United States National Committee of the IEC

News and Notes

In This Issue

- If You're Not on the Dance Floor, You Don't Get to Dance
- Consumers on the Dance Floor
- Latest from the IEC
- USNC News
- Conformity Assessment
- On the Grid
- Laugh Track
- Save the Dates

Volume 5 Number 3 Fall 2010

The success of the USNC in bringing forward the views and interests of U.S. stakeholders in international electrotechnical standardization is first and foremost dependent upon one thing: participation. With the right technical experts at the table, the USNC can lead the way in shaping the most flexible, efficient, and effective standards ever.

If You're Not on the Dance Floor, You Don't Get to Dance

The Importance of Active Participation

by John Leach, TA, IEC SC 32A, High-voltage fuses

Back in December 2009 I was asked to contribute a few words for "News and Notes" about my experiences working in the IEC Subcommittee (SC) 32A, *High-voltage fuses*, Maintenance Team (MT) 3. The Subcommittee has a relatively small, dedicated group of engineers who work in the rather narrow field of high-voltage (HV) fuses. MT 3 covers current-limiting (CL) fuses, and this is the area on which I was asked to comment.

I was not sure how common my experiences were in light of our relatively limited product scope, but it turns out that the trials, tribulations, and triumphs I have experienced over 15 years of active IEC meeting involvement are not unique. My words apparently resonated with enough folks who work for the love of standards that I have been asked to expand on my original thoughts. I make no claim to any expertise outside my area of interest – so your experiences may vary – but what follows is based on my time as the U.S. Technical Advisor (TA) for HV fuses.

Demographic Differences

In my comments last year, I made the point that some standards are perceived as being "Eurocentric" – at least by those of us outside Europe. This was not meant to imply that there is some grand conspiracy involved in producing standards that are more relevant to European usage than to the rest of the world, but rather that this tends to be a natural outcome of the geography and demographics involved.

The U.S. and Canada (which tend to use similar electric systems) have a total population of about 340 million, a land area of roughly 9 million square miles, and an electricity consumption approaching 4,500 terawatt-hours (TWh) per year. The EU member states and candidate countries, by contrast, together have an area of less than 2 million square miles, a population around 500 million, and an electricity consumption of about 3,000 TWh/year. Keeping in mind that statistics are often unreliable in making useful observations, it is safe to say that, a) the higher population density in Europe lends itself to somewhat different electrical distribution systems than are common in North America, and, b) the Europeans can muster a much larger number of IEC votes than we can in North America.

Of course, it is not just votes that count in IEC. By the time one gets to a Final Draft International Standard (FDIS), the document is essentially a "done deal," unless a large number of negative votes suddenly materialize. Often, many of the countries voting have not actively participated in the process (in the case of HV fuses, typically no more than 40 percent participate), and I cannot recall a negative outcome to an FDIS. Even at the Committee Draft Vote

Published by the American National Standards Institute and its U.S. National Committee of the IEC

If You're Not on the Dance Floor, You Don't Get to Dance (continued)

(CDV) stage, significant changes are rare, as group members are anxious to move on to the FDIS to maintain IEC Central Office schedule. The real work and opportunities for input take place during the creation of a Committee Draft (CD), and in HV fuses this is done by a relatively small number of participants from a handful of countries. This is where my notion of "Eurocentricity" originates.

So why so few participants? HV fuse manufacturing is concentrated in a small number of countries, even though usage occurs all over the world. Just to participate in IEC standards development, one needs the desire and the expertise to provide input. For effective participation, however, one also needs financial support and time to attend meetings. These capabilities tend to exist only in countries that house manufacturers of the product, reducing likely participation of those countries that have users only.

If you care about a subject, you need to be there. Waiting for a draft that others have produced, and then making comments – particularly negative comments – is usually a waste of time.

In IEC, if you want your voice to be heard, it literally has to be heard. If you are not at the Technical Committee (TC)/SC, MT, Working Group (WG), or project team meetings to argue your point of view, there is no guarantee that anyone will take you seriously – i.e., "If you are not on the dance floor, you don't get to dance." If you care about a subject, you need to be there. Waiting for a draft that others have produced, and then making comments – particularly negative comments – is usually a waste of time.

