The Product Safety Engineering Newsletter

Vol. 3, No. 3 September 2007

What's Inside

President's Message

Hello Product Safety Engineering Society Members,

I am looking forward to seeing many of you at our annual PSES-sponsored symposium, this time in Longmont, CO on October 22–23, 2007. Please check out the PSES symposium website to see the wide range of topics to be presented on product compliance, such as product safety, electromagnetic compatibility, and environmental compliance challenges. The symposium organizing committee lead by Richard Georgerian and Bansi Patel has done an excellent job putting together a high quality technical program and expanded product compliance vendor exhibition at a great monetary value.

Our members should be receiving a list of members running for PSES Board for 2008. Please take a look at the excellent list of candidates and mail in your votes. You may wish to consider running yourself next year.

Henry Benitez

There are plenty of opportunities for volunteers to contribute in the establishment of this Society in other capacities as well, such as on Technical Committees, Chairing or establishing new local PSES chapters, contributing newsletter articles, contributing papers at the annual international symposium, contributing to the organization of the symposium when it is hosted in your region,

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The
Product Safety Engineering Newsletter

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and so forth. Volunteering is a great way to network with people in your professional discipline, as well as enhance your leadership skills.

See you in Colorado!

Sincerely,

Henry Benitez
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Booked your trip to the 2007 Symposium on Compliance Engineering yet?

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Technically Speaking

by Richard Nute
Product Safety Consultant
San Diego
September, 2007

PRINCIPLES OF THERMALLY-CAUSED INJURY

Introduction.

Virtually all electrical energy used by electrical and electronic equipment ultimately is converted to heat. This heat causes many touchable parts of the equipment to be noticeably warm, or even hot. In this article, I will discuss some of the processes and parameters by which this heat may cause a burn-type injury and how to safeguard against a burn-type injury.

Notebook computer warning.

In an accompanying document, one notebook computer manufacturer warns:

> "Do not leave the base of your computer in contact with your lap or any part of your body for an extended period when the computer is functioning or when the battery is charging. Your computer dissipates some heat during normal operation. This heat is a function of the level of system activity and battery charge level. Extended contact with your body, even through clothing, could cause discomfort or, eventually, a skin burn."

This manufacturer is concerned, not with temperature, but with the time of contact with the surface.

We will see that contact time, as well as temperature, are among a number of parameters that determine whether a burn will occur. We will further learn that control of any one of these parameters, such as time, can prevent a burn injury.

Safety standards for electronic product enclosure temperature.

National and international safety standards set temperature limits for surfaces which may be touched. Surfaces which may be touched continuously have a temperature limit unlikely to cause a burn injury. Surfaces which may be touched for intermittent and short periods of time, have a higher temperature limit that is also unlikely to cause a burn injury in a short period of time.

For a surface which is touched continuously, such as a notebook computer surface, the UL, ANSI, CSA, and IEC safety standards for IT equipment specify a maximum temperature for the plastic adapter enclosure of 122° F (50° C). [1, 2]

For an external surface which may be touched, but not touched continuously, the UL, ANSI, CSA, and IEC safety standards specify a maximum temperature for touchable plastic parts of 200° F (95° C). [1, 2]

From these standards, we again learn that both temperature and time are parameters of whether a burn will occur.

Heat transfer.

By convention, heat moves from hot to cold. If a hot object is brought into contact with a cool object, heat will flow from the hot object to the cool object.

Due to the loss of heat, the hot object will become cooler. Due to the gain of heat from the hot object, the cool object will become warmer. This heat movement will continue until both objects are at the same temperature.

When the temperature of the two objects is the same, the objects are said to be in thermal equilibrium. Heat flow and thermal equilibrium are shown in Figure 1.

