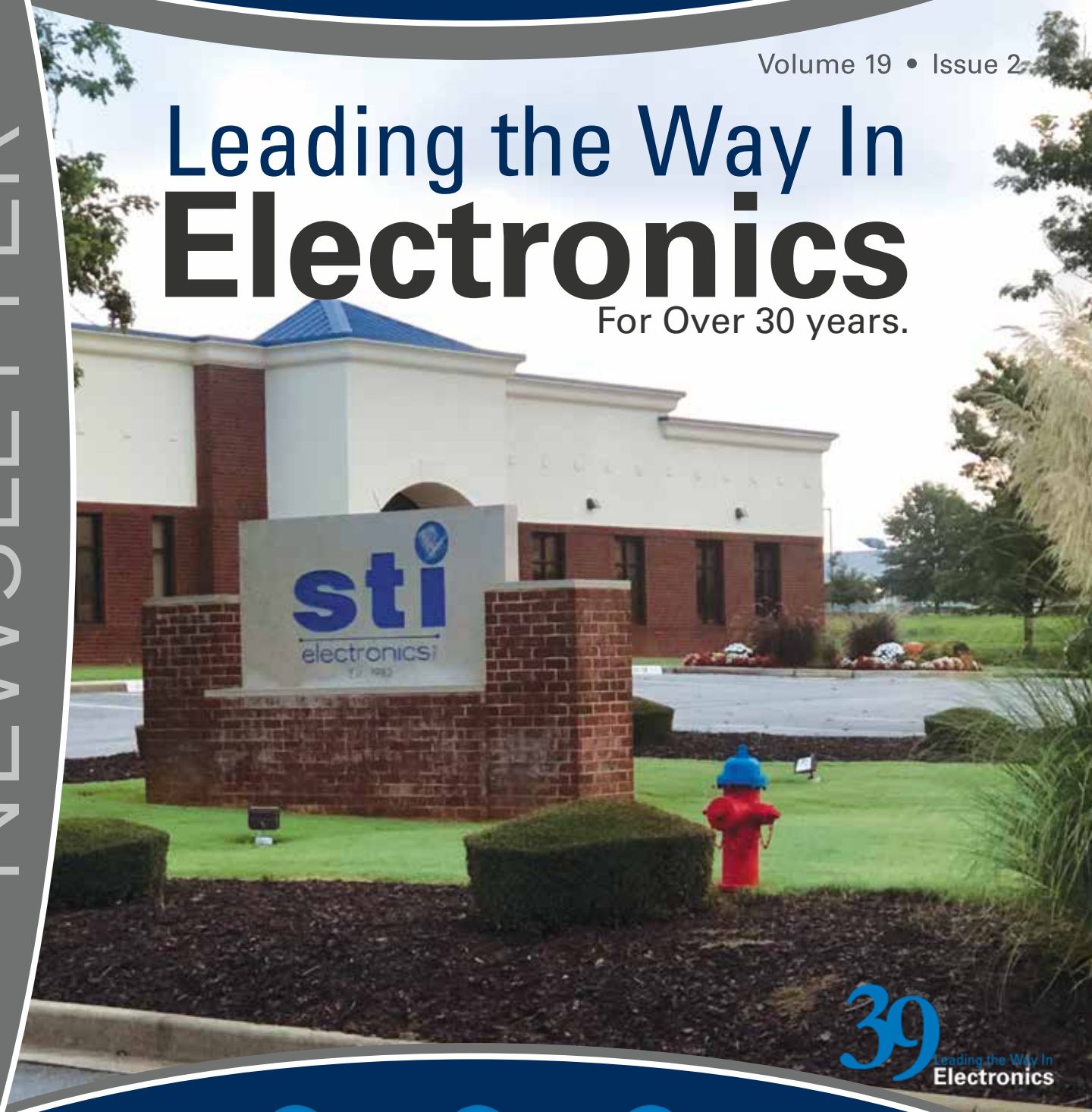
NEWSLETTER

sti electronics inc.