There tends to be a fair amount of inertia in IEC standards. If a question is raised that requires a significant modification in the standards, the easy answer tends to be "this is a regional concern." Unsolicited comments and comments to a CD, and more so, a CDV, are easy to dismiss if there is no advocate present. To get your concerns addressed, there is no substitute for active participation.

Clout and Credibility

Beyond mere presence, an active participant also needs credibility. This is acquired by paying one's dues with regular attendance at meetings and useful contributions. When starting one's IEC career, making the observation that you must be right because the U.S. uses more widgets than anyone else on Earth is almost always counterproductive. Generally speaking, the longer a competent participant spends in standards, the better that person's credibility and the better the reception of his or her ideas.

In recent HV fuse work we have seen active, effective members from only about eight countries. All but one of these lies in Europe – and, yes, the other is the USNC. It obviously makes sense to minimize member travel to meetings, so most are in Europe, making it expensive for potential participants from outside Europe to attend. And when we have met outside Europe, the result has often been poor attendance.

Unsurprisingly, most people who do attend an IEC meeting have an agenda, as most are employed by manufacturers. Everyone is hopeful that the practices of their company and country are accepted. In general, the requirements of the majority present tend to be recognized, while those of the minority may not be. This is often irrespective of the merit or the extent of the usage of the practice being advocated. As the main participants in HV fuse standards development over the last 25 years were European, theirs is the practice that was emphasized.

What has helped me recently is the addition of other experts from North America. For years we sent only one representative to meetings while many other countries send at least two. In some cases, representatives from different countries work for the same company and tend to hold similar views. While it may be thought that the agreement of people from different countries would carry more weight, often just the presence of separate voices is enough to make a difference. Of course, as Experts to an MT, for example, we are not official representatives of our country – but in actual practice, this is exactly what is happening.

Reflecting Reality

Because some North American fuse practice diverged from European practice in the middle of the last century, the standards diverged as well. The practical effect was taking the IEC standards and adding "in-country" clauses, so that North American standards looked different from the "parent" documents in a number of areas. In reality, our influence on electrical systems around the globe is really quite astonishing – one can see common U.S. practice in many places. However, this reality was not reflected in IEC fuse standards.

In North America, anywhere there are significant distances between customers, the use of relatively small transformers are common. In Europe, low-voltage distribution to customers by "ring main" using larger transformers is more common. In the past in Europe, fuses were almost never used inside transformers (under the insulating liquid). Instead they were used in the ring-main units, tripping a switch to clear low currents. For moderate population densities, the cheaper North American technique of individual fusing of smaller transformers, with fuses inside the transformer, is the norm. This technique is used in much of the world, but there was no reflection of this in IEC fuse standards.

While in North American standards we were aware of these differences, for a long time we practiced a certain amount of isolationism, with no real attempts made to draw the standards

FEATURED ARTICLE

If You're Not on the Dance Floor, You Don't Get to Dance (continued)

closer together. Some years ago, the U.S. fuse community decided to change this approach. I have made it my task, during the second half of my HV fuse standards career (now running at over 30 years), to try and bring the North American and IEC standards back into line as much as possible, working with both sets of standards. I can now say that with help from my other U.S.-based colleagues, I have achieved a measure of success.

Strengthening Support

Few engineers are fortunate enough to be able to do standards work without sponsorship, and certainly not if one is actively employed. It therefore takes a company with vision to recognize that supporting employees in standards activity is important, and that to continue the support of retired staff is an excellent (and relatively inexpensive) way of maintaining their profile and influence in standards activities. Unfortunately, not every company has this vision, and customers generally have even less recognition of the importance of standards participation.

