Volume 12, No 1

PRODUCT SAFETY ENGINEERING NEWSLETTER

IEEE

PSES
Product Safety Engineering Society

What's Inside

New Editor's Message

Dear Readers,

Nice meeting you! Allow me to introduce myself. My name is Wen-Chung Kao, and I am the new editor of the Product Safety Engineering Newsletter beginning with the next issue. I am based in Taipei, the capital of Taiwan. I am married and have two children. My older daughter is at university studying electronic engineering, and my other child is still in high school.

In my day job I am the Dean of School of Continual Education at the National Taiwan Normal University. If you are wondering about the term "Normal," it is just a Chinese way of saying "being the standard." It is difficult to translate and may leave English-speaking people wondering. Prior to the education job at the University, I worked in industry in R&D labs. In 2001, I led a team that developed the first electrophoretic display system in Taiwan. Most of the industry work involved signal processing, especially for digital cameras and video applications.

My time in industry made me aware of the importance of safety engineering. I was involved with a digital camera project that had a serious safety problem. I led the team to a break through and made the product a success. There is really no point in having the most efficient and most aesthetic design in the world, if it is unsafe. Reflecting on design safety, we know that today's society is far more safety conscious than even 20 years ago. However, products established a long time ago that we might deem unsafe by today's standards are still being sold. An example is a motorbike. If it were invented in 2015, it would most likely not be able to meet safety requirements. Our job as safety engineers is to make sure that new products are designed to be safe. Thus it is interesting to see hover-boards being sold, despite the feedback that they are not really safe. There are many reports of people being injured, yet some people still let their children use them.

I hope that you will find the newsletter interesting. I will work on providing articles of interest to safety engineers. But to make the newsletter more valuable to you I need your support! Please send me your Chapter news. The newsletter can be an effective tool for chapters to communicate with their members. If you are a consultant or involved in safety engineering, you may consider contributing articles that are of interest to our readers. Writing for the newsletter provides an opportunity to show the world that you are an expert. Why not use this chance to boost your popularity and hear the echoes! I am also open to suggestions on regular columns for the newsletter.

Let's all work together and make the newsletter something special, a publication you look forward to receiving because it contains information and news that helps develop your professional skill base.

I look forward to serving the Product Safety Engineering Society's members with this newsletter.

Please feel free to communicate with me at any time.

Wen-Chung

jungkao@ntnu.edu.tw

The Product Safety Engineering Newsletter is published quarterly during the last month of each calendar quarter. Closing dates for articles, news items, and advertising:

1Q issue: February 15
2Q issue: May 15
3Q issue: August 15
4Q issue: November 15

Volume 12, No. 1 - March 2016

Chapter and TAC Safety Probes

News about Chapters and Technical Activity Committees

To see current chapter information and people looking to start chapters please go to the Chapter page at: http://www.ieee-pses.org/Chapters/index.html

Technical Activity Committee information can be found at: http://www.ieee-pses.org/technical.html

Chapter Coordinator Column

As PSES Chapter Coordinator, my goal is to help all of our chapters to provide meetings and activities for local members. I plan to have a few remarks and some chapter news in each Newsletter.

I'm not going to go over my background with PSES and its predecessor EMCS TC-8. My articles as president back in 2010 and 2011 cover that. My roles as a Santa Clara Valley Chapter officer in the early '90s give me a perspective of at least one template of what a dynamic chapter might be. The monthly chapter meetings and other activities are what encouraged me about the merits of having an organization for our profession of product safety and compliance engineering, similar to what the AMA is for doctors. I hope this concept can build value for our current IEEE PSES members and potential future members.

Upcoming ISPCE2016 – Chapter Annual Meeting

We will have a one-hour slot for a chapter annual meeting. This will be our opportunity to discuss and brainstorm ways to combine resources and improve chapter programs while, hopefully, reducing the workload for chapter leaders. I have encouraged every chapter to send representatives to the conference and be a part of our Annual Meeting. Over the years, there has been general agreement that the most valuable part of the conference is the network and synergy that results from the face-to-face interaction at the conference. Since this year's conference is in Orange County, California, I am sure there will be many attendees from our Orange County and San Diego Chapters, but I am hoping we will get ideas from our other regions as well.

Chapter of the Year Award

I hope to work with every chapter to build a program to submit for the CotY Award, thus building the prestige of the annual award. Each chapter functions somewhat differently. Each local area is geographically different; the technical areas of interest are to some degree different; available resources, e.g. sponsor support and meeting venues, are different; even the local climates and transportation issues are different. On a global scale, cultures are different. My opinion is that bridging these differences is opportunity for creativity and development that can benefit us all.

In any case, there are many parameters to consider for CotY, but it boils down to value for the membership and steadily increasing our membership. I plan to work with every chapter to see what we can accomplish.

Keep in mind that one of the benefits of helping lead a chapter is leadership growth. Starting from hesitatingly getting in front of a small group of colleagues to gaining a worldwide reputation as a leader in the field is the well-worn pathway that thousands have followed in IEEE. Being a part of winning CotY is a big step in this development.

Chapter Mentors

We need experienced leaders to provide support for chapters. I would call on all PSES directors to support the chapters in their area. Past chapter officers should also feel an obligation to offer their experience, leadership, and help as needed.

Personally, I would prefer an informal arrangement where one or more experienced society and chapter leaders work with chapter "executive committees" consisting of current and aspiring chapter officers. Each chapter is different, so I would encourage each chapter to build a leadership dynamic. As a pretty diverse profession, PS and Compliance engineers, managers, and administrators benefit from interesting meetings on a wide range of topics. I certainly have.

More ideas on this will be in future columns. I'm also hopeful to develop the concept of chapter mentors and executive committees at our Chapter Annual Meeting in Anaheim.

IEEE Sections

I would be remiss if I did not briefly mention the importance of the local IEEE sections to their respective

PSES chapters. A good chunk of IEEE dues go to IEEE sections to provide chapter support in the form of guidance and funding. IEEE society chapters are considered "children of the section." Most sections have a lot to offer their chapters and are really serious about wanting to help.

Then what does the PSES do for chapters? Well, we're here to provide technical support and leadership from within our profession. I will certainly elaborate on this in future columns. The bottom line is that IEEE provides tremendous resources for our enrichment and success.

Chapter News

Central New England (aka Boston) – Steve Brody is working to get this chapter up and running. Please contact him with your ideas if you are in the Central New England area.

From Steve Brody: The Boston Chapter of the PSES will host a mini-ISPCE in November 2017, The format will follow those of the main ISPCE and will feature technical presentations from basic product safety through specific issue/concern related topics.

We intend to have tracks for various New England industry focused segments of product safety including consumer products, medical, measurement and control equipment, machinery, semiconductor, and test equipment. We will also try to use local experts as much as possible.

There will also be room for exhibitors to display their products and services.

More information will be provided in the coming months. If you would like to be part of the planning committee for this event please contact Steven Brody at sbrody@ieee.org or stevenb@productehsconsulting.com.

Dallas – Jonathan Jordan reports they had four meetings in 2015 and one so far this year. They had one joint meeting in 2015 with the Austin [Central Texas] chapter, and plan more.

Madras, India – V. Jayaprakasan reports that on 20 February they held an Executive Committee meeting to consider their 2016 program.

North Jersey – This chapter is being run as a joint EMCS/PSES group. Dan Roman reports that he has enough volunteers for presentations but lacks the time to organize the meetings. He has received some emails asking about their next meeting. Come on Northern New Jersey people! Lend Dan a hand! If four or five people share the duties, it's not that much work and doesn't take much time. And you'll benefit from the chapter meetings.

