

Components for Military & Space Electronics Conference & Exhibition

February 9 - 12, 2009
Sheraton Mission Valley Hotel
San Diego, CA

13th ANNUAL CMSE CONFERENCE

ADVANCE PROGRAM & REGISTRATION



Highlights of 2009 CMSE Conference

- Workshop
 - Counterfeit Components Avoidance
- Seminar
 - Pb Free Approaches for Military Applications
- Technical Sessions
 - Supply Chain Fight Against Counterfeit Components
 - COTS Electronics & Applications
 - Impact & Mitigation of Pb Free Materials on Reliability
 - Reliability Practices & Improvements
 - Components Engineering Approaches
 - Space Applications & Rad Hard
 - FPGA and Complex ICs
 - DC/DC Converters

**CMSE IS THE PREMIER CONFERENCE ON THE USE OF
COMPONENTS IN MILITARY AND SPACE ELECTRONICS**

Organized by
Components Technology Institute, Inc.

Co-Sponsored by
**Electronic Products
Military Embedded Systems
VME and Critical Systems**

Invitation to CMSE 2009

To the Military and Space Electronics Industry;

The CMSE Conference was organized in 1997 to promote the exchange of experiences and promote good practices for selecting and applying all components and COTS electronics, when required, so they will operate successfully and reliably in the military and space environments.

It was soon discovered that many components used in computers, cell phones, consumer electronics and even automobiles were not suitable for military and space systems without testing, uprating, upscreening and in some situations required protection from temperature extremes and radiation levels. The low prices of commercial components as compared to those available to military specifications imply this is a much lower cost approach. Once companies realized the amount of testing and stress mitigation practices required, the cost savings from using COTS components became smaller and in some cases more expensive. The major issue is that many newer technology components are only available as COTS and have to be used.

There are many examples where circuit boards and subsystems built with commercial components have been successfully used as embedded electronics in military systems. The road to success is a function of the suppliers design, controls and testing. The US Congress is promoting more use of COTS and even consumer products in military systems.

The CMSE Conference is dedicated to provide tutorials on current topics of great interest to the industry and peer presented topics in the technical sessions. Counterfeit electronic components represent a major problem to military electronics and preventative actions are presented in the Workshop and Session1. The technical sessions contain presentations on supply chain fight against counterfeit components, COTS electronics and applications, impact and mitigation of Pb free materials on reliability, reliability practices and improvements, components engineering approaches, space and rad hard applications, FPGA and complex ICs, DC/DC converters.

The two tutorials this year provide valuable knowledge and experience on:

- Avoiding Counterfeit Components Workshop
- Successful Transition to Pb-Free Components for Military Applications Seminar

Components equivalent to COTS have been used for decades in military and space systems. They were identified as non-standard or non-preferred components because they had not been qualified and tested to suitable specifications. Once the circuit performance was identified, the design was qualified and production items screened for reliability. A similar approach can be applied to commercial components, but methods and techniques may differ and cost has to be identified and controlled to be efficient.

CMSE is the biggest and most comprehensive conference addressing successful practices for the use of both military and COTS components in military and space systems, though sometimes controversial. Everyone working in this field is encouraged to attend CMSE 2009 to learn about the latest information and visit the exhibits which promote current equipment, information and services on components and COTS for military and space use.

I look forward to seeing you in San Diego at CMSE 2009.

Leon Hamiter
Program Chairman

Components for Military and Space Electronics Conference

Organized by engineers for engineers and engineering management, this is the premier conference for military and space electronics issues. This 13th Annual Conference addresses subsystems, circuit boards and components while also emphasizing new technology, and design practices.

Venue

Accommodations:

Sheraton Mission Valley Hotel
1433 Camino Del Rio South
San Diego, CA 92018
Tel: 619-260-0111
Fax: 619-497-0808

Reservations should be made directly with Sheraton Gateway Hotel.
Mention CMSE Conference.

