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DfR Solutions
reliability designed, reliability delivered

Happy New Year Colleagues,

[NEWS FLASH: US RoHS on the Way](#)

There are strong indications that the House Subcommittee on Environment & Hazardous Materials will introduce US RoHS legislation this year. Rumor has it that ongoing negotiations with major electronic associations will remove any industry opposition.

What peaks your interest? According to the links you clicked on in our last 10 newsletters, its whiskers, whiskers, and more whiskers. And since the customer is always right, we have acquiesced to your demands by offering not one, but two lead articles on tin whiskers

Who's Afraid of Tin?

It has been estimated that government agencies and contractors have spent over \$20 million dollars 'battling' the tin whisker menace. Of course, this assumes that component manufacturers are using matte tin plating. [Click here](#) to learn the latest on the 'tin myth' and how some of the world's largest OEMs have been misled about their influence on the component market.

Tin Whiskers (Revisited)

If the first article wasn't enough to wet your appetite, we are giving you a second opportunity to read our former articles on tin whiskers, including

- The tin whisker [exemption](#) and why it is [irrelevant](#)
- Why certain parts of NASA thinks tin whiskers are [not a risk](#)
- What happens [after 15 years](#) of whisker growth?
- Industry documents regarding tin whiskers
 - JEDEC ([JP002](#), [JESD201](#), [JESD22A121](#))
 - iNEMI ([Recommendations on Lead-Free Finishes for Components Used in High-Reliability Products](#))
 - GEIA documents ([ANSI/GEIA-STD-0005-2](#))
- Swatch and tin whiskers: The initial [request](#) and how it was [resolved](#)

Please contact [Gerd Fischer](#) with any questions or comments on tin whiskers.

Liquid Crystal Displays (LCDs)

Active Matrix Liquid Crystal Displays (AMLCDs) are used throughout the world in increasingly severe environments as industrial and military technologies rapidly adopt this technology. In addition, AMLCDs in traditional applications continue to increase in size and complexity. In an attempt to better understand these risks and develop a more rapid life assessment, DfR Solutions' [Morrigan Johnson](#) has recently completed a study characterizing the [mechanical strength](#) of LCD panels and assemblies.

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 [Ceramic Capacitors](#). For more information on

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our uprating and derating services, please contact [Norm Anderson](#) or [Craig Hillman](#).

Design for Reliability: Don't Bend Your Caps

How important is design for reliability (DfR)? Ignoring it could cost you billions. A [recent article](#) at DigiTimes.com (What lies behind the Sony battery recall? Thursday, Oct. 12, 2006) suggests that cracking of ceramic chip capacitors, a potential design issue, may have caused the overheating that flamed the lithium batteries. [Click here](#) to learn more about the most common mistakes made by designers today and how DfR Solutions can help you avoid them. For more information, contact [Nathan Blattau](#) or [Jim McLeish](#).

Forget Europe; Watch out for China

Another year, another deadline. The March 1, 2007 deadline for the China RoHS is fast approaching. And it gets even better. The March 1 deadline is for labeling, in Chinese, not for compliance (compliance is expected between September 2007 and March 2008). The China RoHS is more restricted (opt-in, not opt-out like the EU RoHS), but certain products exempted by the EU are covered by China (1,400 products in 11 categories). And only 18 authorized Chinese test labs can certify you. Confused? Here are some excellent articles by [Steve Gold](#), [WilmerHale](#), and [PRTM](#) for some guidance.

Who Doesn't Want Pb-Free (Part I)?

While their wireless division may have RoHS compliant cell phones, Verizon is starting to make its position on RoHS perfectly clear. While they have not made an official statement, word is out that Verizon will currently not accept any central or remote office products assembled with Pb-free solder. How the rest of the service providers (AT&T/BellSouth, Qwest, NextelSprint) respond remains to be seen. For more information, contact [Craig Hillman](#).

