The Product Safety Engineering Newsletter

Vol. 8, No. 2 June 2012

IEEE PSES Product Safety Engineering Society

What's Inside

President's Message

Outreach to Argentina

"*Travel is fatal to prejudice, bigotry, and narrow-mindedness*" (Mark Twain)

As I write this message, in the Tel-Aviv Airport, on my way to IEEE Board Meeting Series, I reflect on the traveling I have done in the last two weeks. Indeed, I travelled to Cordoba, Argentina, to Atlanta, GA and now to Boston, MA.

In Argentina, I, together with BoD member Steli Loznen, I attended the "Argencon' 2012" Symposium, and participated as speaker in the Product Safety Workshop which took place as part of the Symposium. A full day event organized by BoD member Silvia Diaz Monnier, the Workshop attracted more than 30 attendees and focused on safety in Medical devices. Please see more about this Workshop inside this edition of the Newsletter.

Silvia attached several photos from the Workshop, so I will attach only a couple from the Gala Reception. That was a great opportunity for networking, which, by the way, is probably the one most important thing in Symposia and conferences.

Region 9 Director-Elect Norberto Lerendegui, Steli Loznen and PSES President Elya B. Joffe (left to right) at Gala Reception in the Jockey Club Córdoba

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The
Product Safety Engineering Newsletter

Newsletter Committee

Officers of the IEEE PSES

IEEE PSES Web Sites

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http://www.ieee-pses.org/newsletters.html
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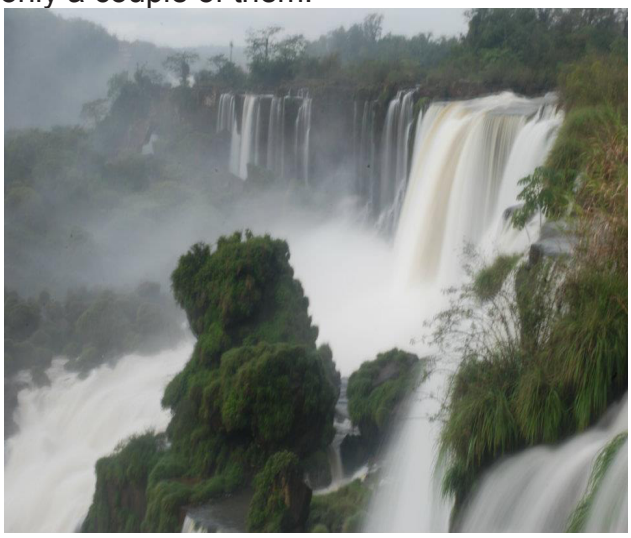
I would like to thank Silvia for her great efforts and congratulate her for the success of the event. I am also grateful for the cooperation and support of the Argentina Section. As a matter of fact – a good "lesson learnt" is that Section cooperation and support is a key to the success of local events.

We hope that this Workshop will be repeated in following years. Discussions have already started to organize a joint EMC-PSE Workshop in 2013. All being well, I will be there! Needless to say that we received several "likes" for this post in my Facebook page.

We sure hope to soon be able to celebrate the formation of a new Chapter in Argentina!

"*It's a dangerous business, Frodo, going out your door. You step onto the road, and if you don't keep your feet, there's no knowing where you might be swept off to*." (The Lord of the Rings: The Fellowship Of The Ring, Bilbo to Frodo)

On my way, I took a private visit to the Iguazu falls in Argentina. The Iguazu falls were only recently declared as one of the 7 natural wonders of the World. They can't be real! The falls are AMAZING! Actually, amazing is an understatement! I think that no photo can make justice to the falls so I will share with you only a couple of them:



Travel, see, and enjoy! Meet people, see places, and remember the beauty of the World we all share.

Moving to Atlanta, GA

Few days after my return from Argentina, I visited with several members of the BoD a Workshop organized by PSES and graciously hosted by Intertek Labs in Atlanta. The Workshop hosted more than 20 attendees, and featured speakers from the PSES BoS as well as from Intertek.

From Charlie Daniel's well-known song "*The Devil went down to Georgia*" I take only the warmth of the welcome we received and the excellent organization of the event. The weather, surprisingly, was very comfortable and the atmosphere was great! Atlanta is moving to the formation of a PSES Chapter in the Atlanta Section and we hope to have good news following this event.

Organization from the PSES side was done mostly by Doug Kealey, Member of the Board and PSES Chapter Coordinator, and I would like to express my gratitude to Doug for his great efforts. I believe that a report from this meeting is also included in this issue of the Newsletter.

Many thanks also to our hosts from Intertek for the pleasant welcome, hospitality and arrangements.

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Chapter Safety Probes

To see current chapter information please go to the chapter page at: http://www.ieee-pses.org/Chapters/index.html

People Looking To Start Chapters

Dallas Texas

Jonathan Jordan
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Central Texas:

The May meeting topic was "SAR for Dummies (or just how much energy can your body absorb?)". Meeting opened with general announcements concerning upcoming meeting topics, the CTPSES website and LinkedIn access, the 2013 Product Safety Symposium (in Austin) as well as other regular business. After the announcements, Thanh Nguyen, Senior Regulatory Engineer, Dell Inc. was introduced. Thanh's topic covered the basic principles of SAR, how it is measured on different types of mobile devices, and the current theories regarding "safe" values. He also mentioned the standards to which products are tested for SAR (and MPE - Maximum Permissable Exposure) limits. Several questions were asked about specific areas of interest in this topic after Thanh's presentation and discussion followed.

Chicago:

We had a great April meeting. Michael Mats from UL spoke on Functional Safety. He gave an overview of IEC61508 and talked about the differences in IEC13849.

Our next meeting is scheduled for June 27th. Thomas Bajzek, PE, CFEI from Engineering Systems, Inc will present on Failure Analysis and Forensic engineering including case studies from the field. This presentation is being offered as a live webcast.

John Allen
jrallen@productsafetyinc.com
http://www.ewh.ieee.org/r4/chicago/pstc/

Taiwan:

The upcoming event in Taipei Chapter in June 22 (Fri.), we are honored having Mr. Richard Nute with us to present "Paradigm Shifts - Evolutionary of IEC62368-1".

Maxi Tsai
Maxi.Tsai@ul.com
http://ewh.ieee.org/r10/taiwan/pses/index.htm
http://ewh.ieee.org/r10/taiwan/pses/officer.htm

Vancouver:

In April the (joint) chapter featured a presentation by Michael Tang that introduced the safety standard for audio/video information technology and communication technology equipment, Part

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1- Safety requirements, IEC 62368, the new safety standard containing requirements developed using Hazard Based Safety Engineering (HBSE) principles.

Peter Lim
Peter.Lim@alpha.ca
http://vancouver.ieee.ca/content/aero

Portland:

In April, Thomas K. Filler and Scott Corley, UL Staff Engineers, discussed the anticipated implementation plan of the new standard IEC/UL/CSA 62368-1. The presentation focused on the upcoming publication of the second edition of the standard and included a brief history of the standard development in addition to implementation topics.

Pete Perkins
peperkinspe@cs.com

PSES Jobs Web Page

PSES has a web page for employers and job seeks at http://www.ieee-pses.org/jobs.html. Employers may post jobs seeking regulatory or compliance-related personnel free of charge. Job postings will remain on this web site for a period of 6 months but may be removed earlier by request of the employer.

See http://www.ieee-pses.org/jobs.html for posting policy and how to submit requests.

IEEE PSES Membership savings

UL University Offers
IEEE PSES Members
15 Percent Discount

UL University (ULU) has established a discount code which will provide all IEEE-PSES members with a 15 percent discount off the price of all ULU instructor-led workshops, online programs, videos, books, and other services/products offered under the ULU brand. The discount is automatically applied during registration or purchase of ULU products. Registration or product purchase can be accomplished online at www.uluniversity.com or by calling 888-503-5536 in the U.S. or the country-specific number posted on the ULU website.

To receive the discount, members must enter or mention the discount code found in the Members Only section of the PSES website.

TAC News

Industrial Control TAC:

The Industrial Control Technical Committee is currently considering establishing a track at the 2015 IEEE PSES symposium in Chicago. We are also inviting members to join our technical committee. If you would be interested in helping establish this track or joining the technical committee, please contact Ken Thomas at kthomas@globalsafetysolutions.net.

FFATC TAC:

The FFATC LinkedIn group has reached over 650 members! This online forum is a great place for failure analysis investigators to join and have discussions concerning failure analysis of new and mature components and circuits, rare failure modes not commonly seen in any given product line, and tools and techniques used, to name a few topics.

The leadership group of the FFATC is looking for interested and dedicated persons to join this leadership group to augment our efforts to grow the contributions and importance of this committee to the field of quality failure analysis and its ability to feedback findings to the improvement of electrical and electronic product safety. If you are interested in helping lead this effort, please join the LinkedIn group "Forensics and Failure Analysis" and contact Daren Slee.

ITE TAC:

The TAC for ITE/Computers has a monthly teleconference held every third Monday at 3PM CST. The group currently has 13 active members. Topics for discussion at recent meetings have included the status and technical requirements of IEC 62368, impact of the EU's new legislative framework, laboratory accreditations, dc distribution systems and dc powered products, and halogen free power cords. To join, please send an email to Gary_Schrempp@dell.com.

News and Notes

History Committee Formed

The PSES Board approved the formation of a History Committee headed by Rich Pescatore. Rich will be contacting some of those instrumentation in the formation of PSES and a history page will be created on the website. Contact Rich at richard.pescatore@hp.com.

IEEE Technology Navigator Adds New Features More ways to find IEEE content

By KATHY KOWALENKO 9 April 2012

The online tool for browsing through IEEE's vast collection of technical resources just got a vastly improved look to make it easier to find information, with additional ways to home in on the content you're seeking.

Launched in 2010, IEEE Technology Navigator (TechNav) at http://technav.ieee.org/textui/#/organization/all lets users review IEEE's intellectual property resources, which include more than 8600 topics. The information is organized by key terms, or tags, which are words or phrases that can be used for searching. TechNav tags are generally terms that are based on search terms from the IEEE Xplore digital library's thesaurus. They are mapped to more than 50 IEEE societies and organizational units, as well as to industry sectors.

"This is a great research and informational resource tool, especially for those outside the United States," says Kathy Grise, senior technology manager with the IEEE Future Directions group, in Piscataway, N.J., which manages TechNav. An analysis of the website's traffic during the fourth quarter of 2011 showed that researchers from India were the most frequent visitors, Grise notes.

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The redesigned home page presents the topic areas in a less cluttered, more streamlined way. They can be navigated by industry topic (such as education, health care, or transportation) or by IEEE organization (like the IEEE Standards Association or IEEE Member and Geographic Activities). Topics can be displayed, using a drop-down menu, by alphabetical order or related fields. A search feature that relies on key words can narrow the topic further.

DRILLING DOWN

You can sift through content in several new ways. Hovering your mouse over a topic area triggers a pop-up window that displays the number of tags associated with that area. For example, hovering over Artificial Intelligence shows it has 12 tags. To find what those tags are, click on the More Details link. Then, clicking on one of the tags brings you to a page with clickable tabs to related industry topics and IEEE organizations, technical societies, conferences, publications, standards, and educational information, as well as the IEEE Xplore digital library. Displayed next to each of the categories is the number of pieces of related content.

Recently, the display tabs were redesigned to help maneuver through additional informational resources. They include related patents filed with the U.S. Patent and Trademark Office. You can see the individual patent's name and number, date of filing, and a brief description. Click on the patent's name to get more details.

Coming soon, Grise says, is a new tab listing openings from the IEEE Job Site. Also coming is a tab displaying the names of IEEE members in the IEEE Xplore digital library who have written on the topic at hand.

In addition, a mobile-friendly version of TechNav was released that works on all mobile devices including smartphones and tablet computers.

