ADVANCE PROGRAM & REGISTRATION

Components for Military & Space Electronics Conference & Exhibition

17th Annual Conference

CMSE 2013

February 19 - 22, 2013      LAX Radisson Hotel      Los Angeles, CA

CMSE is the premier conference on the use of components in military & space electronics

Organized by
Components Technology Institute, Inc.
www.cti-us.com

Co-Sponsored by
Electronic Products Magazine
How2Power.com
Military Embedded Systems
Webcom Communications
Invitation to CMSE 2013

Dear Military and Space Electronics Professionals,

The CMSE Conference promotes advancements in electronic components for military and space electronics.

The DoD emphasis to use of commercial components soon discovered that many of these components were not suitable for military and space systems without costly testing, uprating, upscreening and protection from temperature extremes and radiation levels. The low prices of commercial components as compared to those available to military specifications did not prove this to be a lower cost approach. The major issue is that many newer technology components are only available as COTS and have to be used. This is where the special effort should be expended to provide reliable performance.

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, application controls, quality practices and testing to detect deficiencies.

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 2013 to learn about the latest information and visit the exhibits which promote current equipment, information and services concerning components for military and space applications.

Highly informative presentations this year include:

- Curiosity Rover Electronics
- COTS Single Board Computer
- UAV Power Subsystem & Components
- Pb Free EEE Parts in Aerospace Applications
- Improved Passives Technology
- Power Semiconductor Testing
- Other Valuable Topics

I look forward to seeing you in Los Angeles at CMSE 2013, mark your calendar.

Leon Hamiter
Program Chairman

Highlights of 2013 CMSE Conference

Two Keynotes:

1. Curiosity Rover Electronics
2. DoD Changes for Security & Counterfeit Components

Seminars

1. CCAW - Advanced Counterfeit Detection
2. Components Construction & Engineering
3. Environmental Stress Screening (ESS) for COTS & Improved Reliability
4. NanoMEMS for Future Military and Space Electronics

Technical Sessions

Components Selection and Applications
Quality and Reliability Issues
Advanced Testing & Analysis
Supply Chain Issues
Harsh Environments Capability
CMSE Schedule & Information

Organized by engineers for engineers and project management, this is the premier conference for military and space electronics issues. This 17th Annual Conference addresses components, circuit boards and subsystems while also emphasizing new technology and design practices.

**Venue**

**Accommodations:**
LAX Radisson Hotel
6225 W. Century Blvd.
Los Angeles, CA 90045
Tel: +1 800 395-7046
Fax: 310 337-6555

Room reservations should be made directly with LAX Radisson Hotel. Mention CMSE Conference.

**Registration:**
Tuesday, February 19
7:00 am - 5:20 pm
Wednesday, February 20
7:00 am - 5:00 pm
Thursday, February 21
7:30 am - 11 am

**Seminar Schedule** (see details herein)
Tuesday, February 19
8:30 am - 5:00 pm

**Conference Schedule**
Wednesday, February 20
8:00 am - 5:00 pm
Thursday, February 21
8:00 am - 5:30 pm
Friday, February 22
8:30 am - 4:00 pm

**Exhibit Hours**
Wednesday, February 20
12:00 noon - 7:30 pm
Thursday, February 21
10:00 am - 2:00 pm

**Get Acquainted Reception**
Wednesday, February 20
5:30 pm - 7:30 pm

**For technical questions contact:**
Leon Hamiter: +1 256 536-1304
Leon.Hamiter34@cti-us.com

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**General Information**

**REGISTRATION**
The Conference Registration fee includes only the Technical Sessions and Discussion Group. The Training Seminars have additional prices. Advance registration is strongly recommended and the selected Seminar must be identified when registering. At the door changing of Seminars will only be allowed if space permits.

Registration Fee includes the Technical Sessions (1-5), Conference Notes CD, Conference Guide, refreshment breaks, buffet lunches, reception on Wednesday and the Exhibits. There are discounts for attending one or two Seminars as shown on the Registration Form. Advance Registration is recommended and provides a discount and complimentary valet parking. See the Registration Form for fees. Payment must be submitted with the Registration.

The Advance Registration cutoff date is January 18th and refunds will not be given after this date for cancellations. Cancellations before January 18th will be charged a $100 administration fee. Substitutions can be made at any time.

**HOTEL ACCOMMODATIONS**
Special rates of $110 single or double ($10 additional person), excluding taxes, have been arranged with the LAX Radisson 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 10, 2013. To book these rates call +1 800 395-7046, 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 their checkout date will pay early departure fee. Reservations must be canceled more than 24 hours before arrival date to avoid a charge.

