


OPS ALA CARTE® Reliability News

TOP EVENTS:      Print Ver

Summer 2010

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MESSAGE FROM THE CEO

Welcome to our 22nd quarterly newsletter. Our newsletter comes out the first week of March, June, September, and December. Comments and suggestions are always welcome.

Summer is almost here and that means it is time for summer break for many of you. HALT and HASS Labs is holding our own **Summer Break** special in which we have rolled back prices for all tests in our HALT Lab to **1995** prices. That's right! **For this summer only**, we have **reduced** our prices back to what we charged 15 years ago when we first opened our lab. Details are below in the **SPECIAL OFFERS** section.

On June 8th, we will be co-hosting a one of a kind Clean-Tech event called **Green Technology Reliability Seminar**. See our **News Events** tab for more details.

My book "**50 Ways to Improve Your Product Reliability**" is in final editing and is due to be published within the next quarter. Check back for more details. For a sneak preview of the book, you can download the first two chapters at **Reliability Book: 50 Ways - 1st Two Chapters**.

We completed our west coast **Design for Excellence (DfX) Symposium** in San Jose in April. We will be holding it again October 11-15 in Austin, Texas.

Check out our new **calendar of events**. We wanted to make it easier for you to see what was going on in the world of reliability. All of the events are shown in more detail within the website. Our education courses are shown in more detail in our **Education** tab and our seminars and events are shown in more detail in our **News Events** tab.

We hope you enjoy the following newsletter. Our next newsletter will come out September 1st. Thank you for your continued support and interest.

- Mike Silverman, Managing Partner/CEO

COURSES

► **Certified Reliability Engineer (CRE) Preparation Course**

Date(s): August 17 - September 28, 2010

Time: 6pm-10pm one night a week, 7 weeks

Instructor: Doug Farel and John Cooper, Ops A La Carte

Length: 7 weeks

Cost: \$1295

Location: San Jose, CA

*(for those out of area, course is now offered via **internet**)*

Description: Becoming certified as a Reliability Engineer (CRE) can be valuable to your employer and your career. We are offering this Exam Preparation Course. Students have found it very valuable in preparing for the exam. Even if you are not planning on taking the exam but need a good, in-depth course in Reliability Engineering, this can benefit you substantially.

Course Webpage: [CRE Course by Ops A La Carte](#)

► For information on other course offerings go to: [Ops A La Carte Schedule](#)

► *All our courses are offered as **in-house tailored** seminars. To view a list of all our seminars, go to [Ops A La Carte Course List](#)*

SEMINARS

► **Design for Excellence (DfX) Symposium**

Date: **Oct 11-15**

Location: Austin, TX

About Event: Ops A La Carte and DfR Solutions are teaming up to give this Design for Excellence (DfX) Symposium. We already gave this symposium earlier in the year in San Jose California.

DFX TRACK ONE - DESIGN

Design for Reliability (DfR): Oct 11: [Mike Silverman](#) of Ops & [Dr. Craig Hillman](#) of DfR

Design of Environment (DfE): Oct 12 by [Dr. Randy Schueller](#) of DfR Solutions

Design for Manufacturability (DfM): Oct 13 by [Cheryl Tulkoff](#) of DfR Solutions

Design for Testability (DfT): Oct 14 by [Vaughan Carlson](#), Pres. of Value Engrafting

Design for Components: Oct 15 by David Cavanaugh

DFX TRACK TWO - TESTING

Best Accelerated Life Tests: Oct 11-12 by [Mike Silverman](#) of Ops A La Carte

Root Cause Analysis (RCA): Oct 13-14: [Greg Swartz](#) of Ops & [Dr. Craig Hillman](#) of DfR

Design for Mechanical Reliability: Oct 15 by [Dr. Kim Parnell](#) of Ops A La Carte

PRICING AND TERMS

Class Prices: Two day=\$1195, One day=\$695, half day=\$395

Group Discounts: Every 5th registrant is FREE

Unemployed/Employees paying themselves=25% off

Full time students=50% off

All are available via webinar for a 25% discount.

Payment: PO, Check, or Credit Card in advance

For more info or to register, please



EVENTS

► **Topic:** [Green Technology Reliability Seminar](#)

Date: **June 8, 2010, 1-6pm**

Location: DLI Labs, Austin, TX and via webinar

Price: Free

About Event: Ops A La Carte's Mike Silverman will be giving a presentation along with several industry speakers, including Paul Parker from Solar Bridge and Nathan Reddy from Polycorn.

