

The Product Safety Engineering Newsletter

Vol. 7, No. SE August 2011



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President's Message

On behalf of the IEEE Product Safety Engineering Society I would like to invite all the professionals in the product safety engineering and regulatory fields to attend our annual symposium in San Diego, California, USA on 10-12 October, 2011. The program includes topics on wide-ranging areas from close-up to overview perspectives; from local to global. The program and the networking opportunities should make this a worthwhile experience both from the individual and the company perspectives. The attendee camaraderie ties the event together, making the learning experience fun and rewarding.

Our conference goal is to provide a unifying location for information in a concise and timely fashion for engineers, administrators, and managers who want to stay ahead of the curve of technical and regulatory developments. This is our first PSES Conference Newsletter. Its purpose is to get the word out about the event. It provides the background you need to see the opportunity that our volunteers are putting together for our practicing professionals.

Please let me know your ideas for how we can improve our IEEE society. Our annual confer-

ence, Newsletter, LinkedIn Network and local chapter meetings are the main vehicles that we have so far. We would like to build on this, with more workshops and a Distinguished Lecturers program. There is really unlimited opportunity for what we can achieve with volunteer and company support. With wide-ranging support, the investment is really very modest. Hoping to see everyone in San Diego!



A handwritten signature in black ink that reads 'Murlin Marks'.

Murlin Marks
President IEEE PSES

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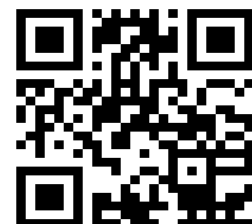
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IEEE PSES Web Sites

<http://www.ieee-pses.org/>
<http://psessymposium.org/>
<http://product-compliance.oc.ieee.org/>
<http://www.ieee-pses.org/emc-pstc.html>
<http://www.ieee-pses.org/newsletters.html>
<http://www.ieee-pses.org/pses.html>



Greetings from San Diego

“Surf’s up in San Diego.” And this year’s theme for ISPCE 2011 is “Surfing for Safety”.

On behalf of the newly formed San Diego Chapter of Product Safety Engineering Society it is my pleasure to welcome you to sunny San Diego and the 8th Annual IEEE Product Safety Engineering Society’s Symposium on Product Compliance Engineering! The fall is a great time to be in San Diego; the water is cool and scenarios are magnificent and the activities are abundant. Bring your family and enjoy our beaches, and attractions like San Diego Zoo, San Diego Wild Animal Park, Sea World, old town etc.

But that is not the only good thing about coming here now. Wait until you see the outstanding program our Technical Committee has put together for your professional development and enjoyment. With over 20 exhibitors displaying their products and services and over 40 speakers presenting workshops, discussion panels, and technical sessions, we think you will find many different topics of interest to you. STEPHEN H. WENC, President UL Environment Inc., President & Managing Director – Europe & Latin America will be the keynote speaker; his topic is; “Bridging the Gap between Safety and Sustainability”. Building the new green economy will take more than simply developing green products—it will require developing, manufacturing and validating products that meet safety as well as sustainability requirements.

In addition to our program, our partners, Underwriters Laboratories and iNarte, will have events on Thursday and Friday, October 13 and 14. UL University is presenting a one day workshop on October 13 on “Documenting required ISO 14971 Risk Management File Elements in the IEC 60601-1TRF and a two day workshop on October 13-14 on ”Applied Safety Science and Engineering Technologies (ASSET)”. iNarte will have Certification Exams. Contact them directly for more information on these events.

The work of the PSES, such as this Symposium, or monthly technical meetings, etc., would not be possible without you and your active participation. If you are not currently a member of the PSES please consider joining and volunteering in anyone of the many activities it takes to run your professional Product Safety organization. If you would like more information about this please talk to me, or any one of the PSES Board Members or Chapter Chairs for your area, sometime during the Symposium. So enjoy the Symposium and the sunny San Diego area and we’ll see you in Portland in 2012.

Bansi Patel
Chair 2011 IEEE International Symposium
on Product Compliance Engineering



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

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Symposium Registration

	Advance (until 1-Sept-11)		Regular (2-Sept-11 to 12-Oct-11)	
	Full Conference	Exhibits Only	Full Conference	Exhibits Only
Non-Member	\$550.00	\$50.00	\$600.00	\$50.00
Member	\$450.00	\$50.00	\$500.00	\$50.00
Life Member	\$150.00	\$50.00	\$200.00	\$50.00
Student	\$150.00	\$50.00	\$200.00	\$50.00

Non-Members are persons who are not members of IEEE. All non-members registering for the conference will be given an IEEE Affiliate membership for 2011. You will receive a coupon for Affiliate Membership at registration. You can return that during the conference to receive your membership.

To register by bank transfer, please download the registration form and return completed to Lauren Pasquarelli, conference registrar.

2011 Steering Committee

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Special Projects and Photography
Richard Georgerian

Symposium Main Schedule of Events

Sunday October 09, 2011

8:00 AM to 5:00 PM PSES Board of Directors Meeting (open to all)
If you want to attend please let Jim Bacher know at j.bacher@ieee.org.

Monday October 10, 2011

Tracks: Forensics, Environmental, IEC 62368-1, General

08:30 AM to 09:00 AM Opening Ceremony
09:00 AM to 10:00 AM Keynote
10:00 AM to 10:30 AM Break - with the exhibitors
10:30 AM to 11:30 AM Sessions
11:30 AM to 01:00 PM Lunch Break - with the exhibitors
01:00 PM to 03:00 PM Sessions
03:00 PM to 03:30 PM Break - with the exhibitors
03:30 PM to 05:30 PM Sessions

Tuesday October 11, 2011

Tracks: Lithium Ion Batteries, EMC, General

08:00 AM to 10:00 AM Sessions
10:00 AM to 10:30 AM Break - with the exhibitors
10:30 AM to 11:30 AM Sessions
11:30 AM to 01:00 PM LunchBreak - with the exhibitors
01:00 PM to 03:00 PM Sessions
03:00 PM to 03:30 PM Break - with the exhibitors
03:30 PM to 05:30 PM Sessions

Wednesday October 12, 2011

Tracks: General, Technical Activity Committee Meetings

08:00 AM to 10:00 AM Sessions
10:00 AM to 10:30 AM Break (no exhibitors)
10:30 AM to 12:30 AM Sessions
Symposiums ends at 12:30 PM

	Room 1	Room 2	Room 3	Room 4
Monday				
7:00-8:00	Speaker Breakfast - Room TBD			
8:30 - 9:00	Opening Plenary - Patel			
9:00-10:00	KEYNOTE			
10:00-10:30 AM	Break			
10:30-11:30	FORENSICS - Utility Guy Wires - A Potential Electrical Hazard Nosh Medora	Functional Safety and Ethical Concerns Elya Joffe	ENV - Measuring Energy Efficiency for IT and A&V	Impact analysis on test items between IEC 60065, IEC 60950-1 and IEC 62368-1 Martin Lih
11:30-1:00	Lunch			
1:00-2:00	FORENSICS - AC & DC Adapter Safety Considerations Ashish Arora	Who checks the safety of the safety engineer Ted Eckert	ENV - European Directive for Energy Related Products (ERP)	Hazard base safety assessment for consumer electric household products Yasuo Harada
2:00-3:00	FORENSICS - Safety Considerations when Designing Portable Electronics with Electric Double-Layer Capacitors (Supercapacitors) Ginger Walden	Clarification on repetitive impulses requirement Information Technology Lal Bahra	ENV - Energy Requirements by National Resources of Canada - NRCan	Safety considerations for surge suppression devices employed in information technology equipment Flore Chiang
3:00-3:30	Break			
3:30-4:30	FORENSICS - Arcing Faults in Low and Medium Voltage Electrical Systems - Why Do They Persist? Forensics Nosh Medora	Fundamentals of minimum ignition powers Gary Tomquist	ENV - Energy Star - for IT and A&V	IEC 62368-1's Allowance for Non-Prescriptive HBSE Thomas M Burke
4:30-5:30	FORISNCIS - Advanced Tools for Forensic Analysis Ken Buddoff	Touch current analysis of power supplies designed for energy efficient regulations William Meng	ENV - Exporting IT and A&V products into Mexico	PANEL DISCUSSION - IEC62368-1 Certification Panel of Test Labs and Certification Bodies
Tuesday				
7:00-8:00	Speaker Breakfast - Room TBD			
8:00-9:00	BATTERY - General Guidelines: Lithium Cell Selection and Battery Pack Design Eddie Forouzan	Power supply cords Lal Bahra	Maneuvering the Minefield: Successfully Preparing for and Testifying at Corporate Employee Depositions Edgar J Gutierrez	EMC - Metamaterial Patterning to Improve the Septum of a GTEM Chamber Performance: RR - Ring Resonator Cells Stamped and Tested on the APEX Humberto de Araujo
9:00-10:00	BATTERY - Topic to be determined ATL, Anthony Wong, V.P	Type Testing of Component Power Supplies and Transformers Brian O'Connell	Temporary overvoltages: What are they and what are the implications on insulation coordination? Flore Chiang	EMC - Electromagnetic interference and exposure from household wireless Yakov P Shtokhinov
10:00-10:30 AM	Break			
10:30-11:30	BATTERY - Topic to be Determined - Todd Sutton, Sr. Director of Technology	Predicting Potential Safety Problems in Switching Power Supplies, with Multiple Secondary Supplies Stefan Mozar	Applied Safety Science and Engineering Techniques - ASSET Management Process Thomas Lanzisero	EMC - A New Proposal for EMC Technique Using DSM Keiichi Ohizumi
11:30-1:00	Lunch			
1:00-2:00	BATTERY - Comparison of Select Li-Ion Cell and Battery Safety Standards Tom O'Hara	IEC 61730/JUL 1703 - Safety Standards for Crystalline and Thin-film PV Regan Amdt	Semantic annotation of product safety information Erik A. Glisdorf	EMC - Electromagnetic Compatibility (EMC) Design Modification Considerations in Electronic Norman Bemis
2:00-3:00	BATTERY - CTIA IEEE 1625 Certification - An Introduction Jan Swart	IEC 61730/JUL 1703 - Safety Standards for Crystalline and Thin-film PV Regan Amdt - PART 2	Would your Product Safety Testing Workstation Comply with OSHA 1910 Electrical Safety Requirements Dwayne Davis	Power Loss Detection as a Solution to Foreign Object Detection in a Contactless Power Neil Kuyvenhoven
3:00-3:30	Break			
3:30-4:30	OPEN	Assessment and Control of Ignition Risk of HT Induction Motor for Increased Safety Ex 'e' as per Indian Standard for Explosive Atmospheres Bhagirath Ahirwal	Post Fire MOV Examination Forensics Mark Goodson	Brazilian Regulation on Safety Conformity Assessment for Household and Similar Appliances - Update Luiz Claudio B Araujo
4:30-5:30	OPEN	Beyond the Basics, Save the trauma for when it really counts Grant Schmidbauer	Electrical Shock and the Electric Powered Vehicles - An Introduction Forensics Jan Swart	Mandatory requirements for commercializing electrical products in Argentina 2011 IEEE International Symposium on Product Compliance Engineering Silvia L. Diaz Manner
Wednesday				
7:00-8:00	Speaker Breakfast - Room TBD			
8:00-9:00	WORKSHOP: Human-Centered Systems Engineering George Michael Samaras	TAC Meeting - ITE	TAC Meeting - Forensics	TAC Meeting - TBD
9:00-10:00	WORKSHOP: Human-Centered Systems Engineering George Michael Samaras	LASER - Reporting Requirements for Lasers and Laser-Containing Products Anne M. Venetta Richard	Tying the electrical event to the equipment problem Forensics Peter Perkins	Product Safety Requirements - When your Product Becomes Part of the Building Bob Griffin
10:00-10:30 AM	Break			
10:30-11:30	WORKSHOP: Human-Centered Systems Engineering George Michael Samaras	LASER - Recap of the International Laser Safety Conference 2011 Steve Stegner	PANEL DISCUSSION - 100W USB	Main Differences for IEC 61010-1, between 2nd and 3rd editions Grant Schmidbauer
11:30-12:30	ENV - RoHS Recast James Calder	Impact of VoIP services on the level of head exposure to radiation from 3G Smartphone & Hayat Abdulla	Safety Considerations for Wireless Base Station Equipment Don Gies	HOLD - Product Safety Guidelines for Prototype and Limited Use Commercial Devices Jack M Burns
12:30	SYMPOSIUM RECAP?			