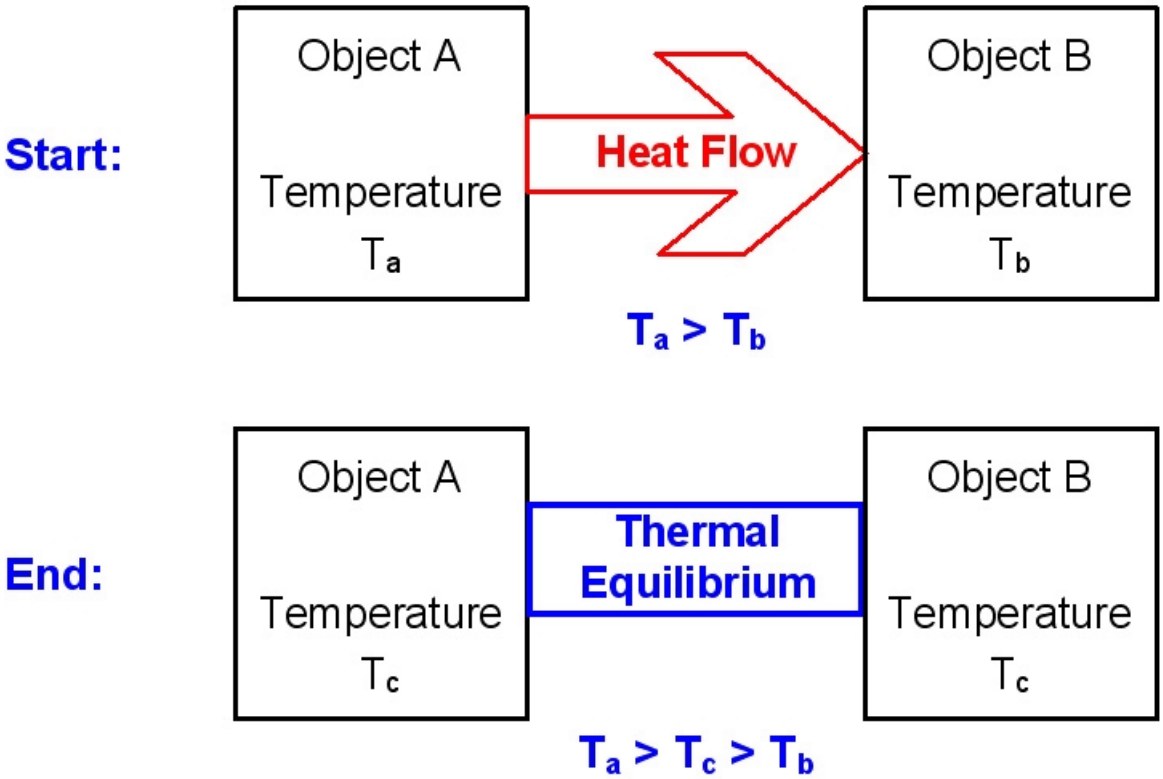

Figure 1 – Heat transfer

As a general rule, the rate of heat flow from hot to cold depends on the temperature difference between the two objects. The higher the temperature of the hot object, the higher the rate of heat flow, and the faster the temperature of the cool object rises (and the faster the temperature of the hot object drops).

The rate of heat flow also depends on the thermal resistance of each object. The lower the thermal resistance, the faster the heat transfer, and the faster the temperature of the cool object rises (and the warm object drops). Aluminum has very low thermal resistance, so heat will flow quickly from an aluminum object to another object and equilibrium will occur in a short time. On the other hand, plastic material has a high thermal resistance, so heat will flow slowly from the plastic to

Continued on Page 8

another object and equilibrium will occur in a longer time. (A thermal insulator is a material with a very high thermal resistance.)

Finally, the duration of heat flow depends on the heat (or cold) stored in the two objects. A heated aluminum block has high amount of stored heat, while a heated aluminum foil has very little amount of stored heat. (Stored heat is roughly proportional to mass.) The time to thermal equilibrium of two blocks of aluminum is much longer than for two pieces of aluminum foil. When heated aluminum foil is touched, the rate of heat flow is high, but the duration of heat flow is short; the amount of heat transferred from aluminum foil usually is insufficient to raise the skin temperature to the skin burn temperature.

If thermal insulation is inserted between the two objects, heat still moves from hot to cold, but much slower. The time to thermal equilibrium with insulation is much longer than without insulation.

If electrical energy is dissipated in an object, then the object may be considered a constant-temperature object. If a cool object is brought into contact with a constant temperature object, then, depending on the circumstances, the cool object could act as a heat sink for the constant-temperature object, in which case the equilibrium temperature of the two objects will be less than the initial temperature of the constant-current object. Or, the cool object could act as an insulator for the constant-temperature object, and the equilibrium temperature of the constant-temperature object will be more than the initial temperature.

Skin Technical Data

Effect	Description	Skin temperature
Pain	Tingling sensation, hot sensation. [4]	111° F (44° C) [3]
1st degree burn	Superficial injury to outer layer; skin is reddened; painful. [4]	111-131° F (44-55° C) [3]
2nd degree burn	Outer layer is burned through; the second layer is damaged; skin is moist and reddened, with blisters and mottled appearance; intense pain. [4]	131-140° F (55-60° C) [3, 4]
3rd degree burn	All layers of skin are damaged. [4]	140° F (60° C) [4]

Skin pain temperature and skin burn temperature.

As the skin temperature increases, the first sensation is that of heat, then of pain. As the skin temperature continues to increase, the skin incurs a 1st degree burn, then a 2nd degree burn, and finally a 3rd degree burn. The table indicates the skin temperatures for each burn degree.

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The temperatures in the table are skin temperatures, not the temperatures of touched objects. Because heat transfer takes time, when the skin touches a warm or hot object, the skin temperature does not instantaneously attain the object temperature. Indeed, the skin will never achieve the object temperature.

Heat transfer to skin.

Blood transfers heat from deep within the body to capillaries in the skin. The skin transfers the heat to the surrounding environment through radiation, convection, and evaporation. The skin is cooled, which cools the blood. The blood then circulates into the body, and the cycle continues. [6]

When a warm object is placed next to the skin, heat flows from the object to the skin. The blood is warmed rather than cooled, and carries the heat from the object back into the body. The blood circulates, and other skin locations perform the cooling.

At the instant a warm object touches the skin, the skin surface temperature rises, and the object surface temperature – at the point of contact – falls.

If the object is not coupled to a continuous supply of heat, the warmed blood carries the heat to other skin locations until the temperature of the warm object drops to the normal skin temperature.

The capillaries have limited capacity to carry heat from the skin. If the heat transferred from a warm object to the skin exceeds the capacity of the capillaries, the skin temperature can rise to a temperature that can cause pain or burn.

