classes were added. Our staff stayed together and continues to easily be the strongest in the industry. Training Materials added several new training kits to our line of products and new dummy components were added as fast as the components are manufactured. In 2004, you can look for several new products from Training Materials as well as new classes from Training Services. Also look for STI's continued involvement in industry organizations to promote proper training and the use of standards.

### Overall

Internally, we've continued to invest in infrastructure including software and training and other things to make us more efficient and able to respond better to your needs. In March, we added Stacey Sipes as our Staff Accountant and she has helped us progress tremendously in that part of the business. 2003 was a good year and definitely will allow STI to go into 2004 with a lot of positive momentum.

By David Raby



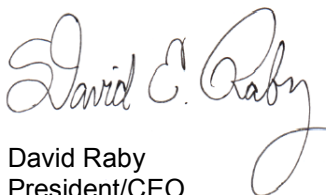
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## Dave's World (Cont.)

By the time you read this, we'll have started on the long road to constructing a new building to house the continued growth we expect. I'll give you plenty of details on the building in the future but we are currently in the final stages of site selection. (It will be within 10 miles of our current location.)

The thing you need to remember, and we remind ourselves of this everyday, is that all of these goals we met from 2003 and all of the goals we have for 2004 and beyond are for only one purpose and that is so we can serve you better. If you have any suggestions on anything else we can do to better serve you, please let me know.

Thank you for making 2003 such a success here at STI and I, along with everyone here, wish you the best for the holiday season and a happy, healthy, and prosperous 2004.



David Raby  
President/CEO  
draby@solderingtech.com



## 2003/2004 Training-At-A-Glance Schedule

- **December 8-12** - IPC Rework and Repair Registered Instructor Certification
- **December 15-18** - STI MSFC/NASA Staking and Conformal Coating
- **December 15-18** - IPC/WHMA-A-620 Instructor Certification
- **January 5-9** - Basic Soldering
- **January 5-9** - IPC J-STD-001 Registered Instructor Certification
- **January 12-16** - IPC J-STD-001 Operator Proficiency Certification
- **January 12-16** - IPC-A-610 Class "A" Instructor Certification
- **January 19-23** - STI MSFC/NASA Solder Certification
- **January 19-20** - IPC Rework and Repair Registered Instructor Recertification
- **January 26-29** - IPC/WHMA-A-620 Operator/Inspector Certification

Register for Classes

On-line at [www.solderingtech.com](http://www.solderingtech.com)

or call

1-256-705-5512 or 1-800-858-0604

Classes are conducted at our facility in Madison, AL unless otherwise noted.



## STI<sup>2</sup> Engineering Services: Year in Review

*By: Jason Gjesvold*

While the topic of this month's engineering services section was to be a follow up to the solder insertion depth study, scheduling of the test coupons on the SMT line has delayed the production of the test samples. Therefore, we decided that we would take the opportunity to look back at some of the developments in the prototype and development lab, as well as the analytical lab over the last year. The solder insertion depth analysis will be completed soon and the results of the study will be included in the next newsletter.

Projects completed over the course of the last year include military hardware prototype assembly and sustained support of commercial SMT prototype customers. STI's engineering lab continues to support space applications with assembly of NASA flight hardware, as well as space hardware for military customers. Analytical lab projects included numerous failure analysis efforts and material characterizations. Research is ongoing into manufacturing related problems, as well as Lead-free research.

Several new capabilities were added to both labs over the course of the year as well. An automatic stencil printer was incorporated on the surface mount assembly line and has increased the consistency of pasting operations from board to board. A larger reflow oven was integrated into the line to increase reflow capabilities. In order to provide total prototyping capability, a tape and reel machine was added to facilitate single piece automated manufacturing. Finally, Juki 2020 placement equipment was added to the line to expand placement capabilities to include chip-on-board applications, 0201 passive component placement, and odd form connector/component placement. As a part of the analytical lab expansion, an environmental lab was established to allow for environmental testing. Testing capabilities include High Temp, Low Temp, Temp/Humidity, Thermal Cycle, and Thermal Shock. The newest piece of test equipment, the nitrogen assisted Thermal Shock chamber, utilizes a moving basket between three chambers to provide very aggressive ramp times when necessary.