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Compliance News Shorts

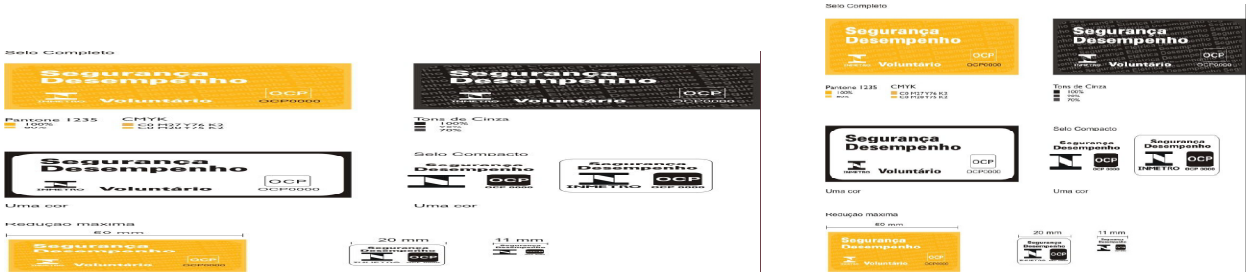
June, 2012

Brazil – Product Safety, EMC, and Energy Regulation

The Conformity Assessment Program was published in the official Gazeta on April 11, 2012. The Program is effective immediately after publishing in the Gazeta.

The Conformity Identification Seal must be applied to the product by a sticker or label or directly to the product by molding, stamping or other means. The seal must also be shown on the packaging, and must be at least 50 mm.

On September 19, 2011, Brazil published the Portaria no. 368/2011 which approves the requirements for a voluntary certification of information technology equipment. Although published as a voluntary conformity evaluation, all bids to public offices must offer products which have INMETRO certification, as stated in the Decreto 7174/2010 from the Civil Office.



Australia – RCM - A Consolidated Mark

The A-Tick and C-Tick marks are currently used to indicate compliance with Australian regulations. The A-Tick Mark is used for compliance with regulatory requirements for telecommunications equipment and cabling. The C-Tick Mark is used to show compliance with the EMC requirements.

The Australian Communications & Media Authority (ACMA) plans to implement a consolidated Mark, the RCM, to replace both the A-Tick and C-Tick marks. Implementation has been postponed to March 1, 2013. This is to allow time to implement planned commencement date for the Electrical Regulatory Authorities Council (ERAC) Electrical Equipment Safety System (EESS). Information on the EESS is available from www.erac.gov.au. The RCM Mark consists of the RCM and the supplier identification.

Further information is available at

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http://www.acma.gov.au/webwr/aca_home/publications/reports/industry/manuals/emcbook.pdf

Argentina – Changes to Safety Approval Procedure

Effective May, 2012, a sample will be required for inspection at submission of a new product, or significant changes to a product which will require an update in the process of a foreign certificate recognition used as a basis of Argentina certification. Some repeat testing will be conducted on the sample at an in-country lab effective January 2, 2013.

The sample must be cleared from a designated importer within Argentina, following the process established by Disposition 178/00.

For further information, inquiries may be directed to IRAM, Instituto Argentino de Normalizacion y Certificacion, www.iram.org.ar, regarding Disposition 178/00.

USA – US Postal Service

The USA Postal Service has announced that packages containing lithium batteries, either alone or installed in equipment, destined for international locations will not be accepted. This includes packages addresses to military or diplomatic locations. The same restrictions apply to the US Military Postal systems. This restriction does not apply to domestic package mailing of either lithium based batteries, or equipment with lithium based batteries.

New IATA regulations are intended to be effective in January, 2013. The US Postal service is expected to align their regulations with international requirements.

Vietnam – Certification Program Changes

A new regulation which governs the compliance certification Type approval and declaration of products has been published by the Ministry of Information & Communication in Circular 30/2011/TT-BTTTT. Test reports by in country labs will accepted only if the lab is accredited by Vietnam Authorities under the Mutual Recognition Agreement process. Until December 31, 2012, manufacturers and importers may use ICTQC accredited labs. After January 1, 2013, only labs included in the VNTA (Vietnam Telecommunication Authority) list of labs will be acceptable.

Standards Roundup

IEC 62368-1, 2nd Edition

The Committee Draft for Vote (CDV), 108/479/CDV, for the 2nd edition of IEC62368-1, hazard based Standard covering Information Technology equipment and Audio Video Equipment circulated to national committees for vote in December, 2011 was not approved.

The development committee is working to address the comments and issues with the draft, and is expected to release a new draft for circulation by October, 2012.

The new standard is intended to replace both the ITE standard, IEC 60950-1, and the Audio-Visual standard, IEC 60065.

Adoption of IEC 60950-1, 2nd Edition

China – GB4943.1-2011

China published a formal announcement regarding their adoption plan for the 2nd Edition of IEC

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60950-1 as their standard, GB4943.1-2011. Implementation date for the new version is December 1, 2012. National deviations include testing for high altitude of 5000m, and a test method for use in tropical environments. An option provided for products not meeting either or both of these new testing requirements is use of the following markings, along with explanation in the user manual.

Not for use at >2000M Altitude

Not for use in Tropical Environments

Version change of existing certificates will require a submission, including potential samples and testing, to CQC, should be completed no later than the first factory inspection after the implementation date. All Certificates not to the new version found in the factory inspection will be suspended, and then withdrawn if not updated before March 1, 2014.

IEC 61010-1 3rd Edition

The EU has established October 1, 2013 as the date of cessation for the 2nd edition, After this date, all new products included in the scope sold in the EU must demonstrate compliance to the 3rd edition of IEC 61010. The 3rd edition was published in June 2010.

USA – UL 61010-1 – Laboratory Equipment

Effective on January 1, 2014, the scope of UL 61010-1 covers laboratory equipment for both industrial applications and for healthcare. It combines the standard previously available for laboratory equipment, test equipment, and process control equipment. It is harmonized with IEC 61010-1, but does have US national differences.

A copy of the UL Industry file Review bulletin is available at https://ifs.ul.com/ifr/ifr.nsf

Energy Regulations

South Korea – eStandby

South Korea Ministry of Knowledge Economy (MKE) has announced a revision to the e-Standby standard for displays. Integrated computer displays, network displays, displays with a special function such as VoIP, or displays for medical or broadcasting use are exempted.
The revised criteria are applied to displays manufactured on or after July 1, 2012. An ON mode power consumption criteria is included in the revised requirements, as well as revisions to the OFF mode consumption.

	Display Category	Maximum On mode Power Consumption (W)	Standby mode	Off-mode
Without Automatic Brightness Control	Diagonal screen size < 76 cm Screen Resolution £ 1.1 MP	Po=6×(MP)+0.00775×(A)+3	≤ 2.0W	≤ 0.5W
	Diagonal screen size < 76 cm Screen Resolution > 1.1 MP	Po=9×(MP)+0.00775×(A)+3		
	Diagonal screen size 76 cm ~ 153 cm All Screen Resolutions	Po=0.04185×(A)+8		
With Automatic Brightness Control	All	Po1=(0.8×Ph)+(0.2×Pl)		

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- Po : On-mode power consumption
- MP: Megapixel
- A : Viewable Screen Area (square centimeters)
- Po1: Average on-mode power consumption
- Ph : On Mode power consumption in high ambient lighting conditions
- Pl : On Mode power consumption in low ambient lighting conditions

China – China Energy Label (CEL)

CNIS announced the publication of the minimum allowable energy efficiency values and energy grades for computers. The effective date is September 1, 2012.

The Implementation Rule of china Energy Labeling (CEL) is yet to be finalized. Completion is expected in late 2012 or early 2013.

Example

Based on current available information

Current draft information indicates that the CEL may be either on the system or on the packaging and must be a colored label as per the specification. Content should consist of the manufacturer’s name, energy grade of the product, and the GB standard. Registration on the CEL website is required within 30 days of the first application of the label.

A datasheet is required to be shipped with the product with the producer’s name, model, energy grade, TEC value, and GB standard. The datasheet must be shipped with the product, but may be in either hard or soft copy.

All relevant forms and a list of qualified labs to perform the testing is available at:

www.energylabel.gov.cn

Single and Repetitive Pulses in Accessible Circuits

by Lal Bahra

Part A of this article describes calculation of the various values of the subject pulses.

After developing this approach, it was noticed that some inconsistent interpretations and applications of subclause 2.2.3 of IEC 60950-1 were being applied. These are described in part B of this article.

Part A: Deriving the values for single pulses and repetitive pulses (these appear in information technology products under single fault conditions)

Circuits that are accessible to users need to be free from shock hazard under both normal operating conditions and single fault conditions. The limits for voltage and current levels are usually rather well defined in the standards applicable to a particular product. These values are steady-state values (usually longer than 2 s). What is not usually covered is the effect of a single pulse or repetitive pulses that are of short duration.

Non-repetitive single pulse

A non-repetitive single pulse needs to be derived from Figure 22 of IEC 60479-1 (reproduced here as Figure 1) based on the current value for a particular duration. This can be converted to the voltage limit values by multiplying the current with the body resistance. This needs to be repeated several times as the body impedance changes with the voltage. Once the calculated voltage divided by the body resistance at that voltage becomes equal to the original current value from Figure 1, then that is the correct limit for the voltage**.** For IEC 60950-1, this voltage limit can be 120 V peak maximum if the duration does not exceed 200 ms and if the voltage pulse goes up above 60 V dc only once within a 200 ms period. The 200 ms period is measured from the point where the pulse crosses 60 V to the point where it crosses the 60 V point again.

Non-repetitive single group of pulses

For IEC 60950-1, a non-repetitive single group of pulses can have multiple peaks of no more than 70.7 V peak as long as the total duration of group of pulses does not exceed 200 ms. The 200 ms period is measured from the point where the first pulse goes above 42.4 V peak to the point where the last pulse comes below the 42.4 V point again.

Heart's ability to withstand repetitive pulses

The body can withstand a higher pulse voltage or pulse current than a steady voltage or current. That means a single pulse can be higher in magnitude than the steady state limits but if a second pulse comes, it must either be after a sufficient time to allow the body to fully recover from the effect of the first pulse or the magnitude of the second pulse must be greatly reduced in order for the body to endure the second pulse.

According to IEC 60479-2, the heart's ability to withstand bursts of current goes down by about 35 percent if the time to the next pulse is less than 1 s and so on until the heart's withstand

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ability drops down to about 10 percent of the values under curve c_1 of Figure 1. Table 1 summarizes this situation.

Table 1 – (Table 1 of IEC 60479-2) Example of estimate for ventricular fibrillation threshold after each burst of current in a series

Burst of current in a series of bursts separated by less than 1 s, where the first current burst is in the AC-3 or DC-3 region of Figure 20 or Figure 22	Example estimate of the ventricular fibrillation threshold after each burst of current in a series %
First current burst	100
Second current burst	65
Third current burst	42
Fourth current burst	27
Fifth current burst	18
Sixth current burst	12
Seventh and subsequent current bursts	10 or less

Current pulses:

The limits for the threshold value of current with respect to time are given in Figure 1 for threshold of startle reaction (curve a); threshold of not-let-go conditions (curve b); threshold of ventricular fibrillation (curve c1); etc. Any current less than curve “a” usually is known as perception and does not result in a startle reaction. The current and duration between curve “a” and curve “b” may result in startle reaction and may not result in a not-let-go condition. For parts that are accessible to an ordinary person, it is not advisable to permit access to values of current above the curve b.

Under single fault conditions, power supplies sometimes develop higher than permitted voltages. IEC 60950-1 allows voltage up to 70.7 V peak ac or 120 V dc for a duration of 200 ms after which the voltage must come back to the normal limits for a safety extra low voltage (SELV) circuit (42.4 V peak ac or 60 V dc). In some power supply designs the load is sensed, and the power supply is shut off if the load or the temperature exceeds preset values (usually under single fault conditions). But as soon as the shutoff occurs (or when the temperature drops below the preset limit), the sensing circuitry does not see load anymore, and the power supply goes to an ON condition. This cycle repeats itself and results in repetitive pulses on accessible circuits. Such power supplies are known as hiccup mode power supplies.

As described above, according to IEC 60479-2, the heart’s ability to withstand current goes down with every incoming pulse and is only about 10 percent of the original value after seven pulses unless the heart is given sufficient time to fully recover from the effects of the previous pulse. This time duration is required to be greater than 1 s if the pulse width does not exceed 20 ms and is required to be greater than 3 s if the pulse duration is greater than 20 ms but does not exceed 200 ms. The requirement is that for a single pulse, the value of the current shall comply with the duration given in curve b of Figure 1. For repetitive pulses, the value of the current must not exceed the duration in curve b or 10 percent of the value in curve c_1, whichever is lower. As is apparent from Figure 1, the curve “b” will not be used for repetitive pulses which do not have sufficient time between any two repetitive pulses.