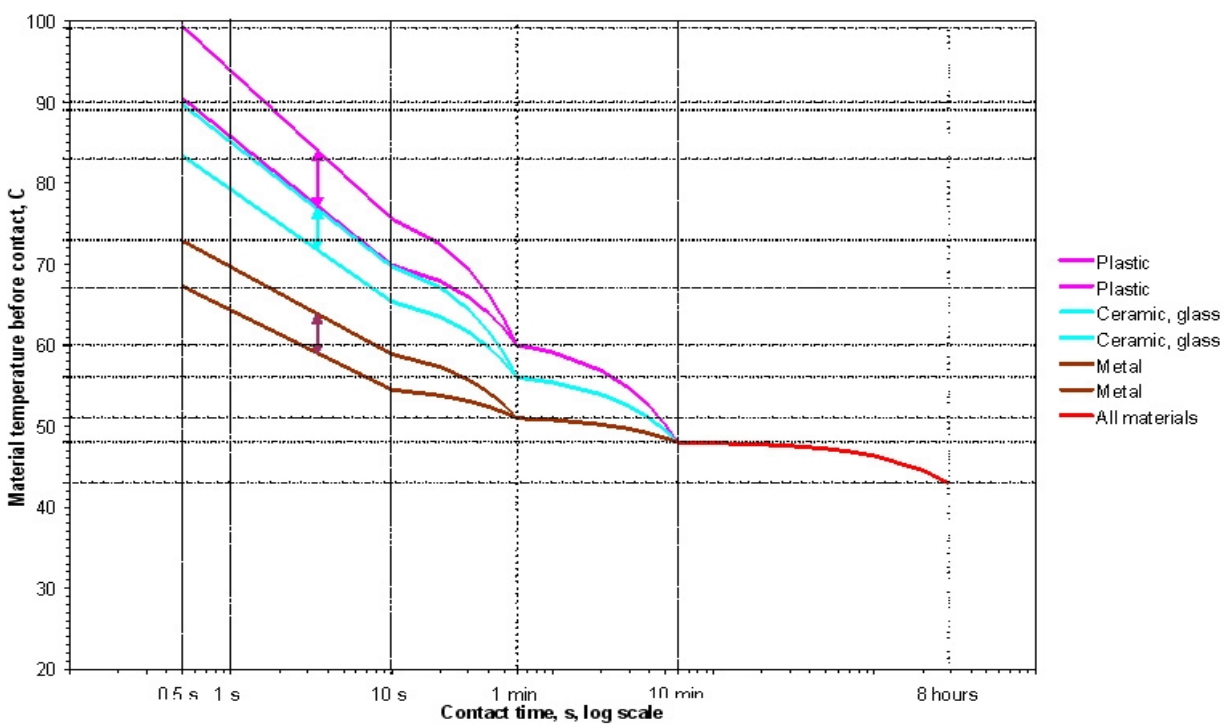

Figure 2 – Material Temperature and Contact Time [5]

Skin temperature.

When touching a hot object, the skin temperature does not immediately rise to the object temperature, and the object temperature does not immediately fall to the skin temperature. Heat will flow from the hot object to the cooler skin. The skin temperature will rise depending on (1) the temperature of the hot object, (2) the rate of heat flow from the hot object to the skin, (3) the heat stored in the hot object, (4) the time of contact with the hot object, and (5) the rate of heat carried away by the blood.

Figure 2 illustrates safe and injurious temperature, time, and material properties. Figure 2 is for large masses of material at the point of contact, not for metal foil and similar small masses.

Metals have low thermal resistance and high heat storage. This means metals can quickly transfer lots of heat the skin, thereby quickly raising the skin temperature. For any contact time up to 10 minutes, the metal temperature must be much lower than for other materials.

Ceramics and plastics have higher thermal resistance and lower heat storage. This means that contact time can be longer than metal, or that material temperature can be higher than metal.

In Figure 2, any combination of temperature (of a touchable surface) and time below the brown and red lines is not likely to cause a burn. Any combination of temperature and time on the lower line of each color is likely to cause a 1st degree burn. Any combination of temperature and time between two of the same color lines is likely to cause a 2nd degree burn from that group of materials. Any combination of temperature and time above the upper color line for each material group is likely to cause a 3rd degree burn.

Summary.

A burn is due to the skin temperature, not the object temperature.

When the skin touches a hot object, heat begins to flow from the object into the skin, and the skin begins to heat up (and the surface of the object begins to cool). If the rate of heat flow from the object to the skin is slow, then the blood can carry the heat from the heated skin to other parts of the skin for dissipation.

If the skin temperature rises to about 43 C, then a 1st degree burn is likely. If the skin is in contact with an object at a constant 43 C, then, in 8 hours, the skin temperature will rise to 43 C.

If the skin is in contact with an object at a constant 48 C, then the skin temperature will rise to 43 C in about 10 minutes.

For contact times less than 10 minutes, heat transfer from a hot object to the skin and the resultant rise in skin temperature to 43 C is related to the object temperature, the object thermal resistance, the object stored thermal energy, and the duration of contact. Figure 2 illustrates maximum contact time for the combinations of temperature, thermal resistance, and stored thermal energy for different materials.

The usual safeguard against a hot object is thermal insulation. Insulation slows the rate of heat transfer, and thus increases the time of skin contact to the thermally-insulated object.

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If you have any comments or questions about this article, please send them to Richard Nute, richn@ieee.org.