“Bridging the Gap between Safety and Sustainability” -An Interview with Stephen Wenc

*Doug Nix, PSES VP Conferences
9-Aug-11*

This year our ISPCE Keynote Speaker will be Stephen Wenc, General Counsel for UL, President UL Environment Inc., and President & Managing Director – Europe & Latin America.

Wenc will be addressing a new and growing area of technology in his Keynote Address, **“Bridging the Gap between Safety and Sustainability”**. “Green” or “sustainable” products represent a significant opportunity for growth for North American manufacturers, and the intersection between product safety requirements and performance requirements in these products is the focus of Wenc’s activities at UL.

Wenc’s career path started in law. In his early days he worked on legacy environmental claims cases. Seeing the impact experienced by claimants in these cases spurred his interest in seeing safer products on the market. He served UL as external counsel for a number of years before joining the company in 1999. Wenc became Acting General Counsel in 2004.

UL’s mission resonated at a personal level. As his experience grew, he came to realize that UL needed to become heavily committed to environmental aspects of products in addition to traditional product safety concerns. He sees UL bringing science into the discussion, where emotional concerns can sometimes become overwhelming. Wenc is personally committed to this work, having been part of the original team that decided on UL entering this field.

He sees the definition of safety changing; where once the concerns were primarily fire, shock and casualty, the definition now

includes air quality, toxicology and related aspects that are part of the end-use of the product.

Some of the most exciting developments are in building materials standards, like those for drywall, insulation, ceiling finishes and other materials. Since greener building designs result in less air exchange, emissions from building materials become critical elements in the safe use of the finished building. The challenges lie at the intersection between the safety of these products and their effectiveness in meeting the energy efficiency requirements of the design.

UL also recently acquired “Air Quality Sciences” in Atlanta, GA. AQS brings a strong interest in ultra-fine particles and their biological and toxicological effects on the human body. This focus dovetails in perfectly with the focus at UL Environment.

Over the next few years, Wenc sees the biggest challenges in developing an understanding of what “green” means for building products, developing definitions for “green” and “sustainable”, and incorporating these definitions into standards. In the longer term, getting a handle on the intersection between safety requirements and sustainability requirements will likely pose the biggest challenge. Finding ways to strike a balance between these requirements will be key.

Long term, harmonization in the global market will be the biggest challenge, but one that cannot be ignored. Programs like LEED in North American and parallel systems such as Green Star in Australia and similar programs in the UK and France are driving the need for architects, designers, engineers and builders to have safe products that meet the energy efficiency requirements available to them. Greater transparency in disclosure through programs like RoHS mean that manufacturers must declare the use of hazardous materials in their products. Harmonization of these

kinds of requirements are required to keep foreign markets open to North American manufacturers.

Wenc sees the current conditions in the development of green standards as similar in many ways to the early days of electrical safety and fire standards. Time is needed to develop the understanding, the materials and the techniques to provide optimal levels of performance and safety, and to integrate that knowledge into standards.

Wenc sees many opportunities for growth for North American manufacturers in the area of green products. Manufacturers who define themselves by their sustainable manufacturing activities and the qualities of their green products will succeed. Architects, engineers and designers are looking to specify high efficiency green products in their designs, and Wenc believes that this market can only grow in coming years.

Currently, there are no UL standards that combine both sets of requirements, nor are there any internationally. There are individual standards at the product level that address one set of requirements or the other. UL sees and opportunity to lead the world in this area, developing new standards that combine these requirements.

To gain a deeper understanding of the intersection between safety and sustainability, come to the 2011 ISPCE in San Diego, CA to hear Stephen Wenc's keynote address on this important topic.

Professional Biography – Profile

Stephen H. Wenc President, UL Environment



Stephen Wenc is president of UL Environment, a wholly-owned subsidiary of UL (Underwriters Laboratories). UL is an independent Standards Development Organization, Testing Lab and Certification Body with a Mission to en-

hance life safety and facilitate global commerce. Founded in 1893, UL is a Chicago based company with worldwide operations in areas of Product Safety, Life and Health Products, Environmental Safety, Verification Services and Education.

As president, Steve leads global operations and development of the company's business in the environmental sector. Steve is a member of the US Green Building Council, UL Environment's representative on the Sustainable Building Alliance and an advisory board member for the Disney Planet Challenge Program. He also is a member of the American Bar Association and the Chicago Bar Association.

Previously, Steve served as senior vice president, general counsel and corporate secretary, managing UL's legal department, government affairs office, anti-counterfeiting operations and ethics and compliance group. Since July 2008, he has served as president and managing director of UL's business in Europe and Latin America, a role he continues to play in addition to his responsibilities as president of UL Environment.

Steve is a former partner at the law firm of Bell, Boyd & Lloyd in Chicago, where he represented a range of large- and mid-cap clients, including UL, as part of the firm's antitrust and trade regulation group.

Steve holds a bachelor's degree with honors in government from the University of Notre Dame (1988) and a law degree cum laude from Georgetown University (1991).

Steve currently resides in Geneva, Switzerland with his wife, Sara and their three children, Madeleine (14), Grant (11) and Kate (7). He has been

Continued on Page 10

ISPCE 2012 Chairperson's Message:

Hello, my name is Anna Klostermann, I am a Business Development Manager at CASE Forensics and I'm your chairperson for the 2012 ISPCE/PSES International Symposium. 2011 in San Diego will be my fifth symposium and I am excited and honored to head up the 2012 symposium; I will give my all to make it the best symposium possible for both attendees and exhibitors

The 2012 symposium will be held in beautiful Portland, Oregon. The underlying theme for the 2012 symposium is "Sustainability"; here in the Northwestern part of the U.S., living green and building and manufacturing using sustainable processes and practices is of the utmost importance.

To build upon the theme of sustainability the committee has chosen a hotel that is 2 blocks from the Metro light rail system. This light rail will allow people to commute from the airport, to the hotel, to downtown Portland and most of the rest of the city with ease and with no need for a rental car. The chosen hotel; Doubletree @ Lloyd Center is a completely green and sustainable property.

We are planning some exciting events for spouses/partners and for after symposium entertainment, including wine tasting, micro brew tasting, sales tax free shopping adventures, walking tours and a multitude of fine dining options. I am also very happy to be able to announce our room rates will not be going up from this year's rate.

If anyone would like to be a part of the committee to make the 2012 Symposium a great success please call or email me your contact information; please include what type of role you would like to assist with.

I look forward to meeting all you this year in San Diego and welcoming you all to my beautiful home city of Portland, Oregon. Keep an eye out for us on LinkedIn and Facebook; as we draw nearer we will keep those sites updated with information regarding events and activities.

Thank you,
Anna Klostermann



Continued from Page 9

actively involved in a variety of organizations including serving as Chair to the Stewardship Committee at Old St. Patrick's Church in Chicago, Illinois; Executive Chair of UL's American Heart Association campaign supporting research and education on heart disease; and a long-time coach of American Youth Soccer Organization teams in the Chicagoland area. Steve also enjoys history, travel, fly fishing, running and cooking.