I suppose that technological change in fuses is now relatively slow, which is probably also true of other "old line" electrical equipment. There is no doubt that some manufacturers will "milk" an existing product without putting in any significant investment, and such folks are unlikely to participate in standards. Manufacturers who keep up with new developments to meet customers' needs normally recognize the importance of standards participation. But if they are a division or subdivision of a larger entity, "the powers that be" often do not recognize the value of investing in standards activities, as the payback is difficult to measure. When budgets are tight, support may often be viewed as nonessential, and cut.

But the pace of fuse development has by no means stopped. And while the number of fuse manufacturers worldwide has dropped (partially through acquisition), materials technology continues to change, customers have new problems to solve, and they continually look for fuses in a smaller package that can do more. While no one wants significant changes to relevant standards every year, changes do become necessary, even in the older products.

Why are customers reluctant to get involved in standards work? Perhaps we have done too good a job in the past with our fuse standards! They say the squeaky wheel gets the grease, and maybe an absence of problems leads to complacency. In North America, a few of the more forward-thinking utilities do send representatives. They benefit from an increased knowledge of how fuses work – a standards meeting can be a fine tutorial – and in return we are able to give valuable feedback on the effectiveness of past work. They also help us stay "honest," as one cannot sweep questions and issues under the rug just because they are inconvenient.

There were times a few years ago when I returned to the U.S. with, if not my tail between my legs, the feeling that I had just gone ten rounds with a stone wall. However, even stone walls develop cracks. By attending every meeting (like Beijing, which was skipped by my "opponents") and patiently (or impatiently) pushing my point that U.S. practice was actually quite widespread, I managed to get some of our North American practices included in the IEC fuse standards.

High voltage fuses are used to protect the electrical system in a substation from power transformer faults.

Lessons Learned

So what have I learned? Above all, persistence and compromise. As engineers we are used to making decisions almost wholly on the basis of scientific merit, and we do not always make good politicians. While it is certainly advantageous to have clear technical facts on your side, this is not always enough. I found that additional voices in support of my viewpoint were almost always required. Persuading other countries to support your viewpoint is often essential. And don't underestimate the importance of attending social events with fellow members – and sometimes even being ready to buy a round!

I also found that while you may not get everything you want this time around, ten years from now the faces may change and modifications to what by then has become established practice may be much easier. If the engineering is sound, sooner or later other folks are likely to adopt it – even if it does take several decades. As the British philosophers Jagger and Richards said, "You can't always get what you want, but if you try sometimes you just might find you get what you need."

While IEC testing standards still do not fully reflect worldwide "North American" practice, there has been significant movement toward this recognition. New proposals, supported by members of a working group, include recognition of worldwide practices. Again, I am not sure how typical fuses are when it comes to national and international standards, having had no other experience. But I am sure that by remaining persistent, making sound technical arguments, compromising and obtaining support, remaining persistent, volunteering to write drafts, and remaining persistent, achievements have been realized – in short, by always being represented at the meetings, "on the dance floor."

Note to Readers

We'd love to hear how being "on the dance floor" has made a difference in your own technical area! Email tzertuche@ansi.org. *–Editors* ■

FEATURED ARTICLE

Consumers on the Dance Floor

By Jim McCabe

With the focus of this issue on the importance of active participation, it seems like a good opportunity to note some of the steps already made and those still to come to get consumers involved in the work of the IEC and USNC.

A few years ago, the USNC adopted a strategic objective to build strong consumer involvement and active participation at the management and technical levels of IEC and the USNC. To help shepherd this initiative, a consumer advocate seat was established on the USNC Council, and a series of action items were identified by a task force.

A glossy brochure promoting the program was produced. Articles were written for this publication about the initiative, the value of the consumer perspective, areas of technical work of consumer interest, and steps being taken to involve consumers. Presentations were made by the USNC president to the ANSI Consumer Interest Forum (CIF) and by the CIF chair to the USNC Council. The USNC Council also approved a fee waiver provision for consumers to enable their participation on U.S. Technical Advisory Groups (TAGs) for IEC activities. And the USNC Council determined that its consumer advocate should have full voting participation on matters coming before the Council.