If you have a question about safety, and would like to see the answer published here, please send the question to Richard Nute, richn@ieee.org

References.

(1) UL Standard for Safety for Information Technology Equipment, UL 1950, 3rd edition, July 28, 1995/American National Standard ANSI/UL 1950-1997.

(2) International Electrotechnical Commission, Safety of Information Technology Equipment, IEC 60950, 2nd edition.

(3) Raj, Phani K., Hazardous Heat, NFPA Journal, Sep/Oct 2006,.
Standard Guide for Heated System Surface Conditions That Produce Contact Burn Injuries.

(4) Thermal conductivity and Heat Transfer of the Human Skin, J. van den Berg, Thermography Proceedings, 1st European Congress, Amsterdam, 1974.

(5) Data from ISO DIS13732-1.

New PSES Members from June 27, 2007 Through July 28, 2007

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If you do not see your name in the list and are a new member, please email j.bacher@ieee.org with the details.

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Tony Robertson
Manager – Customer Training

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Symposium: http://www.ieee-pses.org/symposium/

Membership: The society ID for renewal or application is “043-0431”. Yearly society fee is US $35.

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

We need papers, news, articles, etc. for the Newsletter, *eDJ* and Symposium.

eDJ Publication Schedule

The eDJ is published as a special section of the PSEN.
Contact Mike Sherman for details.

Symposium Author's Schedule:

Intent to present and topic (e-mail) April 29, 2007
Draft e-paper June 1, 2007
Notification of Acceptance July 6, 2007
Complete e-paper August 17, 2007

PSEN Visits ULU

by Gary Weidner

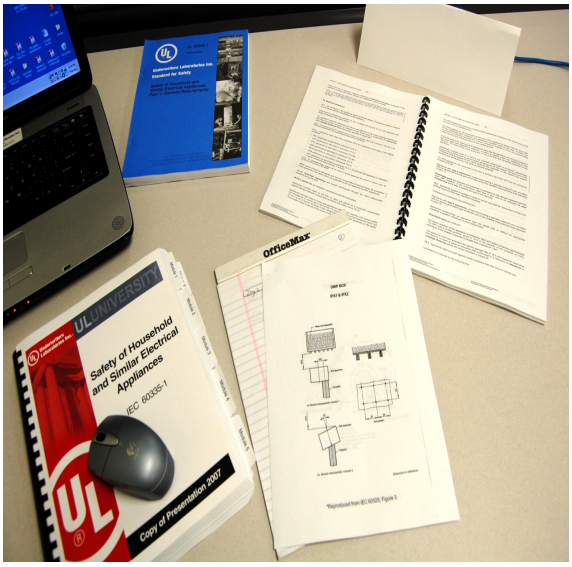
Like most healthy business entities, Underwriters Laboratories looks for ways to leverage its product testing and standards development expertise to develop new business areas. Over the last few years, UL's venture into training services, now called UL University, has mushroomed into a multi-venue, multi-national, multi-media powerhouse with an inventory of more than 1500 courses.

With such a wide variety of offerings, it's reasonable to wonder whether the courses have adequate depth. (One is reminded of the old principle of gain-bandwidth product.) To find out more about what the courses are like, *PSEN* sat in on a two-day offering titled, "Safety of Household and Similar Electrical Appliances; General Requirements, IEC 60335-1." This particular session was held at UL's Northbrook campus.

And campus-like it is. After reporting bright and early to the main lobby, we are transported by van along tree-lined roadways and around a small lake to the training center. We pick seats and settle in while enjoying a continental breakfast.

The session begins with the usual indispensable ice breakers—introductions all around and each attendee briefly stating what he/she seeks from the course. Our two-man instructional team consists of Phil Willingham and Rick Slupinski. Phil is a UL veteran who retains his "day job" in appliance conformity assessment work at UL. Rick is UL's Principal Designated Engineer (PDE) for motor-operated appliances, personal care appliances, and cleaning machines. This is an auspicious beginning—we have two instructors who are directly involved in work related to the course material.

Regarding course material, there's nothing like a good set of handouts—those that are well designed both in information content and physical construction. If a seminar turns out to be of value, that value is vastly enhanced if the attendee can later reach for a well organized binder of information any time it's needed.



Ample course materials allow attendees to focus on the presentation rather than on note-taking.

For this course, ULU provides attendees with a 390-page bound, tabbed handout that contains all of the slides presented. The volume is nicely arranged with each pair of facing pages having slides on one page and a blank facing page to allow generous space for note-taking right next to each slide. Also provided are copies of IEC 60335-1, UL

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60335-1, and worksheets used in exercises. Unfortunately, the standard that is the subject of the course, IEC 60335-1, is only loaned to attendees for in-class use. All of the other materials are for take-home.

Some may dislike the fact that ULU declines to provide a class roster to participants. With attendees coming from other countries as well as from around the U.S., a roster with contact information would facilitate networking and eliminate the need to individually exchange business cards with other attendees. On the other hand, ULU staffers explain that its philosophy is to respect the privacy of participants, noting that competing companies may prefer not to advertise their presence.

Module 1, Structure of the Standard

The course is divided into 11 modules, each with its own binder tab in the take-home materials. Each module begins with the statement, "Upon completion of this module participants will be able to…," followed by several bullet points highlighting what is to be learned from the module.