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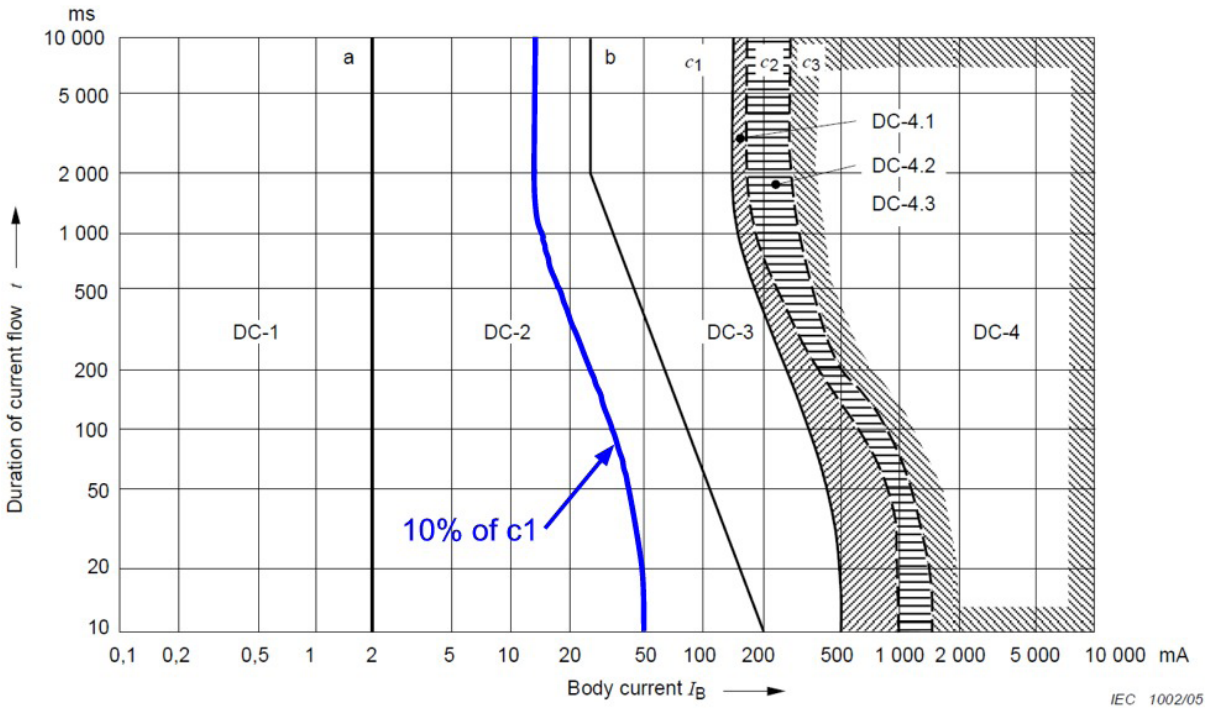

Figure 1 – (Figure 22 of IEC 60479-1) Conventional time/current zones of effects of d.c. currents on persons for a longitudinal upward current path

Voltage pulses

Designers commonly use voltage values rather than current when designing electronic circuitry. In IEC 62368-1, for single pulses, the values of current have been converted to voltage pulses, using Figure 22 of IEC 60479-1 and the body impedance tables of IEC 60479-1. For repetitive pulses, we need to calculate this voltage value using the permitted current for certain duration and the body resistance value from IEC 60479-1 at that voltage using curve b and 10 percent of the value of curve c1 of Figure 22 of IEC 60479-1.

Table 2 gives the calculations for different durations using curve b of Figure 22 of IEC 60479-1. Table 10 of IEC 60479-1 provides dc resistance values for two body contacts based on the area of contact. Curve b provides the value of the current for certain time duration. The voltage for the single pulse can then be calculated from the known value of the body resistance and the value of the current by simply using Ohm's law. This voltage will be different from the U peak value and this calculated U peak results in a different body resistance. These calculations are repeated till the calculated value of the U peak and the body impedance produces the best fit.

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Table 2 – Calculated values for single pulses using curve b

Pulse duration	Area of contact Large, Dry				Area of contact Medium, Dry				Area of contact Small, Dry			
	U peak	H to F	Current	Best fit H to F	U peak	H to F	Current	Best fit H to F	U peak	H to F	Current	Best fit H to F
ms	V	Ohms	mA	V	V	Ohms	mA	V	V	Ohms	mA	V
10	230	541	200	131	230	891	200	196	230	2136	200	370
20	220	546	166	117	220	911	166	178	220	2189	166	324
50	205	556	110	90	205	950	110	150	205	2319	110	234
80	200	560	87,5	77	200	963	87,5	135	200	2363	87,5	203
100	195	564	80	72	195	987	80	129	195	2468	80	195
200	170	584	66,1	65	170	1120	66,1	117	170	3248	66,1	184
300	120	700	58	59	120	1736	58	110	120	10430	58	176
400	100	770	50	54	100	2100	50	102	100	16100	50	169
500	87	834	45	50	87	2692	45	98	87	23216	45	167
600	76	888	43,6	49	76	3192	43,6	97	76	29238	43,6	166
700	74	902	42,2	48	74	3308	42,2	96	74	30688	42,2	165
800	72	910	40,8	47	72	3451	40,8	94	72	32494	40,8	164
900	70	938	39,4	45	70	3592	39,4	93	70	34300	39,4	163
1 000	68	956	35	39	68	3735	35	89	68	36106	35	161
2 000	60	1022	25	33	60	4295	25	77	60	43330	25	150
10 000	60	1022	25	33	60	4295	25	77	60	43330	25	150

Likewise, we can calculate the values for acceptable peak voltages that will fit the 2 pulses or 3 pulses and up to 7 pulses using the same criteria as applied to Table 2 above. The process becomes a little complicated, but it can be done.

Table 3 provides the acceptable peak voltage limits based on the curve b and 10 percent of curve c_1 (whichever is less) of Figure 1. These values are for 7 or more pulses which do not have the minimum 1 s requirement between any two pulses when the voltage is below 42.4 or 60 V peak. Figure 2 provides the same information in a graphical mode and shows that the voltage limit decreases rapidly depending on the pulse width.

Table 3 – Calculations of the voltage value for rapidly coming pulses using curve b and c1

Pulse Duration ms	Current c1 mA	ES2 10 % of c1 mA	ES2 Voltage limit (best fit)		
			Large Contact V	Medium Contact V	Small Contact V
10	500	50	54	102	168
20	495	49	52	101	167
50	480	48	51	100	166
100	400	40	46	90	160
200	260	26	35	80	155
180	250	25	33	77	146
400	200	20	28.5	71	142
500	190	19	28	70	140
1000	150	15	22.5	62	130
> 1400	140	14	22	60	127

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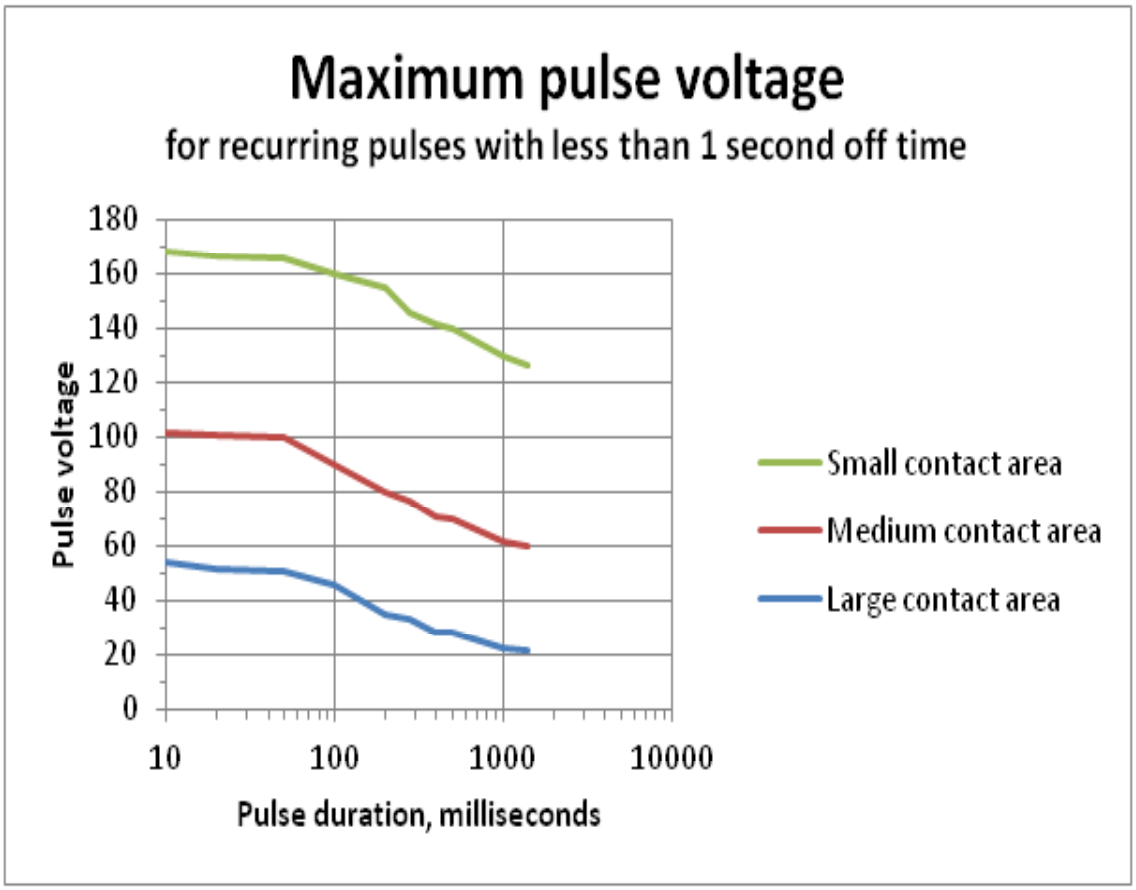

Figure 2 – Maximum pulse voltage for recurring pulses with less than 1 s off time

Part B: Resolution of inconsistent interpretations of 2.2.3 of IEC 60950-1

In this part B, the focus is on the application of the principles in actual power supply design and testing in accordance with 2.2.3 of IEC 60950-1, 2nd Ed. Under single-fault conditions, the designer may design a sensor circuit for the current that shuts the power supply unit (PSU) off if the current exceeds a preset value. The problem however is that when the PSU shuts off the sensor sees no current, and it turns the power supply back on. This usually results in quite rapid pulses, and so the designer will add a time delay for the circuit to turn on. As an alternative, a sensor circuit for sensing the temperature may be added to the power supply which again shuts of the power supply if the temperature exceeds a preset value. The cooling down of the unit is usually slow and addition of any time delay may not be necessary. This occurrence of repetitive pulses is called hiccup mode.

The first edition of IEC 60950-1 did not address this issue. Therefore, the only rule followed was that after the introduction of the single fault condition, the higher limits of 70.7 V peak ac or 120 V dc were allowed only for the first 200 ms, and after 200 ms the limits of 42.4 V peak ac or 60 V dc were applied. This resulted in the addition of 2.2.3 to the 2nd edition of IEC 60950-1. The duration of the pulse and the duration between any two pulses when the voltage is below 42.4 or 60 V peak must comply with 2.2.3 of IEC 60950-1.

Subclause 2.2.3 of IEC 60950-1, 2nd Ed covers two time durations for the repetitive pulses.

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Duration #1

If the time duration t_1 as shown in Figure 3 is 20 ms, then there can be a single pulse or multiple pulses within t_1 duration as long as the time between any two t_1 intervals is more than 1 s. The time duration t_1 is always measured at the V_1 level

The third paragraph of 2.2.3 reads "Only one pulse is permitted to exceed V_1 during time period t_1, but it can have any waveform" has caused confusion and some test houses interpreted that if more than one pulse exceeds V_1 during t_1, then only SELV levels should be permitted. If the waveform of the pulse crosses above V_1 level only once, then the voltage within t_1 should be dc and that means no more than 10% ripple. In actual fact the limits shown in Figure 2E of IEC 60950-1 should all be in peak values and not ac or dc values. It is peak voltage. It can be a single peak (single pulse) or multiple peaks (multiple pulses) within t_1. Within the t_1 window, there may be a single peak or multiple peaks. This is followed by another t_2 time duration exceeding 1 s (or 3 s) in which the voltage must drop to the V_1 limit as shown in the Figure 2E of IEC60950-1. Therefore, there is no need to classify it as AC or DC. The maximum peak voltage is measured and this peak voltage shall be within the limits of requirements given in 2.2.3. It is simply a peak voltage measurement. The single or multiple peaks must fit in the t_1 time slot and must be preceded by a t_2 time slot where the voltage remains within the normal SELV circuit limits.