Building Interest

Since the beginning of 2008, JoAnn Emmel, Ph.D., an associate professor in the department of apparel, housing, and resource management at Virginia Tech, has served as the elected consumer advocate on the USNC Council. She brings to the committee a background that includes service as a consumer representative for the Association of Home Appliance Manufacturers (AHAM), CSA, and Underwriters Laboratories (UL) standards committees. Officially, Dr. Emmel's representation on the USNC Council is on behalf of the Association of Home Equipment Educators (AHEE), a small association of active and retired university instructors in the field of family and consumer sciences, cooperative extension educators from land grant institutions, and household appliance manufacturers.

Through direct outreach, Dr. Emmel was successful in identifying two colleagues from the academic community to serve as consumer representatives for the IEC Technical Committee (TC) 59, *Performance of household and similar electrical appliances,* and TC 61, *Safety of household and similar electrical appliances*. A telephone orientation session involving the newly appointed consumer representatives, TAG secretaries, and USNC and CIF staff was held, describing the work of the two committees and what to expect. Access was provided to the USNC training modules, and TAG participation fees were waived.

One of the guideposts for helping to identify the IEC TCs where consumer participation would be most helpful are the areas of priority interest identified by the International Organization for Standardization (ISO) Committee on Consumer Policy (COPOLCO). TC 59 and 61 are probably the most obvious IEC TCs of consumer interest included in the COPOLCO listing, but also noted are TC 23, *Electrical accessories;* TC 34, *Lamps and related equipment;* TC 35, *Primary cells and batteries;* and TC100, *Audio, video and multimedia systems and equipment*. There are several others that should be looked at in terms of their relevance to consumers and how consumer representatives might add value to the discussions.

Future Opportunities

Looking ahead, American National Standards Institute (ANSI) staff will be working with Dr. Emmel and TAG secretaries to secure consumer participation in those areas where it will be most beneficial. One valuable resource is the IEC's very knowledgeable representative to ISO COPOLCO, Gert Bukkjaer of UL Demark, who has been an active participant in COPOLCO the last two years. Mr. Bukkjaer always provides a very candid and comprehensive verbal and written report on IEC perspectives and activities related to COPOLCO's priority areas and new initiatives. His involvement has fostered understanding and strengthened the liaison between IEC and ISO relative to consumers.

Jim McCabe, senior director, consumer relations and IDSP, American National Standards Institute (ANSI)

Continued Engagement

As John Leach said, when it comes to standards participation, showing up for the dance is the first step. In 2008, Dr. Emmel attended the annual ISO COPOLCO meeting as part of the ANSI delegation and spoke on domestic appliances and energy use at the COPOLCO workshop on sustainable energy. In the fall of that year, Dr. Emmel and ANSI staff co-delivered a presentation to the Housing Education and Research Association on the theme of "Safer Homes through Consumer Involvement in Standardization."

This year, Dr. Emmel is attending the IEC General Meeting in Seattle. And she will also be speaking about how standards fulfill consumers' needs at the adjacent meeting of the International Federation of Standards Users (IFAN). All of these experiences are invaluable in enhancing understanding of the standards process and participants.

ANSI staff looks forward to continuing to work with Dr. Emmel and the USNC membership to achieve the strategic objective of consumer involvement and active participation that the USNC has set forth. ■

LATEST FROM THE IEC

Crossing Frontiers: IEC and ISO Speak at WTO TBT Special Meeting

International standards provide social and economic benefits to industry, regulators, and consumers in general," said Jonathan Buck, IEC director, on behalf of the IEC and its sister organization, the International Organization for Standardization (ISO), at the World Trade Organization (WTO) Technical Barriers to Trade (TBT) Special Meeting on information exchange on June 22, 2010, at the WTO's Geneva headquarters. These special meetings, held every two years, provide members with an opportunity to discuss issues relating to communicaton and to review the functioning of different notification procedures, as well as the operation of their national enquiry points (NEPs).