Registration:

Monday, February 9
7:00 am - 5:30 pm
Tuesday, February 10
7:00 am - 5:30 pm
Wednesday, February 11
7:00 am - 5:30 pm
Thursday, February 12
7:30 am - 12 noon

Workshop and Seminar Schedule (see details herein)

Monday, February 9
8:30 am - 5:00 pm **Workshop & Seminar**

Conference Schedule

Tuesday, February 10
8:30 am - 5:15 pm

Wednesday, February 11
8:00 am - 5:00pm

Thursday, February 12
8:00 am - 4:30 pm

Exhibit Schedule

Tuesday, February 10
12:00 noon - 7:30 pm

Wednesday, February 11
11:30 am - 2:00 pm

Get Acquainted Reception

Tuesday, February 10
5:30 pm - 7:30 pm

General Information

REGISTRATION

The Conference Registration fee includes only the Technical Sessions. The Workshop and Seminar tutorials are additional. Advance registration is strongly recommended for space availability in the selected tutorial. At the door changing of tutorials will only be allowed if space permits.

The All Events registration fee includes a choice of Workshop/Seminar, Technical Sessions, Conference Notes CD, refreshment breaks, buffet lunch, reception on Tuesday and the Exhibits. Advance registration is recommended and provides a discount. **Payment must be submitted with the Registration Form.** See the Registration Form for fees.

The Advance Registration cutoff date is **January 12th** and refunds will not be given after this date for cancellations. Cancellations before **January 12th** will be charged a \$100 administration fee. Substitutions can be made at any time.

HOTEL ACCOMMODATIONS

Special rates of \$142 single or double, excluding taxes, have been arranged with the Sheraton Mission Valley Hotel. This rate is less than government per diem. Rates will be honored 3 days prior and following the Conference. The cut off for these rates is **January 12, 2009**. To book these rates call 619-260-0111, mention CMSE Conference and ask for on-site reservations. Check in time is 3:00 pm and check out is 12:00 pm. Any guest departing prior to checkout date will pay early departure fee. Reservations must be canceled more than 24 hours before arrival date to avoid a charge.

TRANSPORTATION TO HOTEL

The Hotel provides limited complimentary shuttle service between the airport and hotel, call 619-260-0111 for pickup. Go to the transportation island for pickup at the hotel shuttle sign. Cloud 9 Supper Shuttle is available to hotel for \$12.00, call 800-974-8885. Day self parking is free. Self parking overnight at the hotel is \$10.00 per day.

Workshop

Counterfeit Components Avoidance

Leon Hamiter, Thomas Lee, CTI

Don Trenholm, Custom Analytical Services

Mark Marshall, Integra Technology, Larry Pappas, Attorney,
Others

Counterfeit components entering the supply chain, including military spec parts, are causing a huge economic impact in the Electronics Industry. Counterfeiting and fake components take many forms. In some cases, counterfeiters abrasively remove existing markings, blacktop the components, and lay down new ink. Sometimes they do high-quality remarking that is difficult to distinguish from markings on authentic ICs. The only tell tale difference in some cases may be that the top of the IC is darker than its sides; color should be consistent across the plastic/epoxy package. DPA investigations of a variety of components have found that some have the correct package and identification markings but contain an incorrect die or no die at all. Counterfeiters also may create totally counterfeit die with chips that may in fact work, but that are not from the manufacturer represented on the label. Sometimes counterfeit devices are marked upside down and can be inserted backwards or the pins do not properly align. There are cases where everything looks perfect from the outside but the die is wrong. That is why samples must be decapped to verify the die and samples electrical tested to assure authenticity. Many of these components have been subjected to ESD stresses that if they have not failed may now be "walking wounded", just waiting to fail.

This seminar is designed to educate the attendees to the kind of counterfeit components that have been discovered and recommend practices to detect and avoid them. These range from purchasing practices to marking analysis inspection and electrical testing to identify items that are counterfeit or fake.