2012 IEEE SYMPOSIUM ON PRODUCT COMPLIANCE ENGINEERING

SPONSORED BY THE IEEE PRODUCT SAFETY ENGINEERING SOCIETY

NOVEMBER 7 - NOVEMBER 9, 2012

PORTLAND, OREGON, USA

WWW.PSESYMPOSIUM.ORG

Call for Papers, Workshops, and Tutorials

The IEEE Product Safety Engineering Society seeks original, unpublished papers and tutorials on all aspects of product safety and compliance engineering including, but not limited to:

Product Specific: Consumer, medical, computer (IT), test and measurement, power supplies, telecommunication, industrial control, electric tools, home appliances, cellular and wireless, etc.

Hazard Specific: Electrical, mechanical, fire, thermal, chemical, optical, software, functional, reliability, risk assessment, etc.

EMC / RF: Electromagnetic emissions, electromagnetic immunity, regulatory, Introduction to EMC/RF for the safety engineer and compliance engineer.

Components: Grounding, insulation, opto-couplers, cables, capacitors, connectors, current-limiters, transformers, current-limiters, fuses, lasers, ferrites, environmental, electromagnetic suppression & protection, surge protectors, printed wiring boards, etc.

Certification: Electromagnetic emissions & immunity, Environmental, Product safety, Processes, safety testing, regulatory, product liability etc.

Standards Activities: Development, status, interpretations, country specific requirements, Laboratory Accreditation, etc.

Research: Body physiological responses to various hazardous energy sources, unique safeguard schemes, electrically-caused fire, forensic methods etc.

Environmental: RoHS, WEEE, EuP (Energy-using Products), Energy Star, Packaging Directives, REACH (Chemical), CeC, etc.

Demonstration Papers: Demonstrations of product safety testing techniques including mechanical, electrical, fire, etc.

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
All Final Papers and Presentations	September 1, 2012

Prospective authors should submit e-papers using the on-line EDAS submission system. Please go to the Author's Kit page of the PSES web for comprehensive submission instructions including paper templates on the author tab at:

www.psessymposium.org

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Exhibitors

Advanced Test Equipment Rentals offers effective solutions on rentals, leases, and sales of leading-edge test and measurement equipment used throughout the product safety and environmental industries. Our wide selection includes a large inventory of equipment manufactured by premier brands such as Teseq, Agilent, QuadTech, Kikusui, Fluke, Narda, Bruel & Kjaer and more. We also carry a full line of EMC equipment for both compliance and pre-compliance testing.

ARC Technologies Inc. is a leading manufacturer and supplier of microwave absorbing materials for commercial and defense applications. The company's Wave-X family of products is an effective, reliable, and simple solution for EMI and SAR suppression due to their unique formulations. Visit ARC's booth or Web site for more information

Associated Research, an ISO 9001 registered company, has been the leader in the electrical safety compliance testing industry for over 70 years! Today, Associated Research offers a complete product line of electrical safety compliance testers. Included in their product offering are AC Hipot, DC Hipot, Insulation Resistance, Ground Bond, Functional Run, Line Leakage testers, and Multi-Function Electrical Safety Compliance Analyzers.

CASE Forensics has provided consulting engineering services since 1990. Our experience investigating field failures provides an intrinsic knowledge base to assist you with research, development and product safety testing.

D.L.S. provides global compliance testing services, including testing certification, and consulting for Product Safety and EMC requirements. D.L.S. can test to UL, CSA, CE, (Low Voltage, Medical Device, and Machinery Directives) CCC, TUV, GS, CB and other global safety requirements. Combined with global EMC testing, D.L.S. provides a true one-stop shop for all your global compliance testing needs.

ED&D offers the world's most complete line of Product Safety Test Equipment. Products include Hipot testers, leakage current testers, impact hammers, glow wire testers. Dust chambers, jet nozzles, accessibility probes, force gauges, and many more items ...of which many will be on display. ED&D is now ISO/IEC 17025 Accredited, with the industry's most complete Scope for specialized test equipment.

iNARTE, Inc., a non-profit association, Certifies qualified practitioners in Product Safety Engineering. Certification benefits the individual engineer and technician, their company, and the global product safety community by establishing an internationally recognised standard of individual professional excellence.

IN Compliance Magazine is the voice of compliance in the electronics industry, giving readers the advantage of one news source for the compliance requirements of their products. IN Compliance Magazine's strong commitment to editorial excellence with innovative, interesting and informa-

tive articles and columns will keep you coming back for more month after month.

Interpower Corporation makes it EASY to design and build your products for export worldwide. The International Power Source produces the voltage and frequencies used around the world and can simulate fluctuations. The IPS can run on 100 to 240 VAC and 50 to 60 Hz with all major world sockets on the unit. Stop by and see for yourself!

Nemko Group is a premier market access service provider for electrical and electronic products. What is your product? Where are you selling your product? We can put together a comprehensive market access portfolio that allows you to sell your product in the markets you desire. We also offer product certification and compliance test at our locally operated laboratories in many countries around the world. With our accredited, modern and efficient testing facility, we offer our customers professional services in the areas of Safety, Wireless, EMC and Telecom.

We deliver timely and cost-effective market access, certification and testing services. Our CB Scheme certification facilitates customers access Global Markets. Nemko is also an accredited Certification Body for registering your Quality (QMS) and Environmental (EMS) Management Systems in accordance with ISO 9001, ISO 14001 and ISO 13485. Our experienced and professional auditors provide prompt and efficient audit services, resulting in on-time certification.

Northwest EMC Inc. is an independent, accredited, commercial EMC compliance test laboratory. The company has locations in California, Minnesota, New York, Oregon, and Washington. Facilities include FCC listed 10M, 5M, and 3M chambers with a full complement of immunity and wireless testing capabilities. SAR Evaluations and DFS testing are now being offered.

TÜV SÜD America, a subsidiary of TÜV SÜD AG, is a business-to-business engineering services firm providing international safety testing and certification services. With over 700 experts in North America, TÜV SÜD provides NRTL and SCC Certification, CB Scheme Certification, Field Evaluations, SEMI Evaluations and other Industrial Machinery Services. Additional services include Medical services as an EU Notified Body, CE Marking assistance, International Compliance, EMC/ Environmental Testing, and Quality Management System Certification. TÜV SÜD also provides Electromagnetic Compatibility (EMC), Electrical & Mechanical Safety, Wireless Testing, and many additional global conformity assessment services that help companies gain product compliance to enter individual country markets. For more information, visit www.TUVamerica.com.

Underwriters Laboratories Inc. (UL) is a global leader in product safety certification that has been testing products for more than 115 years. UL provides a broad range of integrated compliance services to the high technology (Consumer Electronics, Computing and Peripherals, Telecom Products) industry including international safety certification services, electromagnetic compatibility testing (EMC), performance testing in accordance with Telcordia GRs and ETSI specifications in the areas of NEBS, outside plant and fiber optics. UL also provides comprehensive consulting on engineering support services, training, and testing relating to energy efficiency and RoHS requirements for restricted substances.

**Please be sure to visit them the Exhibitors while you are at the 2011 symposium?
Exhibit Space is Available but going FAST!**

Abstracts

Mr. Don Gies, Alcatel-Lucent US: This paper gives a brief overview and history of safety certification of wireless telecommunications base station equipment, and describes some of the particular techniques used to evaluate the safety of the radio transmitting sub-assemblies.

Mr. Erik Gilsdorf, Technische Universität Darmstadt, DE: Due to an increasing number of regulatory restrictions and a rising product complexity, compliance and safety management have become key issues for enterprises today. Besides the requirements to build safe products, extended documentation of safety compliance and in-use restrictions have to be archived and published by law. Some research projects have already tackled the problem of visually identifying hazards zones within virtual environments. Other approaches deal with the formal analysis of safety issues in expert systems for conformity checks. What is still missing is the bridge between visual representation and documentation. The virtual reality approaches do not support storage and processing of identified hazards, furthermore 3D models have to be prepared and converted to VR formats, which does not allow "online" analysis. Expert systems only cover an abstract, textual definition of hazard zones, which separates the safety domain from design. This paper describes a framework for "product safety information" to identify, track and document hazards and protective measures throughout the product lifecycle. The underlying data model supports integration of geometric references into the safety information, similar to the use of product manufacturing information like GD&T. Thus pictorial and textual safety information can be annotated to 3D CAD models and used for communication of engineering changes related to safety issues in early design stages. Later in product life this information can then be embedded into user documentation or service manuals.

"Wireless power transfer has been around for many years, current research in this technology has lead to systems with higher efficiency and more applicability over varying distances. Though there are many advantages to wireless power transfer, safety concerns associated with the technology exist as well. These include concerns surrounding high voltage on resonant coils, electromagnetic energy exposure, and unintentional foreign object heating. The Wireless Power Consortium (WPC) has a call to detect metal objects (MOD) located in the power transfer field [1].

This research addresses metal objects as defined by the WPC as well as other non-metallic objects that may dissipate power in a magnetic field; therefore, this article expands MOD to foreign object detection (FOD). The work proposes a parasitic loss detection (PLD) model as an approach to FOD by modeling and characterizing the energy lost in a wireless power system. The model considers electronic component losses and magnetic material losses in an attempt to quantify the specific energy lost due to parasitic element or foreign object heating. There are alternative methods to the FOD problem, however, this paper highlights the benefits of PLD as it compares to the alternatives. Using predictive techniques which take into consideration operating conditions (e.g. load, position, frequency), the model can quantify the magnitude and location of losses from measurements on the primary side and reported power usage on the secondary side of the wireless power transfer system.

Using PLD as a method of FOD, it has been demonstrated that foreign objects can be detected in the magnetic field when their power absorption reaches 0.5W. The detection is accomplished by on board measurements quantifying the losses in the system; no external sensing (e.g. temperature, optical, pressure) is required for detection of foreign objects.