Orange County and San Diego, California – Together they will be hosting this year's ISPCE. I hope we will see everyone in the region at our conference and sharing ideas to build chapters.

Santa Clara Valley Planning –

Clockwise from bottom left: Ken Gross (webmaster), Homayon Homayoni (secretary), Jon Derickson (past treasurer), Cherie Forbes (chapter chair) and Azim Karimi (treasurer) – photos by MM

On February 24, the SCV Chapter held an executive meeting. Primary focus was on the meeting schedule and possible meeting topics/speakers. Other possible activities were discussed, along with a review of past, successful activities such as the tour of the Stanford Linear Accelerator. Other important areas: keeping the SCV website up to date, developing a calendar with several months of future meetings, surveying members for areas of interest and expertise, potential joint meetings with other IEEE societies or other groups, interacting with

other PSES chapters, ISPCE2016 participation, judging at the regional science fair, and possible chapter/society merchandise. The group spent some time considering ways to boost PSES membership and ways to win Chapter of the Year.

Sydney, New South Wales, Australia – Stefan Mozar (our PSES VP of conferences) reports that after many years of effort a joint Consumer Electronics/Broadcast Technology/PSES Chapter is in the final stages of formal IEEE chapter formation in the NSW Section.

Some of the activities so far and planned for 2016:

1) Paul Robinson's talk on button cell batteries and child safety (the talk he gave in Chicago).
2) 17-18 March Bio-medical Workshop at the University of Sydney.
3) Healthcare & Engineering "Winter School" June 2016.
4) Contribution to Metropolitan Area Workshop, August 2016, Sydney.
5) DL talk on Wireless Charging August 2016.

From time to time, many PSES members travel to Sydney. By all means check if it's possible for you to attend one of their meetings.

Taipei – Flore Chiang reports, "last year we tried out new approaches for Taipei chapter meetings, please click the following and take a look. Check out Product Compliance Managers - IEEE PSES Taipei Chapter on Meetup"

http://www.meetup.com/Product-Compliance-Managers-IEEE-PSES-Taipei-Chapter/

Summer's meetup (03 Jul, 2015): http://meetu.ps/2Jcshp

Autumn's meetup (11 Sep, 2015): http://meetu.ps/2VDcsh

Virtual – This chapter is for our members who are spread out over the globe who are not near local PSES chapters. Mariel Acosta-Geraldino, our VP of Member Services, is putting together a committee to consider how to connect in a chapter-like environment over the Internet. There are some working templates, and the technology is available to handle and record meetings. All that is really needed to get this up and running is loading her committee with people motivated to get it active.

And so...

Please contact me (Murlin Marks; murlinm@ieee.org) with your comments and suggestions. Please send notes with photos from your meetings with names of those shown in the photos. That will help liven this column up!

Telecom Safety TAC

The group has been recently discussing power semiconductor converter systems (PSCS) and how they relate to safety standards covering solar photovoltaic energy systems, wind turbines, fuel cell technologies, and electrical systems in general that incorporate any or all of the above as many are affecting the design and safety of telecom systems.

Other topics being discussed on remote radio unit (RRU) DC feed protection, GR-487-CORE Issue 5 continuing discussion, and IEC updates.

For information about the TSTC contact Don Gies at Don.Gies@ALCATEL-LUCENT.COM. Meetings are generally held on the last Wednesday of the month.

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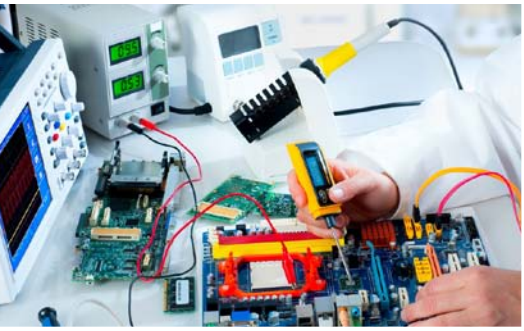

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Call for BoD Nominations

Upcoming elections of Members at Large for 2017

Nominations for the upcoming Election of Members at Large for the IEEE PSES Board of Directors are currently open!

Becoming more involved in the PSES is as easy as joining a local Chapter, volunteering for one of our Symposia or Workshops, or getting involved with the Board of Directors.

The Board of Directors is the governing body for our Society. The Board constantly strives to provide more and new value to our members through various offerings as part of the IEEE and as related to our Field of Interest. One way to help or have some influence on what we do is to become active in our Board. This can be done in a number of ways:

- Our meetings are open – you can always attend our meetings (they are typically held by teleconference, so it is easy)
- You can become active in one of the standing or interim committees of the Board
- You can become a 'Member at Large' of the Board
- You can become an Officer of the Board

Currently we are looking for Nominations for 'Members at Large' for the Board. We elect four (out of 12) new 'Members at Large' every year for a three-year term. This helps provide continuity to our activities but also brings in new energy and ideas each year. Being a 'Member at Large' is a great way to get involved in the Board – it allows you to have direct input on our future plans. It is a good way to 'test the waters' to see if you would like to become an officer of the Board.

I hope you consider nominating yourself or someone else for the upcoming elections so we can welcome some new members to the Board starting in 2017.

For more information, see the "Call for PSES Board of Directors Nominations for 2016" on the next page. If you want to learn a little more about the Board and Board-related positions, please take a look at our Constitution and By-Laws; they are on the website http://www.ieee-pses.org/ under "About PSES" on the main menu bar.

A Microsoft Word template for the BoD Candidate Nomination Form is available online on the PSES web site at http://www.ieee-pses.org/docs/BoD-Candidate-Nomination-Form-2016-FINAL.docx.

If you have any questions, please contact one of our current Board Members or myself kevin.l.ravo@ul.com.

Kevin L. Ravo

Immediate Past President

IEEE PSES

Call for PSES Board of Directors Nominations 2016

Candidate nominations are now being accepted for the 2016 IEEE annual elections for Director-at-Large positions on the IEEE Product Safety Engineering Society (PSES) Board of Directors, for a three-year term beginning January 1, 2017.

Candidates should possess professional stature and significant technical skills in product safety and compliance engineering. They must have adequate financial support outside the Society and have the approval of their organizations or employers to actively participate in the Board meetings and contribute to its activities. Duties include attending one face-to-face meeting per year, typically held along with the ISPCE, as well as our monthly BoD teleconferences. In addition, members are expected to actively participate in BoD committees.

To be eligible for consideration, candidates must be full, **higher grade members** (i.e., excluding those of students and affiliates) of the IEEE and members of the PSES **in good standing** (i.e., dues paid).

Elected Directors will be expected to serve a **three-year term** commencing January 1, 2017. Attendance at the last meeting of the 2016 year is also encouraged. No member can serve more than two (2) consecutive three-year terms, including partial terms.

Nominations for candidates who are interested and willing to serve shall be submitted to the Nominating Committee using the **BoD Candidate Nomination Form,** including the following material for inclusion in the ballot:

(1) **Personal biography – Technical and Professional Experience**, not to exceed 125 words in length, intended to round out the profile of the Nominee's experience outside the IEEE and PSES activities.
(2) **Factual summary of IEEE/PSES Activities**, not to exceed 150 words in length, intended to summarize your current and past service to the IEEE and the PSES.
(3) **A candidate photograph** taken no earlier than 1 August 2015. A digital photograph can be submitted electronically in either TIF or high-quality JPEG format. The photo should be the original digital file, 300 dots per inch (dpi) resolution.
(4) **Statement of candidacy**, not to exceed 150 words in length

A Microsoft Word template for the **BoD Candidate Nomination Form** is available online on the PSES web site at http://www.ieee-pses.org/docs/BoD-Candidate-Nomination-Form-2016-FINAL.docx.

