

IEEE
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IEEE Symposium on
Product Compliance Engineering
Virtual Conference - November 16-20, 2020

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SPCE 2020 November 16-20, 2020 Virtual Program at glance V1

Basic Product Safety for Electronic Products

Julio Posse (Sony Electronics Inc., USA)

An overview of risks associated with electronic products and the mitigation of those risks.

BREXIT - Market Changes & Impacts

Bruce McGill (Intertek, USA)

TBD

Conducted Emissions Feedback from VSD operated products; what can we learn from testing actual VSD driven products?

Peter Perkins (P. E. Perkins PE, USA); Henry Benitez (ElectroMagnetic Investigations, LLC, USA); Aziz Inan (University of Portland, USA); Christian Miles and Joshua Thompson (Univ of Portland, USA)

Effects of contacting object conditions on burn thresholds, Part II

May Yen and Francesco Colella (Exponent Inc., USA)

Increasing use of consumer electronics such as wearables brings new concerns associated with long duration, low temperature skin burn risk. Part I described a burn injury model which numerically solves the transient heat transfer equation in living tissues and presents the burn injury threshold conditions associated with finite thermal mass objects. In Part II, the sensitivities to object shape, size, thickness, contact resistance and applied heat flux are considered.

Electric Shock, Compliance 101

Peter Perkins (P. E. Perkins PE, USA)

This tutorial covers the basis for electric shock protection in electrical equipment. It is build upon the response of the human body to electric current and the ways in which to deal with this in equipment design and evaluation. A comprehensive presentation of the understanding and application of the needed protections will be presented. This tutorial is aimed at engineers and managers working on equipment design and construction as they have to deal with these issues.

Electrical Fire Patterns in Vegetation

Louis Bilancia (Engineering Systems, Inc., USA)

Lichtenberg, Fern patterns, Carbon Tracking, and Fire Patterns The formation of branching patterns in association is commonly associated with electrical discharges. For the fire investigator patterns etched into wood-frame structures are often destroyed by subsequent combustion. Sometimes, however, the patterns persist and can serve to indicate what actually happened. Examples of how such patterns are formed are presented.

Electrochemical Cell Evidence Collection

Louis Bilancia (Engineering Systems, Inc., USA)

This paper reports on a chemical assay from several recovered post-fire 18650 cells. We then address some of the aspects of identifying and collecting the cell and battery debris for later analysis Consumer-grade power cell chemistries are covered. Other chemistries, exist but are not in prevalent consumer use.

Enhancing the safety for immersive technology equipment (VR/AR/MR)

Flore Chiang (Underwriters Laboratories (UL), Taiwan)

It is anticipated that the market acceptance of VR/AR/MR technology equipment will be accelerated by the nearing 5G and Wi-Fi 6 and yet there is no specific safety standard in the market. High latency is the main cause of latency-induced motion sickness that needs to be addressed as well. Moreover, other safety aspects such as irritated or inflamed skin (bio-compatibility), neck strain, should be considered for greater consumer acceptance. UL 8400, is intended to address safety concerns arising from emerging VR/AR/MR technology and enhance consumer safety as it prevails.

Evolving the safety approach to address the expanded applications of lithium ion batteries

Laurie B. Florence (UL LLC, USA)

Standards addressing lithium ion batteries began when batteries were being introduced into portable applications such as electronics. With the increased use of lithium ion batteries in the early 2000's came an increase in incidents in the field leading to development of new safety criteria. This presentation will go through the progression of North American battery safety standards addressing lithium ion batteries and how they have developed over the years to meet these growing challenges.

Functional Safety, The Uniqueness and Importance of Proactive Certification Compliance

Gabriel Zozaya (Intertek Testing Services, USA)

Every day we hear about emerging technologies influencing design of safety critical controls that impact our lives. This paper focuses on the functional safety certification process including key care-about and differences from "conventional" certification programs and why these differences are so important.

Global RoHS

Theresa Glenna (TUV SUD America Inc., USA)

Learn about RoHS from a Global Market Access perspective. Several countries have recently implemented RoHS regulations; some of those being Russia (EAEU), UAE, Ukraine, and Taiwan. We will review the requirements, controlled products lists, and important dates.

GMA Basics for Radio and Wireless Approvals with focus on Europe

Julia Gresser (CSA GROUP, Germany)

Wireless functions and technologies are becoming more and more prominent and relevant. Networks and related wireless devices are driving our ever more connected world. This session will provide a solid foundation and understanding of the general principles and requirements, as well as the approval process to gain access to the European market.