The specific topics covered include:

- *Introduction to Counterfeit Problem*
- *Detection Experience & Examples*
- *How to Authenticate Microcircuits*
- *Electrical Testing to Identify Counterfeits*
- *Detection Methods & Equipment*
- *Ownership Risks in Counterfeit Parts Transaction*
- *Selecting Dependable Test Labs*
- *Data Sources for Component Authentication*
- *Certification Program for Independent Distributors*

This Workshop provides many practices for detecting counterfeits and should prove very educational to the attendees. It includes the training to develop internal procedures for the detection and avoidance of counterfeit components.

Seminar

Successful Transition to Pb-Free Components & Materials for Military/High Reliability Applications

Craig Hillman, DFR Solutions

Mike Silverman, Ops A La Carte

This Seminar consists of two parts, a case study of the successful transition to Pb free electronics and how to develop a test plan for qualification of RoHS compliant products for military applications.

Part 1 - This is a case study covering the RoHS changes instituted on components, boards, solder and coatings for a high reliability application. The results obtained from comprehensive test and analysis demonstrate that RoHS packages using careful design rules and controlled materials can yield reliable electronics for known applications. Interesting results, conclusions and suggested approaches will be provided.

Part 2 - Problem Addressed: Many companies are being forced to change their products to be RoHS Compliant, and they are not doing an adequate job of assessing the risks involved in the transition. This is leading to a variety of different types of problems in the field. At this time, there are significant reliability uncertainties with Lead-Free Solder. Even if a product does not need to be compliant, the materials and processes that make up the product are changing to Pb free. As one major consumer product team concluded, doing nothing would double the field failure rate of the electronics. During this time of rapid transition, there is a significant new body of knowledge to understand and determine the areas of greatest risk to the reliability of a product.

An effective RoHS Transition program should contain the following elements:

- 1. RoHS Assessment:** Review product specifications and requirements. Then, select key individuals from each area within the organization that will be affected by the RoHS directives. Meet with these individuals to conduct a high level review on current products and processes.
- 2. RoHS Training:** Provide a training course to educate key personnel about the important issues.
- 3. Audit Manufacturing Line:** Create a checklist based on processes and perform an audit of manufacturing line. Assure solder bath, stencils, 2nd op procedures, etc. are sound and being followed.
- 4. Design Review:** In the assessment and then the training, review the product to determine the possible risks. During the design review, check for these risks and chose methods of mitigating them. After completion of these four steps, write a new Qualification Test Plan. It is important to understand the products, application, shipping and operating environment and narrow down the issues to those that present a significant change in reliability risk.

tuesday, february 10

8:30 - 9:00am

Keynote: Export Pitfalls with Technology Information & Electronics

Russell VanDegrift, Senior Consultant & Director,
MK Technology

9:00am - 12:00noon

Session 1: Supply Chain Fight Against Counterfeit Components

Chair: Leon Hamiter, CTI Inc.

Military OEMs:

Colin Mortimer, GE Fanuc - UK
Parvez Sidiqqi, DRS-TEM - Huntsville
James Barrow, NGC - Baltimore
Chet O'Brien, BAE - San Diego

Independent Distributors:

Lena Lauer, North Shore Components
Robb Hammond, American Electronic Resource Inc.

12:00 - 2:00pm **Lunch with the Exhibitors**

2:00 - 4:45pm

Session 2: COTS Electronics & Applications

Chair: Lori Bechtold, Boeing

- 2.1 ***Thermal Challenges for Deployed Applications;***
M. Gust, D. McKenney, Mercury Computer Systems Inc.
- 2.2 ***Stacked Memory Packaging: Increasing Density while Decreasing Area;***
T. Meade, C. Kenyon, S. Thorne, R Jadowski,
Aeroflex Colorado Springs
- 2.3 ***Processes for Trusted COTS Electronic Parts;***
P. Plunkett, R. Heath, J. Marchiondo, Sandia National Labs
- 2.4 ***State of the Art of Power Modules;***
S. Leslie, Powerex Inc.
- 2.5 ***Value-add Solutions for the BGA Supply Chain;***
H. Rotchadl, Premier Semiconductor Services
- 2.6 ***Experience and Techniques for PEM Replacements of Obsolete Electronic Components;***
M. Marshall, Integra Technologies

4:45 - 5:15pm

Exhibitor Session

5:30 - 7:00pm **Get Acquainted Reception in Exhibit Hall**

wednesday, february 11

8:00 - 9:45am

Session 3: Impact & Mitigation of Pb Free Materials on Reliability

Chair: Larry Harzstark, The Aerospace Corp.