Volume 19 • Issue 2

# Leading the Way In Electronics

For Over 30 years.




www.stiusa.com
261 Palmer Road, Madison, AL 35758 • Tel: (256) 461-9191 • Fax: (256) 461-9566

# Contents

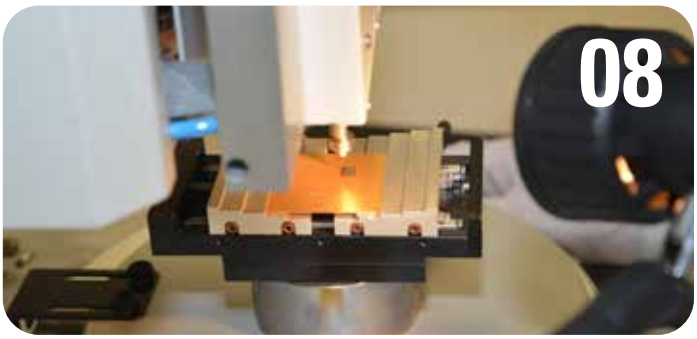
Volume 19, Issue 2, 2nd Quarter

## features

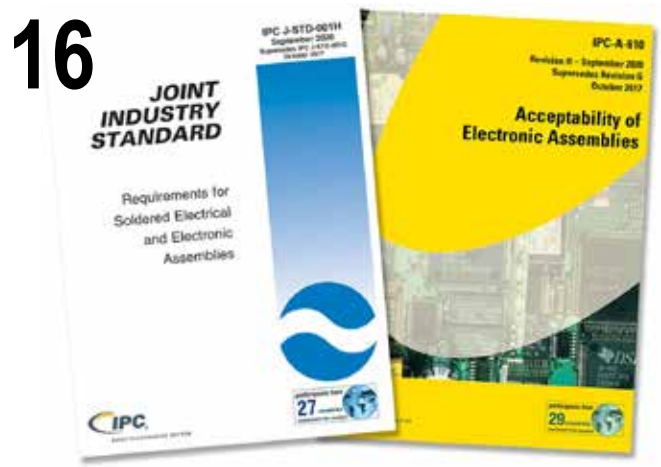



**STI Electronics, Inc.**
261 Palmer Road, Madison, AL 35758
**256.461.9191 • www.stiusa.com**
*email: info@stiusa.com*









# Dave's World

JUNE 2021

This week we are holding our first employee appreciation luncheon in over a year. There will be a food truck, an ice cream stand, cake, games and hopefully a fun afternoon for everyone who has been through this most interesting time. More importantly, we'll be all together albeit spread out more than usual. We'll be celebrating 7 important anniversaries that we've missed over the last several months because we couldn't gather together – Katrena and KP's 10th, Christy and Chuck's 15th, and Frank, Mark, and Pat's 20th. Next week we'll do our usual smaller celebration (with cake) as we celebrate Kelli's 15th.

We are also hiring for the first time in over a year so we'll all be seeing some new faces. (Actually, it is nice to see any faces.) Without the new folks joining us, our "average" tenure would hit 10 years by the end of the month. How many of these new people will eventually celebrate their 10th anniversary or beyond at STI? I have no idea but I hope they all do.

What makes an employee stay (or not)? We look for people that mirror what we try to do as a company and that includes sharing common values and common courtesies: Be honest; Communicate; Don't hide problems. Some people struggle with one or more of these and eventually one of us decides that STI isn't the right place for them. That doesn't mean they are a bad person or that they can't succeed somewhere else. It just

David Raby

President/CEO

draby@stiusa.com

means they weren't the right fit with us. I feel as bad or worse than the individual when that happens because it means we hired the wrong person. We are a small company which means we all have a job to do but also almost everything we do individually is visible to others and impacts their ability to do their job.

Co-workers have to know what you are working on and everybody has to be willing to help you but you have to be willing to ask for that help. The worst thing anyone can do here is to make a mistake and not tell anyone about it. Everyone has to learn that mistake is going to be caught whether it is by the next person over or by our quality folks or, worst of all, by our customer. We do not want it being caught by our customer.

