

Newsletter from November 15th, 2007

1. The new reviews of all RoHS exemptions and addition of new substances!

- *Two new studies have been started by the European Commission regarding the RoHS Directive!*
- *It is now important for manufacturers to act swiftly to counter unacceptable changes!*

Two new studies have been started by the European Commission regarding the RoHS Directive. One is considering the case for ALL existing exemptions plus some new requests, the other is looking at adding more substance restrictions to RoHS beyond the existing 6. Both studies will have major implications on the legality of existing designs which rely on current exemptions, which may be withdrawn or substances which may be banned.

ERA attended a Member State RoHS workshop organised by BERR (formerly the UK DTI) on 26 October 2007 to discuss options for improving the RoHS exemptions process. Applicants have experienced long periods of uncertainty with no indications of progress and the Commission has found it difficult to reach decisions because of the technical complexity of many of the requests. Steve Andrews of BERR will present the conclusions from the workshop at the next TAC meeting in November.

The Commission has recently awarded two study contracts to the Öko Institut; the review of all existing exemptions in the RoHS Directive Annex plus seven new requests and a study into the possibility for adding more substances to the current RoHS 6. The latter study forms part of the current review of the RoHS Directive that will eventually be amended. These studies will have profound implications to all sectors of the electronics industry including those that are currently excluded because the scope of RoHS could be changed to include many new product types.

It is now important for manufacturers to act swiftly to counter unacceptable changes. Once the Commission's proposals are presented to the European Parliament and Council of Ministers, it will be much more difficult to make changes - so now is the time to act.

Study 1- Exemption Review

- All existing exemptions will be reviewed including those that many manufacturers take for granted such as those for:
 - **lead in glass of electronic components:** required for many passive surface mount devices such as chip resistors and potentiometers, and also hermetically sealed ICs and through hole mounting diodes,
 - **lead in high melting point alloys:** required for power devices such as rectifiers, regulators and solid state relays,
 - **lead in ceramics:** required for, piezoelectrics, chip resistors, and some MLCCs,
 - **lead in solder for network infrastructure and servers etc. ,**
 - **Cadmium in switch and relay contacts .**

The process for granting or maintaining of exemptions is extremely rigorous. The onus is squarely on industry to demonstrate they need an exemption and to present the evidence for this. The Commission's consultants will recommend that exemptions are deleted if there is any evidence that substitutes exist. Industry will need to take a pro-active approach and provide data from recent research that has looked for substitutes but shows that these are technically unsuitable or have more negative impacts on human health or the environment than the RoHS substances. Letters of support and pleas to continue the exemptions are of very limited value, as the consultants need technical evidence that will convince them, the EC and European Parliament that exemptions should continue. The Commission accepts that research into substitutes will mainly be carried out by large multi-nationals, not by SMEs although SMEs are clearly affected by RoHS exemptions and should make contributions to the study by providing results of their efforts to find substitute materials and designs and also by encouraging their OEM component suppliers to submit technical data. Doing nothing and relying on others is very risky as almost all electrical products rely on at least one exemption.

Study 2 - Additional substances

- This study is equally important to the electrical industry. It is likely that NGOs and Member States will suggest many substances be considered and these could be restricted if industry does not provide clear technical evidence that substances cannot be replaced or that possible substitutes would be more harmful to the environment or human health.

The whole life cycles of substances should be considered and lead in solders provides a good example of why. Lead is clearly a toxic material but a full life cycle assessment comparing tin/lead solders with lead-free solders carried out by the US EPA showed that the lead-free alternatives were not better (or worse) but different and overall provide no benefit to the environment, especially if lead is adequately controlled. The results of this LCA are not enough to allow an exemption for lead in solders now that lead is restricted by RoHS but would have been substantive evidence when the restriction of lead under RoHS was first considered.

Clearly it is preferable to prevent substances from being added to the RoHS restricted list than having to request new exemptions in the future. It is essential that all manufacturers, including SMEs review their products to determine if they are relying on hazardous substances and to provide technical data to the consultants as soon as possible.