Please submit the elections material including the BoD Candidate Nomination Form with digital photograph to the Nominating Committee Chair: Kevin Ravo, e-mail: kevin.l.ravo@ul.com

Qualifying nominations and all supporting documentation must be provided to the N&A Committee **no later than May 30, 2016** to be considered.

If you have any questions, please contact Kevin Ravo or any other member of the PSES Board of Directors http://ewh.ieee.org/soc/pses/bod.html.

News and Notes

Compliance News Shorts

News To Know

Standard Updates:

CISPR 16-1-3:2004/AMD1:2016 - Amendment 1 - Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-3: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Disturbance power

EN 55020:2007/A12:2016 - 2/12/2016 - Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement

EN 60065:2014/AC:2016 - 1/29/2016 - Audio, video and similar electronic apparatus - Safety requirements

EN 60335-2-14:2006/A12:2016 - Household and similar electrical appliances - Safety - Part 2-14: Particular requirements for kitchen machines

EN 60598-1:2015/AC:2016 - 1/29/2016 - Luminaires - Part 1: General requirements and tests

EN 60601-2-33:2010/AC:2016-03 - 3/4/2016 - Medical electrical equipment - Part 2-33: Particular requirements for the basic safety and essential performance of magnetic resonance equipment for medical diagnosis

EN 60601-2-66:2015 - Medical electrical equipment - Part 2-66: Particular requirements for the basic safety and essential performance of hearing instruments and hearing instrument systems

EN 60695-11-20:2015/AC:2016 - 2/5/2016 - Fire hazard testing - Part 11-20: Test flames - 500 W flame test method

EN 61000-4-13:2002/A2:2016 - 3/18/2016 - Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity tests

EN 61000-4-16:2016 - 3/18/2016 - Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz

EN 62368-1:2014/AC:2015 - Audio/video, information and communication technology equipment - Part 1: Safety requirements (IEC 62368-1:2014, modified)

EN ISO 13485:2016 - 3/2/2016 - Medical devices - Quality management systems - Requirements for regulatory purposes (ISO 13485:2016)

IEC 60320-1:2015/COR1:2016 Corrigendum 1 - Appliance couplers for household and similar general purposes - Part 1: General requirements

IEC 60335-2-14:2016, Ed. 6.0 - (03/18/2016) - Household and similar electrical appliances - Safety - Part 2-14: Particular requirements for kitchen machines

IEC 60335-2-23:2016, Ed. 6.0 - (03/18/2016) - Household and similar electrical appliances - Safety - Part 2-23: Particular requirements for appliances for skin or hair care

IEC 60335-2-87:2016, Ed. 3.0 - (03/18/2016) - Household and similar electrical appliances - Safety - Part 2-87: Particular requirements for electrical animal-stunning equipment

IEC 60601-2-10:2012/AMD1:2016, Ed. 2.0 - 2/19/2016 - Amendment 1 - Medical electrical equipment - Part 2-10: Particular requirements for the basic safety and essential performance of nerve and muscle stimulators

IEC 60601-2-19:2009/AMD1:2016, Ed. 2.0 - 2/12/2016 - Amendment 1 - Medical electrical equipment - Part 2-19: Particular requirements for the basic safety and essential performance of infant incubators

IEC 60601-2-20:2009/AMD1:2016, Ed. 2.0 - 2/12/2016 - Amendment 1 - Medical electrical equipment - Part 2-20: Particular requirements for the basic safety and essential performance of infant transport incubators

IEC 60601-2-21:2009/AMD1:2016, Ed. 2.0 - 2/12/2016 - Amendment 1 - Medical electrical equipment - Part 2-21: Particular requirements for the basic safety and essential performance of infant radiant warmers

IEC 60601-2-3:2012/AMD1:2016, Ed. 2.0 - 2/19/2016 - Amendment 1 - Medical electrical equipment - Part 2-3: Particular requirements for the basic safety and essential performance of short-wave therapy equipment

IEC 60601-2-33:2010/COR2:2016 Corrigendum 2 - Medical electrical equipment - Part 2-33: Particular requirements for the basic safety and essential performance of magnetic resonance equipment for medical diagnosis

IEC 60601-2-44:2009/AMD2:2016 - Amendment 2 - Medical electrical equipment - Part 2-44: Particular requirements for the basic safety and essential performance of X-ray equipment for computed tomography

IEC 60601-2-6:2012/AMD1:2016, Ed. 2.0 - 2/19/2016 - Amendment 1 - Medical electrical equipment - Part 2-6: Particular requirements for the basic safety and essential performance of microwave therapy equipment

IEC 60695-11-20:2015/COR1:2016 Corrigendum 1 - Fire hazard testing - Part 11-20: Test flames - 500 W flame test method

IEC 60695-1-20:2016 Fire hazard testing - Part 1-20: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - General guidance

IEC 60950-22:2016 Information technology equipment - Safety - Part 22: Equipment to be installed outdoors

IEC 61000-1-2:2016, Ed. 1.0 - 2/5/2016 - Electromagnetic compatibility (EMC) - Part 1-2: General - Methodology for the achievement of functional safety of electrical and electronic systems including equipment with regard to electromagnetic phenomena

IEC 61000-4-13:2002/AMD2:2015, Ed. 1.0 - Amendment 2 - Electromagnetic compatibility (EMC) - Part 4-13: Testing and measurement techniques - Harmonics and interharmonics including mains signalling at a.c. power port, low frequency immunity test IEC 60950-22:2016, Ed. 2.0 - (1/7/2016) - Information technology equipment - Safety - Part 22: Equipment to be installed outdoors

IEC 61000-4-16:2015, Ed. 2.0 - Electromagnetic compatibility (EMC) - Part 4-16: Testing and measurement techniques - Test for immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150 kHz

IEC 61140:2016 Protection against electric shock - Common aspects for installation and equipment

IEC 62532:2011/AMD1:2016 Amendment 1 - Fluorescent induction lamps - Safety specifications

IEC 62911:2016 Audio, video and information technology equipment - Routine electrical safety testing in production

IECEE TRF 60335-2-2&3&54:2016 This Test Report Form applies to: IEC 60335-2-2:2009 (Sixth Edition) + A1:2012 and IEC 60335-2-3:2012 (Sixth edition) + A1:2015 and IEC 60335-2-54:2008 (Fourth Edition) + A1:2015 for use in conjunction with IEC 60335-1:2010 (Fifth Edition) + A1:2013

IECEE TRF 60335-2-2:2016 VH - This Test Report applies to: IEC 60335-2-2:2009 (Sixth Edition) + A1:2012 in conjunction with IEC 60335-1:2010 (Fifth Edition) (incl. Corrigendum 1:2010) and Corr. 2:2011 + A1:2013

IECEE TRF 60335-2-24:2016 VP - This Test Report applies to: IEC 60335-2-24:2010 (Seventh Edition) + A1:2012 in conjunction with IEC 60335-1:2010 (Fifth Edition) incl. Corr. 1:2010 and Corr. 2:2011 + A1:2013