References 1. ""System Description:Wireless Power Transfer,Volume I: Low Power,Version 1.0.2 April 2011"", The Wireless Power Consortium, New Jersey, USA"
Mr. Neil Kuyvenhover, Fulton Innovation, US

Mr. Bhagirath Ahirwal, Central Institute of Mining and Fuel Research, Dhanbad, In: It is very difficult to manage ignition risk by operational procedures to ensure that there has not been a hazard gas release in the area prior to starting the motor or and stator sparking which may occur during running; this procedure may be less appropriate than an automatic interlock. As per Indian Standard rotor cage potential sparking and potential stator winding discharge of induction motor are to be considered for risk assessments of increased safety motor. Risk assessment is done based on construction, operation, protection, and environmental conditions of the motor and ignition risk factor are assigned based on its characteristics. The sum of assigned risk factors should not be more than 5. If it is greater than 5 the motor should be type tested where no incendive sparking should occur during ignition risk assessment test for Ex 'e' motor. The paper discusses about the control of ignition risk and assessment of risk factor. The paper also describes the ignition risk assessments test of HT Ex 'e' motor as per Indian Standard , conducted successfully first time in India by Central Institute of Mining and Fuel Research Institute, Dhanbad, jointly with Bharat Heavy Electricals Limited, India.

Mr. Thomas Lanzisero, UL Inc., US : Applied Safety Science and Engineering Techniques (ASSETs) merge hazard based safety engineering and safety science principles in an overall framework of a safety management process to achieve, maintain and continuously improve safety. The ASSET process is synthesized from current, industry-standard risk assessment and risk management guidelines, including recent ISO, IEC and ANSI publications.

Mrs. Silvia Diaz Monnier, National Institute of Industrial Technology, AR: "In the last years, Argentina has established mandatory requirements for different products. The process, normative and standards vary for each case. The presentation will describe how to put an electrical product into Argentinean market, with special attention in the S-mark and the medical products.

For non medical products a certification process is required. It will explain which products are included in the mandatory requirements, the three systems of certification, and the market surveillance process for each system of certification.

For commercialize a medical product, the product shall be listed in ANMAT. Before the listing the manufacturer or importer should make the registration for that kind of product with ANMAT. The presentation will explain the process required for manufacturer/importer registration, the product listing and the systems for classification of products.

There are some special products that have other compliance requirements. The presentation will explain which products are involved, the normative, the technical requirement and the enforcement authority for each case.

Finally, the presentation will describe some Argentinean requirements like the plug, some marking and ratings."

Mr. Yasuo Harada, Panasonic, JP: "Product safety and quality issues have been discussed globally. It is important that the safety design should be laid in the stage of the product's design of the manufacturing process in order to reduce the incident of house hold appliances. In this paper, we propose the safety assessment using hazard base approach. For the past and until now, the product safety has been tried to be achieved by the basis on the past incident cases, and manufacturers have been trying to avoid reoccurrence of the similar incidents by checking past incident causing. But this approach is still not perfectly effective to reduce cases in the market. So we analyze the incident report in Japan on hazards of the past incident case. We incorporate major hazards into FTA diagram to oversee the

Continued on Page 14

causes of the products incidents including the important components of consumer electronics appliances. The hazard base FTA helps to cover the all causes the incidents. We also incorporate the safeguard components in FTA. The reliability of components is calculated and the safety merit of the products is derived against the product living period using the Monte-Carlo simulation.

Mr. Grant Schmidbauer, Nemko USA, Inc., US: We propose that the hazard base product safety assessment be applied to derive the safety merit of the product design, which gives the criteria for the product design for service periods of product and maintain the manufacturers safety design level at design stage. By using this scheme, the identical criteria for safety requirement for all kinds of products categories can be standardized for product safety."

I will present on the main differences between the existing standard IEC 61010-1: 2001, 2nd edition, and the newly published standard IEC 61010-1: 2011, 3rd edition.

Mr. Flore Chiang Underwriters Laboratories Taiwan Co., Ltd., TW: The use of surge suppression devices has been proliferated since the last decade, primarily addressing the need for equipment to be immune to external influence caused by atmospheric disturbances and switching transients. Safety concerns associated with the persistent conduction and deterioration over time had arisen after several field incidents. This paper will attempt to provide an overview of the use of SPD in electronic equipment and the respective safety considerations.

Mr. Flore Chiang Underwriters Laboratories Taiwan Co., Ltd., TW: The term 'temporary overvoltages' has been first introduced to product safety standards for information and communication technology equipment as one of the causes of VDR (voltage dependent resistor) fire and burst, and then has been factored in the determination of working voltages. Unlike a.c. mains transient overvoltages, temporary overvoltages are due to the fault in low-voltage power distribution system and medium-voltage or high-voltage power distribution system from which the low-voltage system is derived. This paper will attempt to provide an overview of the cause and the implications of temporary overvoltages in safety considerations.

Mr. Martin Lin, Underwriters Laboratories Taiwan Co., Ltd., TW: For decades, safety evaluations for A/V (Audio/Video) apparatus and ICT (Information/Communication Technology) equipment have been conducted per two different standards (i.e., IEC 60065 and IEC 60950-1 respectively). However, modern technologies tend to blur the boundary. For examples, more and more people would watch movies on a laptop, or surf the internet on a smart TV, etc. Since 2002, IEC TC 108 had recognized the problem and has started to develop a new single standard IEC 62368-1 to accommodate both A/V and ICT equipment, utilizing Hazard Base Safety Engineering principles. The first edition of IEC 62368-1 has been published in January, 2010, and the 2nd edition is planned to be published around the end of 2012. In order to be ready for the transition from IEC 60065 or IEC 60950-1 to IEC 62368-1, it's imperative to know what are the differences and impacts that possibly imposed on current design practice. For this purpose, UL (Underwriters Laboratories) has developed comparison charts for clauses, test equipment and test items between IEC 60065, IEC 60950-1 and IEC 62368-1. This paper provides an overview of the comparison charts and will discuss several case studies on selected topics pertaining to tests.

Mr. William Meng, Underwriters Laboratories Taiwan Co., Ltd., TW: Every year, hundreds of thousands of switching mode power supply (SMPS) are manufactured and shipped to users all over the world. Most of these power supplies used with information and communication technology equipment

or consumer electronics are either certified to IEC 60950-1 or IEC 60065, or other derivative ones. In most safety tests, operation conditions are clearly defined if they were found to influence the test results. Historically, the loading conditions of SMPS have not been specified in most standards as they were found to have little influence on the measurement. However, with the proliferation of energy efficiency (eco-friendly) regulations, linear power supplies are falling out of favor, furthermore, a variety of techniques (e.g. to reduce power consumption of stand-by mode) are developed in this efficiency game. For instance, to latch off some portion of circuit while no-load condition or change operation frequency with the loading conditions. This paper intends to summarize how touch current measurement is affected by loading conditions in modern design, and how do we select an appropriate method to simulate the worst-case scenario.

Dr. George Samaras, Samaras & Associates, Inc., US

TUTORIAL TITLE: Human-Centered Systems Engineering

TUTORIAL TOPIC: How to design, develop, and validate human-centered products, processes, and services that are safe and effective.

TUTORIAL ABSTRACT: Products, processes, and services exist solely because their uses by humans have real or perceived value (utilitarian or esthetic). This is the fundamental justification and rationale for human-centered development, which provides the greatest long-term return-on-investment, lowest "total cost of ownership", and the highest probability of safety and effectiveness. Systems Engineering (SE) is a structured, systematic approach to the conceptualization, design, development, deployment, and replacement of products, processes, and services. Classical SE, in existence since the early 1900s, is one of the oldest agile methods. We will discuss the fundamental state space, life-cycle, technical, and management activities, in the context of micro-ergonomics (tools for individuals) and macro-ergonomics (tools for organizations). Quality is about identifying and satisficing ALL the stakeholders' evolving and frequently conflicting needs, wants, and desires (NWDs). Requirements (design inputs) are a subset of NWDs selected for fulfillment. Modern human factors engineering can contribute at all levels of SE. The concept of human-centered system complexity (from physical and behavioral to social and cultural considerations) will be presented, followed by a discussion of the relevant metrology. Human-centered SE presents a rather large set of factors for experimental verification and validation studies. Experimental design approaches, historically used by engineers, are very inefficient given large numbers of factors. We will discuss the fundamental principles of experimental designs and the modern approach (statistical design of experiments or DOE) useful for product, process, and/or service verification and validation studies. DOE will be visually presented using its underlying, simple geometric structure. Please bring your laptop; lectures and workbook will be on a CD. NEED FOR THE WORKSHOP Historically, human factors engineering has been relegated to the very beginning and the very end of the development process; this creates a significant and justifiable reluctance by the organization to incorporate HF engineering changes in new or improved products, processes, or services. A major barrier for the integrated application of human factors engineering in the development of safe and effective products, processes, and services is the general inability of ergonomists to justify their continual participation (from "lust to dust") and explain the value of their contributions to technical management. Understanding how human factors engineering can contribute to all aspects of the design and development process will lower a barrier to achieving safety and effectiveness.

This will be an update of the workshop given to ergonomists at IEA 2006/2009 and for a number of years at HFES. It will be based, in large part, on work with clients and the peer-reviewed articles listed below. The specific objectives are: • Understand that the introduction of human actors (a term of art in the social sciences and economics that subsumes users) into any endeavor dramatically increases the possible number of incorrect or inappropriate responses of a "simple" hardware and/or software system and that these responses are dependent on individual and group characteristics. • Review the basics of systems engineering (the SE activity space, condensed vs. expanded SE lifecycle notations, reconciliation with agile methods, verification vs. validation, SE from a project management

perspective, micro- vs. macro- ergonomic perspectives, etc.)

