

# DfR Solutions

reliability designed, reliability delivered

## DfR Solutions Newsletter November/December 2008

[DfR Solutions is Hiring!](#) | [DfR Comes to Your Area!](#) | [DfR Launches e-Learning!](#)

### ELV Trumps RoHS

While the world has focused on the RoHS legislation, the automotive world has been in an uproar over the recent release of [Annex II](#) to the European Union End of Life Vehicle (ELV) Directive. Similar to RoHS, this directive bans Pb-based solder in automotive electronics by December 31, 2010. Unlike RoHS, there are NO exemptions. Not for flip chip. Not for high Pb. If you design, produce, or purchase automotive electronics and are concerned about this transition in terms of cost, quality, and reliability, please contact [Randy Schueller](#) or [Jim McLeish](#).

### The World of SnPb Continues to Shrink

The transition of automotive electronics to Pb-free continues the reduction of high reliability industries manufacturing with SnPb. Dell announced that their [entire line of enterprise servers](#) is Pb-free. Sun Microsystems has strongly indicated they are close to the same situation. [Nokia](#) and [Ericsson](#), the largest mobile communications equipment manufacturers in the world, have also indicated they are completely Pb-free (except for products sold to Verizon and AT&T). If you are interested in strategic guidance on Pb-free transition (the why, the when, the how), please contact [Bob Esser](#).

### Reliability Issues in Optical Transceivers

The increasing importance of communications in product functionality, the integration of optics into a variety of electronic designs, and the need for alternate paths for Moore's law have made understanding optical transceivers critical to multiple electronic OEMs and end users. In this [white paper](#), DfR provides an overview and recommendations on ensuring quality and reliability in this cutting edge component. For more information, please contact [John McNulty](#).

### Success of the Month: HALT Testing Confirms High Reliability Confidence

DfR Solutions recently performed a two week HALT operation for a military contractor. To meet the customer's need for a quick turnaround, the testing, which included thermal step stress, rapid thermal transition, vibration step stress, and combined environments, was performed late into the evening and over the weekend. The client was extremely pleased with our premium HALT services, which provides a unique combination of HALT testing and access to our failure analysis facilities and subject matter experts. In the words of the customer, DfR "ran the testing in the utmost professional manner." If you would like to learn more regarding DfR's HALT capabilities, please contact [Bob Esser](#).

### Is REACH the New RoHS?

The battle over REACH is 'reaching' a fever pitch. A recent email from [DCA](#) noted that environmental groups have come out with a 'Substitute It Now' list of over 200 substances. Included in this list are Tetrabromobisphenol A (TBBPA), Beryllium Oxide (BeO), Nickel Oxides (we're not making this up), and Urethane. The driver for this activity is frustration over the limited number of candidates listed as Substances of Very High Concern (SVHC) by the European Chemicals Agency. Should we be prepared for another ban, a la RoHS1 and RoHS2? Not quite. DfR has developed an [informational presentation](#) that provides an understanding of REACH, SVHC, and what it really means for you and your company. For more information on environmental legislation worldwide, please contact [Craig Hillman](#).

### What is the Latest in Advanced Packaging?

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DfR, through John McNulty, provides our readers unique insight and assessment into the latest technologies and techniques presented at the recent [MEPTEC](#) (Micro Electronics Packaging and Test Engineering Council) Symposium on Advanced Packaging. For more information on this critical industry gathering and how DfR can help you with component packaging, please contact [John McNulty](#) or [Randy Schueller](#).

### **Question of the Day: MTBF and System in Package (SiP)**

Imagine you are a reliability engineer in a company that uses failure rates from the field to predict the future reliability of new products. Your component manufacturer now announces that it has taken your Flash, DRAM, and ARM processor and put it into one package. What is the failure rate of the new component? Do you apply a correction factor for fewer solder joints? Do you now rely on your supplier's test results? Give us your thoughts and we will publish the best responses in our next newsletter. To reply to this question, please contact [Ed Wyrwas](#).

### **Solving Conductive Anodic Filaments (CAF): Understanding Epoxy-Glass Adhesion**

One of the more complex and increasingly common problems experienced by the electronics industry is conductive anodic filaments (CAF). This failure mechanism is being exacerbated by decreasing spacings and exposure to Pb-free reflow. In the [first of a series](#), DfR explains the role of epoxy-glass adhesion on the probability of this insidious failure mechanism. For more information on printed board quality and reliability, please contact [Craig Hillman](#).

### **Service of the Month: Technology Feasibility Assessment**

Using our broad background in electronics and optics, DfR is consistently asked to provide a neutral, science-based assessment of new technologies. DfR's extensive background in reliability and root-cause analysis allows us to ask a unique question: How could this fail? For more information, please contact [Nathan Blattau](#).