**PARKING**
Valet parking is available to Seminar/Conference Attendees for $10/day.

**TRANSPORTATION TO HOTEL**
The Hotel provides complimentary shuttle service between the airport and hotel. Go to the transportation island outside baggage claim for pickup at the hotel shuttle sign.
Seminar 1

CCAW - Advanced Counterfeit Detection

Leon Hamiter, Thomas Lee, Don Trenholm, Aaron DerMarderosian, Bill Cardoso, Larry Pappas, Erik Jordan

Counterfeiters are constantly changing and improving their techniques for hiding the counterfeit characteristics. The latest information on detection practices will be presented. The latest DoD requirements and weaknesses will be discussed as well as SAE 6081 requirements. This Seminar will address the types of equipment, needed to detect counterfeit components. The procedures for the use of this equipment and examples of the counterfeit characteristics will be presented.

The following topics will be covered:
- Introduction & overview;
- Practices to avoid counterfeits;
- Optical inspection equipment: Equipment
  Useful photographs
  The Hawk System
- Counterfeit examples;
- More counterfeits including mil and passives;
- New DoD requirements & counterfeit examples;
- X-ray practices and findings;
- XRF verification of leads materials;
- Decap: Mechanical & chemical
  Automated chemical
- Die inspection;
- Electrical testing;
- SAE 5553 & 6081 requirements & implementation plans;

Seminar 2

Components Construction & Engineering

This Seminar ties together the varied challenges facing the Component Engineer in today’s electronics world. Knowledge on the strength and weaknesses of different part types is a function of its electrical performance, construction and how well it is suitable for the application, derated and tested.

Experts from throughout the components industry have been selected to present these topics. They will address the various technologies and related performance, design and construction aspects, typical product, production testings, process qualification, failure mechanisms and quality difference between military and commercial (COTS) processes.

The following components will be covered:
- Capacitors; John Prymak, Kemet Electronics
- Specialty Passives; Ron Demko, AVX
- Resistors; Mike Torres, TT Electronics
- Thermistors; Jon Fishback, Quality Thermistor
- Semiconductors & ICs; Bob Lowry, Consultant Electronic Materials
- Military vs COTS quality; Ed Erginsoy, Space Tech Pro Engineering
  Dr. Mark Cooper, JPL/NASA

Seminar 3

Environmental Stress Screening (ESS) for COTS & Improved Reliability

Dr. Andrew Kostic, Consultant

Environmental Stress Screening (ESS) is a process used to precipitate process related defects from latent to current for detection by a product verification test. For most processes, the product verification tests are electrical tests and may include other forms of testing which are non-electrical. To conduct an effective screen, the product must be capable of surviving the high stimulation levels needed to accelerate the failure mechanism of assembly related defects. A mechanically “weak” design may be changed to improve its margins with respect to a specific form of environmental stimulus. A by-product of this activity is a more rugged product which may enjoy a higher demonstrated MTBF. The form of ESS chosen is dependent on the failure mechanisms for the relevant field failures. The ESS process is a dynamic process which must change as product failure behavior changes. For this reason, it is not appropriate to “spec” an ESS regimen and leave the regimen unchanged throughout product life.

An important ingredient of product qualification must be the undertaking of environmental testing to ensure that the design is robust enough to meet its design goals. This is especially useful in proving COTS components and subassemblies.

MORE
CMSE Technical Sessions

Wednesday, February 20

8:15 - 8:30am
WELCOME & INTRODUCTION
Program Chairman: Leon Hamiter, CTI, Inc.

8:30 - 9:00am
Keynote 1: Curiosity Rover Electronics & Reliability Concept;
Richard Kemski, JPL

9:00am - 12:00noon
Session 1: Components Selection and Applications
Chair: John Prymak, Kemet Electronics
1.1 Curiosity Rover Single Board Computers Evolution from Mature Technologies;
Marlon Feiger, Daniel J. Kouba, Sarah Jeffers,
BAE Systems North America
1.2 Output Filter Capacitors for Mission Critical Applications;
Pat Hollenbeck, AVX Corporation
1.3 UAVs Demand Power Subsystems with Optimal Power/Weight Performance;
Tom Curatolo, Vicor Corporation
1.4 Why and How to Use Lead(Pb)-Free EEE Parts in Aerospace Applications;
Andrew D. Kostic, Ph. D., The Aerospace Corp.
1.5 Designing High-rel, Hi Availability System with FPGAs;
Doug Johnson, Synopsys, Inc.
1.6 Aeroflex HiRel Memory Roadmap;
Ronald Lake, Aeroflex Colorado Springs
1.7 Polymer Hermetic Seal (PHS) Capacitor Developments;
Yuri Freeman, João Pedroso, Ed Jones, Henry Bishop, Kemet