In his remarks, Mr. Buck reiterated the IEC and ISO's commitment to supporting the TBT committee's efforts to increase technical capacity among WTO Members, most of whom are members or affiliates of either or both of the standardization organizations. He went on to point out that, "International standards have an added value that is unique. This value comes from the long experience of the IEC and ISO in international consensus-building and the transparent and highly inclusive nature of their development processes. Their wide international memberships mobilize all relevant stakeholders in the different countries throughout the world and organize national enquiries to ensure appropriate market feedback as a precondition of a standard's publication. At the same time, the IEC and ISO business models ensure that international standards are developed in a neutral environment – one country, one vote – in which no one interest group is able to predominate over any others. As a result, international standards have a global reach and global relevance that makes the IEC and ISO brands among the most widely recognized and respected in the world."

The focus of the meeting, split into four panel sessions, centered on good practices for notification and transparency in setting standards. Along with Mr. Buck, other contributors to the different sessions were Heba Hammad (Egypt), Georges Malcorps (EU), Seema Sharma (Fiji), Craig Radford (New Zealand), and James A. Thomas (ASTM International, U.S.).

Delegations from Canada, the U.S., and the EU shared their experiences and presented the efforts of their respective NEPs to follow the TBT agreement's requirements.

Six WTO members – Chile, China, the EU, India, Indonesia, and the U.S. – presented their electronic databases and demonstrated how web-based applications could improve transparency and access to notifications. Brazil, Paraguay, and Turkey showed how their enquiry points operated. And the WTO Secretariat presented its TBT Information Management System (IMS), launched in July 2009 as a tool for members and other interested parties to track TBT information according to their specific needs.

The European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC, the IEC's regional partner organization in Europe), and ASTM International demonstrated other models of ensuring transparency in producing standards. And Egypt, Fiji, and New Zealand each presented national case studies. ■

WTO headquarters in Geneva

LATEST FROM THE IEC

Morocco Joins the IEC as Associate Member

The IEC has recently welcomed Morocco, the fifth largest African economy, as its 81st member, joining a growing community of 162 countries involved electrotechnical standardization.

The Moroccan electrical and electronics industry is expanding rapidly. Morocco's participation in IEC standardization work should prove to be beneficial for its local economy and an excellent tool to accelerate its exports. The country's total electricity production amounts to 19.78 billion kilowatt hours (kWh) while consumption reaches approximately 21 billion kWh.

The electrotechnical interests of Morocco in the IEC are represented by COMELEC, the new Moroccan IEC National Committee (NC). The president of COMELEC, Youssef Tagmouti, is also president of the National Federation of Electrical and Electronic Companies (FENELEC). FENELEC has over 250 company members representing more than 95 percent of the products and services in the Moroccan electric and electronic sector. The Secretariat of the Moroccan NC is held by the Moroccan Service of Industrial Standardization (SNIMA).

Contact Information

IEC National Committee of Morocco
(COMELEC)
Ministry of Industry, Trade
and New Technologies
Angle Avenue Kamal Zebdi et Rue dadi
Secteur 21 Hay Riyad
MA-10100 Rabat, Morocco
Tel: +212 537 71 62 14
Fax: +212 537 71 17 98 ■

Spread the Word: Standards Enable Innovation

At the July 2010 European Academy for Standardization (EURAS) conference in Lausanne, Switzerland, Peter Swann, Ph.D., professor of industrial economics at Nottingham University in the UK, chaired a session and presented a discussion on standards and their effect on innovation. Dr. Swann is the co-author of a 2005 report for the British Department of Trade and Industry (DTI) entitled, "The Empirical Economics of Standards."

"Standards are very much on my radar screen," said Dr. Swann. "I look at a broad range of economic factors and connect them together." Recently, he revisited his original 2005 DTI study in the light of figures made available in subsequent editions of the UK's Community Innovation Survey (CIS). The new report, "The economics of Standardization: An Update May 2010," and other pertinent documents are available on the UK Department for Business Innovation and Skills website.