In addition, the addition of 2.2.3 was to specify the time t_2 between two pulses or between two sets of pulses and there was no intention to change the limits within 200 ms of the introduction of the fault condition. Therefore, the voltage limits during t_1 should remain the same as in first edition of IEC 60950-1.

Duration #2

If the time duration t_1 as shown in Figure 4 is greater than 20 ms but does not exceed 200 ms, then there can be a single pulse or multiple pulses within t_1 duration as long as the time between any two t_1 intervals is more than 3 s.

During hiccup mode the post fault signal is identical in both cases after the single fault condition. Some manufacturers interpret the post fault signal limits (71 V peak or 120 V dc) to be based on the pre-fault operating condition, thus allowing use of the higher post fault limits. However, the Standard does not instruct that the post-fault signal limits should be based on the pre-fault signal characteristics. The single peak or multiple peak criteria within the t_1 time duration needs to be considered under the hiccup mode criteria. If the single peak or multiple peaks do not fit into the t_1 time slot, then they need to comply with the SELV criteria. Actual wave shape has to be considered, it has nothing to do with what was present before the fault. There may be multiple peaks within the time slot t_1 as long as they do not cross the zero V line.

Table 4 gives a summary of the voltage limits for the two values of t_1 and the voltage limits depending upon the values of t_2.

An ad hoc group set up to resolve this controversy came up with following recommendations after lengthy discussions. The following table summarizes the limits during the hiccup mode.

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Advantages of Membership in the IEEE PSES

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Membership: The society ID for renewal or application is “043-0431”.

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Table 4 – Voltage limits for repetitive pulses under the hiccup mode (IEC60950-1)

Number of peaks exceeding V_1 during t_1	t_1 (duration of a single pulse or set of pulses > V_1)	t_2 (duration between single pulses or set of pulses measured at V_1)	V_1 (peak voltage for measurement of time t_1 and t_2)	V_2 (maximum peak voltage during t_1)
One	≤ 20 ms (see Figures 1 and 2)	> 1 s	60	120
	> 20 ms but ≤ 200 ms (see Figures 5 and 6)	> 3 s		120
One	> 20 ms (see Figures 3 and 4)	> 1 s but ≤ 3 s	60	60
	≤ 20 ms (see Figures 1 and 2)	≤ 1 s		60
	> 20 ms but ≤ 200 ms (see Figures 5 and 6)	≤ 3 s		60
	> 200 ms	> 3 s		60
	In the above 4 cases, the limit will be 60 V peak (there are no pulses exceeding 60 V peak as it is not permitted)			
Two or more	≤ 20 ms (see Figures 1 and 2)	> 1 s	42,4	71
	> 20 ms but ≤ 200 ms (see Figures 5 and 6)	> 3 s		71
Two or more	If > 20 ms (see Figures 3 and 4)	> 1 s but ≤ 3 s	42.4	42,4
	≤ 20 ms (see Figures 1 and 2)	≤ 1 s		42,4
	> 20 ms but ≤ 200 ms (see Figures 5 and 6)	≤ 3 s		42,4
	> 200 ms	> 3 s		42,4
	In the above 4 cases, the limit will be 42.4 V peak (there are no pulses exceeding 42.4 V peak as it is not permitted)			

Figure 3 shows the limit envelope for a single pulse having pulse width up to 20 ms and peak greater than 60 V peak, properly scaled (for t_1 equal to 20 s or less).

Figure 4 shows the limit envelope for a single pulse having pulse width up to 200 ms and peak greater than 60 V peak, properly scaled (for t_1 equal to 200 s or less).

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2012 IEEE SYMPOSIUM ON PRODUCT COMPLIANCE ENGINEERING

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Author's Schedule	**All dates require that the associated documents be loaded into EDAS by the due date**
Abstract submission	May 15, 2012
Notification of Abstract Acceptance	June 1, 2012
Draft formal paper / presentation	July 1, 2012
Formal Final Paper	August 1, 2012
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www.psessymposium.org

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Anuj Kumar (Intertek) (front), Doug Kealey (PSES Chapter Coordinator) (back), Cindy Weidmann (Intertek), Elya Joffe (PSES President), Andy Gbur (Intertek), Phil Mason (Intertek), Kevin Ravo (PSES) and Thomas Ha (PSES VP for Member Services) (left to right) at Intertek, Duluth, GA

This, by the way, is one of the objectives of PSES—teaming up with and working with Industry as well as Academia. I am certain that for an application-oriented society as PSES is, Industry "sets our feet on the ground", not withholding the importance of Academia in providing the scientific infrastructure for our technologies.

If you wish to host a similar Workshop, form a chapter in your location, or both, please let me know. The PSES BoD will do its best to help you make such an event happen and be a success.

Global Outreach Will Continue…

"It's an extraordinary commentary on what the Internet can do, ... opening the crossroads around the world for communication between all people." (David Hayden)

PSES is increasing its global outreach, and further outreach to our members and professional communities wherever they are across the globe will continue. I believe that the President and officers of the BoD should be accessible and should outreach directly to our members – you all! We should be able to answer your questions, hear your suggestions and, yes, also give some explanations, if necessary. There is no better way than face-to-face "get-togethers."

In October, 2012, I plan to attend together with Rich Nute, an icon in PSES, the South Africa Section. We will be presenting a series of workshops in several cities along this vast country, meet members and make an effort to recruit new members, and possibly forming a South Africa Section. No official PSES presence exists in Africa yet, as for me personally, born in South Africa, forming a PSES chapter there will be a "closure of a circle", a type of "paying back."

To our existing chapters: You are not being "left out." The BoD schedules its meetings while considering opportunities for outreach to our chapters in the US as well. I also invite our chapter chairs to inform me of any special event you may be holding along the year, particularly colloquia and workshops (please try to give me much advance notice as possible), and (no promises made, but with good intentions…) I will try to be present in support of the event, hopefully with more BoD members whenever possible, and will surely be glad to make presentations in the event.

Hoping for an Improving Economy

This year (much like the previous few years) was not easy, and that is an understatement. No doubt times have been difficult for many engineers while many PSES members were affected by the recent recession, as well as the operations of the IEEE and the PSES itself. Similar situations are all around the global village…

However, the emerging summer seems to be holding the promise of a thaw in the recession. This will come as a great relief to many who have been waiting, while "raging economy oracles" tell us what we already know. But if we try to believe recent messages, this summer

seems to also be bringing new opportunities in many areas where our members provide the technical insight needed to make a potentially good product idea into a successful one in the marketplace.

From ISPCE'2011, in San Diego, CA to ISPCE'2012 in Portland, OR

"*The end of a thing, is never the end, something is always being born like a year of a baby*" (Lucille Clifton, "December" Everett Anderson's Year)

By the time you read these lines, our most recent IEEE International Symposium on Product Compliance in San Diego, CA, will be but a fine memory, blended with new profession and social experiences, friendships renewed and new friendships made. This will have been a great opportunity to network, to learn from our peers and to simply have a great time. Many thanks are due to Bansi Pattel and his dedicated team for putting this Symposium together. Having done that myself, I know how much effort and enthusiasm must be put into such an event.

But as every end is only a chance for new beginnings, the end of the 2011 Symposium marks the birth of the 2012 Symposium in Portland, OR. Let us make our plans to meet again in the beautiful venue in Portland in early November 2012. Anna, the Symposium Chair, and her team have put together a great program, reaching new peaks and climaxes. I know I will be there.

"Shape of Things to Come"
"Much Work Remains To Be Done Before We Can Announce Our Total Failure To Make Any Progress"

For several years the PSES has been successfully engaged in developing its "business plan". Many activities and plans have been formulated through this process; multiple initiatives and programs we have all been accustomed to, have been devised through that process and many achievements were reached. However, the process is somewhat lacking: It addresses topics bottom-up rather than top-down. The latter is the process of Strategic Planning.
Indeed, the **field of interest (FOI)** of the PSES is well defined and you may find it in the home page of the Society:

> *The society focuses on the theory, design, development and practical implementation of product safety engineering methodologies and techniques for equipment and devices. This includes the study and application of analysis techniques, construction topologies, testing methodologies, conformity assessments, and hazard evaluations. The society provides a focus for cooperative activities, including the promotion of product safety engineering for the benefit of humanity.*

But – let us look at the bigger picture. If we want to be viable in future, the FOI is simply insufficient! The British Pop Group "Slade" (in the 80s) said: "Know who you are and know where you're going to…" Where are we going? What is the purpose of the EMC Society of the IEEE at the first place? What is our Mission, our vision, our Goals and Objectives? Or in short, **what is the "core ideology" of the Product Safety Engineering Society**?

Try taking a minute to list just a few items – this is a challenge, isn't it?

Since mid-2012, the PSES BoD has been engaged in a strategic planning process, the highlight of which was the approval in the June 2012 BoD meeting of the PSES's core ideology, namely its Mission and Vision (or big audacious goal):

> **PSES Core Purpose (Mission)**: *The mission of the PSES is to serve the product safety and regulatory profession and the*

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public, by fostering the development and facilitation of the exchange of knowledge in the disciplines of product safety and compliance engineering (PS&CE), as detailed in the PSES's field of interest (FOI), and promote scientific, literary, educational and professional aspects thereof, that benefit members, the profession and humanity.

PSES Big Audacious Goal (Vision): *… to be recognized as the respected innovator and global resource for scientific, technological and engineering information and services in the disciplines of product safety and compliance engineering for the betterment of society, and to be the preferred professional development source for our members.*

On this foundation, the PSES BoD has now initiated its detailed strategic planning exciting process, holding 3 meetings a year, with the objective of completing and approving a Strategic Plan document by the end of 2013. This Document will set the scene for the PSES activities in the years 2013 through 2017. Stay tuned for more in future.

PSES BOD Meetings

When the PSES BoD visits your region, I would like to reiterate that all meetings of the Society Board of Directors are open and you are most welcome to attend. As mentioned above, we try to schedule those meetings so as to reach out to you, and we hope that you reach out to us and honor us by attending. You are not restricted to being a "silent observer" in the meetings. Indeed, you may talk and express your opinions, make suggestions and take part in our activities. The schedule of BoD meetings is posted on the Society web site (http://ewh.ieee.org/soc/pses/) and in the Calendar section of this Newsletter.

I'll close by posing a question to you: Is the Product Safety Engineering Society meeting your expectations? I invite your feedback on this matter. Please write to me with any suggestion, comment, or just a "howdy" message.

I, as your President am at your service. Please do not hesitate to e-mail me at: eb.joffe@ieee.org. I look forward to your inputs.