- 3.1 ***Metal Whiskers: A Discussion of Risks and Mitigation;***
J. Brusse, Perot Systems NASA Goddard
- 3.2 ***Reliability Impacts of Lead-Free Materials on Rugged COTS Modules;***
I. Straznicky, Curtiss-Wright Controls Embedded Computing
- 3.3 ***Tin Whisker Mitigation Methods;***
J. Aragon, R. Wavrik, J. Witham, B. Mckenzie,
Sandia National Labs
- 3.4 ***Novel Flexible Ceramic Conformal Coatings for MIL-SPEC Environmental Endurance and Tin Whisker Containment;***
O. Sneh, Sundew Technologies

10:00 - 12:00noon

Session 4: Reliability Practices & Improvements

Chair: Paul Plunkett, Sandia National Labs

- 4.1 ***Physics of Failure in Handbook Reliability Predictions;***
L. Bechtold, Boeing Phantom Works
- 4.2 ***Flexible Termination - Reliability in Stringent Environments;***
J. Prymak, B. Sloka, P. Staubli, K. Lai, A. Hill, C. Riedl, P. Blais,
KEMET Electronics Corp.
- 4.3 ***Reliable Solder Identification by X-ray Fluorescence Spectroscopy;***
M. Haller, V. Rossiger, Fischer Technology, Inc.
- 4.4 ***Stable, Reliable and Efficient Tantalum Capacitors;***
Y. Freeman, KEMET Electronics
- 4.5 ***Upgrade Screening Practices and Results;***
C. O'Brien, BAE Systems Inc.

12:00 - 2:00pm **Lunch with the Exhibitors**

Parallel Sessions for 5 and 6

2:00 - 5:00pm

Session 5: Components Engineering Approaches

Chair: John Prymak, Kemet Electronics.

- 5.1 ***Best Detection Methods for Counterfeit Electrical Components;***
M. Marshall, Integra Technologies

5.2 **Advancements in Military Wet Slug Tantalum Capacitors;**
B. Brunette, AVX Tantalum

5.3 **High Voltage Tantalum Polymer Capacitors;**
Y. Freeman, KEMET Electronics

5.4 **Long Term Dormant Storage Experiment of COTS Components Under Field Conditions;**
L. Rohwer, R. Wavrik, J. Aragon, J. White, J. Marchiondo,
Sandia National Labs

5.5 **Systems Approach to Failure Analysis;**
Chet O'Brien, BAE Systems Inc.

5.6 **Delamination Gap Detection Capability of SAM;**
R. Hudson, Sandia National Labs

Parallel Sessions for 5 and 6

2:00 - 5:00pm

Session 6: Space Applications & Rad Hard

Chair: David Strobel, Space Micro

6.1 **Quantified Commercial Off-the-Shelf NV-RAM - A Case Study;**
C. Hafer, M. Von Thun, F. Sievert, T. Jordan, B. Bauer,
Aeroflex Colorado Springs

6.2 **Space Navigation Star Tracker Development Based on COTS Parts;**
A. Mara, M. Fennell, D. Strobel, K. Rose, D. Czajkowski,
Space Micro Inc.

6.3 **Radiation Characterization of Flash-Based FPGAs: Pro ASIC3;**
S. Rezgui, J. Wang, J. McCollum, Actel Corp.

6.4 **A Step-by-Step Procedure to Integrate Transformer Coupled LVDS into your SpaceWire Application;**
J. Larsen, F. Sievert, Aeroflex Colorado Springs

6.5 **Radiation Hard/Mitigated COTS Electronics for Space;**
D. Strobel, D. Bozek, K. Rose, D. Sellers, D. Czajkowski,
Space Micro Inc.

