

DfR Solutions

reliability designed, reliability delivered

DfR Solutions

November/December 2007

Newsletter

The Latest on Tin Whiskers

To busy to go to conferences? Then we'll go to you. Enclosed in this [presentation](#) is the latest information on tin whiskers. The most interesting trend? An increasing number of component suppliers are now offering 'double mitigation', such as SnBi over nickel or thick (7-10 microns) plating with a 150C anneal. For more information on tin whiskers, please contact [Gerd Fischer](#) or [Bob Esser](#).

A Review of the Occam Conference

DfR staff member [John McNulty](#) attended the first Occam Developers' Conference October 16 in San Jose, CA. The Occam process is a proposed method of building circuits without the use of solders. Click [here](#) to read his review of the conference.

Service of the Month: Component Testing

Frazzled by component failures? Looking to get a better handle on the performance and reliability of your passive and discrete components? DfR can help. The staff at DfR is extremely knowledgeable and skilled in all industry test specifications, but we are also keenly aware of those test specification's limitations. This knowledge provides you with *complete* solutions to ensure your product's longevity. Let DfR help you with compliance, performance, or specification component testing. For the months of November and December we'll offer this service at 10% off our usual pricing. Contact us at askdfr@dfrsolutions.com today.

Pb-Free Misinformation Continues to Cause Confusion

Regardless of your point-of-view on Pb-free (good, bad, or indifferent), your decisions and approaches are not helped by misinformation and misunderstanding. A stunning example of this is a [recent article](#) in *EDN*. Titled "The 12 Myths," it contains a number of mistakes and half-truths. These include:

- Lead-free is less reliable than SnPb. As the DEFINITION of reliability is application dependent, this broad-based statement is in error. For example, SAC tends to be more robust than SnPb in most temperature cycling environments
- Exceptions were granted to military and other hi-rel because of the high level of RISK involved in these applications, not poor reliability of Pb-free
- Figure 2 is ZINC whiskers, not tin whiskers
- SAC solder and whiskers. The risk of whiskers emanating from tin-based solder is relatively low compared to tin-based plating. All tin-based materials can whisker (they have even been observed on SnPb solder), but it's the likelihood and maximum length that's key
- The majority of lead coatings are tin and palladium, not SAC
- Swatch's problems were more complex than detailed and involved some poor material selection

Buyers beware on 'experts' in Pb-free. *EDN* could have done better.

Cleanliness and Contamination

A number of companies, both big and small, have struggled with ensuring cleanliness of the printed boards and circuit card assemblies. This [presentation](#) provides some insight on what industry documents recommend to prevent

excessive contamination and why sometimes those efforts fail. For more information, please contact [Seth Binfield](#) or [John McNulty](#).

Environmental Pressures on Electronics Increase

Numerous recent articles, such as stories on [high levels of brominated flame retardants](#) in electronics-dismantling workers in China and [Greenpeace's attack on the iPhone](#), demonstrate the increasing expectations of environment-friendly materials in electronics. And where is this taking us? In addition to Norway's recent Super-RoHS, the EU Technical Advisory Committee (TAC) has started the process of RoHS 2, which may include adding medical and industrial control products, increasing the number of restricted substances and reducing the current number of exemptions. Want to know more? Gary Nevison of Farnell has two excellent blogs on this critical topic ([blog1](#) and [blog2](#)).

Component Upgrading 2007

As part of our ongoing series on best practices in reliable and cost-effective design, we are pleased to continue our discussions on upgrading, which involves performing a risk assessment of parts used outside their manufacturer's specifications (typically temperature). This month's component is [Magnetic Components](#). For more information on our upgrading and derating services, please contact [Jim McLeish](#) or [Nathan Blattau](#).

In the News

DfR Now Has Representation in Europe

DfR Solutions announces the addition of [Klaus Hagen](#) to the company's staff. Hagen will be responsible for technical sales in German-speaking countries (Germany, Austria, and Switzerland). He has over 20 years of experience in design and new product development of industrial electronics and systems. His specific R & D activities include analog and digital hardware, and system design, including software and ASIC development. Click [here](#) for a press release with more information. If you are located in Europe, and would like Mr. Hagen to visit your organization, you can reach him at khagen@dfrsolutions.com

DfR Announces Partnership with A.T.E Solutions

The increasing need for rapid product introduction while lowering development costs requires the implementation of a true Design for Excellence (DfX) solution, which includes Design for Testability (DfT), Design for Reliability (DfR), and Design for Manufacturability (DfM). To meet this need from our customers, [DfR Solutions](#) and [A.T.E. Solutions](#) have agreed to partner and provide a unique set of combined services and joint educational opportunities.