### **A Gift to Remember**

Forget the flat panel TV this holiday season. For that very special someone, say you care by giving them their own [personal nuclear reactor](#). If you are interested and would like more information, please do not contact DfR Solutions.

### **Employment Opportunities**

DfR is looking to expand its laboratory staff. If you have a background in materials science, chemistry, physics, electrical engineering, or mechanical engineering and enjoy working in a laboratory setting solving challenging problems, please send your resume to [Bob Esser](#). A range of degrees (B.S. to Ph.D) and experience (2 to 15+ years) are currently being considered.

## **DfR News**

### **DfR Welcomes Dr. Randy Schueller as New Senior Technical Staff Member**

DfR Solutions is proud to announce the hiring of Dr. Randy Schueller, an industry renowned expert in the fields of component packaging and Pb-free. Prior to joining DfR Solutions, Dr. Schueller has held numerous management and leadership positions at such companies as 3M and Extreme Devices (an Austin high tech start-up company), where he developed flex-based IC packages. At Dell, Randy assisted in resolving countless failures in IC packages, connectors, PWBs, and assembly issues and was instrumental in Dell's transition to Pb-free for their enterprise servers. Randy currently holds 15 patents and has authored and presented over 30 papers within the electronics industry. Dr. Schueller provides amazing capability and insight based on his background which will help supplement DfR's current expertise in component packaging, supplier assessments, root-cause analysis and Pb-free transition guidelines.

### **DfR Solutions Selected by CERN for Reliability Activities**

DfR Solutions is currently working with CERN (European Center for Nuclear Research) to ensure the reliability of the fiber optic monitoring systems and data communications program in the Large Hadron Collider. These monitoring systems employ near-infrared transmitters and detectors and are being qualified for use once the collider becomes fully operational. This collaboration leverages DfR's expertise in opto-electronic and micro-electronic component reliability. DfR is honored to have been given the opportunity to contribute to the success of the Large Hadron Collider and to work with [CERN](#), the world's largest physics laboratory.

### **DfR Solutions Launches e-Learning**

DfR Solutions is very pleased to announce that we have added a new and exciting feature to our current website – presentations with audio! We invite to you visit the [e-Learning section](#) of our website to learn more about DfR Solutions and the state-of-the-art capabilities that we possess. While you are there, please feel free to listen to one or all of the webcasts. You will also find a comprehensive catalogue of presentations and courses designed to educate you on all aspects of electronic reliability and quality. Additionally, the e-Learning section of our website includes case studies, articles, white papers, and more.

## DfR Solutions Adds Sales Representatives

DfR Solutions has recently added sales representation in North America. If you would like to speak with someone locally regarding DfR's services, or if you would like to schedule an on-site visit to learn more about DfR, please contact [Tom O'Connor](#).

Area(s)	Representative	Phone	E-mail
NJ, PA, Lower NY	<i>Argo Zeta</i> - Jack Maccarone - Bob Slusarczyk	(215) 538-9353	<a href="mailto:jackmacc@argozeta.com">jackmacc@argozeta.com</a> , <a href="mailto:slu@argozeta.com">slu@argozeta.com</a>
Florida	<i>Century Automation</i> - Joe Cormier	(386) 216-5151	<a href="mailto:joecormier@cfl.rr.com">joecormier@cfl.rr.com</a>
NC, SC	<i>Cope Assembly Products</i> - Ted Kress	(336) 423-9120	<a href="mailto:tkress@triad.rr.com">tkress@triad.rr.com</a>
IN, OH, KY	<i>DMP Products LLC</i> - Steve Treadwell	(317) 786-5941	<a href="mailto:dmpsat@comcast.net">dmpsat@comcast.net</a>
MN, SD, ND, WI	<i>E-Tronix</i> - Erik Stromberg	(612) 803-2619	<a href="mailto:estromberg@e-tronix.com">estromberg@e-tronix.com</a>
ME, VT, NH, MA, RI, CT	<i>Precision Automation &amp; Assembly</i> - Bob Wons - Dave Healey - Mike Brown	(603) 471-9320	<a href="mailto:bwons@precisionautomation.com">bwons@precisionautomation.com</a> , <a href="mailto:dchealey@verizon.net">dchealey@verizon.net</a> , <a href="mailto:mbrown@precisionautomation.com">mbrown@precisionautomation.com</a>
Southern CA, AZ, NM	<i>Reliability Resources</i> - Clayton Bonn	(714) 903-1005	<a href="mailto:cbonn@reliability-resources.com">cbonn@reliability-resources.com</a>
VA, WV, MD, DC, DE	<i>T &amp; M Sales</i> - Tom O'Connor	(301) 854-5044	<a href="mailto:tomfoc3@verizon.net">tomfoc3@verizon.net</a>
Upstate NY	<i>Yankee Tronics Inc.</i> - Joe DePeter	(315) 682-8368	<a href="mailto:info@yankeetronics.com">info@yankeetronics.com</a>