IECEE TRF 60335-2-65:2016 VH - This Test Report Form applies to: IEC 60335-2-65:2002 + A1: 2008 + C1:2004 + A2: 2015 (Second Edition) in conjunction with IEC 60335-1 2010 (Fifth Edition) incl. Corr. 1:2010 and Corr. 2:2011 + A1:2013

IECEE TRF 60335-2-89:2016 This Test Report applies to: IEC 60335-2-89:2010 + A1:2012 + A2:2015 in conjunction with IEC60335-1:2010 + A1:2013 (Fifth Edition)

IECEE TRF 60601-2-37:2016 VF - This Test Report Form applies to: IEC 60601-2-37 (ed.2), am1 for use in conjunction with IEC60601-1 (ed.3), am1 with Corr1 and Corr2

IECEE TRF 60601-2-8:2016 This Test Report applies to: IEC 60601-2-8:2010 (Second Edition) + A1 for use with IEC 60601-1:2005 (Third Edition) + CORR.1:2006 + CORR.2:2007 + A1:2012

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The 6th IEEE International Conference on Consumer Electronics – *Berlin*, 4 – 7 September 2016

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Conference Coordinators
Charlotte Kobert
IEEE CE Society, US
Jasmin Kayadelen
VDE/ITG, DE

CALL FOR PAPERS

The 6th IEEE International Conference on Consumer Electronics – Berlin ("ICCE-Berlin") will be held from the 4th to 7th September 2016 in Berlin in parallel with the IFA, the leading trade show for Consumer Electronics and Home Appliances. The ICCE-Berlin is the European sister conference of the IEEE Consumer Electronics Society's flagship conference "ICCE" held annually in Las Vegas in conjunction with the Consumer Electronics Show. Now in its 6th edition, ICCE-Berlin is well established and fully integrated in the IFA and continuously growing. This year again the IEEE CE Society is joining forces with other IEEE societies to broaden and strengthen the CE subjects and scope of the conference: the EMC Society, the Product Safety Engineering Society, the Reliability Society, and the Society of Social Implications of Technology.

Berlin, a birthplace of consumer electronics, is one of Europe's most exciting cultural centres and a vibrant city. The conference will again bring together researchers and engineers from industry, research centres, and academia to exchange information and results of recent work on systems, circuits, technologies, processes, and applications. It will provide an excellent forum for the researchers, system developers, and service providers to share their ideas, designs and experiences in such a proper environment as the IFA. We have some of the world's leading experts giving keynote speeches, and also high quality tutorials as well as panel discussions. There will be a doctoral workshop as well as a seminar and a social event for Young Professionals.

IEEE 2016 ICCE-Berlin is asking you for submissions of technical papers for oral and poster presentations. Prospective authors are invited to submit a 2-page abstract in any of the technical areas below as well as in other areas related to **consumer electronics.** The final paper may extend up to 5 pages. All accepted and presented (!) papers will be submitted to IEEE Xplore for publishing. Student papers are particularly encouraged. The conference especially covers the following subject areas:

- **Audio and Video Technology**
- **Entertainment and Games**
- **Car Electronics**
- **Consumer Networks**
- **RF & Wireless**
- **Human-Device Interaction**
- **Sports, Wellness and Home Healthcare**
- **Smart Energy**
- **Product Safety Engineering**
- **Sustainable Electronics**

The conference committee particularly welcomes contributions related to consumer electronics from the associated IEEE societies of electro-magnetic compatibility, life sciences, product safety engineering, reliability, and social implications of technology.

President IEEE CE Society
Sharon Peng, US

VDE Chair
Ralf Schäfer, DE

IEEE CE Society VP of Conferences
Stephen Dukes, US

Liaison to CE Society
Steve Diamond, US

Leaders of the joining IEEE societies:

Bob Scully, Electro Magnetic Compatibility Society

Mike Maynard, Product Safety Engineering Society

Christian Hansen, Reliability Society

Dona Hudson, Life Sciences Technical Community

Greg Adamson, Society on Social Implications of Technology

Important Dates

Abstract Submission Deadline:
10 March 2016

Notification of Acceptance:
15 April 2016

Final Paper Submission Deadline:
15 May 2016

Paper Submission
at the ICCE-Berlin website www.icce-berlin.org

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Legal Column

Martin Ahlhaus

REACH: ECJ Ruling on SVHC

ECHA Guidance on requirements for substances in articles updated

PSEN includes a regular column on product compliance from the European perspective. The column is provided by Noerr LLP's Product Compliance Team. This column follows up on the News and Notes REACH updates in the previous two newsletters.

By judgment of 10 September 2015 (C-106/2014), the ECJ, in response to a request for a preliminary ruling, specified the communication and information obligations according to Article 7(2) REACH and Article 33 of Regulation (EC) No. 1907/2006 (REACH). The ECJ commented in particular on the question of whether the legal obligations concerning substances of very high concern (SVHC) apply to the "assembled article" when an article is composed of several elements or to each of its elements (cf. IEEE PSES Product Safety Engineering Newsletter, Volume 11, No. 3, p. 8). Following this ruling, the European Chemicals Agency (ECHA) published an updated version of its Guidance on requirements for substances in articles.

A. Background

The judgment was preceded by litigation over many years as to whether, according to the above provisions, the assembled article or its elements should be relied upon. The latter was the case according to some Member States (inter alia, Germany, France and Sweden) while the Commission, ECHA and other Member States relied only on the assembled article in its entirety as being the relevant reference.

The French authorities issued a notice based on the 1O5A approach, ("once an article, always an article"), as the standard for the enforcement of Article 7(2) REACH and Article 33 REACH – an interpretation which differed from opinion of the European Commission and ECHA. The French authorities emphasized in that notice that the term "article" includes all elements corresponding to the definition of "article" within the meaning of the REACH Regulation. That is, which "during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition" (Article 3(3) REACH). According to the French authority, it follows that an article can be assembled from one or more elements which fulfill the definition of the term "article" and, that therefore, the provisions of Article 7(2) REACH and Article 33 REACH apply to each of these elements.

Two industrial associations in France filed a claim contesting this interpretation, and the court concerned requested a preliminary ruling from the ECJ on the following question:

> *"Where an article within the meaning of the REACH Regulation is composed of several elements which themselves meet the definition of article given by the Regulation, are the obligations resulting from Article7(2) and Article 33 of the Regulation to apply only with regard to the assembled article or with regard to each of the elements which meets the definition of article?"*

The ECJ therefore had to decide whether the thresholds specified in Article 7(2) and Article 33 REACH for the concentration of SVHC of 0.1 % (w/w) must be ascertained in relation to the entire weight of the assembled article or in relation to each of the elements contained therein qualifying as an article in terms of Article 3(3) REACH.

B. Decision of the ECJ

The ECJ decided that any article, even an element of an assembled article, falls under the communication and information obligation in question if it is an article in the meaning of the REACH Regulation and contains SVHC in a concentration of more than 0.1 % (w/w).

In the opinion of the ECJ, the REACH Regulation does not provide separately for the case of an article assembled from a number of articles. It follows in the opinion of the

court that no distinction is to be made between articles which are elements of an assembled article and articles which are not. This applies in particular since the REACH Regulation contains no provision from which it could be derived that an article once manufactured or imported would lose its classification as an article by becoming an element in assembled articles. In addition, the ECJ emphasized that the purpose of the REACH Regulation – ensuring a high level of protection of human health and the environment – indicates, on one hand, that ECHA should be informed to the greatest possible extent about the use of SVHC in articles. On the other hand, that an information obligation along the entire supply chain up to the consumer should be ensured.