Elya Joffe
President IEEE PSES

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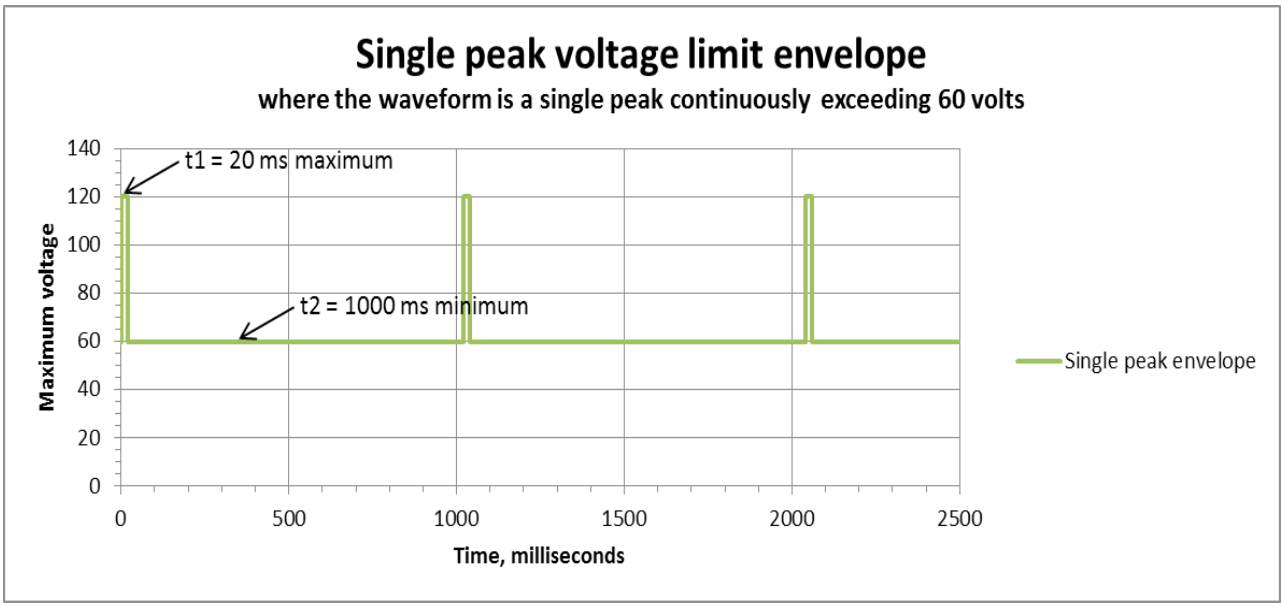

Figure 3 – Single peak voltage limit for a pulse of 20 ms width and peak greater than 60 V

Here are the limit envelop for a single pulse, properly scaled (for t1 equal to 200 s or less).

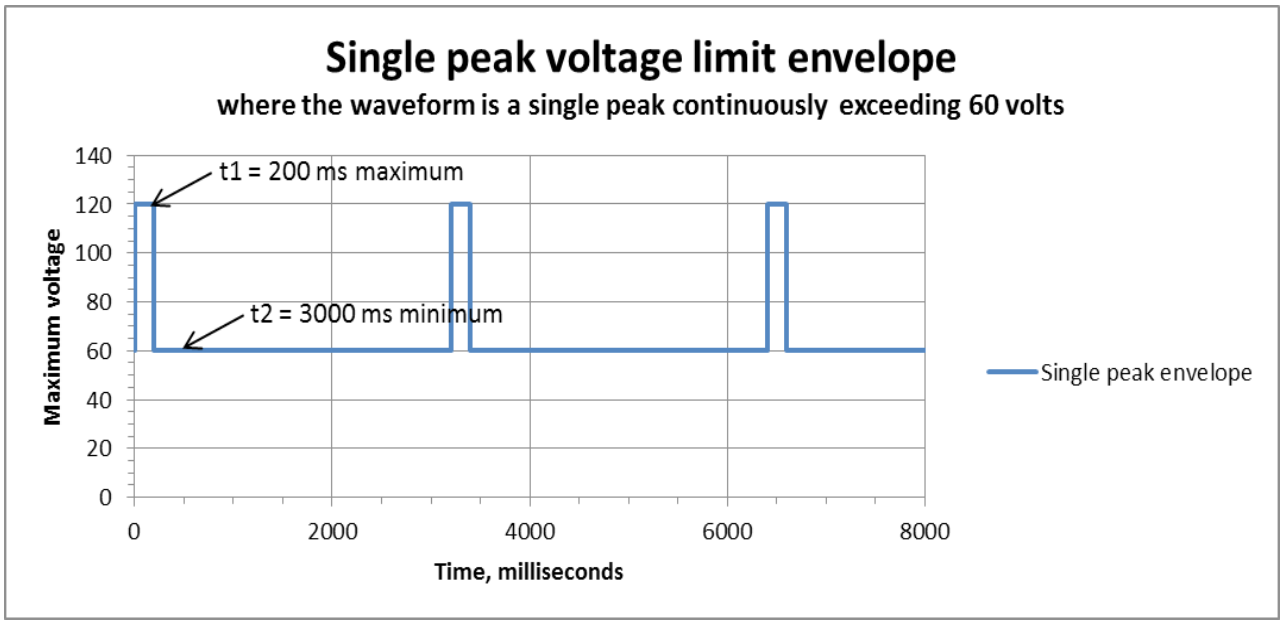

Figure 4 – Single peak voltage limit for a pulse of 200 ms width and peak greater than 60 V

Let us consider a few examples.

Case 1: Considers a single pulse or set of pulses within t_1 (max 20 ms) followed by t_2 of > 1 s duration between two pulses or two sets of pulses

Case 1a: See Figure 5, t_2 > 1 s or more between two pulses (only one peak in the 20 ms region): Acceptable

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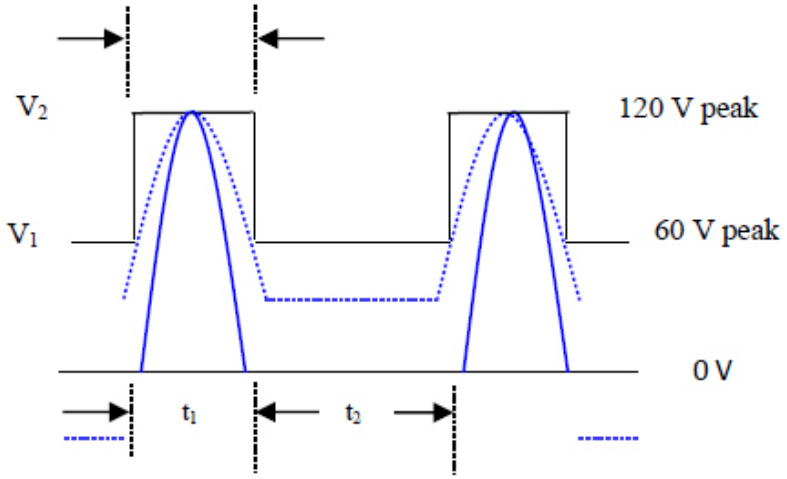

Figure 5 – t_2 > 1 s or more between two pulses having one peak in the 20 ms region

Case 1b: See Figure 6, t_2 > 1 s or more between two sets of pulses (Two peaks shown in the 20 ms region): Acceptable

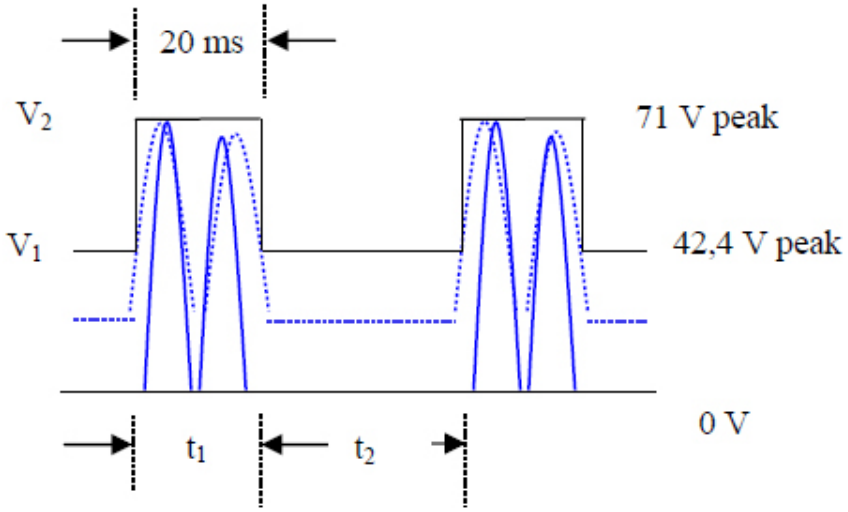

Figure 6 – t_2 > 1 s or more between two sets of pulses having two peaks in the 20 ms region

Case 1e1: See Figure 7, Pulse does not fit in the t_1 = 20 ms window (single peak) width is measured at the 60 V peak point for V_1; t_2 less than 3 s: Not Acceptable, regular SELV limits apply.

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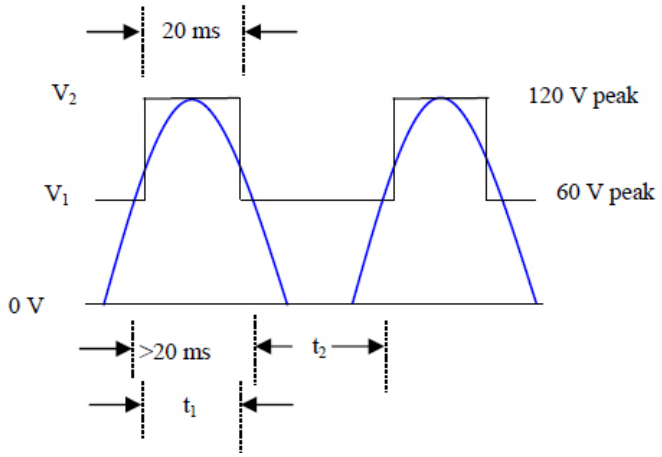

Figure 7 – Pulse does not fit in the t_1 = 20 ms window and t_2 less than 3 s

Case 1e2: See Figure 8, pulses do not fit in the t_1 = 20 ms window (two peaks), width is measured at the 42,4 V peak point for V_1: Not Acceptable, regular SELV limits apply.

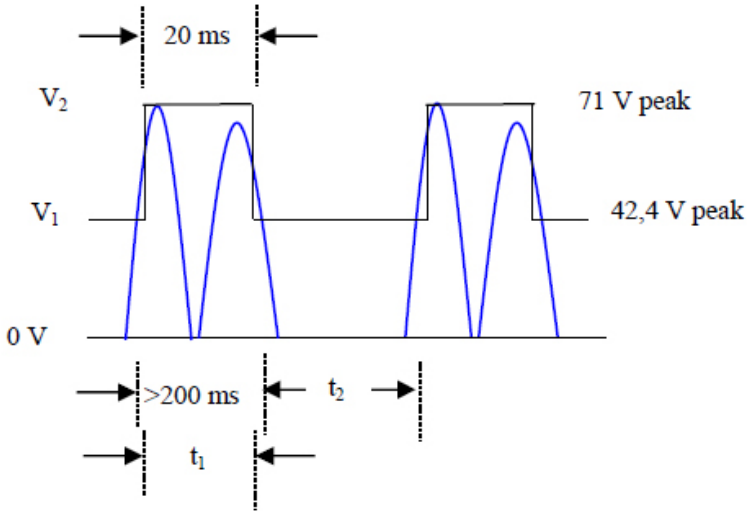

Figure 8 – Two pulses do not fit in the t_1 = 20 ms window and t_2 less than 3 s

Case 2 considers a single pulse or set of pulses within t_1 (max 200 ms) followed by t_2 of 3 s or more duration between two pulses or two sets of pulses

Case 2a: See Figure 9, t_2 > 3 s duration between two pulses (only one peak in the 200 ms region): Acceptable

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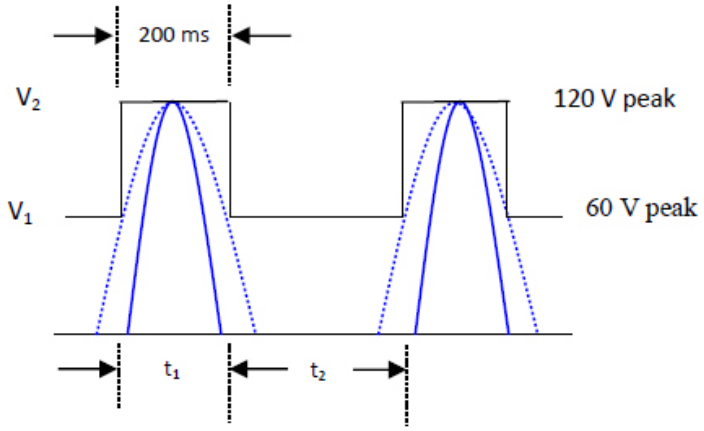

Figure 9 – t_2 > 3 s duration between two pulses with only one peak in the 200 ms region

Case 2b: See Figure 10, t_2 > 3 s duration between two sets of pulses (Two peaks shown in the 200 ms region): Acceptable