Our instructors deliver a good introduction to the international standards arena, focusing on the International Electrotechnical Commission (IEC) and the European Committee for Electrotechnical Standardization (CENELEC). Topics discussed include correlation between IEC and European (EN) standards, the relationship of part 2 standards, the system for amendments, and the creation process for EN standards.

After a discussion of appliance types (portable, hand-held, stationary, fixed, built-in), we are led through the front matter of IEC 60335-1 and then into an overview of the content and relationships of the standard's 32 clauses. For those familiar mainly with traditional UL standards, this material lays a foundation for understanding a different approach to structure of the standards.

Module 2, Markings and Instructions

Continuing with a well-organized approach, our instructors launch this topic by first reviewing the definitions for terms and parameters that are required in markings.

Instructor Rick Slupinski describes marking requirements.

After being led through the marking requirements, we are exposed to the requirements for instruction manuals. In both cases, some of the requirements are much like those found in traditional UL standards, while others are quite different. For example, text must be in the official language of the country in which the appliance is to be sold.

Module 3, Protection Against Electric Shock

Fortunately for the participants, our course does not consist simply of the instructors trudging clause-by-clause through the IC standard. This module, for example, draws from several parts of the standard in order to give us an overall picture of how protection against electric shock is dealt with.

We start off by learning IEC terminology for insulation types—functional, basic, supplementary, double, and reinforced. To some this is old hat, but to others it's important basic information about a different way of doing things.

The next topic is classification of appliances

based upon grounding ("earthing") and insulation systems employed. After that, accessibility of live parts is discussed from the IEC standpoint, including various IEC test probes.

It's nice to go home from a course with unexpected nuggets of extra information. One such nugget that our instructors provide is an eight-page handout that cross-references the IEC 60335 series of standards to traditional UL standards. (The IEC is up to part 2 number 108 and counting.)

Module 4, Identifying Insulation Parameters

This module focuses on clause 29, "Clearances, creepage distances, and solid insulation." The concepts are defined, and we learn proper techniques for measuring creepage distances and clearances, how to determine the appropriate creepage distance and clearance requirements, and how to determine the required thickness of solid insulation

Instructor Phil Willingham explains creepage distance and its finer points.

One might assume that the concepts related to "spacings" would be boringly simple, but that is definitely not the case. Taking into account the effects of voltage leads to discussions about the effects of working voltage, overvoltage categories, impulse voltages and tests, comparative tracking index, and material groups. The determination of acceptable values for these parameters is a sufficiently complex process as to cause the standard to resort to both tables and flow charts.

"Doing it" is supposed to be one of the best aids to understanding and remembering, so we do it—working from handouts, we analyze the insulation needs for a somewhat complex geometry. Then we huddle in groups and disassemble blenders to discern the insulation system characteristics of the internal construction and external shell.

In a hands-on exercise, we ponder the details of a blender's insulation system.

Module 5, Performance/Tests

In traditional UL standards, product tests are usually grouped in a section called "performance." In the IEC approach, tests are typically spread among the related requirements. Using a holistic approach like in Module 3, our instructors present the big picture. In this module we learn how to identify applicable tests and formulate a test program for a given product, and we are guided through test methodology and criteria.

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Appliance type, class of protection against electric shock, degree of moisture protection, and part 2 particulars are the starting point. Appliance types include heating, motor-operated, or combined. General conditions for tests, supply voltage considerations, criteria for normal and abnormal operating tests, and an array of specific tests are discussed. Particular attention is paid to the many details of abnormal operation testing.

Module 6, Moisture Protection

Regarding resistance to ingress of moisture, product-specific requirements and tests are relegated to the part 2 standards. This module covers important basics—the IPXX system of IEC 60529 and the related tests (drip box, oscillating tube, spray nozzle, and jet hose nozzle).

Familiarity with the IP system is becoming more and more of a necessity for North American engineers. While the present UL 60335-1 takes exception to the IP system, the forthcoming tri-national/North American 60335-1 fully embraces it. In another sign of the times, the National Electrical Manufacturers Association (NEMA) has now accepted IEC 60529 on an equal footing with the traditional NEMA 250 standard for electrical enclosures.

Module 7, Components

Components can be a source of considerable complications. Acceptability of a component is not nearly so simple as looking for a certification mark on the component. The IEC appliance safety standards frequently require product-specific component tests different from or beyond those of the relevant IEC component standards. Components particularly singled out for testing are motors, heating elements, automatic controls, capacitors, safety isolating transformers, and switches.

Module 8, Supply Connections

The supply connections clause (25) in IEC 60335-1 serves similarly to the same title in traditional UL standards, but the specific requirements often differ. Power supply cord designations and construction are an example. We learn about the IEC cord code designations, particularly those for rubber, elastomer, and PVC insulated cords, and about the harmonized wire coding system.

Detachable supply cords are discussed next. Detachable cords are not unusual in the EU, because they provide a way of dealing with the variations in attachment plugs in various EU countries.

Next we get into the details of what IEC 60335-1 calls Type X, Y, and Z cord attachment methods. Since Type X is the only one providing for user replacement of the power cord, it gets particular attention by our instructors.

Additional topics include permanently connected appliances, direct plug-in appliances, and provision for

Some participants enjoyed their provided lunches in an outdoor area.