Event is being sponsored by Ops A La Carte, DLI Labs, and DfR Solutions.

To sign up for live event, go to: <http://events.linkedin.com/Austin-Green-Technology-Reliability/pub/317197>

To sign up for webinar event, go to: <https://www2.gotomeeting.com/register/726817826>

► **Topic:** [Applied Reliability Symposium \(ARS\)](#)

Date: **June 15-18**

Location: Reno, Nevada

About Event: We will be presenting the follow paper at this event.

"*HALT Calculator - New Fast Method for Determining Product MTBF*", by Mike Silverman and Harry McLean

For more info, please



► **Event:** [Summer Barbeque](#)

Date: **Friday, August 20**

Location: Sunnyvale, CA

About Event: We will have several technical presentations followed by a fun barbeque. For more info or to register, please go to:



SPECIAL OFFERS

► *Summer is almost here and that means it is time for summer break for many of you. HALT and HASS Labs is holding our own **Summer Break** special in which we have rolled back prices for all tests in our HALT Lab to **1995** prices. That's right! We have **reduced** our prices back to what we charged 15 years ago when we first opened our lab.*

This offer is good for HALT and HASS proposals written from June 15th to August 15th. Test must be completed by August 31st.

Email us via our [Special Offers Contact Form](#)

NEWS



BELOW ARE NEWS HIGHLIGHTS FOR THE PAST QUARTER. MORE DETAILS FOR EACH ITEM CAN BE FOUND AT [NEWS](#).

All presentations that we gave can be found on the technical download section of our website at [Technical Papers](#).

► **May 26, 2010**

Presentation on "Impact and Mitigation of DRAM and SRAM Soft Errors"

Charlie Slayman of Ops A La Carte gave this presentation at our monthly IEEE Reliability Society meeting. We also broadcast this via webinar. If you would like to see the slides or the broadcast of the event, please go to:

► [Impact and Mitigation of DRAM and SRAM Soft Errors Presentation](#)

► [Impact and Mitigation of DRAM and SRAM Soft Errors Webinar](#)

► **May 17-20, 2010**

Ops Consultant Peter Arrowsmith presented his paper at the [International Conference on Solder and Reliability \(ICSR\)](#) on [ZIF Connector Failure Analysis](#). You are welcome to download the presentation.

► **May 15, 2010**

Ops adds two new consultants to our company:

► **Charlie Slayman, PhD** (*San Jose, CA*) has held positions at Hughes Research Labs in optical/microwave device research, Cypress Semiconductor as R&D Pilot Line Manager, Alliance Semiconductor as Foundry Operations Manager and Sun Microsystems as SPARC Supply Engineering Manager and Senior Member of the Technical Staff in memory reliability. He has also participated in various task groups responsible for the JEDEC soft error standards (JESD89, JESD89-1, JESD89-2 and JESD89-3) and served as the chair of the Soft Error Committee for IRPS 2008 and 2009.. See the [Ops Team](#) for more details.

► **Matt Lashinsky, MSME** (*San Diego*) Matt has years of experience in multiple domains of engineering including reliability, product development, electronics packaging, manufacturing, project management in industries ranging from telecommunications to renewable energy, to automotive and construction plastics, to irrigation systems and education. Matt's education consists of 2 undergraduate degrees, BS in mechanical engineering and Bachelor's in Mathematics, while also holding a Master's degree in Mechanical Engineering, focusing in Fluid Mechanics, Turbulence, and Propulsion.. See the [Ops Team](#) for more details.

► **May 6, 2010**

Del Mar Electronics Show presentation on "Design for Reliability"

Vijay Prasad of Ops A La Carte gave a presentation at the [Del Mar Electronics Show](#) on the topic of [Design for Reliability](#).

► **April 27, 2010**

"How to Avoid Being the Next Toyota" Safety Talk

Ops A La Carte's Mike Silverman teams up with Eugene Heil of Lewis Bass International and Ken Kapur of KLA to lead a panel discussion at the monthly IEEE Safety Society meeting (which we combined with the IEEE Reliability Society Meeting). The topic was on [How to Avoid Being the Next Toyota](#).