Upcoming Events:

Applied Reliability Engineering & Management Institute (Tucson, AZ: November 14)

Craig Hillman will present "Best Practices for Reliability Assurance in the Electronics Marketplace" on November 14 during the 45th Annual Applied Reliability Engineering and Management Institute. For more information on the conference, please contact [Deborah Fisk](#) or click [here](#).

DfR Solutions in England (November 26-28)

[Craig Hillman](#) will be visiting one of DfR Solutions' European clients during this time period and is currently available for onsite visits. If your company would like Dr. Hillman to give a presentation or be available for discussions, please contact [Deborah Fisk](#) to make arrangements.

IEEE Reliability Society – Boston Chapter (Boston, MA: January 9, 2008)

[Craig Hillman](#) will provide an overview on fiXtress™, the revolutionary software that automates component stress analysis, reducing product development time and greatly reducing the risk of potential field issues. More information on location and exact times will be provided when available.

SMTA Medical / Medical Device and Manufacturing (Anaheim, CA: January 29, 2008)

DfR Solutions will present "Selecting a Pb-Free Solution for Medical Devices" on January 29, 2008 at the Medical Device and Manufacturing West Conference. For more information, please contact [Deborah Fisk](#) or click [here](#).

LEAP Working Group (Irving, TX: January 30-31, 2008)

[Nathan Blattau](#) will be attending the LEAP meeting in Texas and will be presenting "Developing a Pb-Free Qualification Plan for Hi-Rel Applications". For more information, please contact [Deborah Fisk](#) or [Rusty Rentsch](#) at the Aerospace Industries Association.

DfR Solutions in Dallas, Texas (January 29-31, 2008)

[Nathan Blattau](#) will be in the Dallas area for the LEAP meeting and is currently available for onsite visits. If your company would like Dr. Blattau to give a presentation or be available for discussions, please contact [Deborah Fisk](#) to make arrangements

Reliability and Maintainability Symposium (Las Vegas, NV: January 31, 2008)

[Craig Hillman](#), in conjunction with Mike Silverman and Fred Schenkelberg of OpsAlaCarte, will be presenting "How to Develop a Qualification Test Plan for RoHS Products." For more information, please contact [Deborah Fisk](#) or go to the [RAMS website](#) to register for this conference.

DesignCon (San Jose, CA: February 4-7, 2008)

DfR will be participating in [DesignCon](#) with an exhibit. A special focus will be given to the fiXtress™ software program for design professionals. This unique program automates component stress analysis, reducing product development time and greatly reducing the risk of potential field issues.

Commercialization of Military and Space Electronics (Los Angeles, CA: Feb. 11-14 2008)

[Clayton Bonn](#) will be presenting "Paradigm Shift in Design Assurance and Reliability Prediction". This paper focuses on new approaches design assurance that will reduce engineering costs and capture reliability issues earlier in the product development cycle. For more information, please contact [Leon Hamiter](#) or [Deborah Fisk](#).

Nistec Group Company (Israel: February 18-19, 2008)

[Craig Hillman](#) will present a two-day technical seminar, "Advanced Packaging: Introduction, Quality Assurance, & Reliability Prediction" at the Nistec Group headquarters in Israel. For more information, please contact [Deborah Fisk](#).

DfR Solutions in Israel (February 17-20, 2008)

[Craig Hillman](#) will be presenting to a number of companies in Israel. If your company is in the region and you would like Dr. Hillman to give a presentation, please contact [Deborah Fisk](#) to make arrangements

IPC Printed Circuits Expo / APEX (Las Vegas, NV: March 30 - April 3, 2008)

DfR Solutions will be presenting "Understanding Failure and Root-Cause Analysis in Lead Free Electronics" along with "True Design for Reliability: Understanding What Is and What Is Not DfR" at the IPC Printed Circuits Expo, APEX, and Designers Summit. For more information, please visit the IPC [website](#).

5110 Roanoke Place, Suite 101, College Park, MD 20740