Module 9, Non-Metallic Materials – Resistance to Heat and Fire

This topic, addressed in IEC 60335-1 clause

30, has long been a subject of debate and frustration. Although there has been some convergence of UL and IEC approaches to the matter, the two standards developers have historically tended toward different approaches to achieve the desired end result—determining heat and fire risks for plastics. In short, the UL approach has emphasized evaluation of material properties, whereas the IEC approach tends to focus on evaluating the specific end product.

We learn how IEC 60335-1 evaluates resistance to heat by means of a ball pressure test and resistance to fire by means of a glow-wire test. Requirements related to glow-wire testing are quite detailed. Finally, we take a look at the alternative needle-flame test.

Along the way, our instructors explain how all this compares/relates to standards such as UL 94 and UL 746C. We are told that nowadays the venerable UL Yellow Card also includes IEC glow-wire and ball pressure data.

In a hands-on exercise, we delve back into the blender we tore apart to investigate spacings and insulation, but this time we are scrutinizing plastic parts with a view toward determining applicable requirements.

Module 10, U.S. National Differences
We are given a brief overview of the history and status of work to develop UL standards that are harmonized to their IEC counterparts. Progress has been slow but steady. The pending publication of a North American harmonized 60335-1 standard is encouraging. (The draft standard is presently out for comments.) Proponents of "one standard, one test" will be happy to find that it is considerably closer to IEC 60335-1 than the present UL 60335-1.

As a final topic for this module, the system of categorizing U.S. National Differences that are inserted into UL 60335-1 (there are a lot of them) is explained.

Module 11, Worldwide Product Certification
In this module, we are briefly introduced to the CB Scheme and its process, and then we get an overview of the CE Marking process.

The Bottom Line
All aspects considered, ULU did a fine job of organizing and presenting a large amount of information in a coherent manner.

UL University

UL University has a world-wide presence. It is an ISO 9000 registered function of UL, and it is certified as an Authorized Provider of Continuing Education Units from the International Association for Continuing Education and Training (IACET). In the U.S. alone, ULU will conduct more than 165 public workshops on 50 different subjects in various cities.

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IEEE PSES Governance Update (Bylaws)

Mark Montrose
Past President IEEE PSES

The Product Safety Engineering Society (PSES) operates as an entity of the IEEE Technical Activities Board (TAB), which consist of all Societies and Councils. It is through TAB that we exist and must abide by the Constitution and Bylaws of the IEEE in accordance with our charter of Incorporation (State of New York). On occasion, legal changes must be incorporated into the governance documents affiliated with all Societies and Councils of the IEEE. These changes must be adopted within a certain time period if the Society desires to remain chartered by the IEEE. No changes are required to be made to our Constitution, only the Bylaws.

In accordance with the Constitution of the PSES and IEEE, any changes made to governance documents must be first approved by the Board of Directors of the Society, the IEEE, and then notification to our membership through our Newsletter or Journal. Below are the changes. If there are any questions regarding governance or legal aspects of the IEEE PSES, please send a note to m.montrose@ieee.org.

Bylaws of the IEEE Product Safety Engineering Society

3.0 Board of Directors

The Board of Directors shall consist of Directors-at-Large and Executive Directors with voting privilege plus elected and appointed Ex-officio Directors without vote. ~~A majority of the voting members of the governing body or any committee thereof shall constitute a quorum.~~ Over fifty percent of the voting members shall constitute a quorum and all voting members shall have an equal vote (Ref: IEEE Bylaw I-300.5).

4.1 Actions of the Nominating Committee

The Nominating Committee shall immediately upon being formed, or no later than 15 April of each year, solicit a minimum of four nominations for election as Directors-at-Large. Notification shall be published in an appropriate venue of the society. Such nominations shall be received by the Chairperson of the Nominating Committee by 30 May of each year. No member of the Nominating Committee shall be nominated for election to the Board of Directors. Persons nominated to the Board of Directors should possess significant technical and professional stature in the Product Safety field and should have adequate financial resources and/or backing to be able to attend meetings and actively contribute to the Board of Directors, including committee activities, correspondence, telephone calls, etc. The Nomination Committee is responsible for ensuring all candidates are Society

members and meet the criteria above.

a. The Chair of the Nomination Committee shall be the past President. In the event of incapacity or conflict of interest of the Chair, the most recent Past Chair of the Nomination Committee shall act as Chair. Under extenuating circumstances, a different individual may be appointed to this position.
b. Chairs shall not be eligible to be elected to the governing body during their term of service.
c. At least two-thirds of the voting members of the Nomination Committee shall be elected or appointed by the governing body.
d. No member of the Nomination Committee shall be eligible for a positions for which such member's respective Nomination Committee is responsible for making nominations except under the following conditions: (i) the nomination is not made by a member of the same Nomination Committee and (ii) the member resigns from the Nomination Committee prior to its first meeting of the year in which the nomination shall be made.

4.2 Nomination by petition

~~A candidate may enter the nomination process by petition. A nominating petition shall carry a minimum of 15 names of Society members, excluding students, for the nominee to be placed on the slate~~.

For each elective office of the Society, individual voting members eligible to vote in such election may nominate candidates either by a written petition or by majority vote at a nomination meeting of the organizational unit, provided such nominations are made at least 28 days before the date of election. The number of signatures required on a petition shall be determined in accordance with IEEE Bylaws as follows (REF: IEEE Bylaw I-3008.16 and IEEE Policy 13.8.3).