DFR IN THE NEWS

DfR Opens Michigan Office

Realizing that the way forward for successful automotive OEMs in the 21st century is electronics and reliability, and in response to increasing business from our clients in the Upper Midwest, DfR Solutions has opened a branch office in SE Michigan ([145 S. Livernois Avenue, Suite 150, Rochester Hills, Michigan 48307](#); 248-726-7600).

The Michigan office, which will offer DfR's unique skill set and approach to physics of failure (PoF) in electronics, will be headed by automotive industry veteran [Jim McLeish](#). Jim has over 30 years of Electrical/Electronics (EE) management and technical leadership positions in QRD and Product Assurance at General Motors (GM) Corporation and Chrysler Corporation. For more information, or to arrange an onsite discussion, please contact [Jim McLeish](#).

Two New Staff Members Join DfR

In response to the company's rapid growth and expanding capabilities, DfR has hired two new staff members. [Deborah Fisk](#) joined DfR as Director of Marketing in October. Deborah has 20 years experience in business-to-business, consumer, and technology marketing. [Sheena Mitchell](#), DfR's new Business Manager, joined the company in November. Prior to her hiring at DfR, Sheena had over five years of experience in managing small businesses and governmental organizations.

UPCOMING EVENTS

Lead-free Electronics in Aerospace Project (Coral Gables, FL: January 16-17)

[Nathan Blattau](#) will present "[Whisker-Resistant Plating Usage by Major Semiconductor Manufacturers](#)" and "Simplified Failure Model for Pb-Free Solder" at the LEAP meeting in Florida. For more information please contact [Nathan Blattau](#).

North American Regulatory Conference for Electronics Products (Shenzhen, China: January 23-24)

[Craig Hillman](#) will be the special guest speaker at the North American Regulatory Conference for Electronics Products, January 23 & 24, 2007. The conference will take place at the Novotel Bauhenia Shenzhen in Shenzhen, China. Dr. Hillman's topics at the conference will include "Failure Analysis for Electronics," and "Risk Minimization for Lead-Free Design in Telecommunication Products." Click [here](#) for more information or to [register](#) for the conference. To arrange an onsite visit during Dr. Hillman's time in Shenzhen, please contact [Sheena Mitchell](#).

IPC APEX and Design Expo (Los Angeles, CA: February 18)

[Craig Hillman](#) will be presenting an all day seminar on "Understanding Failure and Root Cause Analysis in Lead Free Electronics." Attendees will gain an in depth understanding of failure mechanisms that are unique to lead free electronics and the tools and techniques to identify those mechanisms. For more information contact [Craig Hillman](#) or shows@IPC.org.

DfR Solutions in Southern California (February 19-22)

[Craig Hillman](#) will be presenting to a number of companies in the Los Angeles area in mid-February on a variety of topics (Pb-free, design-for-reliability assessments, supplier assurance, etc.). If you are interested in having Dr. Hillman speak to your company, please contact [Sheena Mitchell](#) to make arrangements.

Commercialization of Military and Space Electronics (Los Angeles, CA: March 12)

[Craig Hillman](#) will be presenting two half-day seminars focused on "Selecting a Lead Free Solution for Military, Avionic and Space Applications." This talk will provide critical data and information on developments over the past 6 to 12 months in Pb-free technology, including market trends, process solutions, and quality and long-term reliability issues. Recent GEIA documents, which are expected to be the backbone of lead free product qualification for military and avionic applications, will reviewed in regards risk minimization activities. For more information, please contact [Leon Hamiter](#) or [Sheena Mitchell](#).

Best Practices of Failure Analysis (Milpitas, CA: March 27-28)

[Jim McLeish](#) will be presenting a two-day seminar focused on "Best Practices of Failure Analysis." This seminar will provide reliability engineers and management a foundation by providing a comprehensive review of the best practices in engineering and reliability assurance with case studies that will provide guidance on the practices most appropriate for a given design, use environment, desired lifetime, and available resources. For more information, please contact [Tina Silk](#) or [Sheena Mitchell](#).