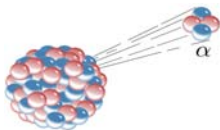
► **April 19-23, 2010**

Design for Excellence (DfX) Symposium

We held our first of three DfX Symposia for this year, collaborating with DfR Solutions. Our next one will be in Austin, TX the week of October 11th. Details can be found in our [Education Schedule](#).

► **For more information** on news, please visit our [News Page](#) or call (408) 654-0499.

FEATURED SERVICE



SOFT ERRORS: The Key to NPFs?

Authors: Charlie Slayman and Mike Silverman

Soft Errors is a hot topic in electronics today because as devices get smaller, there is an increasingly higher chance for soft errors to affect your circuits and cause errors at your customers.

The annual International Reliability Physics Symposium (IRPS) in Anaheim May 2-6 dedicated an entire section to Soft Errors and there were a total of 16 papers presented on the sources and effects of soft errors.

What are soft errors? Soft errors are any change in the output or state of a circuit that is not permanent and can be corrected by a simple re-write, re-compute or circuit reset operation.

Where do soft errors come from? Soft errors are the result of energetic particles that generate enough charge in an IC to change its operation. Alpha particles originate from the contamination of IC process chemicals and packaging materials from naturally occurring radioactive isotopes. Neutrons originate from the reaction of cosmic rays impinging on the earth's atmosphere.

Why are soft errors important? If a system is not architected to handle soft errors, soft errors can result in field service calls, returned product and customer dissatisfaction. And the returned product will often result in a “No Problem Found (NPF)”. Soft error rates can be orders of magnitude higher than hard fail rates. As device technology scales, the amount of charge required to upset a circuit is getting smaller and smaller.

How do you deal with soft errors? Why not just eliminate the source? Reduction of alpha particles can be very expensive from a manufacturing standpoint. It is often more cost effective to use mitigation techniques (such as error correction code). There is no practical way to shield neutrons (a 100 MeV neutron will penetrate 20 feet of concrete!), so mitigation techniques are the only practical solution for reliable product designs.

FUTURE WORK:

Future Directions in Soft Error Modeling – Soft error models exist at various levels, from nuclear physics models for charge generation, transistor level models for charge collection and circuit level models for memory and logic upsets. However, much of the work is proprietary and industry standards do not exist. Olivier Lauzeral of iRoC Technologies and ShiJie Wen of Cisco Systems lead a survey for the workshop participants to determine what features users wanted to see in the development of soft error tools from device modeling to circuit layout. The results will be available shortly (stay tuned to the Ops A La Carte website.)

Assessing Repeatability and Accuracy: The Alpha Counting Consortium – Reduction of soft errors from alpha particle contamination is driving the need for low and ultra-low alpha particle materials (~2 to 50 counts/cm²-khr) in semiconductor processing and packaging materials. This is approaching the background detection level of alpha counters. Jeff Wilkinson of Medtronic and Rick Wong of Cisco Systems discussed the plans for a round robin test among up to ten facilities using low and ultra-low alpha particle samples. The objective of the first phase of the study will be to assess measuring repeatability and accuracy of the various methods employed by participants. Jeff welcomes comments and feedback. Email Jeff at jeff.wilkinson@medtronic.com. Results of this consortium will be part of a future presentation which we will share with readers once it becomes available to the public.

OPS CONSULTING SERVICES FOR SOFT ERRORS

Consulting Services on Design for Soft Errors (DFSE):

- recommend best practices before beginning of design phase
- review of existing IC and system designs for impact of soft errors- validate design by recommending modeling and accelerated testing techniques

Consulting Services on Testing for Soft Errors:

- program management of soft error testing (Ops A La Carte does not actually do soft error testing, but can manage the project between the customer and the soft error design and test service)

Consulting Services on Troubleshooting for Soft Errors:

- review of field service issues to determine if the problem is caused by soft errors or something else. If you currently have a high NPF rate, give us a call and we can determine if it is being caused by soft errors.

For more information on this topic, we presented a one hour overview at a recent IEEE Reliability Society talk. You can download the [presentation](#) or the [webcast](#).

Mention this article and receive \$1K off your next Soft Error service.