The original analysis for DTI had pointed to what could be seen as a dichotomy. It showed that among "those firms who say that standards inform their innovation, the clear majority also say that regulations constrain their innovation." Dr. Swann qualified that statement, underlining that it is not uncommon for British businesses to confuse the issues of regulations and standards. "Some businesses seem to think that standards and regulations are the same. But they are not," he said.

Several academics have argued that we need better educational programs that underline the role of standards in business, clarifying the differences between standards, which are non-compulsory, and regulations, which, by essence, are always obligatory. And yet, Dr. Swann is one of relatively few academics to have studied the role of standards in economic terms. "In the UK, the economics of standards is viewed as a very specialized and even arcane area of the subject. Not so in Germany and the Netherlands," he explained.

The EURAS conference, hosted July 1 – 2, 2010, by Lausanne University, was timed to precede the WSC Academic Week in Geneva, at which many of the participants were also speaking. In his remarks on standards and innovation, Dr. Swann discussed the following questions:

- How can standards and standardization support innovation?
- When do standards and standardization constrain innovation?
- Are such "constraints" necessarily bad?
- Can standards help to achieve the best direction for innovation?
- Can standards help to avoid possibly adverse side-effects of innovation?

Dr. Swann's analysis uses data from the UK CIS study. That study first looked at the importance of standards in acting as a source of information for innovation. The CIS survey asked, "How important to your enterprise's innovation activities during the three-year period yyyy-yyyy were each of the following information sources?" The survey listed 11 sources of information, one of which was "Technical, industry, or service standards." The CIS survey also contained a question exploring the different constraints on innovation. Two of the responses considered were, "Need to meet UK government regulations" and, "Need to meet EU regulations."

Peter Swann, Ph.D., professor of industrial economics at Nottingham University

"You find a very interesting and, perhaps, unexpected pattern in the data," said Dr. Swann. "You find that the respondents who say 'Standards are useful as a source of information' also say 'Regulations constrain us.' Then, the ones who say 'Standards are not used as a source of information' also say 'Regulations don't constrain us either.'

"Standards enable innovation (by informing), while regulations constrain innovation." Simply put, said Dr. Swann, "Standards and regulations are not the same thing… though respondents sometimes blur the boundary.

"The bottom line is that the most innovative companies tend to be very good at squeezing information from standards and pushing the boundaries. In turn, that means that regulations do constrain them, because they're operating on the edge of technology.

"Regulations are rather like railway tracks. You're quite pleased that they're there to constrain you. I find that a very useful metaphor for understanding the economic effects of standards," concluded Dr. Swann. "As a result, innovation strategies are often a 'constrained optimum,' but neither regulations nor standards prevent companies from innovating." ■

LATEST FROM THE IEC

IEC to Present Thomas Edison and Lord Kelvin Awards

Every year the IEC honors the commitment and work of a select group of experts who, through their leadership and technical expertise, contribute to making technology-based products and systems safer, enabling the roll-out of innovations on a global scale, and protecting the lives of millions from electric shocks and other hazards. The following awards will be presented at the 2010 General Meeting in Seattle.

Thomas A. Edison Award

The IEC Thomas A. Edison Award is attributed to a maximum of nine persons who are currently managing a Technical Committee (TC) or Subcommittee (SC) in the IEC or one of the IEC Conformity Assessment Systems. The following are the first-ever recipients of the Edison Award:

Al Brazauski, Secretary, IEC TC 108, *Safety of electronic equipment within the field of audio/video, information technology and communication technology;* Underwriters Laboratories; U.S.

Nic Maennling, Secretary, IEC TC 89, *Fire hazard testing;* independent expert; Canada

Reinhard Pelta, Secretary, IEC TC 64, *Electrical installations and protection against electric shock;* Siemens; Germany

Ron Petersen, Chairman, IEC TC 106, *Methods for the assessment of electric, magnetic and electromagnetic fields associated with human exposure;* independent expert; U.S.