However, the ECJ distinguishes between the obligations under Article 7(2) REACH and those under Article 33 REACH.

I. Notification duties according to Article 7(2) REACH

With regard to the duty of notification provided for in Article 7(2) REACH, the ECJ emphasized that producers of (assembled) articles state the content of substances of very high concern only in relation to the articles actually made by them if the content of substances of very high concern exceeds 0.1% (w/w). In the opinion of the ECJ, this restriction is necessary since the REACH Regulation relies on the producer's own contribution (cf. Article 7(2) REACH) and "double reporting" is intended to be avoided. For importers of (complex) articles, there is, therefore, no relief because the legal duty of notification is to be complied with in relation to each single imported (part) article containing substances of very high concern in a concentration of more than 0.1 % (w/w).

This means in practice that in supply chains with various levels, any duties of notification for (part) articles are to be performed always only by the producer or importer of the article "added" by itself in the course of the production process.

II. Information duties according to Article 33 REACH

With regard to the information duties according to Article 33 REACH, the ECJ emphasized that producers and importers of (complex) articles are obliged to provide information on substances of very high concern in concentrations of more than 0.1 % (w/w) in respect of each (part) article supplied by them with the (complex) article.

Contrary to what was provided still in the final submission of the advocate general, the ECJ did not restrict the information obligation to the actual "information present." Therefore, it is still necessary that all participants on the markets obtain clarity about the content of SVHC in any articles in order that they can comply with their own information duties.

In practice, this means that each supplier of a (complex) article must have reliable information on substances of very high concern in a concentration of more than 0.1 % (w/w) in all parts of the article so that it can appropriately comply with its own information obligation to subsequent participants in the supply chain or to consumers.

C. Updated guidance and practical effects

The ECJ judgment of 10 September 2015, therefore, has wide-ranging consequences for communication in the supply chain. It is still the case, that in principle, the supplier is subject to the obligation to provide information on substances of very high concern in (part) articles. The purchaser can, therefore in principle, rely on the supplier duly satisfying this obligation. In order to avoid risks of penalty – e.g. in Germany breaches of the communication and information obligations can in each case be penalized with a fine of up to EUR 50,000.00. Purchasers should ensure due implementation by amending the contractual conditions, and as a precaution, issue periodic reminders of the relevant obligations. For example, by explicit references to the current ECJ judgment and changes indicated thereby but also by occasional references to amendments of the list of SVHC (cf. http://echa.europa.eu/candidate-list-table), particularly if substances are included which may be expected in the actual supply relationship concerned.

Following the ECJ ruling of 10 September 2015 ECHA has published an updated version of its guidance on requirements for substances in articles (Version 3.0, Decem-ber 2015; cf. http://echa.europa.eu/documents/10162/13632/articles_en.pdf). Unfortunately, the new version of the guidance does not provide for any examples on the basis of the ECJ's ruling. Instead, ECHA only removed examples given in earlier versions of the guidance and outlined that the specific sections of the guidance will be updated in its next version after full consultation.

This notwithstanding the updated guidance unmistakably states that the substance concentration threshold of 0.1 % (w/w) referred to in Article 7(2) and Article 33 REACH applies to every article supplied, i.e. this threshold applies to each article of an object made up of more than one article, which were joined or assembled together.

It is to be hoped that the further update of ECHA's guidance on requirements for substances in articles provides

additional examples as well as recommendations to simplify communication processes within the supply chain - although it must be noted that there is only limited margin for ECHA against the background of the ECJ ruling of 10 September 2015. Companies affected should, however, carefully review future versions of ECHA's guidance and amend communication routines within their supply chain as well as contractual terms to the extent necessary. This in particular as market surveillance authorities in all EU Member States will pursue enforcement in this regard.

Example:

Application of ECJ Ruling and new ECHA Guidance on computers

A complex article like a computer consists of various individual articles which are relatively easy to identify as articles in terms of Article 3(3) REACH, e.g. display, keys, housing and cables. These parts qualify as articles and thus information obligations according to Article 33 REACH apply if such part contains a SVHC in a concentration of more than 0.1% (w/w).

But even parts of a computer can be complex articles consisting of various articles in terms of Article 3(3) REACH. A good example might be a printed circuit board. The board as such would, in general, be deemed an article according to REACH irrespective whether it is a single or double sided or even a multi-layer board and irrespective the specific manufacturing process (e.g. printing, graving, milling) as the specific shape, surface and design determining its function to a greater degree than does its chemical composition is reached only at the end of the manufacturing process.

Additional electrical components used to equip the board like capacitors, resistors or active devices, however, would qualify as individual articles in terms of Article 3(3) REACH and, thus, information requirements according to Article 33 REACH would apply if such component contains a SVHC in a concentration of more than 0.1 % (w/w).

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Noerr LLP is a European law firm founded in Germany with offices in Brussels, Alicante and various CEE-capitols. Noerr's Product Compliance Team advises its clients on all questions related to placing products onto the European market, defends them against complaints from European market surveillance authorities, and conducts product recalls.

Tying the electrical event to the equipment problem

Peter E Perkins, PE

Overview of the problem:

- Power company project to replace a buried conductor to a pad mounted transformer serving an industrial park
- Backhoe shorted a live, medium voltage distribution line to earth
- Power disturbance propagated throughout the industrial park
- Power surge severely damaged computer equipment
- Technical project is to tie the line short to the damaged equipment problem to collect damages.

As with many incidents, this technical review is requested a long time after the incident. Most of the information available comes from the collected records and depositions for the case. The original scene was rebuilt and most of the ruined equipment is no longer available for review.

The key question is can a reliable chain of events be established between the incident and the result? This evaluation works to firmly establish that relationship.

Figure 1: Restored transformer site picture

From site report: …' asked if we could trench around sidewalk. No locate (mark) on sidewalk area, after removed sidewalk dug down 18". Backhoe dug into C phase UG (underground) primary cable. Broke primary wire that was located wrong.'

Summarizing:

- Medium voltage line to pad mounted transformer being replaced
- Underground low voltage service to industrial park

– Location of incident under investigation about 1000 feet from transformer location as shown on site location map, Figure 2.

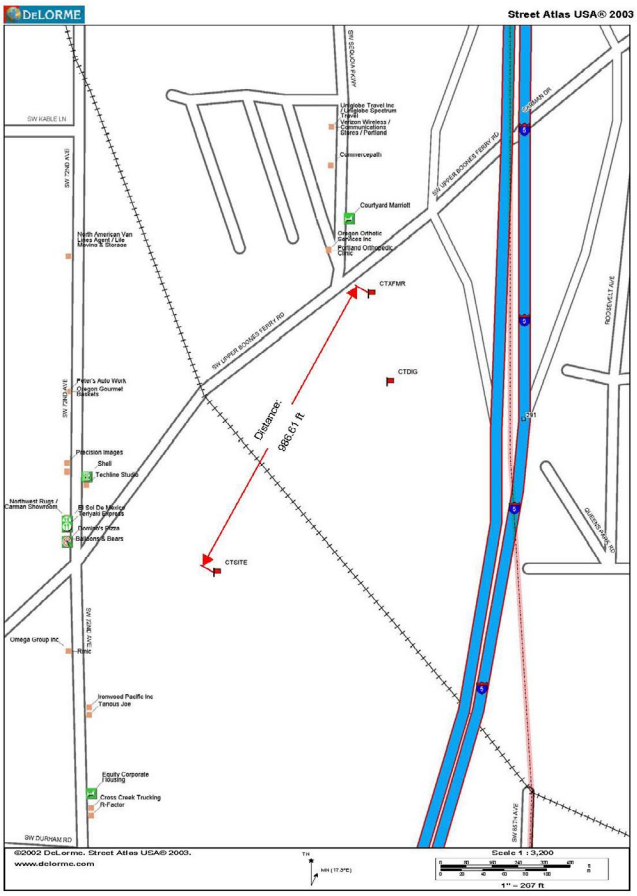

Figure 2: Site location map

This client was only one of many in this industrial park.