For all positions where the electorate is less than 30,000 voting members, signatures shall be required from 2% of the eligible voters. For all positions where the electorate is more than 30,000 voting members, 600 signatures of eligible voters plus 1% of the difference between the number of eligible voters and 30,000 shall be required.

Members shall be notified of all duly made nominations prior to the election. Prior to submission of a nomination petition, the petitioner shall have determined that the nominee named in the petition is willing to serve, if elected; evidence of such willingness to serve shall be submitted with the petition.

Signatures can be submitted electronically through the official IEEE society annual election website, or by signing and mailing a paper petition. The name of each member signing the paper petition shall be clearly printed or typed. For identification purposes of signatures on paper petitions, membership numbers or addresses as listed in the official IEEE membership records shall be included. Only signatures submitted electronically through the IEEE society annual elections website or original signatures on paper petitions shall be accepted. Facsimiles, or other copies of the original signature, shall not be accepted.

The number of signatures required on a petition shall depend on the number of eligible society voters, as listed in the official IEEE membership records at the end of the year preceding the election.

5.1 Term of office

The terms of office for the Officers of the Society, and their eligibility for reelection shall be:

- President-elect (1 year term ~~beginning in odd numbered years~~)
- President (2 year term ~~beginning in even numbered years~~, non-renewable)
- Immediate Past-President (2 year term)
- Executive Directors/Vice-President (2 year term ~~beginning in even numbered years,~~ renewal twice)
- Directors at Large (3 year term, renewal once, one-third to be elected every year)
- Appointed Officers of Standing and Technical Committees (3 years, renewal once)

9.2 Hosting of conferences

The Society shall attempt to sponsor at least one symposium or conference each year.

9.3 Action of the governing body and committees thereof: (Ref: IEEE Bylaw I-300.4)

a. The vote of a majority of the members present and entitled to vote at the time of vote, provided a quorum is present, shall be the act of the Governing Body.
b. The governing body may meet and act upon the vote of its members by any means of telecommunication. The normal voting requirements shall apply when action is taken by means of telecommunications equipment allowing all persons participating in the meeting to hear each other at the same time.
c. The governing body may take action without a meeting if applicable (e.g. email voting). An affirmative vote of a majority of **all** the voting members of the governing body shall be required to approve the action. The results of the vote shall be confirmed promptly in writing or by electronic transmission. The writings and/or electronic transmissions shall be filed with the minutes of the proceedings of the governing body. "Electronic transmission" means any form of electronic communication, such as e-mail, not directly involving the physical transmission of paper, that creates a record that may be retained, retrieved and reviewed by a recipient thereof, and that may be directly reproduced in paper form by such a recipient.
d. Voting. Individuals holding more than one position on the governing body or any committees thereof, shall be limited to one vote on each matter being considered by the governing body or committee.
e. Proxy voting is not allowed.

~~**ARTICLE B17 Transition for Terms of Office and Election Order**~~

~~**(TO BE REMOVED AUTOMATICALLY AFTER THREE YEARS OF OPERATIONS)**~~

~~**B17.1** The creation of the first board of directors for PSES will occur through the actions of a Product Safety Committee (PSC) that has been recognized by TAB as the steering committee for development of this Society. The first group of officers will be approved by TAB upon recommendations of the PSC. This section of the Bylaws will become null and void at the completion of the development period, or 31 December 2006.~~

~~**B 17.2** Directors-at-Large and Executive Committee (During calendar year 2003):~~

~~The Constitution, Article C4, designates a Board of Directors (BOD) as the governing and administrating body of the Society. Section B3 of the Bylaw describes the composition of the BOD. The following procedure will be in effect during a three-year period of beginning 1 January 2004.~~

1. ~~The Product Safety Committee shall nominate a President to serve a two-year term and one Vice President-at-Large for a three-year term beginning 1 January~~

~~2004 without ballot by the Society membership. The nominees are to be approved by the President of TAB.~~

2. ~~Six Directors-at-Large will consist of representatives from different Divisions appointed by the Division Directors Forum in 2003 for calendar year 2004. For 2005, the Division Director Forum will nominate or reappoint four members to the board. In 2006, the Division Director Forum will nominate or reappoint only two members to the board. In 2007, there will be no appointed members to the Board of Directors based on nomination by the Division Director Forum.~~
3. ~~Six additional Directors-at-Large will be appointed by TAB upon recommendation by the PSC. Term of office to be determined upon appointment in 2003. In 2004, two directors will be eligible for election to the board by the membership. In 2005, two other director positions are open to general membership vote. In 2006, the remaining two board member must apply for re-election.~~
4. ~~Three of the appointed Division/Directors-at-Large will be assigned as a Vice President depending on their interest level, along with the Vice-President-at-Large nominee (total of four Vice Presidents).~~
5. ~~The Secretary and Treasurer are to be appointed by the President-nominee with advice and consent of the Vice President-at-Large nominee. Other Ex-Officio Directors are appointed by the President-nominee with advice and consent of all Directors-at-Large.~~
6. ~~After a period of one year, election for four board members are to occur by ballot of the society members; two Division members and two At-Large members. After a period of two years, another four board members are to be elected replacing two appointed Division members and two appointed At-Large members. After three years, the remaining two appointed Division and appointed At-Large position will be replaced with four elected board officers by the membership. Appointed members of the BOD, either Division or At-Large for this transition period are eligible to run for office as an elected member whose term is in accordance with the Bylaws without term limit restriction during this transition period.~~
7. ~~During year one (2004), the President serves as directed by TAB. In year 2005, the Vice President-at-Large nominee will assume the position of President-elect for a one-year term. Beginning 1 January 2006, the President-elect becomes president in accordance with the Constitution and Bylaws. Beginning 1 January 2007, the Board of Directors will be in operation in accordance with the Constitution and Bylaws.~~