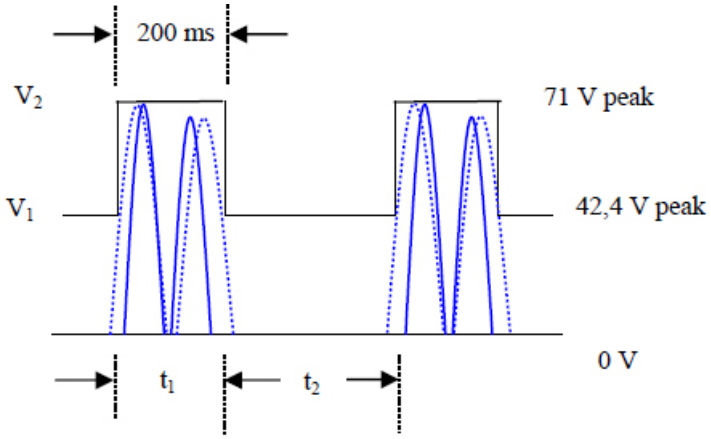

Figure 10 – t_2 > 3 s duration between two sets of pulses with two peaks in the 200 ms region

Case 2e1: See Figure 11, a single pulse does not fit in the t_1 = 200 ms duration (single peak) width is measured at the 60 V peak point for V_1: Not Acceptable, regular SELV limits apply

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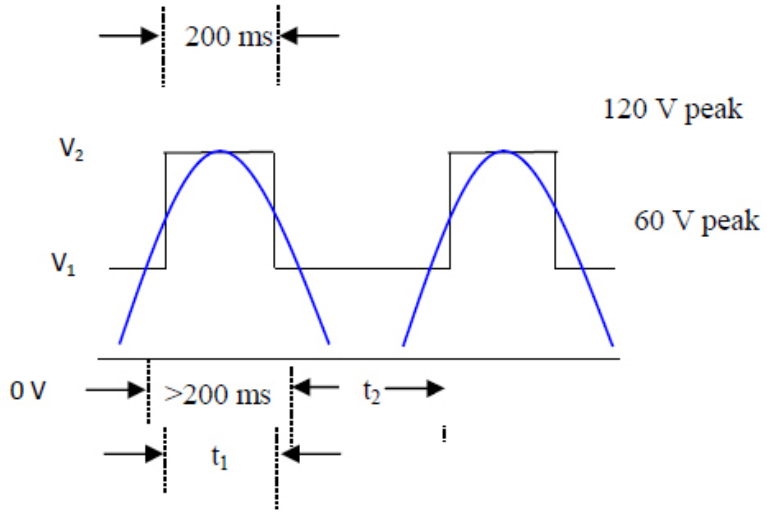

Figure 11 – A single pulse does not fit in the t_1 = 200 ms duration

Case 2e2: See Figure 12, a set of pulses do not fit in the t_1 =200 ms duration, width is measured at the 42,4 V peak point for V_1: Not acceptable, regular SELV limits apply

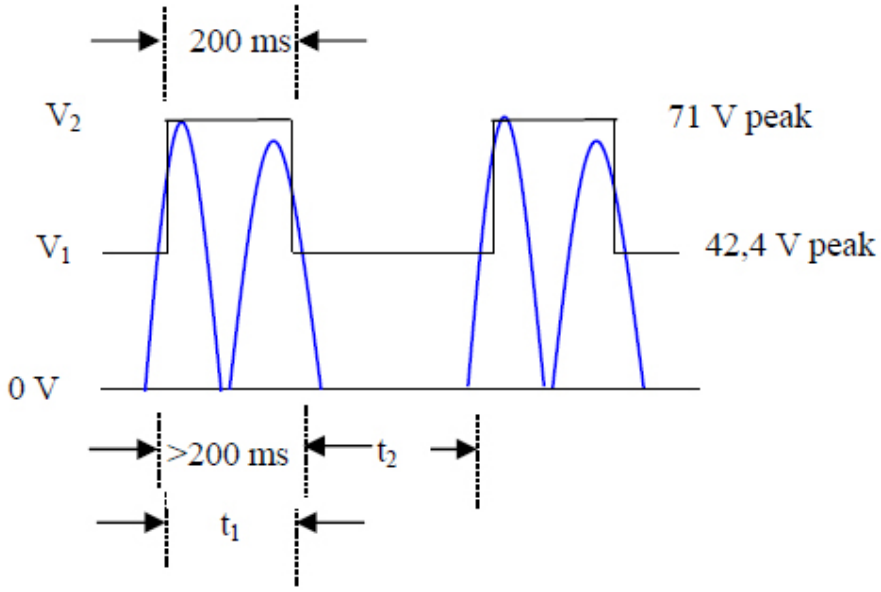

Figure 12 – A set of pulses do not fit in the t_1 = 200 ms duration

Based on the above discussions the following proposal was made to TC108 of IEC at their October 2011 meeting in Sydney Australia to modify the third paragraph of 2.2.3 and replacement of Figure 2E with two Figures 2E.1 and 2E.2 which adequately address the problem of possible misinterpretation. This proposal was accepted and is in the 108/477/CDV document published by TC108.

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Modify the third paragraph of 2.2.3:

~~Only one pulse is permitted to exceed V_1 during time period t_1, but it can have any wave-form.~~

A limit of 120 V peak applies if the pulse goes above V1 only once during time t1 for example see Figure 2E.1.
A limit of 71 V peak applies if the pulse goes above V1 more than once during time t1 for example see Figure 2E.2.

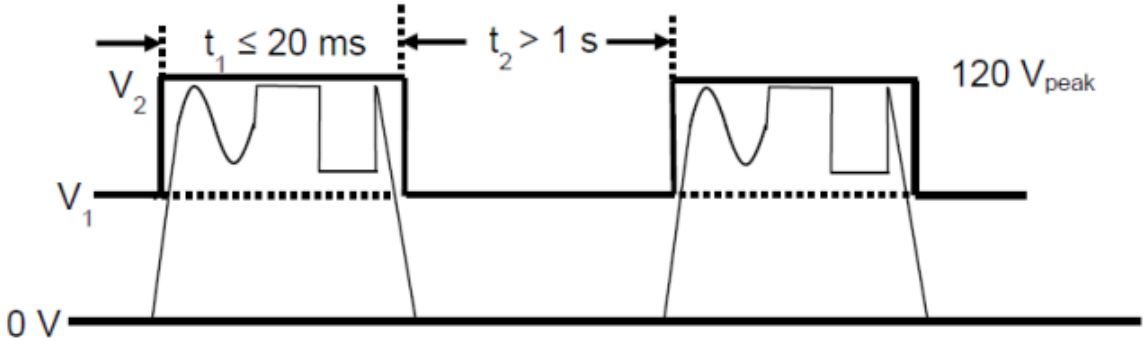

Figure 2E.1 – Voltages in SELV circuits under single fault conditions for a single pulse above V_1

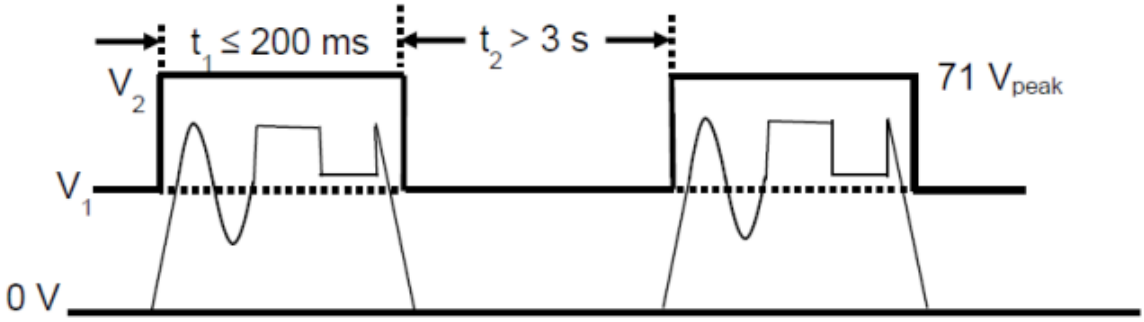

Figure 2E.2 – Voltages in SELV circuits under single fault conditions for multiple pulses above V_1

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Checking Emergency Stop Systems

Editor's note—This is the second in a series of articles reprinted through the courtesy of Doug Nix from postings on the Machinery Safety 101 blog (http://machinerysafety101.com).

by Doug Nix

Awhile back I wrote about the basic design requirements for Emergency Stop systems [1]. I've had several people contact me wanting to know about checking and testing emergency stops, so here are my thoughts on this process.

The Emergency Stop Function

The figure below, excerpted from the 1996 edition of ISO 13850, Safety of machinery — Emergency stop — Principles for design [reference 2, Fig. 1], shows the emergency stop function graphically. As you can see, the initiating factor is a person becoming aware of the need for an emergency stop. This is NOT an automatic function and is NOT a safety or safeguarding function.

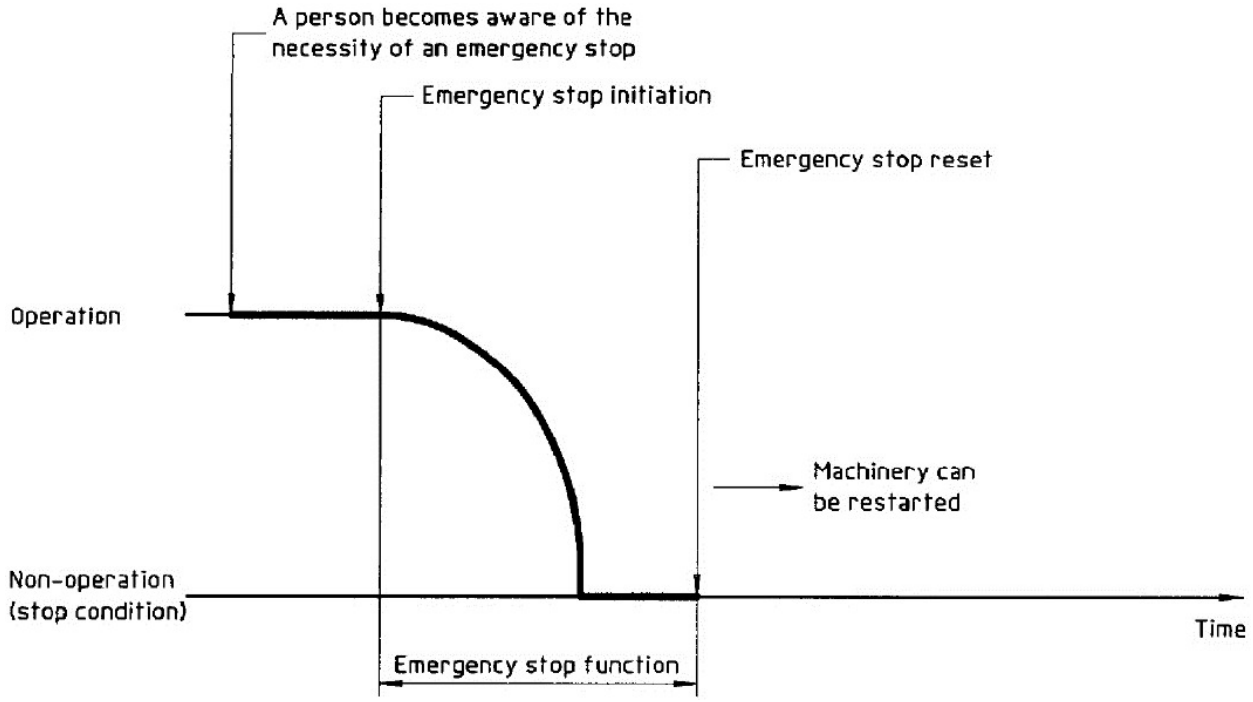

Figure 1 – Graphical representation of emergency stop function

I mention this because many people are confused about this point. Emergency stop systems are considered to be "complimentary protective measures" [3], meaning that their functions complement the safeguarding systems, but cannot be considered to be safeguards on their own. This is significant. Safeguarding systems are required to act automatically to protect an exposed person. Think about how an interlocked gate or a light curtain acts to stop hazardous motion BEFORE the person can reach it. Emergency stop is normally used AFTER the person is already involved with the hazard, and the next step is normally to call 911.