6.6 **Radiation Hardening of Fiber Optic Systems for Missile and Space Applications;**
C. Tabbert, Ultra Communications, Inc.

6.7 **A Low Power Cell Balancer for Lithium-Ion Batteries;**
J. Castaldo, G. Altemose, Aeroflex Plainview

6.8 **Miniaturized DACS Module for MDA Interceptors;**
D. Strobel, A. Kurlovich, H. Cerna, M. Fennell, D. Czajkowski,
Space Micro Inc.

thursday, february 12

8:00 - 12:00noon

Session 7: FPGA and Complex ICs

Chair: Anthony Lai, Aitech

Overview: **Performance Computing Trends in Relation to Component Selection**

A. Lai, Aitech

7.1 **Testing and Reliability Issues with FPGAs;**
R. Roosta, D. Sheldon, Jet Propulsion Lab

7.2 **Secure, High-Performance, Parallel Embedded Architectures Using Alalis[®] CPU872 PowerPC[®] Multicore;**
J. Swensen, G. Walters, CPU Technology Inc.

7.3 **The Case of Applying Formal Verification to Designs with FPGAs and ASICs;**
R. Roger, B. Hughes, Actel Corporation

7.4 **FPGA to ASIC Conversion for Radiation Hardened Applications;**
B. Coco, Aeroflex Colorado Springs

7.5 **Using FPGA Devices as Application Specific Standard Products (ASSP);**
S. Habinc, J. Gaisler, Aeroflex Gaisler AB

1:00 - 3:30pm

Session 8: DC/DC Converters

Chair: Edward Erginsoy, Aitech

8.1 **Radiation Assurance of a Space Qualified Point-of-Load Converter;**
P. Berthet, 3D Plus-USA

8.2 **Thick Film Hybrid DC-DC Converters and Standard for Satellite Power Systems;**
T. Bussarakons, International Rectifier

8.3 **Advance Packaging Techniques for Hybrid Modules;**
J. Lee, C. McKleroy, D. Apte, Microwave Technology Inc.

8.4 **The "New Hybrid";**
F. Muscolino, Austin Semiconductor Inc.

Close of CMSE 2009

3:30 - 4:30pm

Study Group: Screening & Characterization Process

Chair: Jerome Trupiano, BAE Systems
All attendees are invited.

For latest CMSE Program changes see:
www.cti-us.com

Exhibition Information

Tuesday, February 10

12:00am to 7:30pm

Wednesday, February 11

11:30am to 2:00pm

Exhibiting and Advertisements are available. For information contact 256-536-1304,
or visit the web: www.cti-us.com