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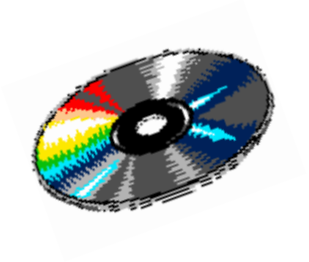

SYMPOSIUM PAPERS ON CD:

The Product Safety Engineering Society continues to offer the 2004 IEEE PSES records for sale. The cost for the CD is $35 plus shipping and handling for IEEE members; $50 plus shipping and handling for non-IEEE members. At this time, check or money orders are the means for payment. Please provide the following information:

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Depending on stock availability allow 2 to 3 weeks for delivery.

News and Notes

Product Safety Self-Declaration Proposal Killed by OSHA

We previously reported that the U.S. Occupational Safety and Health Administration (OSHA) had posted in the *Federal Register* a public notice and request for information and comments regarding a proposal to allow information technology manufacturers to bypass OSHA-mandated Nationally Recognized Testing Laboratories (NRTLs) and self-certify that their products meet safety standards.

OSHA has completed its review of the matter, deciding that the present "third-party approval requirements are effective in safeguarding product safety in the workplace." The translation is that OSHA rejected the proposal and has withdrawn it from the Regulatory Agenda.

The matter had been closely watched because many feared the "domino effect"—if information technology manufacturers could self-certify the safety of their products, it might open the door for manufacturers of other products to achieve the same status.

New OSHA Electrical Standard

OSHA has issued a new electrical installation standard (29 CFR 1910, Subpart S, 2007 Revision) which took effect August 13, 2007. Changes in the rule are unlikely to affect most types of products, but some types of products may be affected, depending upon how and where they are used. The new rule can be found at www.osha.gov/SLTC/electrical/index.html.

UL Moving Toward Listing Electric Motors

UL has no standard for general purpose-type motors and so does not apply its Listing mark to such "off-the-shelf" motors. Perhaps sensing a market opportunity, UL is moving toward development of a multi-part standard for electric motors. The proposal for the standard envisions a document containing general requirements, augmented by a range of "part 2" standards for particular categories of motors.

Proposed outlines of investigation for the general requirements and several types of motors have been sent to motor manufacturers for comment. Outlines for more types of motors are expected to be forthcoming.

One of the contemplated outlines is said to be for a motor rebuilders program similar to an existing UL program for shops servicing hazardous location motors. That's significant, because under such a program a UL-Listed motor could only be repaired by a UL-approved service shop if the motor's safety approval is to be kept intact.

There is a fly in the ointment though. According to several sources in the motor industry, the proposal for the new standard is meeting stiff resistance in the industry. Compliance with such a standard would certainly increase the costs of buying and repairing motors, so equipment OEMs and end users are likely to be unenthused unless UL can show a clear benefit.

UL Code Correlation Database is Available Online

UL now offers an online Index of Product Categories Correlated to the 2005 National Electrical Code (*NEC*). The searchable database helps in determining which UL product Listing categories relate to which parts of the *NEC*. Visit www.ul.com.

Role of Warnings and Instructions Course Offered

The University of Wisconsin will offer its well-regarded three-day course November 6–8, 2007 at its Madison, WI campus. For information call 800-462-0876 and ask for Dick Moll, Program Director, or visit http://epd.engr.wisc.edu/webH374. The course is described in detail in an article by the same title in the December 2006 (V2N4) issue of *PSEN*.

Did You Know?

The U.S. federal Centers for Disease Control (CDC) offers a free CD-ROM or downloadable pdf version of "Bibliography of Behavioral Science Research in Unintentional Injury Prevention." The document, which includes more than 900 citations of journal articles, book chapters, government reports, and other publications, covers the period 1980–2003. Tables of interest include "National Estimates of the 10 Leading Causes of Nonfatal Injuries Treated in Hospital Emergency Departments" and a similar table for fatal injuries. Consumer product safety is one of the topics addressed in the bibliography.

ANSI's University Outreach Program Ramps Up for New School Year

Now in its third full academic year, the American National Standards Institute's university outreach program seeks to educate students on the impact of standardization on the marketplace. By bringing standards into the classroom, ANSI, professors, and academic administrators are teaming up to give students a competitive edge when entering the workforce.

In pursuit of its commitment to implementation of the United States Standards Strategy (USSS), ANSI collaborates with faculty from a select group of universities to incorporate information about standards and conformity assessment into their unique curricula. Participants in the program have access to members of the U.S. standardization community who are available to provide case studies, model tutorials, and other educational resources. In addition, ANSI provides free access for faculty and students to any defined group of standards currently available in the ISO and IEC collections.

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