Control Reliability Requirements

All of that is important from the perspective of control reliability. The control reliability requirements for emergency stop systems are often different from those for the safeguarding systems because they

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are a backup system. Determination of the reliability requirements is based on the risk assessment and on an analysis of the circumstances where you, as the designer, anticipate that emergency stop may be helpful in reducing or avoiding injury or machinery damage. Frequently, these systems have lower control reliability requirements than do safeguarding systems. Remember that these systems have one more layer of backup: The disconnecting device. If the emergency stop system fails, power can be disconnected from the machinery using the main disconnecting device. The biggest risk in this is the rating of the disconnecting device. If it is rated to carry the full load current, but not rated to interrupt that current, the device may explode if operated with the machinery under load.

Testing

Before you begin any testing, understand what effects the testing will have on the machinery. Emergency stops can be partially tested with the machinery at rest. Depending on the function of the machinery and the difficulty in recovering from an emergency stop condition, you may need to adjust your approach to these tests. Start by reviewing the emergency stop functional description in the manual. Here's an example taken from a real machine manual [4]:

Emergency Stop (E-Stop) Button

Figure 2.1 Emergency Stop (E-Stop) Button

> A red emergency stop (E-Stop) button is a safety device which allows the operator to stop the machine in an emergency. At any time during operation, press the E-Stop button to disconnect actuator power and stop all connected machines in the production line. Figure 2.1 shows the emergency stop button.
>
> There is one E-Stop button on the pneumatic panel.
>
> NOTE: After pressing the E-Stop button, the entire production line from spreader-feeder to stacker shuts down. When the E-Stop button is reset, all machines in the production line will need to be restarted.
>
> DANGER: These devices do not disconnect main electrical power from the machine. See "Electrical Disconnect" on page 21.

As you can see, the general function of the button is described, and some warnings are given about what does and doesn't happen when the button is pressed.

Now, if the emergency stop system has been designed properly, and the machine is operating normally, pressing the emergency stop button while the machine is in mid-cycle should result in the machinery coming to a fast and graceful stop. Here is what ISO 13850 [2] has to say about this condition:

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> 4.1.3
> The emergency stop function shall be so designed that, after actuation of the emergency stop actuator, hazardous movements and operations of the machine are stopped in an appropriate manner, without creating additional hazards and without any further intervention by any person, according to the risk assessment.
>
> An “appropriate manner” can include choice of an optimal deceleration rate, selection of the stop category (see 4.1.4), and employment of a predetermined shutdown sequence.
>
> The emergency stop function shall be so designed that a decision to use the emergency stop device does not require the machine operator to consider the resultant effects.

The intention of this function is to bring the machinery to a halt as quickly as possible without breaking it. However, if the braking systems fail, e.g. the servo drive fails to decelerate the tooling as it should, then dropping power and potentially breaking the machinery is acceptable.
In many systems, pressing the e-stop button or otherwise activating the emergency stop system will result in a fault or an error being displayed on the machine’s operator display. This can be used as an indication that the control system “knows” that the system has been activated.
ISO 13850 requires that emergency stop systems exhibit the following key behaviours:

- ✓ It must override all other control functions, and no start functions are permitted (intended, unintended or unexpected) until the emergency stop has been reset;

- ✓ Use of the emergency stop cannot impair the operation of any functions of the machine intended for the release of trapped persons;

- ✓ It is not permitted to affect the function of any other safety critical systems or devices.

Tests

1. With the machine powered up and operating normally, activate the emergency stop function. Once the emergency stop device has been activated, control power is normally lost. The machine should quickly come to a stop. Count this as a PASS.

2. Pressing any START function on the control panel, except POWER ON or RESET should have no effect. If any aspect of the machine starts, count this as a FAILED test.

3. Pressing POWER ON or RESET before the activated emergency stop device has been reset (i.e. the e-stop button has been pulled out to the “operate” position), should have no effect. If you can turn the power back on before you reset the emergency stop device, count this as a FAILED test.

4. Reset the emergency stop device (i.e. pull out the e-stop button). If resetting the emergency stop device results in control power being re-applied, count this as a FAILED test.

5. Reset the emergency stop device. Pressing POWER ON or RESET should result in the control power being restored. This is acceptable. The machine should not restart. If the machine restarts, or motion occurs, count this as a FAILED test.

6. Once control power is back on, you may have a number of faults to clear. When all the faults have been cleared, pressing the START button should result in the machine restarting. This is acceptable behaviour. Count this as a PASSED test.

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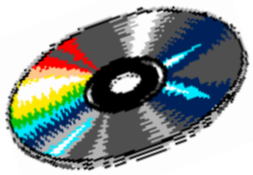

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The Product Safety Engineering Society continues to offer past symposium records for sale on CDs. The cost for the CD is $35 plus shipping and handling for IEEE members; $50 plus shipping and handling for non-IEEE members. At this time, check or money orders are the means for payment. Please provide the following information:

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7. If you break the machine while testing the emergency stop system, count this as a FAILED test.

8. Test all emergency stop devices. A wiring error or other problems may not be apparent until the emergency stop device is tested. Push all buttons, pull all pull-cords, activate all emergency stop devices. If any fail to create the emergency stop condition, count this as a FAILED test.

Conclusions

If, having conducted all of these tests, no failures have been detected, consider the system to have passed basic functional testing. Depending on the complexity of the system and the criticality of the emergency stop function, additional testing may be required. For example, it may be necessary to develop some functional tests that are conducted while various EMI signals are present.

Doug Nix, A.Sc.T., is Managing Director at Compliance InSight Consulting Inc. in Kitchener, Ontario, Canada.

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[2] *Safety of machinery — Emergency stop — Principles for design*, ISO 13850, 1996.

[3] Safeguarding of Machinery, CSA Standard Z432, 2004.

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New PSES Members

from 25 March 2012 Through 30 June 2012

Our new members are located in the following countries: Australia Brazil, Eqypt, Germany, Ghana, Hong Kong, India, Indonesia, Japan, Kuwait, Malaysia, Nigeria, Saudi Arabia, Singapore, South Africa, United kingdom, USA

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August 5 – 10, 2012
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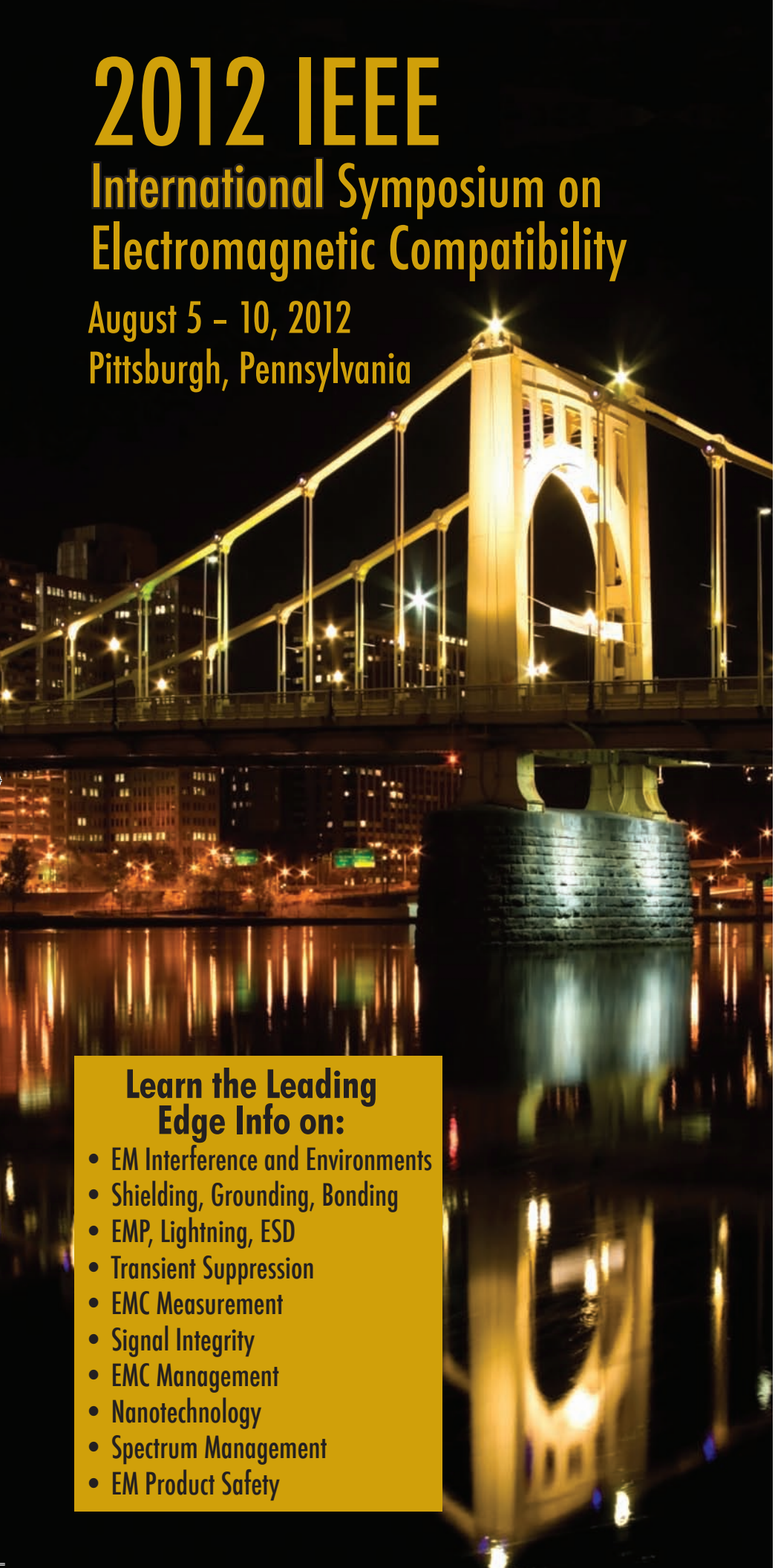

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Product Safety Workshop in Argentina

Product Safety Workshop in Argentina, organized by PSES and IEEE Argentina Section

by Silvia Díaz Monnier

The first annual Product Safety Workshop in Argentina, organized by PSES and Argencon was held in Cordoba City, Argentina, on June 14, 2012. The Workshop was a great success with approximately 40 people attending a one-day technical session focusing on medical products and consumer products.

Argencon is a biannual symposium, and the first one was organized by IEEE Argentina Section and National University of Córdoba. The IEEE publishes the most important scientific and technical contributions worldwide, organizing workshops, conferences and meetings around the world. Many Latin American countries organize conferences and annual meetings on different areas of interest. Argentina has held meetings of this kind, but they were not performed for more than 20 years, for different reasons. The first Argencon was held this year, between June 13 and June 15, 2012.

The main objective of this meeting of members of IEEE, is that our country has a biannual meeting, for technical-scientific presentations developed by local members, with international speakers, tables of discussion, and social activities in the areas of interest of the IEEE, such as electricity, electronics, computing, communications, robotics, aerospace, education, nanotechnologies and others. Even though the meeting is meant to be national, it is expected that members of neighboring countries will be present. No less important is the impact of linking professional activities with student activities. In careers such as engineering that have less amount of new students, it is essential to promote professional motivation and mobilization mechanisms.

Present at Argencon 2012 were Peter W. Staecker, president elect of IEEE; Norberto Lerendegui, director elect of IEEE-Region 9; and Ricardo Taborda, president of IEEE Argentina Section.

Argencon 2012 had several tracks and parallel events, and activities pre- and post- symposium. Product Safety Workshop was one of the parallel events. Both Workshop and Argencon were held in the Faculty of Exact, Physical and Natural Sciences of National University of Córdoba, on Av. Duarte Quiros and Av. Velez Sarsfield, Córdoba City, Province of Córdoba, Argentina. Workshop was honored by the presence of Elya Joffe, president of PSES, Steli Loznen, PSES board of directors member, Javier Elgadban of ANMAT (National Administration of Food, Drugs and Medical Technology) of Argentina, Edmundo Gatti, of INTI (National Institute of Industrial Technology) of Argentina. Workshop was put together by Silvia Díaz Monnier, also of INTI.