RELIABILITY BLOG



Below is a summary of the Best of our Blog for last quarter - highlights of the best blog topics we had. If you would like to contribute to our blog, please either



or go to



- ▶ [Analyzing Data for Repairable Systems](#), by Greg Larsen
- ▶ [How to Avoid Being the Next Toyota](#), by Mike Silverman
- ▶ [Outsourcing Revisited – What have we learned?](#), by Mike Gozzo



HOW CAN YOU PROTECT YOURSELF FROM SOFT ERRORS?

With all this talk about soft errors, is there anything you can do to protect your equipment or to reduce the effects of soft errors for your customers?

The best response within the next 5 days will receive one free consultation in the area of soft errors (see the Ops Consulting Service section of the Feature Section of this newsletter for the types of consultation offered). Alternatively, you can choose one free pass to our next Certified Reliability Engineer (CRE) or Certified Quality Engineer (CQE) course or one free day at our upcoming DfX Symposium.

Congratulations to Quan Tran of Boeing for providing the best response to last quarter's quiz: A) What Should Toyota Do Differently Going Forward? and b) How do you see your company reacting and changing so that you don't become the next Toyota story?

Quan's answer was:

A) Toyota needs to determine the root causes ASAP by **defining** the problem, **investigating** the problem, **verifying** the problem and **ensuring** that the problem would not happen again. To regain the customers perception and trust; Toyota needs to address the root cause and implement their corrective and preventive actions ASAP. To obtain steps A and C, Toyota needs to fully reevaluate their current and future design and verification processes. Toyota need to keep in mind that “No matter how good we design the product, we are still going to have failures during testing”; and “It is only with a robust RCA process that we can quickly and effectively deal with these failures so that we ensure the problem is fixed and does not recur and does not show up in the field.

B) Our company or any other companies definitely don't want to become the next Toyota story. To avoid this scenario, our company is ensuring that the System Safety, Reliability and Maintainability requirements must be included and verified during the preliminary and detailed design phases of the program. **System Safety** includes requirements such as: Critical hazards, catastrophic hazards and Control of functions resulting in critical or catastrophic hazards, etc...As Mike Silverman mentioned in his article of Reliability Matters: The Toyota Take- Away “, other manufacturers of automobiles did foresee this particular problem and put in software that overrides the gas pedal in situations like this. Why Toyota did not foresee this particular problem? Toyota needs to apply the robust RCA process in their design current and future design. **Reliability section** includes requirements such as: Failure tolerance, failure propagation, separation of redundant paths and redundancy status, etc...**Maintainability section** include requirements such as: Qualitative maintainability design, Failure Detection, Isolation, and Recovery (FDIR), Testing at operation location, and Ambiguity Resolution.

ADVERTISEMENTS



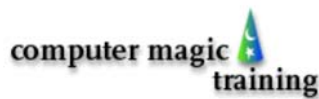
High Technology OEM's face significant increases in global competition, time to market pressures, and technological complexities, which result in higher risks for bringing new products to market. These risks drive the need for greater use of outsourced services.

To reduce these risks, the PRG has developed a “one-stop-shop” of outsourced services that helps companies to bring new products to market. Engagements are tailored to business and product profiles, and partners work together to deliver services that range from initial concept through global logistics and repair.

Your Benefits

- Our integrated solutions will save you time, streamlining bringing your product to market.
- Our proven partnerships will eliminate guesswork and prevent breakdowns in communication.
- Our partners will educate you on current best practices.

Product Realization Group | www.productrealizationgroup.com | mkeer@productrealizationgroup.com |



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JOB OPENINGS

Given the current economic climate, we know of many talented individuals that are currently looking for work. Therefore, if you are an employer and have a need for any position within reliability, engineering, or operations, we are offering to advertise in our newsletter at no cost. Just doing our part to help stimulate the economy! Below are a few positions that we do know about.



Ops A La Carte is looking for Senior Reliability Consultants *around the world* to join our team of consultants and work on some of the most exciting and challenging projects in the industry. Whether you have an existing consulting practice or are interested in developing one, please contact us.

If interested, email us via our [OPS Job Search Contact Form](#) or call (408) 654-0499.



If interested, email Harry McLean at: harry.mclean@aei.com.

Ops A La Carte's newsletter goes out to over 18,000 subscribers. If you would like to put an ad or job opening in next quarter's "Reliability News", email us via our [Job Openings Contact Form](#) or call at (408) 654-0499.

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