Graphical Programming Languages for Functional Safety

Nick Berezowski (CCASS - Competence Center of Sensor Systems, Germany); Markus Haid (CCASS - Competence Center of Sensor Systems & Hochschule Darmstadt, Germany); Jeet Biswas and Ishak Boyaci (Birkenweg 8, Germany)

This research recommend the use of a graphical full variability programming language for safety related system developments. Since there is no research on this topic so far, the question of feasibility arises. There are numerous standards for functional safety. These are updated and rewritten irregularly in order to provide descriptions of the current state of technology.

Harmonization of IEC and EN 62368-series of standards

Grant Schmidbauer (Nemko USA, Inc., USA)

This presentation will discuss the current market situation in Europe related to the latest edition of the standard EN 62368-1. With the introduction of the European Commission HAS (Harmonized standard) consultant, the publication of harmonized EN standards with the hope of eventual citing of the harmonized standard in the Official Journal of the LVD has seen significant delays. This presentation will untangle, as best as possible, the current situation related to the latest edition of EN 62368-1, and include time for Q&A.

"Hazardous live" and "Limited current source"

Richard Nute (IEEE Product Safety Engineering Society & Richard Nute Product Safety Consultant, USA)

This presentation shows that a "limited current source" is the current-mode equivalent to a "limited voltage source," aka SELV.

Improving the energy performance of passive elements using the Internet of Things

Jabeur Reda (Hassan 1 st & XYZ, Morocco)

Optimization of the thermal performance of passive systems inside the building as a whole is not yet achieved due to fluctuations and internal generation. To better identify the need for energy management. This research work aims to improve the energy behaviour in a building located in the city of Fez. This is where connected objects come into play.

India Certification Overview- BIS Safety and WPC Wireless

Thomas Ha (G&M Compliance, Inc., USA)

Overview of India BIS Safety and WPC Wireless product certification. This presentation covers detailed BIS and WPC certification processes including sample study, best practices and lessons learned with important tips.

Leakage or Touch Current Limits and Test Method: Now and Future

Hai Jiang (Underwriters Laboratories (UL), USA)

The leakage (touch) current test is one of the fundamental and critical safety certification tests to prevent user from electrical shock hazard for electrical utilization equipment, information technology equipment, medical devices and so on. As technology advances, many modern electrical and electronic products creates nonlinear harmonics on the leakage current. The presentation introduces test setup of the peak leakage current with measurement circuit diagram.

Making safe products safer with Device-integrated Fire Protection

Markus Fiebig, MF (JOB GmbH, Germany)

Regularly we see consumer product recalls due to fire hazard. New technologies make it possible to install mini fire extinguishers directly in the electronics. In case a fire starts, the mini fire extinguisher can kill the fire and irreversibly cut the power to avoid re-ignition. The methods developed from UL and VdS were used to start the creation of an international standard.

Market surveillance sampling

Ivan Hendrikx (ESTH, Belgium)

New regulations of China CCC, SDoC and RoHS

Paul Wang (G&M Compliance, China)

This presentation introduces the new regulations of China CCC, SDoC and China RoHS. The SDoC regulation added voluntary certification scheme.

North American and IEC Standards: A Comparison in the Approach to Safety of Energy Storage Systems

Laurie B. Florence (UL LLC, USA)

There has been a lot of effort in the standards & codes development area to address safety of energy storage systems. In the IEC, there has been work on developing safety standards for energy storage systems. This presentation will provide an overview of the USA codes and standards and the IEC standards for energy storage systems and batteries for stationary applications.

Open Source Medical Device Safety: Loop Artificial Pancreas Case Report

Michael Dorin (University of Würzburg & University of St. Thomas, USA); Heather Mortensen (University of St. Thomas, USA); Sergio Montenegro (University of Würzburg, Germany)

A persistent global challenge is the availability of affordable treatments for chronic conditions. The increasing sophistication of open-source hardware and software systems may provide hope. This report explores the Loop Open-Source Artificial Pancreas (APS).

Product Liability and Regulatory Compliance Risk Mitigation

Elizabeth Reese (Hunton Andrews Kurth LLP, USA)

This presentation will provide an overview of current trends in product liability litigation, recent product safety regulatory developments, and a general overview of the legal landscape governing product safety, including the Consumer Product Safety Act, Consumer Product Safety Improvement Act, the Toxic Substances Control Act, and voluntary industry standards.