- Understand the role and potential contributions of human factors (ergonomics) engineering in each SE phase (assessment of stakeholder needs, wants and desires; requirements formulation, specification development, verifications, validation, risk management and corrective & preventative actions) during the design, development, deployment, and replacement of complex systems.
- Appreciate human-centered system complexity (from physical and behavioral to social and cultural considerations) and how this leads to the identification of measurable attributes
- Appreciate the metrology issues for human factors and human actors and how to identify and operationalize relevant variables
- Understand (graphically, no maths) the fundamentals of statistical Design Of Experiments (DOE) vs. One-Variable-At-A-Time (OVAAT) studies and how the DOE approach permits: (a) economical, simultaneous study of multiple variables and their interactions, (b) investigation of optimality conditions and sources of variability, and (c) more robust designs

QUALIFICATIONS OF PRESENTER: Please see short bio in EDAS

RECENT RELEVANT PUBLICATIONS

Samaras GM, Horst RL. (2005) A Systems Engineering Perspective on the Human Centered Design of Health Information Systems. *J. Biomedical Informatics*. 38(1):61-74

Samaras GM. (2005) Engineering Complex Systems: Validating the Human Factors. Proc. 7th Annual Symposium on Human Interactions with Complex Systems, Greenbelt, MD, November 17-18

Samaras GM. (2006) An Approach to Human Factors Validation. *J. Validation Technology*, 12(3):190-201

Samaras GM, Samaras EA. (2009) Feasibility of an e-Health Initiative: Information NWDs of Cancer Survivor Stakeholders. Proc. 17th World Congress on Ergonomics, August 9-14, Beijing, China, on CD-ROM (10 pages).

Samaras GM. (2010) Human-Centered Systems Engineering: Building Products, Processes, and Services. Proc. 2010 SHS/ASQ Conference, February 25-27 on CD-ROM (6 pages)

Samaras GM. (2010) The Use, Misuse, and Abuse of Design Controls. *IEEE Eng Med Biol Magazine* 29(3):12-18

Samaras EA, Samaras GM. (2010) Using Human-Centered Systems Engineering to Reduce Nurse Stakeholder Dissonance. *Biomed Instrum & Technol* 44(s1):25-32

Samaras GM. (2011) Human-Centered Systems Engineering: Managing Dissonance in Healthcare Delivery (Chapter 7), in *Management Engineering for Effective Healthcare Delivery: Principles and Practices*, Kolker, A. & Story, P. (Eds). (in press)

RECENT WORKSHOPS

Samaras GM. Human-centered Systems Engineering: A Workshop. IASTED Telehealth 2007, Montreal, Canada, IEA 2009 (Beijing, CN,) HFES 2009 (San Antonio, TX), HFES 2010 (San Francisco, CA)

Samaras GM, Horst RL. Systems Engineering for the Human Factors Engineer HFES 2005 (Orlando, FL), IEA 2006 (Maastricht, NL), HFES 2006 (San Francisco, CA), HFES 2007 (Baltimore, MD)

Prof. Hayat Abdulla, Universidad Simón Bolívar, VE: "The maximum level of emissions from cellular devices, as characterized by their Specific Absorption Rate (SAR), is tightly enforced by regional and national regulatory agencies. As a result of this effort, it is safe to state that the use of cellular phones does not pose significant risks to users, as many studies have certified. However, the result of some other research efforts have hinted at the existence of a correlation between prolonged use of cell phones and certain forms of brain tumors. Although overwhelming evidence points at the fact that this should not be a reason for general public health concern, there are indications that some specific population groups such as children and very heavy adult users may be at an increased risk of developing some form of brain disease as a consequence of cell phone emissions.

On the other hand, while maximum levels of EM energy generated by cellular devices are carefully monitored, little attention has been paid to average levels of radiation, which are equally related to the primary effect of non-ionizing emissions, that is, heat induced from dissipation. The study presented here follows a line of research that looks at the average (as well as other statistics) of head SAR from a system perspective, that is, considering the cellular device not as an isolated piece of equipment but as a part of a rather complex cellular network.

Users of third generation cellular services are becoming increasingly attracted to the use of packetized voice services on their wireless devices. Voice over IP (VoIP) cellular radio connections are characterized by a set of air interface parameters that may be quite different from those used by con-


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ventional, circuit-switched speech connections. This work is aimed at quantifying the impact of such differences on the level of non-ionizing radiation on the head of voice users. The study is aimed at one specific family of devices (smartphones), and considers two types of packetized speech services, namely, VoIP using standard protocols and the proprietary system known as Skype [®].

The methodology employs extensive Monte Carlo simulations of the radio uplink of a Release 99 W-CDMA system (UMTS), in combination with experimental data regarding radio emissions of group of popular devices, as reported by regulatory agencies. It also involves the use of a novel model that linearly relates the average transmit power from a cellular device to its associated SAR. Results indicate that, as a general rule, VoIP connections always bring in an increase in some of the statistics of the level of emissions absorbed by the head of voice users, as compared to circuit-switched connections. Moreover, under a set of typical conditions, such increase in average radiation levels may be as high as 60% . As a result, a number of recommendations aimed at mitigating the increase in radio emissions associated to the use of VoIP instead of conventional voice services are readily drawn from this study"

Mr. Humberto de Araujo, University of Campinas, BR: As the EMC - Electromagnetic Compatibility is an incessant necessity nowadays, because the increases of electronic devices, different approaches support the pre-compliance tests (EMC/EMI/EMS) setups which have consolidated standards and regulations. These setups include TEM/GTEM cells, Magnetic Loop, Magnetic probe, Workbench Faraday Cage, OATS - Open Area Test Site and others. Based on the advantages in terms of frequency range and cost- effectiveness, a GTEM to operate from 500 MHz - 18GHz was designed. In this work, a metamaterial patterning was applied to the septum (metallic plate constructed by cooper) of the GTEM chamber, in order to obtain a better coupling between the EM field and the DUT (Device Under Test). The main analysis is carried out on the excitation sector of the GTEM chamber - APEX. The APEX is the transition from the 50 Ω coaxial cable to the rectangular transmission line. It takes about 10% of the overall length of the chamber with a front panel large enough to mount a N connector. The APEX should be mounted on the body by a flange which ensures mechanical robustness and a good electrical connection. To avoid reflections, the match between the connector and the center conductor should be carefully projected. The basic metamaterial cell pattern employed here consists of a ring resonator - RR (Ring Resonator) or CLL (Capacitively Loaded Loop) in SRR (Split Ring resonator) or CSRR (Complementary Split Ring Resonator) configuration topologies. The cells are oriented depending on the wave direction from the device to the measuring port or from the exciter side to the device under test. Actually, resonant type metamaterial transmission lines are very similar to CLL lines. Experimental results are compared to the simulated ones and show the tuning characteristic advantages of the patterned septum in comparison with the plain one. This new and promising technique appears to improve the GTEM chamber overall performance.

Mr. Elya Joffe, KTM Proect Engineering, IL: "Technology has a profound influence on society. New possibilities and new risks arise as a consequence of the employment of new technologies and products. Thus, decisions made during design processes shape the possibilities and risks of products. Some decisions, for example, can have a large influence on the safety of people using the product lifecycle. These decisions are ethically relevant: safety is an ethical issue.

Every engineer will be faced with an ethical dilemma sometime during his working career. Engineers are also required to make ethical decisions every day during the regular course of engineering work. Rarely in any engineer's career is there an incident like the ""Challenger"" disaster where the explosion of a launch vehicle with people on board occurs, but it is always a possibility. Personnel involved in safety-critical application development should possess a balance of high-quality professional skills. Ultimately, it is unethical to develop safety-related systems without following the best practice available.

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Product Safety Engineering Society

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KEYNOTE

"Bridging the Gap between Safety and Sustainability"

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This presentation addresses the question of potential conflicts between safety and ethics and the manner this conflict can be addressed and resolved."

Mr. James Calder, Intertek - Health and Environment, CA: "Changes within the new Restriction of Hazardous Substances (ROHS) Directive will have significant impact on all electronic products that are currently covered under the existing ROHS Directive while expanding the scope of covered products in a transitional timetable.

This presentation will cover the following aspects of the new law's impact to electronics:

- Overview of Regulation and requirements - Scope - Timeline - New CE mark requirements for RoHS-2 - Harmonized standards - IEC/CENELEC - Industry practices - Enforcement methodologies
- Alignment with other substance programs

The increased enforcement powers for this law create a need for all areas of an electronic company to become properly educated in its impact. This presentation/program will provide sufficient content and discussion to allow companies to make strategic decisions for compliance and product protection."

Mr. Norman Bernas, University of Cumbria, CA: "Light Rail Systems, also known as municipal Rapid Transit Systems, inherently encompass within their area of operation, virtually all aspects of the Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI) spectrum. This extends to the multitude of rail signaling equipment which is jam-packed with an abundance of microprocessor based electronics gear required for the safe and efficient operation of modern Light Rail Systems.

The Light Rail communications systems of today are a far cry from what they were even just a few years ago. In addition to the traditional signaling equipment, that historically indicated basic train functions like starting, stopping and slowing down, there are now sophisticated, computer based Automatic Train Control (ATC), systems that are often operated in the driverless mode, meaning that there is no longer a driver physically present on the train overseeing its operation.

The electromagnetic environment of Light Rail Systems is characterized by high-voltage and current which produces arcing and consequently EMI across a wide bandwidth. High frequency EMI which manifests as radiated and conducted emissions is a common occurrence. In addition to the localized EMC environment, lightning strikes are a real threat to the rail systems electronics and must also be considered.

The Light Rail signaling equipment which is subjected to this severe EMI must function properly under all circumstances and so all aspects of EMC/EMI are considered during the equipment design and formal EMC testing. This is crucial, considering that the safety of the passengers, which after all, is the main focus and motivation for a state-of-the-art Light Rail System, depends on it.

The details of how successful and efficient EMC Regulatory Compliance is accomplished, is the subject of this paper.