The program presentations were:

- Welcome – State of the PSES Presentation of PSE Society by Elya Joffe;
- Registration of medical electrical products in Argentina by Javier Elgadban;
- IEC 60601-1 Third Edition by Steli Loznen;
- Electromagnetic requirements for medical electrical products by Edmundo Gatti;
- Introduction of the new Hazard-Based Safety Engineering (HBSE) standard - IEC 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements. by Richard Nute, presented by Steli Loznen;
- Ethics and Safety by Elya Joffe;
- Product certification in Argentina. Design of appliances according to safety requirements by Silvia Díaz Monnier.

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The technical session started at 9 a.m. and lasted until 7:30 p.m. During the presentations, some interesting interactions took place between attendees and presenters, which really enriched the workshop and caused the program to be altered a bit.

Attendees were given an overview of PSES, invited to became members of this society, and encouraged in helping to form the Argentina Chapter. Those interested in taking part in the Chapter should contact Silvia Díaz Monnier at silviadm@inti.gob.ar.

After the hard work during the day, the camaraderie dinner was organized as a social activity.

Product Safety Workshop is planned to be held next year in Buenos Aires together with EMC Workshop, organized by PSES, EMC Argentina Chapter, and IEEE Argentina Section. And hopefully will be held every year, every other year as a parallel event of Argencon.

Silvia Díaz Monnier is PSES board of directors member and Region 9 Membership Coordinator for PSES.

Workshop de Seguridad de Productos en Argentina, organizado por PSES e IEEE Sección Argentina

por Silvia Díaz Monnier

El primer Workshop anual de Seguridad de Productos en Argentina, organizado por la Sociedad de Ingeniería de Seguridad de Productos y Argencon, tuvo lugar en la ciudad capital de Córdoba, Argentina, el 14 de junio pasado. El Workshop fue muy exitoso y contó con la presencia de aproximadamente 40 personas que asistieron a una sesión técnica de día completo enfocada en productos médicos eléctricos y productos de consumo.

Argencon es una reunión bianual y la primera edición fue organizada por IEEE Sección Argentina y la Universidad Nacional de Córdoba. El IEEE publica las contribuciones científicas y técnicas más importantes de la actualidad a nivel mundial, organizándose workshops, congresos y reuniones en todo el mundo. Muchos países latinoamericanos tienen congresos y reuniones anuales sobre las diferentes áreas de interés. Argentina ha realizado reuniones de este tipo, pero no se realizan desde hace más de 20 años, por diferentes razones. El primer Argencon se realizó entre el 13 y el 15 de Junio de este año.
El principal objetivo de esta Reunión de miembros de IEEE, es que nuestro país cuente con una reunión bianual, para la presentación de trabajos técnico-científicos desarrollados por miembros locales, con disertantes internacionales, mesas de debate y actividades sociales, en las áreas de interés del IEEE, como lo son electricidad, electrónica, computación, comunicaciones, robótica, aeroespacio, educación, nanotecnologías y otras. Si bien el alcance de la reunión es nacional, se descuenta que se contará con la presencia de miembros de países vecinos. No menos importante es el impacto de vincular las actividades profesionales con las estudiantiles, en carreras que tienen cada vez menos ingresantes, siendo imprescindible promover mecanismos de movilización y motivación profesional.

Argencon 2012 contó con la presencia de Peter W. Staecker, presidente electo de IEEE, Norberto Lerendegui, director electo de la Región 9 de IEEE y Ricardo Taborda, presidente de IEEE Sección Argentina.

Argencon 2012 tuvo varios tracks y eventos paralelos, así como actividades pre y post congreso, como por ejemplo la RNR 2012 reunión nacional de ramas estudiantiles de Sección Argentina. El Workshop de Seguridad de Productos fue uno de esos eventos paralelos. Tanto el Workshop como Argencon 2012 se llevaron a cabo en la Facultad de Ciencias Exactas, Físicas y Naturales de la Universidad Nacional de Córdoba, situada en Av. Duarte Quirós y Av. Vélez Sarsfield, ciudad de Cór-

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doba, Provincia de Córdoba, Argentina. El Workshop fue honrado con las disertaciones de Elya Joffe, presidente de PSES, Steli Loznen, miembro de la comisión directiva de PSES, Javier Elgadban de ANMAT (Administración Nacional de Alimentos, Medicamentos y Tecnología Médica) de Argentina, y Edmundo Gatti, de INTI (Instituto Nacional de Tecnología Industrial) de Argentina. El Workshop fue organizado por Silvia Díaz Monnier, también de INTI.

Las presentaciones programadas fueros:

- Welcome - State of the PSES Presentation of PSE Society, por Elya Joffe;
- Registro de productos electromédicos en Argentina, por Javier Elgadban;
- IEC 60601-1 Third Edition, por Steli Loznen;
- Requisitos de Compatibilidad electromagnética para productos electromédicos, por Edmundo Gatti;
- Introduction of the new Hazard-Based Safety Engineering (HBSE) standard - IEC 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements, por Richard Nute, presentado por Steli Loznen;
- Ethics and Safety, por Elya Joffe;
- Certificación de productos en Argentina. Diseño de equipamiento según requisitos de Seguridad, por Silvia Díaz Monnier.

Las sesiones técnicas comenzaron a las 9 de la mañana y finalizaron a las 19:30 horas. Durante las presentaciones se desarrollaron varias interacciones entre la audiencia y los disertantes, que realmente enriquecieron el workshop y causaron que el programa tuviera que alterarse un poco.

Los asistentes recibieron un panorama de PSES y se les ofreció participar como miembros a esta sociedad y especialmente colaborar con la formación del Capítulo en Argentina. Aquellos interesados en participar del Capítulo pueden contactarse con Silvia Díaz Monnier escribiendo a silviadm@inti.gob.ar.

Luego del productivo trabajo durante el día, se organizó una cena de camaradería como actividad social.

Está planificado realizar el siguiente Workshop de Seguridad de Productos el año entrante en la ciudad de Buenos Aires junto con el Workshop de Compatibilidad Electromagnética, organizados por PSES, el capítulo argentino de EMCS e IEEE Sección Argentina. Y se espera organizar estas actividades todos los años, como evento paralelo con Argencon año por medio y en forma independiente el resto de los años.

Silvia Díaz Monnier es miembro de la comisión directiva de PSES y Coordinadora de Membresía de la Región 9 para PSES.

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Peter W. Staecker, president elect of IEEE, Norberto Lerendegui, director elect of IEEE-Region 9 and Ricardo Taborda, president of IEEE Argentina Section during closing act of Argencon.
Peter W. Staecker, presidente electo de IEEE, Norberto Lerendegui, director electo de la Región 9 de IEEE y Ricardo Taborda, presidente de IEEE Sección Argentina durante el acto de cierre de Argencon 2012.

1389: Elya Joffe, Steli Loznen and Silvia Diaz Monnier

Most of the attendees of Workshop
Gran parte de los asistentes al Workshop

Steli Loznen

Javier Elgadban

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Elya Joffe

José Luis Rodriguez, of INTI, Steli Loznen, Elya Joffe, Silvia Díaz Monnier and Lucas Lago of INTI.
José Luis Rodriguez, de INTI, Steli Loznen, Elya Joffe, Silvia Díaz Monnier y Lucas Lago de INTI.

Edmundo Gatti

Norberto Lerendegui, Steli Loznen and Elya Joffe in camaraderie dinner

Silvia Díaz Monnier, Elya Joffe, Ricardo Taborda, president of IEEE Argentina Section and Miguel Piumetto, Chair of Argencon and President of IEEE Córdoba Subsecction in the Welcome Cocktail.

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Editorial

The price of information

An issue is emerging in the U.S. that seems to have no solution other than some sort of compromise. The Federal Office of Management and Budget (OMB), in Circular A-119, directs Federal agencies to use voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical. That seems like a good idea, but it has an unforeseen consequence.

Thousands of consensus standards have been incorporated by reference into U.S. laws and regulations. The problem that arises is that in order to comply with the law or regulation, it is necessary to purchase copies of standards referenced in the law or regulation. This situation is compounded by the usual practice of standards to reference other standards that are necessary in order to learn all that is required by the first standard. And of course, sometimes the referenced standards refer to still other standards, so that what starts out as a single standard reference can become a "tree" that branches out to a number of standards.

Consider for example a small business of several employees. It's easy to see that purchasing all standards referenced in laws and regulations applicable to this business could become quite a financial burden.

On the other hand, Standards Developing Organizations (SDOs) are quick to point out both their copyright ownership of the standards documents and the substantial cost of developing standards, even when volunteer committees are involved.

In the case of the U.S. Pipeline and Hazardous Materials Safety Administration (PHMSA), which is responsible for safe and secure movement of hazardous materials to industry and consumers by all transportation modes, an Act passed by Congress in 2011 requires that after January 2013, PHMSA no longer incorporate, in whole or in part, voluntary consensus standards by reference into its regulations unless those standards have been made available free of charge to the public on the internet. The intent here is good, but how will PHMSA get by without being able to refer to the wealth of existing standards that are not available for free?

An organization called public.resource.org contends that it is unconstitutional to require individuals or companies to purchase standards in order to find out what a law or regulation requires. The OMB is taking the matter seriously and has published a "Request for Information" on the issue in the March 30, 2012 Federal Register. Understandably, ANSI and others have come forward with vigorous defenses of the present pay-for-referenced-standards system.

I am involved in standards development, work with SDOs, and appreciate the cost of developing and publishing standards. I also do not appreciate that in order to find out what is required by some regulations businesses, especially small ones, have to purchase standards (as well as other standards referenced by those standards). There seems to be no simple way to deal with this situation; it will be interesting to see what emerges over time.

— *Gary Weidner*
gweidner@ieee.org

The Product Safety Engineering Newsletter is published quarterly during the last month of each calendar quarter. The following deadlines are necessary in order to meet that schedule.

Closing dates for submitted articles:

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

Closing dates for news items:

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

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Silvia Díaz Monnier, Elya Joffe, Gustavo Fano, president of EMCS Argentina Chapter and Edmundo Gatti, in the Welcome Cocktail

Welcome Cocktail

IEEE Systems Council

by Mark Montrose

The IEEE Product Safety Engineering Society is one of 12 member societies of the IEEE Systems Council. A Society is a group of people with a common bond focused around a field of interest. There are 38 Societies and 7 Councils within the IEEE. A Council is an entity similar to a Society except that it has no direct members. A society with an affinity to the field of interest of a Council may join as a member. An advantage of participating in a Council is that is allows everyone who belongs to a Society to participate in another entity within the IEEE at essentially no cost.

The field of interest of the IEEE Systems Council is:

This Council integrates IEEE activities regarding aspects of multiple disciplines and specialty areas associated with the engineering of systems. This Council covers, but is not limited to the following:

- Systems engineering, education, standards, processes, and methodologies;
- Modeling, simulation, and integration related to design, testing, production, and support;
- Design aspects for robust design, human factors, safety, security, and usability;
- Transition of products from design to production, deployment and use;
- Quality control and system management;
- Program/product/project management interactions;
- Risk management;
- Systems architecture.

The field of product safety engineering is a subset of a larger entity within engineering, namely Systems of Systems and large scale infrastructures. Within these large scale systems, product safety is an integral part, which is why PSES became a Charter member in 2005.

The System Council every year holds a high-quality conference and publishes an outstanding Journal. PSES members can subscribe to the Systems Council Journal for a nominal fee. There is no cost to join the Council since PSES already has membership in the Council and discounts for services are provided to all member Societies.

For those who have an interest in systems engineering, we encourage you to examine the products and services that the Systems Council has to offer. Anyone who wishes to publish in an IEEE Journal dealing with safety of systems or other aspects of system engineering is encouraged to submit their paper to the Editor-in-Chief, whose contact details are provided on the Council's web site, http://www.ieeesystemscouncil.org/.

In addition to direct participation in the Council formation of joint chapters can occur between the Systems Council and PSES. For details on how to establish a local chapter, please contact PSES Vice President of Member Services, Thomas Ha at tom@gmcompliance.com.

Mark Montrose is the PSES Liaison to the Systems Council.

Institutional Listings

We invite applications for Institutional Listings from firms interested in the product safety field. An Institutional Listing recognizes contributions to support publication of the IEEE Product Safety Engineering Newsletter. To place ad with us, please contact Jim Bacher at j.bacher@ieee.org

Tthe Product Safety Engineering Society will accept advertisements for employment and place looking for work ads on our web page. Please contact Dan Roman for details at dan.roman@ieee.org .

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