*Continued on Page 4*

## Training Services: Hints, Tips, and Solutions

*By: Frank Honyotski*

### Can solder paste be used for rework?

When solder paste is used during rework operations, it is treated just like wire solder at many locations around the world. A continuously heated tool like a soldering iron or thermal tweezers will cause unmelted solder paste to explode and send solder balls outward from the solder connection. The solder balls can then short circuit the assembly. Solder paste requires a much slower heating time to allow the liquid flux and solvents a chance to evaporate. Convective or pulse heat devices are well suited for use with solder paste as both heating technologies will allow a slow ramp rate of the heat which evaporates the flux and solvents before solder melt and minimizes the chance of solder balls on the assembly. Pulse heat devices must be set to the manufacturers recommended settings to work properly and convective tools are used at a distance of 2.5 cm until the paste has a dull flat appearance, then the tool is moved into a distance of 0.5 cm until complete solder melt is observed.



#### • Newsletter Update •

To sign up to receive this newsletter electronically, by mail, or to discontinue receiving it, please contact Sandy Flack at 1-256-705-5520 or e-mail at [sflack@solderingtech.com](mailto:sflack@solderingtech.com).



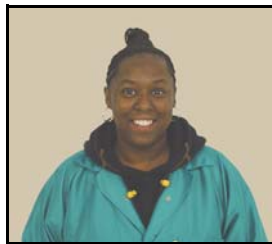


## STI<sup>2</sup> Engineering Services: Year in Review

The past year has also brought about several new faces into the engineering lab. Beginning in February, A.J. Orames joined the STI lab as SMT Applications Engineer. A.J. brings 8 years of wide-ranging experience in electronics manufacturing from medical, to commercial and military. A.J.'s extensive experience with SMT equipment compliments the current staff of the prototype and development lab. In April, Mattie Birdsong joined the STI team as SMT Assembly Technician. She has over 10 years experience in electronics manufacturing and holds several related IPC certifications. Her experience is also in a variety of electronic systems ranging from commercial electronics to military hardware. Finally, in August, Jason Zimmermann joined the STI staff as an Analytical Lab Technician. Jason has experience in operating inline equipment and, when he is not utilized in the analytical lab, he is supporting the prototype and development line. The addition of A.J., Mattie, and Jason complement the staff already in place. Randy Baumgarten continues to handle logistics of part procurement, BGA reballing services, and invoicing. Pam Amerson remains lead SMT Assembly Technician and, in the near future, will transition into Quality Assurance Inspector.



A.J. Orames



Mattie Birdsong



Jason Zimmermann

The upcoming year holds many challenges and opportunities for our division. We continue to perform SMT prototype and development efforts, but will be adding a wire bonding line to support our ongoing packaging technology research. We will be focusing more and more on complex applications such as chip-on-board, or flip chip, with the addition of underfill and overmold dispensing equipment. The analytical lab will be adding capability as well with the addition of a Fourier transform infrared microscope (FTIR). This new capability will enhance the failure analysis resources of the lab and allow for even more powerful analysis potential. Complete organic material identification will be enabled to greatly increase the precision of contamination studies dealing with organic materials such as flux residue or processing chemicals. Additionally, the engineering services staff will continue to grow with the addition of a chemist for the analytical lab, along with several soldering and assembly operators in the prototype lab.

We have appreciated the opportunity to serve each and every one of our customers over the course of the year. We hope that you have found quality and value in all of our services, whether they were manufacturing or analytical. And we look forward to working with each of you again in the coming year! Happy Holidays!

**Mark McMeen**  
VP – Engineering Services  
256-705-5515

**Mel Scott**  
Engineering Lab Manager  
256-705-5529

**Jason B. Gjesvold**  
Analytical Lab Manager  
256-705-5531



## STI's Sales Department Announces the addition of "The Eraser Company"

STI is proud to announce the addition of "The Eraser Company" to our vast array of quality product offerings. Eraser manufactures a large assortment of wire & cable processing equipment. Wire Cable & Tubing Cutters, Wire & Cable Strippers, Magnet/Enamel Wire Strippers, Chemical Strippers, and Dereelers are just some of the products Eraser has to offer. For more details log onto [www.solderingtech.com](http://www.solderingtech.com) and click onto line card for a direct link to the Eraser website or contact one of our friendly Customer Service Representatives.