We try to make STI a good environment to work in. We started and still try to operate as a family-oriented company. We take our jobs and responsibilities seriously whether they are manufacturing, training or administrative but we try to keep the mood as light as possible. We celebrate the good times (achievements and anniversaries) and pull together through the bad times. My goal is to receive an authentically positive response when each employee is asked "Is this the best place you've ever worked?" If that question is answered negatively, what is our opportunity to improve? We have a very low turnover rate and we want to continue that in the future. We don't want any employee to want to leave STI. We want all employees to be happy to show up to work every morning.

I am grateful for the people that flourish at STI. The employees, along with you, the customer, are the reason we've been able to stick around for 38 years and is the reason our future is bright.

I hope in the summer of 2031 to be celebrating some 10th anniversaries. Thank you for the opportunity to serve you.

David Raby

*County Line State of Mind 5K, June 19, 2021 in Madison, AL*

Congratulations to Dave Raby on running his first ever 5K on June 19th

**We are all proud of Dave and this great accomplishment!**


LinkedIn | (800) 767-4919 • Fax (256) 461-9566 • www.stiusa.com

# HAPPENINGS

## Congratulations

During this second quarter of 2021 we have had several anniversaries to celebrate. We would like to congratulate each one on achieving this anniversary with us! They have all worked hard for this accomplishment and we truly appreciate their dedication.

**Roger • 14 Years**

**Christy • 16 Years**

**Collin • 4 Years**

**Shelia • 25 Years**

**Frank • 21 Years**

**Michelle • 14 Years**

**Susan • 8 Years**

**Chuck • 16 Years**

**Erick • 4 Years**

Earlene • 8 Years

Kelli • 15 Years

Travis • 6 Years

Kaven • 2 Years

James Vaughn • 3 Years

# Celebrating YOU

We celebrated the best group of employees June 17th, with an Employee Appreciation Luncheon and celebrated STI Anniversaries that were long overdue and delayed due to COVID-19. Food trucks from O Taste & See BBQ (https://otastenseebbq.com/) and Handel's Ice Cream (https://www.handelsicecream.com/huntsville/) provided lunch and dessert. STI's team wouldn't be complete without the employees that make this company great. We Appreciate YOU!


# Interview with Pat Scott

## Meet Pat

Training Services Manager

**How long have you been part of STI Electronics?** 20 Years

**What do you do for STI?** Manage the Madison and Houston training centers and Coordinate with the Indiana customer.

## Just For Fun

**Tell us about your family.** I have 4 kids Shawn, Teresa, Tamara, and Stephanie. I also have 10 grandkids Brannan, Micah, Elijah, Lily, Alex, Nicolas, Jason, Andrew, Alaina and Makenzie. My grandkids brighten up my day.

**Tell us about your pets.** I have the cutest poodle named Gigi. She's a year and a half old and has a lot of energy.

**Do you have a favorite place to visit?** Lake Tahoe because of its scenic beauty.

**What's your favorite type of music/song/artist?** Country Music

**What is your favorite movie or TV show?** My favorite show right now is Grey's Anatomy.

**What's your favorite meal/food?** Mexican food

**Tell us about any hobbies that you enjoy.** Doing craft projects with my girls and grandkids, playing the guitar and shopping.

**What is your favorite motto or quote that summarizes your approach to life?** "Treat people like you would want to be treated."

**What's one fun thing to know about you?** I enjoy playing video games and board games with my grandkids. I'm not so good at the video games but I try.

**What's your favorite thing about working at STI?** The challenge of the job and of course the people.

**What is your favorite non-profit to support and why?** Alzheimer's Association. My Dad had Alzheimer's and I would like to see a cure someday.