## Upcoming Events

### IPC/JEDEC Conference on Pb-Free Electronics (Dallas, TX: December 8)

DfR Solutions will present "Failure and Root-Cause Analysis of Pb-Free Electronics." If you are interested in attending this course, please contact [IPC](#) or contact [Tammy Smittenaar](#).

### DfR in Texas (December 8-10)

DfR Solutions will be visiting companies in Texas (Dallas, Austin, Houston) in mid December. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

### GEIA APMC Meeting (Arlington, VA; January 7-8, 2009)

DfR Solutions will participate in the GEIA APMC meeting to discuss reliability efforts that can be applied to Aerospace Qualified Electronic Components (AQEC) and AEC Component Qualification. For more information please contact [Jim McLeish](#).

### Lead-Free Electronics in Aerospace Project (LEAP) Working Group (Forth Worth, TX: January 27-28, 2009)

DfR Solutions will present two critical presentations on Pb-free. The first presentation will be by Randy Schueller and will discuss "Strategies for a Successful Transition to Pb-Free." The second presentation will be by Nathan Blattau, and will provide "An Overview on Vibration of Electronic Assemblies and What It Means for Pb-Free Reliability." For more information, please contact [Tammy Smittenaar](#) or [Rusty Rentsch](#).

### DfR in Texas (January 27-30, 2009)

DfR Solutions will be visiting companies in Texas (Dallas, Austin, Houston) in late January. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

### IPC 7711/7721 Training at DfR Solutions (College Park, MD: February 9-13, 2009)

Circuit Technology will teach an advanced course on "Rework, Repair, and Modification of Printed Boards and Electronic Assemblies." Successful participants in this comprehensive hands-on training will be issued an official IPC certification. For more information or to register, please contact [Tammy Smittenaar](#) or [Circuit Technology](#).

**SMTA Anaheim Academy – Electronics West (Anaheim, CA: February 11, 2009)**

DfR Solutions will present two half-day seminars: "Medical Electronics and Lead-Free," and "Understanding Failure and Root Cause Analysis in Electronics." If you are interested in attending this course, please contact [Melissa Serres Marx](#) or [Tammy Smittenaar](#).

**DfR in Southern California (February 9-10, 2009)**

DfR Solutions will be visiting companies in Southern California (San Diego, Los Angeles) in early February. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

**IPC/JEDEC Conference on Pb-Free Electronics (Santa Clara, CA: March 5, 2009)**

Craig Hillman will present a half-day seminar, "Understanding Failure and Root-Cause Analysis in Lead-Free Electronics," the morning of March 5<sup>th</sup>. This will be followed in the afternoon by Randy Schueller and "A Practical Guide to Managing Your Lead-Free Transition." If you would like to attend these courses, please contact [Tammy Smittenaar](#) or [Michelle Michelotti](#).

**DfR in Bay Area (March 2-4, 2009)**

DfR Solutions will be visiting companies in the San Francisco Bay Area in early March. If you and your associates are interested in an onsite visit and/or presentation, please contact [Tammy Smittenaar](#).

**IPC APEX Expo (Las Vegas, NV: March 31-April 2, 2009)**

DfR Solutions will present several seminars at IPC APEX. They include "The Reality of Pb-free Reliability," "Design for Reliability: A Physics of Failure Based Approach," and "Next Generation Technologies in Electronic Packaging and Production." If you are interested in attending these courses, please contact [Michelle Michelotti](#) or [Tammy Smittenaar](#).

**Wayne Tustin at DfR Solutions (College Park, MD: April 1-3, 2009)**

Wayne Tustin will teach his popular short course "Random Vibration and Shock Testing, ESS, HALT & HASS" at DfR Solutions, College Park, MD. For more details and reservations, please [click here](#).

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Our patented lead-free solder SN100C is based on a unique formulation of tin, copper, nickel and germanium that delivers cost-effectively high performance in production and reliability in service. SN100C matches the performance of the tin-lead solder it replaces in delivering smooth, bright, crack-free fillets and high first pass yield. And its combination of strength and ductility ensure superior performance in high strain conditions such as vibration. Visit our [website](#) for more information.

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