Automatic Wire Cutter



Stereo Zoom  
Microscope

Are you in need of magnification? Take a look at our large selection of microscopes from L.W. Scientific. If you are in need of a standard stereo zoom binocular scope or an elaborate video system, we can accommodate. Need illumination with your new scope? We can help there too!!! Call for details and mention the newsletter and receive a 10% discount on your microscope purchase.

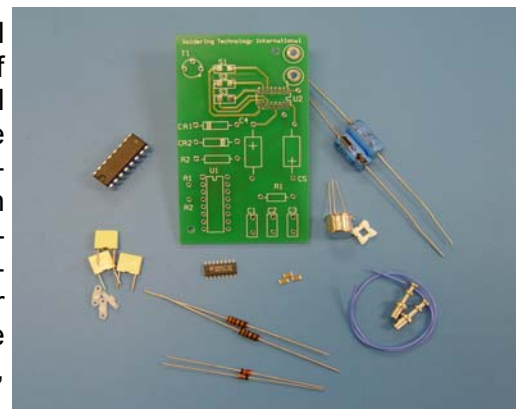
For more information please contact one of our Customer Service Representatives at 1-800-858-0604.

## Surplus Inventory Sale

STI, 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.solderingtech.com](http://www.solderingtech.com), and is updated monthly. Please call 1-256-461-9191 or 1-800-858-0604 and ask for Sales. Quantities are limited so don't delay.

## Low Cost Skill Evaluation

We are often faced with the challenge of performing a quick skill evaluation for an employee who needs to solder on the job. What if you need to screen potential employees? The new Soldering Skill Evaluation Kit provides an effective and low cost method to determine the skill of an operator. It is also an excellent way to determine if additional training is needed without a production impact. Companies can use this kit to screen potential employees before employment or to assess an operator for skill maintenance during job performance. In addition, the kit might even be used as a workmanship training project for skill evaluation or enhancement with a very low material and labor/time expense. The kit contains a representative sampling of Through-Hole, SMT and Wire/Terminal attachments used in day to day production.



For more information about this new Skill Evaluation kit, contact your Customer Service Representative directly or check the web site [www.solderingtech.com](http://www.solderingtech.com), under Training Materials and Solder Skills Kits.



*Soldering Technology International, Inc.*  
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## Jim’s Corner

*By: Jim D. Raby, PE*



So, we have come to the end of another year. They go by so fast now. New and great things continue to happen in our industry and it is nice to be at the cusp of technology.

Some of us have been in this industry for a very long time and have seen the progress go from vacuum tubes and relays on to the transistor, logic devices, double-sided boards and plated-thru-holes, and then surface mount technology. Quad-flat packages, ball-grid-array, multi-chip modules, chip-on-board and other devices have had great success and all of the above will continue to be utilized for a long time.

It is especially nice when one can end the year with a great finish and our small company is doing just that. You see, we (STI) have been quietly working on a new technology that others have explored but not fully developed. STI was asked to develop a technology that could be extremely rugged, one that could withstand very harsh environments, one that could withstand high G-forces and extreme conditions. STI already had a program of this type in its vision and the patent pending. “Imbedded Component/Die Technology” (IC/DT) has fulfilled the prototype and advanced testing stages. STI is now in the process of

providing a complete system for test during 2004.

There are many people who have been important to this program and deserve recognition. Due to the sensitive nature of the program, we will wait until later to provide the names of those outside our own company. When I turned this task over to Mark McMeen, our VP of Engineering Services, he asked Casey Hatcher, Jason Gjesvold, and their support personnel to make it happen. The project took shape, test programs unfolded, the exploration of technology began in earnest and did not stop until success was attained.

So, as I said in the beginning, another year has gone. But, what a year! The Raby family has been rewarded by being surrounded by our employee family and seeing the smiles of success in bringing our electronics industry into a new age. It took the stability and cooperation of the entire STI staff to make this possible.

It is nice to say STI continues to be resourceful and possesses inventive minds. It is nice to know that we continue to be the leaders in the advancement of technology. So, I close this year with a big thank you to everyone who has been a part of our life during 2003.