*Mark McMeen*
*VP. Engineering Services/Manufacturing*
**mmcmeen@stiusa.com**

# How Does the Electronics Industry Define Cleanliness an opinion by Mark McMeen and Mike Bixenman

The industry does not define “Cleanliness” in absolute terms or by defining a pass or fail criteria or even how to quantitatively measure it. The industry specification, as defined by J-STD-001 Rev. H Section 8 Cleanliness, defines cleanliness as an open ended definition that must be determined and defined by each individual manufacturer and end user. The definition requires each manufacturer and end user to develop its own “Objective Evidence” which again opens the definition up to each manufacturer and end user to define its own interpretation and definition. The goal of the specification was to put ownership of objective evidence on the manufacturer to provide data that was measurable and conclusive that the products they were building were clean enough to meet their customer fielded use state. It also said that ROSE testing and IC testing without other supporting data was not sufficient to satisfy the section 8 requirement for objective evidence.

Here at STI and MGX we believe in defining cleanliness with data that allows one to understand the electro chemical signature of the final residue on and underneath your components after the final processes are completed. What is the state of cleanliness once all manufacturing processes are complete and the electronic product is considered completed in its final state after manufacturing? Data is required to determine cleanliness because without it how would one know if the product is reliable and repeatable from lot to lot and that the process is stable and repeatable. SIR (Surface Insulation Resistance) testing is one of the tools in the tool belt that is used to get an electro – chemical signature or data set that allows one to get a hard data number

or data point that can be correlated to actual hardware. A second tool in the tool set is IC (Ion Chromatography) to help define or quantitatively discern the ionic species present and its corresponding concentration level. The ability to measure both the SIR data to the corresponding IC data allows one to correlate the ionic species causing the SIR value and thus correlate back to the actual hardware. IC measures the anion, cation and weak organic acids in a quantitative measuring tool so one can now correlate SIR values in log ohm scale back to ionic species found on and underneath components. This data correlation goes a long way to using data as a way to quantify and qualify cleanliness which can then be used on a regular basis to insure repeatability and reliability. The ability to use data as a qualification tool and then use the same data as a process control tool is the essence of 'Objective Evidence". The same can be said for defining cleanliness – it is the ability to use real data that is measurable to define cleanliness as it relates to your finished electronic product.

The J-STD-001 Rev. H Section 8 allows each company the ability to define its definition of cleanliness by using data as objective evidence to show it understands its end product cleanliness level. The ability to measure SIR underneath your most difficult and critical components such as BTC (Bottom Terminated Components) and then quantify the ionic species and concentration levels goes a long way to defining cleanliness because one now has a baseline measurement in SIR – LOG OHM as well as the correlating ionic species to know if they are deviating from the original qualification levels as they produce on a lot to lot basis. The goal of the J-STD-001 Rev.H specification was to allow the industry and companies the ability to define cleanliness as it relates to their product uniqueness and product reliability objectives. Obviously, Medical, Military and Aerospace would have far different reliability objectives and cleanliness levels than say consumer products and industrial products that were not considered Human Critical Electronic Hardware. We know from our customers in different industries that 8 log ohms and higher is good for general purpose electronic hardware that is not Human Critical, but other clients want their SIR values to be 9 log ohms and 10 log ohms minimum when it is Human Critical or the asset or electronics must work all the time with zero defects or anomalies. This is why the specification was written so that the definition and cleanliness level could match the expected end use environment and its corresponding reliability objective.

Cleanliness is an end condition or state of a number of manufacturing processes, material choices / influences, and environmental impacts on the final electronic hardware. It is not defined by industrial specifications in hard terms or limits, government mandates or levels, or by trade associations and consortiums. This open-ended self-definition to define cleanliness through the

use of objective evidence requires one to take charge and perform a self-assessment and define cleanliness as it relates to your own manufacturing processes and techniques / parameters and material choices and expected environmental conditions.

This is why STI and MGX believes in data driven product qualifications, material evaluations and characterizations and process control measures such as ion process deviation monitoring using SIR testing as the gold standard for gathering real measurable and actionable data. The use of data driven test methodologies allows one to use the data to make decisions and action plans on defining cleanliness that is the foundation of your objective evidence.