Since it's not always possible to pre-test equipment completely in-house for all for EMC requirements, deficiencies are often only revealed during formal EMC testing at a certified test laboratory. It is then that the expertise of the EMC engineer applied.

During the EMC compliance testing process, which includes a plethora of emissions and susceptibil-

ity tests, the deficiencies that are often encountered, inevitably require some sort of design modification. However, great care must be given to the final decision about these design modifications, with respect to cost, ease of implementation and schedule impact. Done incorrectly, they can have far-reaching consequences.

It is with these three considerations of design change for EMC in mind that this paper will discuss specific examples of actual EMC problems and the solutions that have been applied to successfully resolved them. These examples not only apply to rail signaling systems, but may be applied to a broad spectrum of electronics systems, since the principles applied are universal."

Mr. Norman Bernas, University of Cumbria, CA: Light Rail Systems, also known as municipal Rapid Transit Systems, inherently encompass within their area of operation, virtually all aspects of the Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI) spectrum. This extends to the multitude of rail signaling equipment which is jam-packed with an abundance of microprocessor based electronics gear required for the safe and efficient operation of modern Light Rail Systems. The Light Rail signaling equipment which is subjected to severe EMI must function properly under all circumstances and so all aspects of EMC/EMI are considered during the equipment design and formal EMC testing. This is crucial, considering that the safety of the passengers, which after all, is the main focus and motivation for a state-of-the-art Light Rail System, depends on it. The scope of this paper is to provide details of a low cost solution to the problem of one aspect of EMC certification, namely, excessive powerline harmonics. Since it's not always possible to pre-test equipment completely in-house for all for EMC requirements, deficiencies are often only revealed during formal EMC testing at a certified test laboratory. It is then that the expertise of the EMC engineer is applied and not infrequently challenged. During the EMC compliance testing process, which includes a plethora of emissions and susceptibility tests, the deficiencies that are often encountered, inevitably require some sort of design modification. However, great care must be given to the final decision about these design modifications, with respect to cost, ease of implementation and schedule impact. Done incorrectly, they can have far-reaching consequences. It is with these three considerations of design change for Electromagnetic Compatibility in mind that this paper will discuss specific examples of actual EMC problems and the solutions that have been applied to successfully resolve them. Powerline harmonics are typically caused by 'switching' in electronic circuits. The main cause has been discovered to be the EMI associated with the switching circuits in the typical switching power supply. The solutions to excessive powerline harmonics, historically have been expensive, arduous and time consuming. Examples range from re-designing the power supply, which may necessitate requalifying it for electrical safety certifications to installing common-mode filters, which often require an extensive and costly packaging exercise. A low cost successful solution to excessive powerline harmonics is presented here, by using low-frequency ferrite filters. Ferrite filters have traditionally been used to filter high frequency EMI. With the introduction of low-frequency ferrite filters the range of applications of these types of filters has been expanded to provide a simplified and effective solution to excessive low frequency EMI. Actual measurements have shown that when ferrite filters were applied to failing low frequency powerline harmonics levels, an improvement of up to 9% was achieved during formal EMC testing. This was enough to give the equipment under test passing levels, thus saving a great deal of time and expense and avoiding a potential equipment redesign. The savings on a large rail project could potentially run into the many thousands of dollars. This example not only applies to rail signaling systems, but may be applied to a broad spectrum of electronics systems, since the principles applied are universal

Mr. Ted Eckert, Microsoft Corporation, US: Our jobs as product safety engineer require us to abuse products to determine their limits. Our Hipot tests involve high voltages. We have ground bond tests with high currents. We set fire to plastics and we use chemicals to test the durability of labels. Stability tests may require tipping very heavy test samples. Safety test laboratories need to be set up to

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ensure the safety of the test engineers and technicians. The rooms need to comply with the local electrical and building codes, and the procedures need to comply with the local occupational safety and health requirements. Properly implemented procedures can reduce the risk of injury without incurring significant hassle.

Mr. Brian O'Connell, Tamura Corp of America, US: "There are some test requirements that are specific to each of the various information technology, medical, and laboratory product safety standards. Component power converters must be compatible with local electric codes, so there can be test requirements not in the scoped safety standard, but are found in a national version of the standard or in local electric codes.

A detailed discussion of the construction requirements are NOT included. The presentation will focus on the design and conduct of a type test to indicate conformity to specific safety requirements for component power converters and isolation transformers, and to provide insight for the power component customer on when to repeat or add some type tests based on the end-use installation and conditions of acceptability.

Ms. Anne Venetta Richard, Alcatel-Lucent, US: This presentation outlines the compliance requirements and standards for lasers and laser-containing products for Alcatel-Lucent, a leader in the telecommunications industry. The presentation also provides insights and experiences from Alcatel-Lucent's merging of different historical approaches to laser reporting and federal and regulatory compliance.

Mr. Steve Stegner, Microsoft Corporation, US: The 2011 International Laser Safety Conference (ILSC) was a comprehensive four-day conference covering all aspects of laser safety practice and hazard control. Scientific sessions addressed developments in regulatory, mandatory and voluntary safety standards for laser products and for laser use. The Practical Applications Seminars (PAS) complemented the Scientific Sessions by exploring everyday scenarios that the LSO (Laser Safety Officer) and MLSO (Medical Laser Safety Officer) may encounter. The ILSC expanded this year's PAS to include the medical community. Laser safety experts from all over the world met and discussed their current research, ongoing safety programs, trends in laser use and misuse, as well as proposed updates to optical safety standards. This presentation reviews the highpoints of the conference at a level accessible to working compliance engineers and other without deep laser expertise.

Mr. Regan Arndt, TUV SUD America, US: This presentation will initially describe the basic function and composition of the Photovoltaic cell and module in relation to its electrical characteristics during solar irradiance and temperature, including a brief overview of PV systems. From there, the presentation continues to describe the testing requirements for photovoltaic modules in order to provide safe electrical and mechanical operation during their expected lifetime. Specific topics are provided to assess the prevention of electrical shock, fire hazards, and personal injury due to mechanical and environmental stresses in accordance with IEC 61730 and UL 1703 safety standards that are used for certification.

Mr. Lal Bahra, Dell Inc., US: I made a presentation on the same subject in 2006 PSE symposium where the effort was to demonstrate how the various values were calculated. In this new presentation, the effort is on the application of the principles in actual power supply design in accordance with 2.2.3 of IEC 60950-1, 2nd Ed. When the power supply goes into the hiccup mode (irrespective of whether it generates a single pulse or multiple pulses, there is no AC or DC limit during the hiccup mode. It

is simply a peak voltage measurement. It can be a single peak (single impulse) or multiple peaks (multiple impulses). Within the 20 ms or 200 ms window for t1, there may be a single peak or multiple peaks. This is followed by another t2 time duration of > 1 s or > 3 s in which the voltage must drop to the V1 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 appropriate limits of hiccup mode requirements. The single or multiple peaks must fit in the t1 time slot and must be preceded by a t2 time slot where the voltage remains within the normal SELV circuit limits.

Mr. Lal Bahra, Dell Inc., US: A power supply cord is an essential element of all cord connected electrical equipment; it is needed to connect the equipment to electrical mains supply. The power cord can be hard wired to the equipment or it can be a detachable type power cord. The non-detachable power cord consists of a plug, the cordage and a strain relief device to secure the cordage to the equipment enclosure. The detachable power cord, also known as power cord set, consists of a plug, cordage and a connector. This seems to be simple component but when it comes to regulatory approvals from different countries; it becomes a pretty complicated component. There may be different requirements for different countries regarding markings for country agency labels or certificate of compliance, letter of approval, certificate of approval or registration and these can be different for the plug, cordage and the connector. There are different requirements for a power cord if it is packed in the same box as the computer equipment versus when it is shipped as a repair or replacement component. Some countries want only the cord that is suitable for them in the box containing the equipment and no other country power cord. Some countries allow you to just provide proper instruction for the selection of the power cord while others do not rely on such instructions.

Mr. Dwayne Davis, Associated Research Inc., US: Would your Product Safety Testing Workstation Comply with OSHA 1910 Electrical Safety Requirements? Performing a routine product safety test should not be hazardous to the employee conducting the test. It is the employer's responsibility to provide a safe work environment free from any potential hazards. Employers should also implement safety related work practices and procedures and train the operator to avoid any potential hazards. The National Fire Protection Association, Standard for Electrical Safety Requirements for Employee Workplaces NFPA70E stipulates that only qualified persons performing electrical work be permitted access to live parts. The NFPA70E standard is one of the primary standards that the Occupational Safety and Health Administration OSHA 29 CFR Part 1910 subpart S Electrical Safety related Work Practices is based upon. Are your operators "qualified persons"? NFPA defines qualified persons in the following manner: A qualified person shall be trained and knowledgeable of the construction and operation of equipment or a specific work method, and be trained to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method. Such persons shall also be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulating tools and test equipment. Is your Product Safety Testing Workstation set up for Productivity or Safety? Most electrical accidents in the workplace are a direct result of one of the following three factors; unsafe equipment or installation, unsafe environment, or unsafe work practices. A responsible employer can help ensure a safe working environment by using electrical safety testers with a safety agency listing. Recognizing this OSHA requires that electrical instruments used in the workplace be listed by a Nationally Recognized Testing Laboratory (NRTL). Are your Employee's thoroughly familiar with the safety procedures for their particular job? Routine product safety tests are designed to identify faulty insulation, improper grounding, loose connections, and defective parts, equipment ground faults, unguarded live parts and excessive leakage currents that could pose a potential shock hazard. The workstations where these tests are conducted should not be an example of these problems to the operator. The operator should be trained and familiar with the purpose and procedures of each test and how to interpret the test results. Operators should have a basic understanding of how shocks occur, the differences between conductors and insulators, how electrical current will flow to any available ground path, and the effects of electrical cur-

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rent on the human body. What protective measures can be taken to protect people from the electrical hazards including the use of Personnel Protective Equipment. Are ESD Controls Incorporated at your Product Safety Testing Workstation? ESD and product safety testing do not mix. When performing product safety tests the operator should be isolated from ground (during an ESD testing the opposite holds true). Further, conductive clothing is not permitted as this can increased the risk for a potential shock.