PSES 1/2 day Tutorial; Compliance 101:

Part 1: Compliance 101

Ken Kapur (Thermo Fisher Scientific, USA)

Part 2: Compliance 201

John Allen (Product Safety Consulting, Inc., USA)

Part 3: Global Market Access

Grant Schmidbauer (Nemko USA, Inc., USA)

The plan for this tutorial is to delve into some of the “other technical requirements” that products must comply with, including product safety requirements (ie, concepts such as fire, shock, mechanical, temperature, and radiation); and then once your products are compliant, we will discuss the commercialization of the product through obtaining the many country approvals that are needed in order to legally sell the product around the world.

PyLocky Ransomware Source Code Analysis

Gavin D Scott (Exponent, Inc., USA)

Adam Sorini (Exponent, Inc., USA)

The presentation has an analysis of a recently developed ransomware called "PyLocky." it provides an overview of existing tools that may help companies or individuals recover from a "PyLocky." attack. The analysis illustrates general flaws in implementing cryptographic protocols that should be avoided by all software developers.

Recognized Components; An OEM's Understanding of "Conditions of Acceptability" and Important to an Effective Product Development Safety Certification

Jim Bender (Intertek, USA)

This presentation provides a high level overview of recognized components and subassemblies focusing on i) the importance of understanding and fulfilling "Conditions of Acceptability "when designing components and subassemblies into an OEM's end product, ii) differences in "Conditions of Acceptability" and barriers to effective OEM end product integration, iii) an OEM's primer for selecting recognized component "Conditions of Acceptability" along with simplified working examples.

Regulatory changes in Mexico

Polux Sanchez Reyes (CSA Group, Canada)

When importing products into MX, it's critical for the business to know exactly what the regulatory requirements are. This presentation contains the latest information in regards NOM regulation and the recent changes that are affecting the industry. It will provide a guide to know which path forward needs to be followed by customers based on the recent changes in MX.

Regulatory changes in Saudi Arabia and South Africa

Theresa Glenna (TUV SUD America Inc., USA)

A closer look at the new SALEEM/SABER scheme in Saudi Arabia and the SABS requirements for EMC testing in South Africa. The new regulations are common tripping points for manufacturers.

Safety Speaking

Gary Tornquist (Consultant, USA)

This presentation draws attempts to sharpen the communication skills of the audience by describing in a hopefully lively way, the nature of typical conversations between safety professionals and other denizens of manufacturing world he/she is likely to meet.

Simulation-based Testing for early Safety-validation of Robot Systems

Tom P Huck and Christoph Ledermann (Karlsruhe Institute of Technology (KIT), Germany); Torsten Kröger (Karlsruhe Institute of Technology, Germany)

Industrial human-robot collaborative systems must be validated thoroughly with regard to safety. This work addresses this problem by using a human model and an optimization algorithm to generate high-risk human behavior in simulation, thereby exposing potential hazards. A proof of concept is shown in an application example where the method is used to find hazards in an industrial robot cell.

Techniques for Connecting IGBT Modules and Loss Mitigation: A Survey

Muhammad Zahid Nawaz and Mohsin Khalil (National University of Sciences and Technology, Pakistan)

The circuit elements which are able to handle high power play a pivotal role in power electronics industry. Various techniques have been proposed in literature to achieve this voltage/current balance in IGBTs. We discuss the major failure mechanisms and the techniques to handle such failures and dilate upon the open circuit and short circuit fault detection methods.

The influence of object thermal mass on temperature thresholds for contact burns

Francesco Colella and May Yen (Exponent Inc., USA)

Burn injuries are a recognized hazard in our everyday interactions with consumer products and consumer electronics. This paper presents a comprehensive approach to account for the common scenario where the user contacts a finite thermal mass object.

Water Infiltration in Common Residential and Commercial Power Cables Introduced by Capillary Action

Alex Z Kattamis, Patrick F Murphy and Matthew Pooley (Exponent Inc., USA); Alexander Soane (Transform Materials LLC, USA)

Damage to electrical power cables caused by complete or partial immersion in flood water in residential and commercial settings is a potentially serious safety concern. It is observed evidence of water infiltration into the cable up to 7 cm above the initial liquid level. The ultimate extent of liquid infiltration and the progression of infiltration over time is expected and discussed.

What to expect with Amendment 2 of IEC 60601-1 and related collaterals

Pamela Gwynn (UL LLC, USA)

In this session, we will discuss the changes that are expected with Amendment 2 to allow you to start thinking about how this will affect your products. Any amendment to the base standard, it will have other effects. We will additionally discuss the other effect the amendment will have to the 60601 series of standards.

Wireless goes Global

Theresa Glenna (TUV SUD America Inc., USA)

In this presentation we will discuss several options for integrating wireless technology into a product and the pros and cons of using pre-approved modules. We will take a closer look at the wireless regulatory requirements in 30 of the most common countries across the globe.