How to define Acceptable "Pass" Cleanliness – All electronics has some levels of ionic contamination and organic residues present on them after assembly and manufacturing. One must use a number of historical test parameters to determine "Acceptable" Cleanliness such as historical warranty data, field performance data, environmental stress testing of actual hardware, SIR data on a correlated test vehicle using your most challenging components and circuit layout areas, and IC data to define and quantitatively discern what Ionics are present but cannot be seen. The above data set allows one to define Cleanliness and its corresponding level and then define "ACCEPTABLE CLEANLINESS" quantitatively and allow one to use the data as its own "Objective Evidence" to show its customers that it understands its Cleanliness level. Thus, it now meets the intent and definition of the J-STD-001 Rev.H Section 8 by allowing the manufacturer to define and measure its cleanliness level.

How to define Unacceptable "Failed" Cleanliness- As defined above for acceptable – unacceptable is the inverse by which ionic contamination and organic residues are too high or in combination together react negatively or adversely to create intermittent parasitic leakage or a detrimental effect such as dendritic growths or formations. Both of these outcomes are unacceptable levels of cleanliness that impact overall electrical performance and can be measured and quantified by SIR testing and correlated with IC testing to discern what ionic species is causing these detrimental problems. This inverse definition of unacceptable cleanliness is a measurable attribute that can be validated at qualification testing and further controlled thru periodic process control monitoring.

In conclusion, the ability to define and use quantifiable data to determine " Acceptable" and "Cleanliness" is the key to answering the question, "is my electronic assemblies clean enough to meet my customer end use environment and reliability objectives as they relate to cleanliness?". The ability to have the data correlate from product qualification thru process control is the objective evidence goal as defined by J-STD-001. The use of SIR data and IC data as it relates to actual warranty data and environmental stress testing hardware allows one the ability to correlate and answer the question "Is my electronic hardware clean enough for its end use environment?".

**Thanks for taking the time to read and if you would like further information or have any questions please contact**


## Mark McMeen, V.P., Engineering/Manufacturing

**256-705-5515**

**mmcmeen@stiusa.com**

**or**

## Mike Bixenman

**615-584-9089**


## Engineering Services

Electronics Contract Manufacturing
Electro Mechanical Box Build
Microelectronics Lab (Clean Room)
Rework & Repair Services
Material Failure Analysis
Analytical Lab Services
Circuit Design
Testing
Prototype Manufacturing Services

## Training Resources

Training Services
Training Materials
Assembly Aids
Online Training
Custom Courses
IPC Training Center
Cable/Harness
Inspection

**800.767.4919** **800.858.0604**

**https://stiusa.com/**

# On-line IPC Training & Certification

IPC® Training Center

Register Now

In addition to our classroom and on-site training courses, STI offers on-line training and remote testing for the following IPC lecture based Certification/Recertification courses:

IPC-A-610 Certified IPC Trainer (CIT) and Certified IPC Specialist (CIS)
-Standard required for class
IPC/WHMA-A-620 CIT and CIS
-Standard required for class
IPC-A-600 CIT and CIS
-Standard required for class

Note: Currently hands-on courses are not available for on-line training or remote testing for CIT's or CIS's.

The Certified Subject Matter Expert (CSE) on-line courses is also available for

- IPC-A-610, IPC/WHMA-A-620, IPC-A-600, IPC-7711/7721 and J-STD-001
  -Standard required for class

Exams that are required for these courses can now be proctored remotely using IPC EDGE.

Leading the Way In
**Electronics**

**800-858-0604 • www.stiusa.com**

# Do you have a question?
# Do you need information?
# CHAT with us online!

Pat Scott
Training Services Manager
pscott@stiusa.com

# Status Of IPC Courses

IPC has released the J-STD-001H, Requirements for Soldered Electrical and Electronic Assemblies and the IPC-A-610H, Acceptability of Electronic Assemblies in October 2020. Currently the training materials for both the IPC-A-610H and J-STD-001H are available in English. IPC volunteer translation groups are currently working on various languages for the training materials. For the J-STD-001H course there are now 6 modules not including the Space Addendum. Module 3 now covers PCB, Coating, Encapsulation, and Staking.