Mr. Edgar Gutierrez, Bowman and Brooke LLP, US: Corporate engineers/employees are often called upon to testify on behalf of a corporate defendant in product liability litigation, either as a specifically named witness or, as the "person most knowledgeable/qualified." Engineers are not usually trained as "professional testifiers." As such, engineers who may be called upon to testify on behalf of their corporate employers face a particularly grueling task as they must defend the questioned design and adequately convey the company's "story" behind that design. Most engineers are not properly trained or sufficiently experienced to accomplish this task. This presentation therefore is intended to discuss the topic. It is geared toward the novice engineering witness who may have little to no experience testifying as a corporate witness. It covers the importance of the corporate witness testimony, how to adequately prepare for the deposition and a sampling of the topics and questions likely to be encountered.

Mr. Gary Tornquist, Microsoft Corporation, US: This paper examines why fundamentally there should exist a minimum power capable of causing ignition in electrical equipment, without trying to determine the value of the limit. Considerations include heat transfer, fluid dynamics of air, self fusing and scaling issues. Data from a lab experiment is presented. The paper concludes by asking: "Why are there no Micro-fires?" as this illustrates by countexample the existance of a minumum power.

Dr. Yakov Shkolnikov, Exponent, Inc and Drexel University, US: In the last few years, the use of wireless technology for household products has greatly increased led by applications such as smart meters, internet connected TVs, and Bluetooth links to home theater systems. In the coming years, it almost certain that wireless technology will have a nearly ubiquitous presence in households through a variety of mundane household appliances, toys, and other consumer products. Yet, with this technology comes an increased perception of risk by end-users fueled by fears of cancer and other health effects as well as concern about potential interference with life-saving products such as medical devices. This paper discusses concepts of radio frequency exposure and electromagnetic interference as they relate to the wireless communication networks that are likely to be used in household environments.

Mr. Thomas Burke, Underwriters Laboratories Inc., US: IEC 62368-1, Edition No. 1 covers audio/video, information and communication technology equipment within its product scope. Once an energy source has been identified and classified, the Standard contains both performance and construction options to determine the effectiveness of required safeguards for ordinary persons, instructed persons and skilled persons having contact with the equipment. This Standard was developed by IEC TC108 using Hazard-based Safety Engineering (HBSE) with a goal to facilitate consistency in the application of the requirements under a global conformity assessment system. However, it was anticipated that there also would be times when new and innovative technologies, materials and methods of construction are utilized by manufacturers in electronic products covered under its scope, and these new aspects may not be specifically covered by the Standard. In the past, this has resulted in some difficulties applying product safety standards, with delays achieving certification and introducing innovative and ground-breaking products to global markets. Fortunately, IEC 62368-1 contains provision

in its sub-clause 4.1.5 for applying non-prescriptive, basic HBSE principles for "technologies, and materials or methods of construction not specifically covered in this standard..." This provision allows for timely and efficient application of IEC 62368-1 to innovative forms of high technology products, helping to address a past impediment that sometimes prevented manufacturers from achieving certification and introducing products to global markets in a timely manner.

Mr. Keiichi Ohizumi, O2 Inc., JP: A unique approach, Design Structure Matrix, which is one of the methods defining a causal relationship in complex systems. It is so common an analysis in mechanical engineering. Nowadays it is becoming impossible for an engineer to keep up with the technical details aspects of various electrical devices available for use. So, the design and layout of electrical product for EMI suppression at the source must always be optimized, while maintaining system-wide functionality. And this is also a job for both the electrical engineer and mechanical engineer. Consequently, it is clarified that an optimization of design process of product is able to be not only in chronological order, but also design-information order, using DSM. DSM may highlight a lot of "Hidden Schematic" in EMC issue.

Mr. Luiz Claudio Araujo, Schonbek Worldwide Lighting, US: As of July 1st 2011, a group of 87 families of household electrical and similar appliances - including industrial equipment - manufactured or imported to Brazil must be certified according to a regulation published by INMETRO. The Act 371, which mandates compulsory certification, was published at the Official Gazette on December 31, 2009. Among household products that must be certified are electric irons, hair driers, vacuum cleaners, food processors, blenders and electric shavers. Among commercial and industrial products are vending machines, stoves, ovens and multifunctional apparatus for commercial kitchens. The purpose of this paper is to provide an overview of the certification process and the current status of the implementation of the new regulation.

Mr. Stefan Mozar, CQ University, Sydney International Campus, AU: Many designers rely on the over-current protection capability of the power supply control circuit to protect the power supply from an overload. This protection circuit is generally based on the primary or hot side of the power supply. For a major overload condition this form of protection works well. The safety of the power supply may be compromised, if one of the secondary supplies has an overload and the power rating of that supply is low compared to the other secondary supplies. This is especially true if the total loads are low compared to the maximum rated output voltage. In such a case the incremental overload from the low energy winding does not trigger the protection circuit. The result is that an overload on the low power circuit will create a hot spot that may lead to a fire. This paper will show how to predict such potential safety problem, and suggests some possible options for detecting them during the concept stage of the development process. The goal is to eliminate the potential fire hazard.

Mr. Jack Burns, Dell Corporation, US: "Designing a product to meet a specified level of safety can be an expensive and complicated task. Sophisticated analysis techniques exist and are widely used to protect the public in the nuclear, aerospace, and aircraft industries with good success. Lower value consumer products generally follow well-defined safety standards that theoretically force a sufficiently high level of safety without the expense of exhaustive analysis. For products used in a workplace, safety standards fall under the aegis of national labor or worker safety requirements which have focused their attention on eliminating the most obvious hazards in the most dangerous industries. Unfortunately, to the designer of prototype and limited use commercial devices, it is not always obvious what level of safety is desired nor which standards apply. Too often, the design engineer is not trained in safety and has no understanding of the relative level of safety required - nor how to achieve it. One approach for this situation is to go back to the basics of product safety

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This presentation reviews the requirements, basic techniques, standards, and regulations and establishes an appropriate set of product design safety guidelines for prototypes and limited use commercial devices based on frequency of use, potential hazard level, user skill level, and use environment."

Jan Swart, Snehal Dalal, Bala Pinnangudi: "CTIA IEEE 1625 Certification - An Introduction.

Mr. Tom O'Hara, Intertek, US: IEEE 1625 standard is a system level standard and was developed for rechargeable batteries for multi-cell mobile computing devices. Overall compliance to IEEE 1625 is dependent on conformity to each and every sub clause of the standard. Compliance with IEEE 1625 cannot be achieved by any particular multi-cell mobile computing device or subsystem alone without considering the conformity of all subsystems within the system as well as the end user. IEEE 1625 standard has established criteria for design analysis quality and reliability. The CTIA has developed a certification program based on all 'shall' clauses of IEEE 1625. The CTIA program categorize the host and its subsystems. This presentation describes the CTIA certification program and how it applies to a Li-Ion and Lithium polymer rechargeable battery powered mobile computing device." Mr. Jan Swart, Exponent Inc., US

Designing and developing products today can be quite straightforward with the ever narrowing scope of product safety standards however increasingly, companies are more often providing 'solutions' to customer needs rather than a simple product. This very often complicates the application of a simple product standard to possible incorporate many other safety aspects beyond the basic product standard. This might include the need to address specific building codes, life safety codes, plumbing, fire safety, ingress protection. The list or needs can be very consequential and may often involve the need for local architectural support or building codes experts to ensure both customer needs and local law and regulations. This presentation will work through a number of examples of where these intersecting standards can create problems or provide solutions. Mr. Bob Griffin, IBM Corporation, US

A comparison and contrast of select Li-Ion battery safety standards is presented. Focus is the portable, consumer market.

Mr. Mark Goodson, Goodson Engineering, US: "The failures of MOVs are well established causes of fires. Typically during a fire scene examination, the finding of an MOV with hole that has been punched through is considered proof that an MOV has failed. Several versions of UL 1449 have been published in an attempt to minimize fires caused by MOV failures.

Outlined here is research that has been carried out into failure modes of MOVs. More particularly, the research attempts to examine if the cause of an MOV failure is an actual MOV problem or an environmental (transient) problem. Moreover, we look at how MOVs degrade during a fire. The ZnO MOV, due to its high melting point, usually survives a fire, but will have become unsoldered from its leads. When recovered, the investigator will be interested in determining whether or not the MOV has been altered by the fire. Fire debris, such as carbonaceous products, will have some effect on subsequent electrical testing. We demonstrate the effects that post fire ultrasonic cleaning have on an MOVs characteristics. We also show how metallurgical techniques can be used to section an MOV, such that grain structure between failed and non failed portions of the same MOV can be examined.

Finally, we examine fires where MOVs have failed, but in which no failure in the MOV substrate occurred; rather the fire that developed occurred after the MOV degraded, but with the overcurrent causing an arced lead failure. Post fire analysis techniques, to include SEM, EDX, and metallography

are described.”

Mr. Nosh Medora, IEEE, US: “Arcing faults can occur in low and medium voltage systems, causing high temperatures of the order of tens of thousands of degrees, resulting in severe damage to equipment and arc flash hazards with severe burns and possibly death. The electrical industry has adopted various codes and standards in an attempt to improve and enhance equipment safety, and decrease the possibility of the occurrence of arcing faults and thus mitigate the dangerous effects of arcing faults to humans. However, the NEC and other standards do not address the hazards associated when the equipment doors are open and a maintenance worker accidentally creates an arcing fault.

Incidents of arcing faults that we have worked on were reviewed to determine the computed damaging effects of that fault, the degree of destruction, and specifically identify the root cause of that particular arcing fault.