Substances that are likely to be considered for restriction include arsenic, beryllium, diethylhexyl phthalate (DEHP plasticiser) and many types of flame retardants. Another consideration is that many alternatives are not fully tested so the risks from their use is unknown, one of the main reasons for the REACH regulations.

Source: ERA

2. Efforts Grow to Design for Disassembly!

- *It will be increasingly important to consider how products can be taken apart for easier recycling!*
- *Keep an eye on design for recycling!*

It will be increasingly important to consider how products can be taken apart for easier recycling. Keep an eye on design for recycling. It's long been a backburner issue at the great majority of American companies, but that may change.

Two new directives require companies to take responsibility for their products sold in the European Union after their useful life. The Waste Electrical and Electronic Equipment Directive (WEEE), which was enacted as European Union Law in 2003 along with RoHS, is finally starting to grab hold after member states dragged their heels on implementation.

OEMs, distributors and others are required to develop an infrastructure to collect computers, household appliances, cell phones, lighting equipment, medical equipment and other electronic waste and then to recycle or re-use as much of the material as possible. The law became effective in the United Kingdom on July 1. Manufacturers are paying a fee to cover the cost of collection and recycling of goods they produce.

Producers in countries such as Germany are already taking responsibility for post-consumer waste by collecting products at municipal waste sites. It behooves them to make their products as recycleable as possible to reduce costs of the process.

Three states in the U.S. have promulgated electrical waste legislation and bills are pending in a dozen others. The most important law, in California, requires consumers to pay a recycling fee at the time of purchase and does not create an incentive for OEMs to design products differently.

The European Union (EU) is also ramping up recycling targets in its End-of-Life vehicle directive from 75 to 95 percent through 2015. Another factor that will encourage design for recycling is the soaring cost of materials. Price escalation in aluminum, steel, copper and zinc is "scary," says Bo Andersson, General Motors' top buyer. While GM is already a leading recycler, the economic incentive is growing for other OEMs.

Hewlett Packard's Headstart

One of the leaders in design for disassembly and recycling globally is Hewlett Packard, one of the founding members of the European Recycling Platform, which is establishing the framework for WEEE compliance in much of Europe.

HP established a goal in 2004 to recycle 1 billion lb of electronic waste (including printer cartridges) and hit that target last summer, six months ahead of schedule. Its new target is another billion pounds by the end of 2010.

"Starting 15 years ago there was very conscious effort to design products so that they could be recycled," says John Frey, who chairs HP's Environmental Strategies Council. "And the reason for that is we had started recycling 20 years ago and we were running into difficulties with the ways things were put together.

In HP's view, design for easier disassembly required embracing simpler solutions to assembly. "We now use a common screw form factor all the way through," says Frey. "In the good old days, subassemblies

might have been held together with a Phillips head screw; main assemblies might have been held together with a flathead or a torque screw. So what we found in disassembling is that the person had to keep switching screw drivers.”

The cases for desktop PCs used to be held together with five screws. “Now a lot of business PCs have a latch where you pull the latch and the whole side comes off,” says Frey. Battery case covers are now designed so they are integral to the battery, rather than functioning as a separate piece.

Other changes:

- No more adhesives.
- Use of more metals, which are more easily recycleable than plastics.
- Use of plastics families, rather than chemically disparate plastics.
- More snap fits.
- Clear markings indicating types of plastic used.

HP prefers to use simple, off-the-shelf assembly technology. For the most part, new assembly technology has not been developed specifically for design for recycling. However, significant technology has been developed for design for disassembly for maintenance purposes.

One example of a new product that serves both purposes well is the Avdel Rivscrew, which combines the speed of rivet placement with the removability of a screw. Phil Szuba, general manger of Avdel North America told *Design News* that Rivscrew PL fasteners are up to six times faster to install than self-tapping screw and nut or screw and washer assemblies. They’re targeted at a variety of applications, including several in the automotive and electronics categories, such as computer printers. The screws are aimed at plastic assemblies.