## J-STD-001H Sections

| Module | Sections |
|---|---|
| **1 General (Mandatory)** | 1. General<br>2. Applicable Documents<br>3. Materials, Components and Equipment<br>4. General Soldering and Assembly Requirements<br>8. Cleaning and Residue Requirements<br>12. Rework and Repair |
| **2 Wires and Terminals** | 5. Wires and Terminal Connections (excluding Jumper Wires) |
| **3 PCB, Coating, Encapsulation and Staking** | 9. Printed Board Requirements<br>10. Coating, Encapsulation and Staking<br>11. Witness Stripe |
| **4 Through-Hole** | 6. Through-Hole Mounting and Terminations (with TH Jumpers) (Requires Module 3) |
| **5 Surface Mount** | 7. Surface Mounting of Components (with SMT Jumpers) (Requires Module 3) |
| **6 Inspection** | 5. Wires and Terminal Connections<br>6. Through-Hole Mounting and Terminations<br>7. Surface Mounting of Components<br>9. Printed Board Requirements<br>10. Coating, Encapsulation and Staking<br>11. Witness Stripe |


The J-STD-001 Space Document was also recently published. The training materials are not going to be available for at least 6 months. That being said if you require training to J-STD-001 including space you will have to attend a J-STD-001G class along with the J-STD-001GS course until the J-STD-001H plus Space training materials become available.

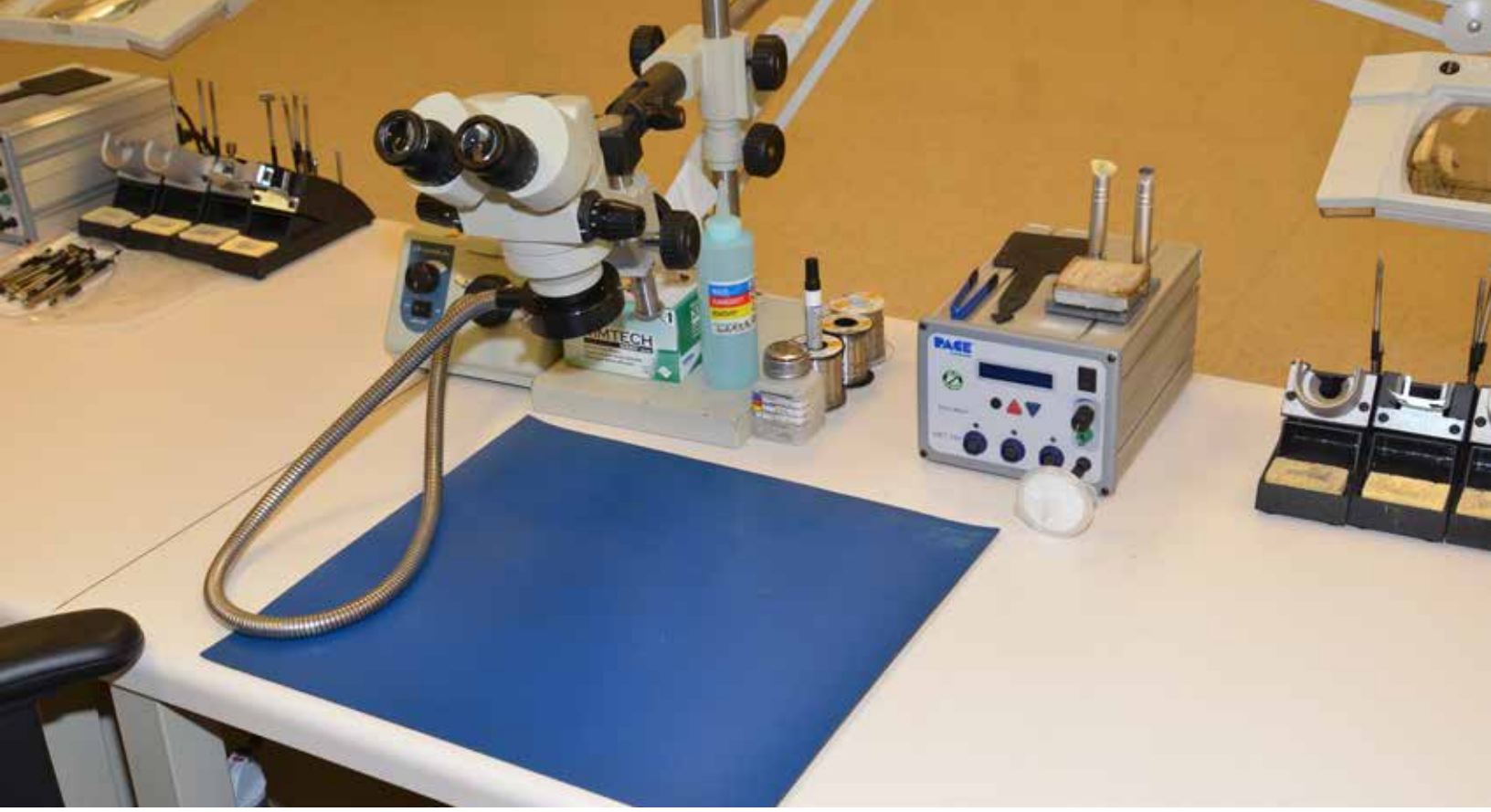
Most of you are aware that the Policy and Procedures version 7.3 was released and will be effective August 1, 2021.