The objective of this paper is to review and investigate the reason for the large number of arcing faults in low and medium voltage electrical systems and further to determine why, there are so many arcing fault incidents in spite of increased levels of protection and installation of fail-safe mechanisms and procedures.”

Dr. Ginger Walden, Exponent Failure Analysis Associates, US: Electronic Double-Layer Capacitors (Supercapacitors) have energy densities that are roughly two orders of magnitude greater than their traditional capacitor counterparts. The high charge and discharge rate, long life, low internal resistance, high output power, and improved energy density of the supercapacitors has introduced the possibility of these devices being used in portable electronics. Supercapacitors can be used together with batteries as a supplemental power source when high bursts of current are needed, or as a stand-alone power source. As of now, there are no standards that specifically address safety considerations when designing electronics that implement supercapacitors. This paper discusses how we can apply what we already know from safety standards for rechargeable battery technology and expounds upon issues specific to capacitor technology that is not addressed in these standards.

Mr. Peter Perkins, P.E. Perkins PE, US: Electrical fault events happen every day in the power grid. When these events impact equipment that is significantly important to the operation of a business it is time to investigate the downstream cascade and tie the final failure to the initial event in order to establish responsibility and liability. This forensic paper examines the specifics resulting from a shorting on the primary side of the distribution transformer which lead to intermittent failure in a server system and subsequent loss of data integrity. The study is interesting because it focuses the larger fault issue and how it works down to the equipment level. Some of the basic issues are well understood and covered in the literature which will be reviewed.

Mr. Ashish Arora, Exponent, US: Most consumer products today are sold with a switching power supply that delivers power to operate the product and to charge the product’s rechargeable battery. Depending upon the application of the product, the switching power supply could be an AC/DC converter (AC adapter), a DC/DC converter (DC adapter) or a combination of the two in a single enclosure. An AC adapter typically converts the 120 Vac/240 Vac power from a wall outlet to a lower DC value for use by the product. A DC adapter is often used in an automotive environment and typically steps down the 12 V vehicle supply voltage to a lower voltage suitable for use with the product. Most AC adapters and DC adapters follow one of several standard circuit designs for voltage conversion.

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However, in addition to requiring circuitry to convert the higher input voltage to a lower DC voltage necessary to power the product, the adapters also use circuitry designed to ensure that failures of one or more components within the adapter do not expose the user to a safety hazard. This principle of safety also applies to the mechanical design of the adapter. Several industry standards are designed to test the safety performance of an adapter under various electrical, mechanical and environmental abuse conditions. In addition, consumer product designers typically have their own abuse standards to which the adapter must comply. Since the overall design and assembly of the adapters can vary significantly from one manufacturer to another, possible failure modes of the adapter may be evaluated and the adapter design may be such that it prevents any single failure from leading to an electrocution or fire hazard. This presentation describes the typical designs of both AC adapters and DC adapters used in the consumer products industry. The presentation also provides a summary of several standards that exist to address and evaluate the safety of the adapters, including a description of the type of tests intended to evaluate the safety of the adapters. The presentation will include a discussion on additional features of the adapter designs that are typically studied and analyzed to ensure the long-term safe performance of the adapter. Some typical quality control issues will be highlighted and failure scenarios will be detailed such as issues with the design of the circuit board as well as issues with mechanical elements and materials of construction.

Mr. Ken Budoff, Microsoft Corporation, US: Often in the process of forensic analysis or safety assessments, we are faced with situations where non-destructive testing or unique investigative techniques are necessary. This presentation will introduce some new tools, test equipment and techniques that can assist the Forensic Engineer with these analyses. Several of the tools and equipment being introduced will be demonstrated and time will be made available for students to get some hands on experience.

Jan Swart, Yakov Shkolnikov, John Loud: "Electrical Shock and the Electric Powered Vehicles - An Introduction.

Mr. Jan Swart, Exponent Inc., US: In today's world, the risk of injury occurring in households and in the workplace from electrification is minimal given the maturity of these installations and the inherent risks are accepted as a reasonable tradeoff with the conveniences that electrification brings. In contrast, electrification in vehicle powertrains is in its infancy and yet they are becoming more and more common. It is not generally understood that there is also risk of electrical injury from both the electrified vehicles and the supporting infrastructure. Potentially at risk from these new electrical hazards are drivers, charge station operators, repair shop workers, electrical workers and first responders. This paper discusses body impedance models and electrical injury thresholds specifically as they relate to the operation of the electric vehicle powertrain and the supporting electrical infrastructure."

Mr. Nosh Medora, IEEE, US: Electrocutions can occur in low and medium voltage systems, when a person comes in direct contact with a conductor at a high voltage or when there is a conductive contaminant which creates an electrically conductive path across an insulating member. Electrocutions can also be caused by an electrically conductive path from the top of a power pole to close proximity to ground where people and vehicles are present. This may be caused by an energized power line that breaks and falls towards the ground or may be due to a utility guy wire that makes accidental contact with the primary voltage conductors. The electrical industry has adopted various codes and standards in an attempt to improve and enhance equipment safety, and decrease the possibility of the occurrence of arcing faults and electrocutions due to guy wires. The NESC and other standards provide requirements for installation and safety of utility guy wires. Incidents of guy wire arcing faults

and electrocutions that we have worked on were reviewed to determine the possible reasons for the guy wires creating a hazardous condition and the damaging effects of that hazard, the degree of destruction, and specifically identify the root cause of that particular incident. The objective of this paper is to review and investigate the hazard conditions created by guy wires, in low and medium voltage electrical systems and further to determine the effectiveness of existing safety measures and any additional safety measures that would possibly reduce the hazardous condition.

Eddie Forouzan, Ph.D., President, ARTIN Engineering: “General Guidelines: Lithium Cell Selection and Battery Pack Design.” The selection of an appropriate lithium cell and its integration into a battery pack design involves various steps. The end product and its application are typically the guiding factors, however, the proper understanding of different lithium cell chemistries and designs, in harmony with the final battery pack design requirements steer our way to a better selection process. Recent cell design advancements, including but not limited to new cathode materials, have provided engineers with many options to choose from. The cell’s performance window, design criteria and inherent safety level are some of the factors which must be taken into account. Some general guidelines will be provided in this presentation.

Anthony Wong, Ph.D., V.P. Business Development, Amperex Technology Limited (“ATL”): “Embedded Lithium-Ion Polymer Batteries Its Qualification, Certification And Market Acceptance In Innovative Devices” Today innovative consumer electronic devices have embraced embedded lithium-ion polymer (LIP) batteries. These batteries offer a new degree of design freedom to the device designers. Qualifying embedded LIP requires close cooperation between battery manufacturers and the device OEMs. Such knowledge sharing is one of the key success factors in developing thinner and lighter weight consumer electronic devices..

Todd Sutton, Sr. Director of Technology, Qualcomm: “Modern Smartphone Challenges Associated with New Battery Technology.” “I want the one with the more GeeBees” is a common request from the average smartphone customer. What they don’t see is that the “GeeBees” will burn a lot more energy. To supply that energy we use bigger batteries. But then the phone becomes bigger and heavier, so we look to new battery chemistries. However this brings along another list of challenges and costs. This talk will walk through a few of these tradeoffs including Size and Power Consumption.

Tom O’Hare, Global Business Manager / Advisory Services, Intertek,: “A Comparison of Select Li-Ion Cell and Battery Safety Standards.” A comparison and contrast of select Li-Ion battery safety standards is presented. Focus is the portable, consumer market.

Jan Swart, Principal, Exponent Failure Analysis Associates, “CTIA IEEE 1625 Certification - An Introduction”: IEEE 1625 standard is a system level standard and was developed for rechargeable batteries for multi-cell mobile computing devices. Overall compliance to IEEE 1625 is dependent on conformity to each and every sub clause of the standard. Compliance with IEEE 1625 cannot be achieved by any particular multi-cell mobile computing device or subsystem alone without considering the conformity of all subsystems within the system as well as the end user. IEEE 1625 standard has established criteria for design analysis quality and reliability. The CTIA has developed a certification program based on all ‘shall’ clauses of IEEE 1625. The CTIA program categorize the host and its subsystems. This presentation describes the CTIA certification program and how it applies to a Li-Ion and Lithium polymer rechargeable battery powered mobile computing device.

iNARTE Examinations and Events at PSES 2011

Preliminary Schedule

Thursday, 13 October 2011

iNARTE is a personnel credentialing organization, offering validation of professional qualifications for engineers and technicians in several highly technical fields, including Product safety Engineering. To learn more about our certification programs in this and other areas, please visit us at <http://www.narte.org/h/ps.asp>.

The iNARTE Certification Examinations will be held at the Mission Valley Hilton Hotel from 8:00am to 5:00pm. We hope that many who attend the PSES Symposium the week will validate their knowledge and experience by becoming an iNARTE Certified Engineer or Technician. This is an ideal time and place to take the Examination element of our Certification process. The exams for PS Engineer and PS Technician will run concurrently. Each is a two-part paper, and each part is scheduled to run for four hours with an optional one-hour break at lunchtime. Examinees may bring any reference materials and a PC to the examination room. We do not guarantee to provide either mains power or wireless Internet access, but if it is available, it may be used.

Please remember that you can register to sit for any of the iNARTE examinations in all disciplines at this event. However, pre-registration on our web site is essential if you are examining in other than Product Safety Engineering.

Tuesday, 11 October through Wednesday, 12 October 2011

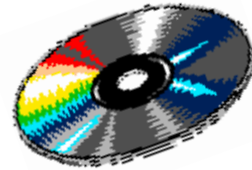
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The Product Safety Engineering Society will accept advertisements for employment and place looking for work ads on our web page. Please contact Dan Roman for details at dan.roman@ieee.org.

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
- 4Q issue: November 15

Closing dates for advertising:

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

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