12:00 - 2:00pm Lunch with the Exhibitors
2:00 - 3:40pm
Session 2: Quality and Reliability Issues
Chair: Aaron DerMarderosian, Raytheon
2.1 Reliability Issues with New Technology Wet Tantalum Capacitors;
Alexandr Teverovsky, NASA/GSFC
2.2 Reaching Highest Reliability for Tantalum Capacitors;
Marc Beaulieu, Robert Fairey, Allen Mayar, AVX Corporation
2.3 Why Current Standard are Not Effective at Providing High Quality Components for Space and Military Applications;
Andrew D. Kostic, Ph. D., The Aerospace Corp
2.4 RBase-Metal Electrode (BME) Ceramic Capacitors for High Reliability Applications;
Abhijit Gurav, Craig Scruggs, Richard Turner and Travis Ashburn, Kemet Electronics
2.5 Tantalum Polymer Capacitors for Space and Hi-Rel Applications;
Allen Mayar, Robert Fairey, AVX Corporation

4:00 - 5:15pm
Session 3: Advanced Testing & Analysis
Chair: Thomas Lee, CTI, Inc.
3.1 New High Reliability Assessment Practices for Tantalum Polymer Capacitors;
Erik K. Reed, Kemet Electronics
3.2 Power Semiconductor Fundamentals and Testing Approaches;
Jane Sabitsana-Nakao, Keithley
3.3 Ferrite Chip Beads – Commercial vs. Hi-Rel;
Scott Sentz, AEM Inc.

5:30 - 7:30pm EXHIBITS AND NETWORKING RECEPTION

Thursday, February 21

8:00 - 8:30am
Keynote 2: Combating Counterfeits - NDAA of 2012 & 2013;
Aaron C. DerMarderosian Jr.
Raytheon

8:30 - 12:00noon
Session 4: Supply Chain Issues
Chair: Andrew Kostic, The Aerospace Corp.
4.1 Advanced Technique to Detect Counterfeit Semiconductors;
B. Parks, Nokomis Inc.
4.2 Data Fusion for Augmented Counterfeit Detection Efficacy;
Dr. Bill Cardoso, Dr. Marcos Turqueti, Creative Electron, Inc.
4.3 Advancements in Early Warning for Counterfeit Alert Notifications;
Malcolm Baca, QTEC Solutions Inc.
CMSE Technical Sessions

4.4 Applying New Taggant Technologies;
   Alan Rae Ph.D. M.B.A. Alfred Technology Resources Inc.

4.5 Large Bus DDRII for Space;
   Pierre Wang, 3D Plus

4.6 Multilayer Varistors – Trends and Comparisons to TVS Diodes;
   Ron Demko, Mike Muir, Gregg Elliott, AVX

4.7 Requirements of AS6081 and Certification Approaches;
   Phil Zulueta, SAE G-19

12:00 - 2:00pm   Lunch

2:00 - 5:00pm

Session 5:   Harsh Environments Capability
   Chair:   Alan Rae, Nano Materials Innovation Center

5.1 High Temperature Silicon Carbide Power Modules and Discrete Devices for Military and High Performance Power Electronic Systems;

5.2 High Temperature Tantalum-MnO2 Capacitors: +200°C;
   Humberto Jasso, Kemet

5.3 New Hermetic Surface Mount and Thru-Hole Schottky’s for Aerospace and Defense Applications;
   Joe Thompson, Dan Tulbure, Solid State Devices, Inc.

5.4 Class Y: A New QML Class for Non-hermetic ICs;
   Shri Agarwal, JPL/NEPP

5.5 Modifiable Silicones for Extreme Environments;
   Vincent Malave, NuSil Technology LLC

5.6 Parylene Conformal Coatings - Enhancing Reliability of PEMS Components;
   Alan Hardy, Specialty Coating Systems

5.7 Counterfeit IC Avoidance Techniques for Today’s High Performance Memories and Microprocessors;
   Sultan Ali Lilani, Integra Technologies

Close of CMSE General Sessions

Friday, February 22
8:00 - 4:00 pm

Parallel Seminars (See description on page 4)

Seminar 3 - Environmental Stress Screening (ESS) for COTS & Improved Reliability
   Dr. Andrew Kostic, Consultant

Close of CMSE 2013

Program Committee
   Shri Agarwal, JPL/NASA
   Chuck Barnes, JPL/NASA
   Bill Cardoso, Creative Electron
   Joe Chapman, DOD Consultant
   Michael Corona, The Boeing Company
   Aaron DeMarderosian, Raytheon
   Ron Demcko, AVX
   Trevor Devaney, Hi-Rel Labs
   Scott Fishback, Quality Thermistor
   Larry Harzstark, The Aerospace Corp.
   Erik Jordan, Nisene
   Andrew Kostic, The Aerospace Corp.
   Anthony Lai, Consultant
   Tom Lee, CTI Inc.
   Bob Lowry, Electronic Matls Characterization
   John Maxwell, Stellar Micro
   David Penn, General Atomics Aeronautical
   John Prymak, KEMET Electronics
   Alan Rae, NanoMaterials Innovation Ctr.
   Mike Sampson, NASA
   Scott Sentz, AEM Inc.
   Jerome Trupiano, BAE Systems