Some changes include:

- Language regarding IPC's remote proctoring option has been added.
- Language regarding a CIT/MIT's training requirements has been added.
- Additional language has been added to the Cheating and Irregularities section.
- Language regarding the length of time a candidate must complete an optional module has been added.
- Additional clarifying language has been added throughout the document.
- All forms have been removed from the Appendix of the Policies and Procedures Document into a centralized location on the IPC website IPC Certification Policies & Procedures | IPC International, Inc. / IPC Certification Forms.

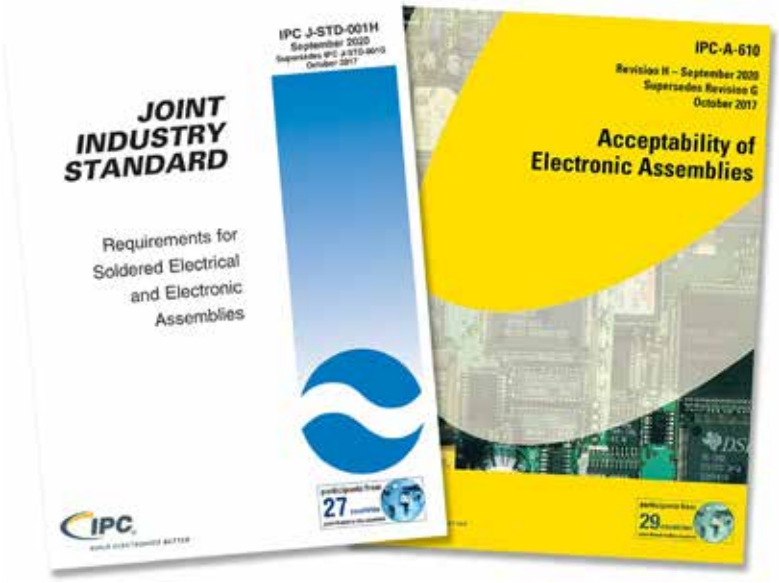
Make sure and read the complete version of the new P&P document.

Additionally, the IPC/WHMA-A-620D Space course is now available.
Check out our training schedule at https://stiusa.com/all-training-events/ for a list of our upcoming classes.



# J-STD-001H and IPC-A-610H Training Materials

For those of you who are MITs or CITs certified to the J-STD-001H and/ or IPC-A-610H, the training materials are currently available in English. IPC volunteer translation groups are working on various languages for the training materials. These will be released upon completion. To download the files visit https://myipcedge.org/CIT Resources / Select Course and download the files. All CITs and MITs can now schedule these courses through the portal. For additional information regarding IPC-A-610H and J-STD-001 Endorsement exams visit CQI News (ipcedge.org).



261 Palmer Road
Madison, AL 35758
(256) 461-9191

www.stiusa.com

# Leading the Way In Electronics

For Over 30 years.


## Current & Back Issues of our Newsletter AVAILABLE

*READ ANYWHERE*

DOWNLOAD