No discussion nor data provided as to how other businesses were affected.

The Client's Story:

- A huge electrical impulse hit the building one afternoon
- It arced and sparked at every electrical switch and outlet then the lights went out.
- When power was restored every computer in the place was fried except the server with UPS protection.
- The server never worked quite right – blue screen death (BSD) several times each day
- Backups were done daily, as was their practice
- Eventually, even though diligent effort by the IT folks, all the engineering database was lost

This small business was devastated by this event.

They believed that they had properly prepared to cover such events but, in the end, it didn't work out very well for them.

RAID Server Performance Review:

- The server was protected by a UPS which was fried by the surge impulse
- The server seemed to work, but BSD required a reboot several times a day
- Some files didn't work right
- The system was backed up each night as scheduled; two weeks of tapes were reused as needed
- After > 3 weeks of effort the RAID server board was replaced because of the ongoing problems
- The restored backup data was badly corrupted; drawings needed to be redone from scratch

The focus on the investigation was the RAID server as it was the only piece of equipment to (seemingly) survive the incident.

Development of the path from incident to the problem:

- Determine most probable impulse generated
- Size the impulse into the building
- What level of protection provided by the UPS & what residual impulse passed on
- How did computer handle the impulse
- What effect of residual impulse into the computer
- Effects of impulse on RAID board memory

The IEEE Guide on the Surge Environment in Low Voltage AC Power Systems, C62.41.1 tells us:

Abnormal, unintended conditions in a power system can produce surges. The intended (corrective) response of a power system to abnormal conditions can also produce side effects resulting in current or voltage surges. Examples of such conditions are described below.

Arcing faults result as insulation systems deteriorate and typically originate as a ground fault. Although smaller in magnitude than bolted faults, arcing faults can generate high heat and arc pressures, thereby escalating the carbonization of insulation material and progressing further to a phase-to-phase fault. In ungrounded systems, the inherent stray capacitance of the system permits **high frequency transients on the order of 2 to 3 times the peak line-to-ground voltage** to be impressed across equipment. Under resonant conditions, these surge magnitudes can be much greater.

Fault clearing by current-limiting fuses or fast-acting breakers that are capable of current chopping leave inductive energy trapped in the circuit upstream. If no low-impedance path is offered for the current flowing in the inductance at the time of current interruption, high voltages are generated. The resultant voltage surge applied to loads connected in parallel with the loads where the fault is being cleared can be exposed to surges of relatively long duration (hundreds of microseconds).

Power system recovery following a fault sometimes occurs with phase-by-phase re-closing. Operation of a single fuse in a three-phase system also produces single-phasing in the remaining circuits. Such abnormal conditions, while not producing surges as defined in this guide (twice the normal voltage and less than a half-cycle), need to be recognized.

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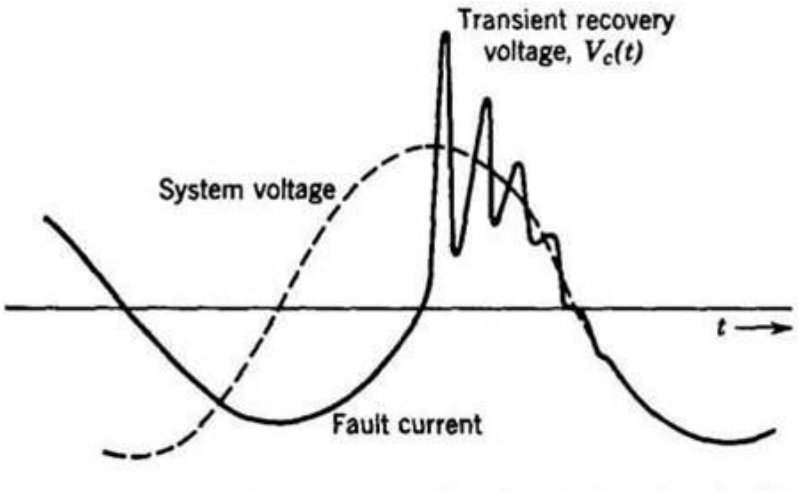

Figure 3: Fault generated impulse

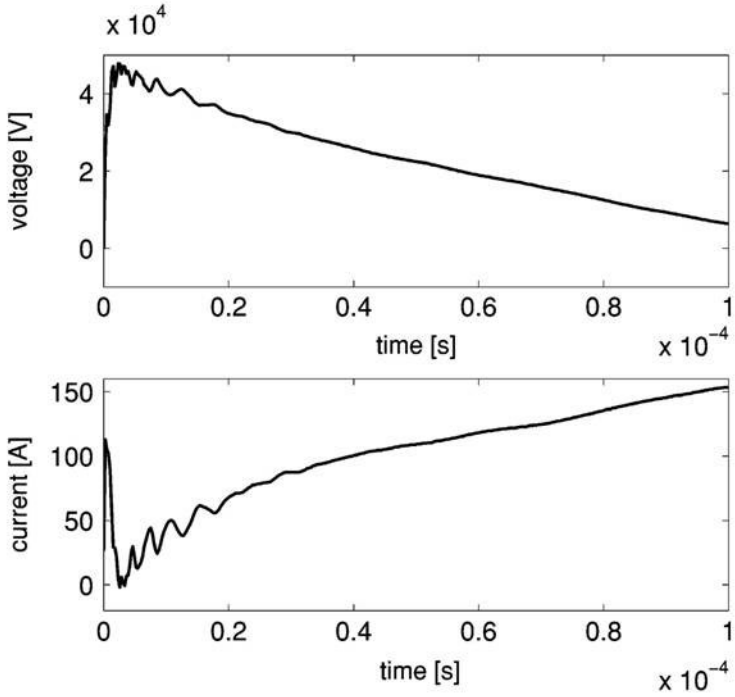

Figure 4: Transformer response to impulse

Digging into the buried distribution line would result in a power to ground short in the distribution circuit. The upstream substation protection device would be opened by the short circuit interrupt power in the line to stop the flow of this abnormal current. This action of opening the line protection develop a high-voltage-pulse on the line as the circuit opens. This pulse can be equal or greater than the value of the line voltage depending upon a number of factors. For this case, the buried line was a 13kV line and the generated impulse would be 13kV or more on top of that, 26kV or more.

This impulse would easily feed through the transformer. The V & I curves for this type of impulse fed through a 13.5kV/220V transformer show a 40kV impulse which peaks in < 10 µsec.