Information     +1 256-536-1304     Leon.Hamiter34@cti-us.com      www.cti-us.com
CMSE 2013 Exhibition Information

Wednesday, February 20  2:00am to 7:30pm
Thursday, February 21  10:00am to 2:00pm

This Conference provides a major opportunity for direct marketing, advertising and technical interchange with decision makers:

- Component Engineers
- Design Engineers
- Engineering Managers
- Project Managers
- Quality Assurance Personnel
- Procurement Executives

The delegates and visitors

The event is targeted to a variety of high-level professionals working as:

- Design Engineers
- Manufacturing Engineers
- Engineering Managers
- System Integrators
- Consultants
- Program Managers
- Project Leaders
- Government Managers
- DOD Procurement

Services

CTI staff will be present to take care of all arrangements, to answer any questions and to cater to special needs that you and your visitors may have. This means that you, as an exhibitor, only have to look after promoting your products and meeting your customers.

Included in your participation

- Exhibition Space (6’ x 10’)
- Exhibition table (3’ x 6’)
- Standard electric connection 110V/500W max.
- Copy of attendee/visitor details
- Refreshments for exhibitor & visitors
- Complimentary visitor admission to Exhibits
- Lunch buffet for exhibitors & visitors +
- Reception also open to visitors +
  + Limited to space availability

CMSE Past Exhibitors

Space & Availability

A few exhibit spaces remain, register now for availability.

- Exhibiting Booth - $2000 (6’ x 10’)
- Exhibiting Table Top - $1600 (3’ x 6’)

Advertising

Advertising is available:

- Conference CD Notes color ad - $300
- Conference Guide color ad full page - &700
  (1 spot left)

Registration & Contact

CMSE 13 Exhibition Registration Form is posted on the web:
http://www.cti-us.com/cmsemain.htm

For exhibition information and space availability contact
Elena: +1 256 536-1304, info8@cti-us.com
Registration Information (please type or print clearly)

Name ______________________________________________________________________________________________

Title ________________________________ Company _______________________________________________________

Address _____________________________________________________________ M/S or Suite # ____________________

City ______________________________________________ State/Prov __________   Postal Code _____________________

Country _________________________Phone _________________________________Fax ___________________________

E-mail _______________________________________________________________________________________________

(Email address must be provided for confirmation & receipt)

Registration Fees

Before Jan 25

<table>
<thead>
<tr>
<th>Event</th>
<th>Before Jan 25</th>
<th>After Jan 25</th>
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<tbody>
<tr>
<td>Seminars (1, 2, 3, 4) (*1, *3)</td>
<td>$460ea</td>
<td>$560ea</td>
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<tr>
<td>Conference Technical Sessions (1 - 5) (*1, *2)</td>
<td>$680</td>
<td>$800</td>
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<tr>
<td>Technical Sessions (1 - 5) &amp; one Seminar (Tu or Fr) (*1, *2, *3)</td>
<td>$1025</td>
<td>$1200</td>
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<td>Technical Sessions (1 - 5) &amp; two Seminars (Tu and Fr) (*1, *2, *3)</td>
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<td>$1575</td>
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<tr>
<td>Speakers and Session Chairman</td>
<td>$460</td>
<td>$560</td>
</tr>
<tr>
<td>Exhibition Visitor Only (Feb. 20 - 21)</td>
<td>$0</td>
<td>$50</td>
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Discount (3 or more only) $50.00

Total __________

Fees not refundable after Jan. 10, 2013, substitutions any time

*1 Groups of 3 or more, from the same company and registering at the same time for same event get $50 each discount.

*2 Includes Conference Notes CD, Guide, applicable Seminar notes, continental breakfast, breaks, lunches, and reception.

*3 Please check Seminar 1 _____ or Seminar 2 _____ (parallel) on Tuesday, Feb. 19

Seminar 3 _____ or Seminar 4 _____ (parallel) on Friday, Feb. 22

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.

Payment Method:  O AMEX  O VISA  O MC  O Check

Card Number ___________________________________________ Exp. Date ____________________

Name on Card ______________________________________________________________________________________

Signature _________________________________________________________________________________________

Interactive Registration

FAX THIS FORM TO: +1 256-539-8477
Email: info8@cti-us.com

Components Technology Institute, Inc.
904 Bob Wallace Avenue / Suite 117
Huntsville, AL 35801
+1 256-536-1304
www.cti-us.com