Previous Exhibitors

3D Plus USA
Abelconn LLC
Acromag
Actel Corp.
Aeroflex Circuit Technology
Aeroflex UTMC
AIM USA
Aitech Defense Systems Inc.
Aldec Inc.
Allied Signal
Analytical Solutions
AP Labs
Applied Microsystems Corp.
APW Electronic Solutions
Atmel
Austin Semiconductor
Avago Technologies
Avionics Magazine
AVX
Bell Technologies
Belobox Networks
Blue Wave Systems
Boeing/Integrated Defense
Calculux
Carlo Gavazzi, Inc.
Catalina Research, Inc.
Catalyst Enterprises, Inc.
Cetia, Inc.
Corfin Industries LLC
COTS Journal
Crestwood Technology Group
Defense News
Dense Pac
Dolphin Interconnect Solutions
DPA Components International
dSPACE, Inc.
DY 4 Systems, Inc.
Electronic Packaging Solutions
ELMA Electronic, Inc.
EMJ Embedded Systems
Eonic Systems Inc.
Fischer Technology
General Test Laboratory, Inc.
GET Engineering Corporation
GIDEP
Green Hills Software, Inc.
Harwin Inc.
Hi-Rel Laboratories, Inc.
Hi-Test Labs Inc.
ICS Radiation Technologies
IHS
Industrial Computing Inc.
Innovative Integration
Integra Technologies
International Rectifier
ITCN, Inc.
ITW Paktron
KEMET Electronics
Knurr
Kyocera America Inc.
Lambda Advanced Analog
Landsdale Semiconductor
Launchspace Magazine
Lineo, Inc.
Lockheed Martin
LSI Logic
LinuxWorks, Inc.
Lynx Real-Time Systems
Macrolink, Inc.
Mango DSP Ltd.
Manufacturing Technology Inc.
Mercury Computer Systems
Micro Memory
Micropac Industries, Inc.
Microsemi Corporation
Miltron Systems, Inc.
Minco Technology Labs, Inc.
Mission Research Corp.
Modular Devices Inc.
M-Systems
Nallatech
NAVSEA PMS440
NNSA's Kansas City Plant
NxGen/US-Semi
Objective Interface Systems
One Stop Systems
Ops A La Carte
Pentek, Inc.
Peregrine Semiconductor
Phoenix International
Primagraphics Ltd.
Pulse Instruments
QP Semiconductor
QPI Sales
Quick Logic
Real Time Innovations
Red Rock Technologies
RT Logic
RTC Group
SBS Technologies, Connectivity Products
Signaal Special Products
Six Sigma
Sky Computers
Soldering Technology Int'l.
Solid State Devices
Space Electronics
Space News
Spectrum Signal Processing
Storage Concepts
Sun Microsystems
SVAD
Synergy Microsystems
Synplicity Inc.
Sypris Test & Measurements
Systems Test
Systran Corporation
Teledyne Electronic Technologies
Teledyne Relays
Texas Instruments
Texel Ltd.
Thales Computers
The Math Works
Total Parts Plus
Tracewell Systems, Inc.
Traquair Data Systems, Inc.
Tri-M Systems, Inc.
UTMC Microelectronic Systems
VenturCom
Vertel Corporation
Vertical Circuits Inc.
Via Satellite Magazine
Vishay Intertechnology
VisiCom
Vista Controls
VMIC
Voltage Multipliers Inc.
VPT Inc.
Wind River Systems, Inc.
Winslow Automation Inc.
Wyle Labs

CMSE Conference Registration Form

Registration Information (please type or print clearly)

Name _____
Title _____ Company _____
Division _____
Address _____ M/S or Suite # _____
City _____ State/Prov _____ Postal Code _____
Country _____
Phone _____ Fax _____
E-mail _____

Registration Fees

	<u>Advance</u>	<u>After Jan 12th</u>
Workshop (Counterfeit Avoidance) *1	\$450 _____	\$525 _____
Seminar (Pb Free for Military Applications) *1	\$460 _____	\$535 _____
Conference Technical Sessions	\$595 _____	\$695 _____
Workshop or Seminar and all Technical Sessions *2	\$845 _____	\$945 _____
Speakers and Session Chairmen	\$450 _____	\$595 _____
Exhibition Only	\$0 _____	\$50 _____
Total	_____	_____

*1 Groups of 3 or more, from the same company and registering at the same time for same Workshop or Seminar get \$60 each discount.

*2 Includes Conference Notes CD, applicable Workshop/Seminar notes, continental breakfast, breaks, lunches, and reception.
Fees not refundable after Jan. 12.

Payment

Payment must accompany registration. Registrations without payment will not be processed. Company checks must be made out to Components Technology Institute, Inc. and payable in US dollars drawn on a US bank. Credit card payment requires card number, expiration date, and signature. Please note confirmation and cancellation policy listed inside. **FAX THIS FORM TO: 256-539-8477.**

Payment Method: AMEX VISA MC Check For Info Call: 256-536-1304

Card Number _____ Exp. Date _____

Name on Card _____

Signature _____

Components Technology Institute, Inc.
904 Bob Wallace Avenue / Suite 117
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CMSE 2009
ADVANCE PROGRAM & REGISTRATION FORM