PennEngineering also has several products aimed at design for disassembly, whether for maintenance or recycling purposes. The primary product line, self-clinching fasteners, provides permanent threads in thin metal sheets. Only mating hardware is needed for final assembly — and disassembly is just as simple, says a PEM spokesman. The line extends to inserts for plastic assemblies, too, with all the disassembly benefits.

In addition, some standoff fasteners (for stacking or spacing PC boards) allow users to “snap boards on” and then “snap them off” without tools.

“First and foremost we design for assembly,” says Leon Attarian of PennEngineering, Danboro, PA, “but the reverse of that can also be true. We are trying to eliminate a lot of the loose hardware, nuts, bolts, washers, things like that, so that when you’re putting things together you don’t have to deal with all of these components. And at the other end of it, when you are disassembling you don’t have to worry about stuff falling all over.”

Another company that offers products for fast disassembly is Asymmetric Fasteners Inc. of Hackettstown, NJ. Referring to a product called Torksleeve M, President Tad Staniszewski says “To disassemble these components from the shaft or disassemble shafts from metal or plastic wall takes seconds. Just loosen up the nut ($\frac{1}{2}$ to $\frac{3}{4}$ turn) and slide components from the shaft.”

Keep It Simple

Design for disassembly isn’t so much a matter of special technology, however.

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“Our view of design for disassembly is very much as it is for the design for assembly,” says Winston A. Knight, professor of industrial and systems engineering at the University of Rhode Island and author of several books on industrial design. “If you concentrate on simplifying the overall product by reducing the number of parts then this has just as much impact on disassembly as it does on assembly.”

Knight helped develop a software package on design for disassembly for software firm Boothroyd Dewhurst Inc. of Warwick, RI. It was first rolled out in the 1990s and is being revamped again in anticipation of increased interest because of the EU directives. “The thinking is that if you want to meet the EU directives, a company is going to have to say that a certain percentage of this product is recyclable or reusable,” he says. The software also provides information on financial impact of disassembly and disposal for different design options.

One of the key aspects of the program indicates materials preferences and their recycling potential. Design engineers get quick alerts to avoid materials such as lead that are restricted substances. Other materials such as polyvinyl chloride and plastics with brominated flame retardants are indicated as non-preferred.

Materials selection is also a big part of the Hewlett Packard approach. HP has phased out brominated flame retardants and most PVC. Power cables are jacketed with PVC at HP and elsewhere because no safe alternative exists. The materials push at HP is to take its own recyclate back and use it in high-end applications, sometimes even above its original use. Recycled polyethylene from HP printer cartridges is compounded with glass fiber, recycled polyethylene terephthalate (PET) from soda bottles and other materials into a plastic that replaces polycarbonate on a piece that holds the light source on optical scanners. “The structural stability of that piece is very important for optical clarity,” says HP’s Frey. It’s not only a good environmental move; the cost of the new compound is less than PC. The recycled material is referred to as RPET.

The design for recyclability process requires a rigorous design engineering protocol, particularly considering much of electronics design now takes place by third parties all over the world.

“One of the things we recognized early was the necessity to embed our design for recyclability standards in our design standards in each of our groups designing new products,” says Frey. Environmental managers participate in new product development with design engineers.

Source: Designnews.com

3. France expects to meet WEEE collection target!

- *The country will "very soon" meet the annual collection target of 4 kg per inhabitant set for 2008!*
- *The national average reached 3.4 kg in August 2007 and continued to rise!*

The French environment ministry is confident that the country will "very soon" meet the annual collection target of 4 kg per inhabitant set for 2008 in the EU Directive on Waste Electric and Electronic Equipment (WEEE). The ministry reported on Wednesday that the national average reached 3.4 kg in August 2007 and continued to rise. The collection system started operating on 15 November 2006.

Source: EUWID