Impulse attenuation at service entrance:

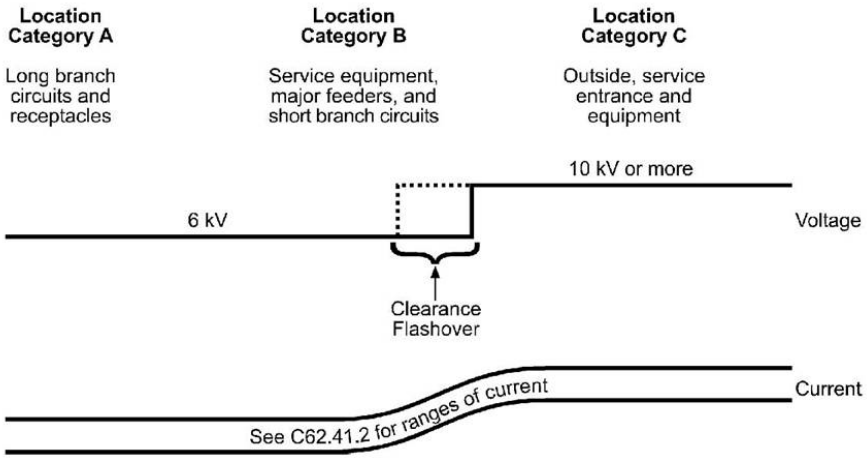

Figure 9—Voltage staircases and current down-slopes according to location category

Figure 5: Service entrance attenuation diagram

HV impulses are attenuated when they arc over the clearances in the breaker box.

This general level of attenuation because of the designed clearances in the breaker panels is not commonly understood.

6kV is the number specified by the IEEE standard that has been cited in this discussion.

The UL standard specifies these clearances correctly.

6kV is a large number compared to the usual impulse tests applied to electronic equipment.

Surge domain:

- Surge environment on ac power circuits
- Simplified relationships among voltage, duration, rate of change, and effects on equipment graph

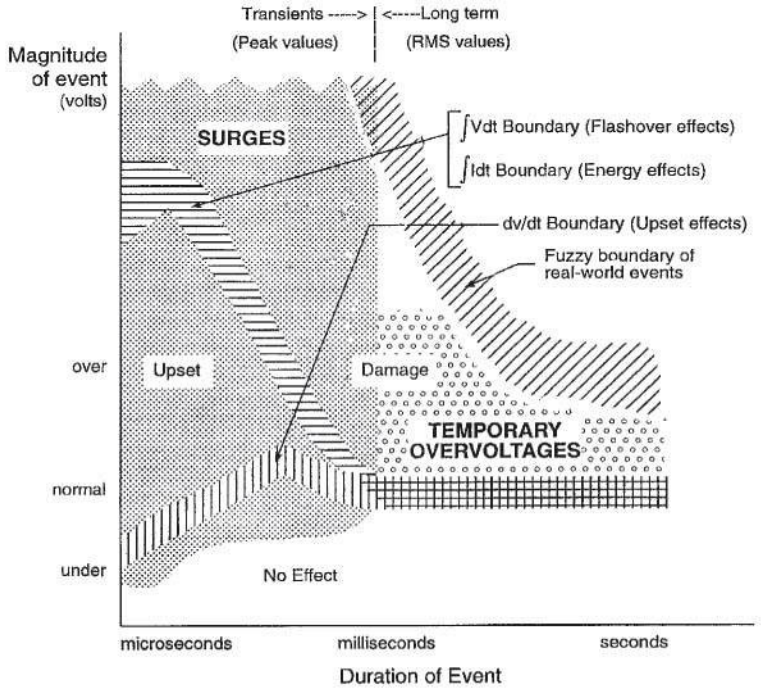

Figure 6: Surge chart for equipment

From IEEEC62.41-1/2

Surges are half –cycle mains duration; periodic or random; bring about upset in performance or damage to the equipment.

For this figure, the fine pattern relates to surges, the coarse pattern relates to temporary over voltages; these over-voltages can last longer than a half-cycle.

This is only one measure of surge severity; other measures could include peak current and duration, rise time or energy transfer.

Impulse Protection Discussion:

Power protection schemes have been devised and are commercially available. These involve the use of Varistors or Avalanche Diodes which very quickly sense the high transient voltage and switch the related high current to earth ground. These devices act very quickly (in a few nanoseconds or less); at high currents they clamp the voltage to a few hundred volts, rather than the several thousand volts applied by the transient. These protection devices are rated according to the total amount of energy that they can absorb. This rating is in Joules.

Consider the energy available in a normal 20A branch circuit in 1 sec: 120V * 20A * 1 s = 2400 Joules.

Consider the energy available in a normal 20A branch circuit for 1 cycle of power:120V * 20A * 0.01667 s = 40 Joules. This is a small value compared to the 320 J protection provided by the UPS.

Consider the time that an installation limited transient could last at the limits of absorption for the UPS:

320 J / (6500 A * 6000V) = 8.2 µsec; 8.2 millionths of a second.

The current absorbed in 1 µs would be:

320 J / (6000 V * 1*10-6 s) = 53,333 Amps or 53.3kA.

Energy available:	UPS Protection
20Acircuit, 1 cycle = 40j	OC & SS protected
20A circuit, 1 sec = 2400j	Surge energy rated: 320J (1/1000 µs waveform)
Absorbing 320J:	Surge Current rated: 6500 Amax (8/20 µs waveform)
320j, 6500A, 6kV = 8.2µsec	Surge response time: <5 ns
320j, 6kV, 1µs = 53.3kA	Surge voltage let thru: 0.7% (6kV) = 42V
320j, 6kV, 1 nsec = 53.3MA	

Table 1 Comparison of impulse energy vs the UPS protection

If the device works in a few nanoseconds, as claimed, the current it would absorb is:

320J / (6000 V * 1*10-9 s) = 53.33 MA or 53.33 Million Amps.

Since the UPS failed, the current was above the protective levels described earlier, as we have shown herein.

Reported energy damage levels for components in equipment:

Assuming that the current is attenuated as much as the voltage, the energy passed thru to the equipment is:

Ej = V*I*t = 42V*0.37*10+6A*10-9sec = 15.7*10-3 = 0.016 Joules

This is at the damaging level compared to the withstand capability for most components as shown in Figure 7.

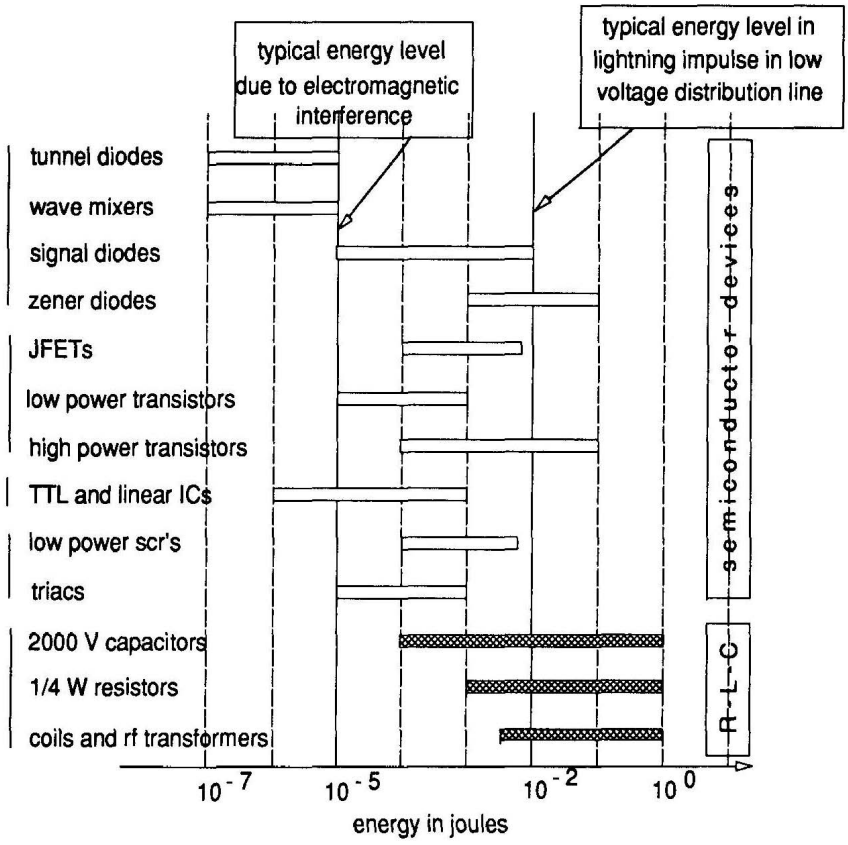

Figure 7: Energy damage thresholds for components

Partial Discharge, the slow death of electrical equipment:

- Solid insulation:
- Usually withstands impulses but
- Any voids have a higher voltage stress
- Local erosion occurs
  - Chemical decomposition
  - Pressure bulging
  - Carbonization, too

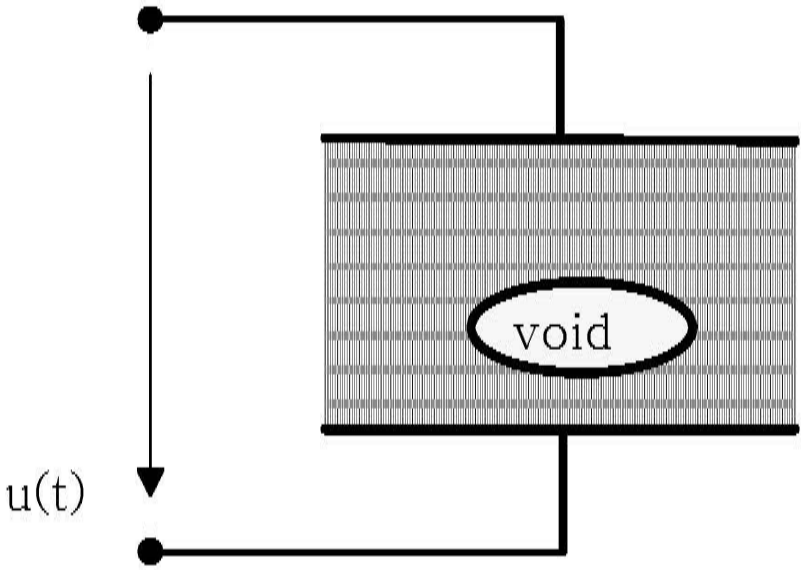

Figure 8: PD due to voids in insulation

Solid insulation is normally capable to withstand sharp and high impulses of short duration. However, partial discharge (PD) may occur in these situations, due to the presence of voids or air gaps in the solid insulation together with high voltage across the solid insulation. This voltage is divided across the different types of insulation, depending on the dielectric constant of the involved material. As air has a low dielectric constant of 1 compared to solid insulation, the highest voltage appears across an air gap. This can cause a local sparkover in the void, or partial discharge.

PD causes local erosion: chemical decomposition takes place into e.g. ozone and nitric acid. Discharges in a void in solid insulation generate local heat and the barometric pressure increases if the bubble is hermetically sealed. This effect can damage the surrounding isolating material. Depending on amplitude and duration of the applied voltage, a local carbonization may initiate.

If the voltage is removed prior to the point where sufficient heat has been generated to burn the insulating material, no harm is done to the insulation. This is normally the case with fast and short transients where not much energy is involved.

In the other case, if the voltage is in effect long enough to generate that much heat in the area of the void that local carbonization can start; permanent damage to the insulation will result. The damaged section can grow in magnitude and eventually can result in breakdown of the whole component (e.g. a transformer). This is true for high

d.c. voltages as well as for a.c. voltages of high frequency and of sufficient amplitude. PD is re-initiated with each impulse and the developed heat can not be passed to the environment fast enough to protect the insulation from over-heating. Solid insulation normally is not a good heat conductor.

At higher frequencies the dielectric losses increase, which result in temperature rise. This is an additional detrimental effect to resistively against PD.

It can be generally stated that PD thermally destroys the insulating material.

Insulation breakdown under impulse:

- Under impulse conditions, the energy to form a tree channel must come from the electric field as formation of a substantially conducting channel 'shorts out' part of the field.
- At very small channel lengths the energy threshold will drop below that required to convert the matter in the channel to conducting.

Boggs, Breakdown under Impulse, tells us that the worst case for breakdown channel formation is that which can be realized with the smallest input energy. Small, pre-breakdown tree, discharge channels form off the tip of a stress-enhancement during impulse voltage application. These precursors are below the voltage value of a single impulse since breakdown doesn't occur. These channels are in the range of 1µm in diameter. The understanding of all of this starting at this small diameter is key to separating the failure or success of the breakdown in the medium.

For this case, since the product did not break down completely, we have shown that this low level of damage in the memory cells was the effect that mangled the data storage so that the result was unreliable. QED

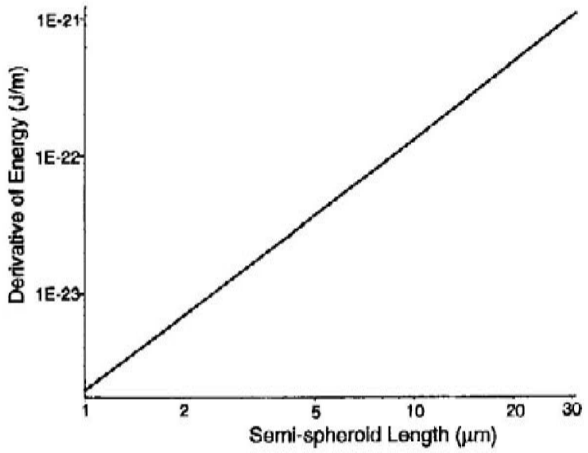

Figure 9: insulation breakdown rate per void size

Fault-to-failure summary:

- Fault generation and propagation is well understood in the literature
- Energy levels at the power interface to the equipment are defined
- Survival of components data is available
- Failure mode in the equipment is shown
- The path is completed

Selected Bibliography:

ANSI/IEEE Std C62.41.1-2002; IEEE Guide on the Surge Environment in Low-Voltage (1000V & Less) AC Power Circuits

Bhuyan, K, & Chatterjee, S; Study of the Effects of Standard and Non-Standard Impulse Waves on Power Transformer; IEEE PEDES, 2010 5712434.

Boggs, Stephen; Analytical Approach to Breakdown under Impulse Conditions; IEEE Trans on Dielectrics and Electrical Insulatin, Vol 11, NO 1, Feb 2006

Camp, Michael & Garbe, Heyno; Susceptibility of Personal Computer Systems to Fast Transient Electromagnetic Pulses; IEEE Trans on EMC, Vol 48, No 4, Nov 2006

Cristina, S, D'Amore, M, Salerno, M; Digital simulator of transformer windings subject to impulse voltage, IEE Proc Vol 129, Pt C, NO 4, July 1982

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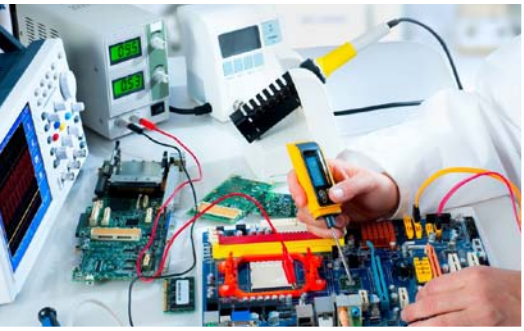

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