Umberto Rossi, Chairman, IEC TC 86, *Fibre optics;* independent expert; Italy

Hiroshi Sasaki, Chairman, IEC SC 61B, *Safety of microwave ovens;* The Japan Electrical Manufacturers' Association (Panasonic); Japan

Lord Kelvin Award

American **Jerome E. Dennis** is to be one of three recipients of the 2010 IEC Lord Kelvin Award. This distinct honor is given annually to members of the IEC community for their outstanding contributions to global electrotechnical standardization.

Mr. Dennis recently retired after 33 years at the Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration (FDA), where he was an international expert in laser and optical radiation safety and safety standards. His responsibilities included maintaining the CDRH radiation safety standard for laser products, developing regulatory policies, and guiding CDRH reviewers in report review criteria.

During his time at CDRH, Mr. Dennis represented the agency through leadership roles in national and international standards organizations and committees, including American National Standards Institute (ANSI) Accredited Standards Committees (ASC) Z136 and B 11.21 and the National Fire Protection Association (NFPA) TC 115 on Laser Fire Protection. Since 1998 he has held the chairmanship of IEC TC 76, *Optical radiation safety and laser equipment,* and is a technical advisor for the USNC, chairing the U.S. committee on laser and optical radiation safety. He also served as general chairman of the Laser Institute of America's (LIA) International Laser Safety Conferences in 1997 and 1999.

Prior to joining the CDRH, Mr. Dennis spent 15 years in industry, working with Hadron, Inc., and TRG Inc., as well as the Naval Material Laboratory. He is a graduate of Fordham University in New York City. ■

USNC NEWS

USNC Announces New Officers for 2011

Philip M. Piqueira, USNC president elect

The USNC is pleased to announce the results of the recent elections for USNC officer positions.

James E. Matthews III, director of technical standards and standards policy at Corning Incorporated and current USNC president, has been nominated as chairman of the Standardization Management Board (SMB) and vice president of the IEC. The IEC Council is expected to endorse Mr. Matthews at the Seattle General Meeting. His term would begin on January 1, 2011.

Philip M. Piqueira immediately assumes the role of USNC president elect, and will automatically be elevated to the USNC presidency upon Mr. Matthews's resignation, anticipated for January 1. Mr. Piqueira is the global standards leader for the General Electric (GE) Industrial Solutions Business, and has been with GE since 1979.

Alec McMillan, currently USNC vice president – finance, has been elected as USNC vice president – technical, beginning January 1. Mr. McMillan is a chartered member of the Institute of Electrical Engineers in the UK, a member of IEEE, and a senior member of the International Society of Automation in the U.S. Mr. McMillan will also serve as the USNC's primary representative on the IEC SMB.

Lori L. Tennant will assume Mr. McMillan's role as USNC vice president – finance, beginning January 1. Ms. Tennant is the manager of industry standards – control and automation products, for Schneider Electric North America.

The USNC congratulates these individuals on their election and anticipates great success under their leadership. ■

USNC NEWS

USNC Makes Great Showing at ANSI Awards

The American National Standards Institute (ANSI) recently presented a number of its 2010 Leadership and Service Awards to prominent figures in the world of electrotechnology.

Frank K. Kitzantides, senior technology advisor at the National Electrical Manufacturers Association, received the Howard Coonley Medal for service to the national economy through voluntary standardization and conformity assessment. Mr. Kitzantides is IEC vice-president, chairman of the IEC Standardization Management Board (SMB), a member of IEC Executive Committee (EXCO), a member of the World Standards Cooperation (WSC), an ex officio member of the IEC Council Board (CB), and an ex officio member of IEC Market Strategy Board (MSB).

Albert (Chip) Pudims, retired manager, codes and standards and product liability at Bryant Electric/Hubbell Inc., received the Finegan Standards Medal for extraordinary leadership in the development and application of voluntary standards. Mr. Pudims is a member of IEC Technical Committee (TC) 23, *Electrical accessories*, Maintenance Team (MT) 61916, and a member of IEC Subcommittee (SC) 23H, *Industrial plugs and socket-outlets*, MT 7.

Charles C. Packard, chairman emeritus at the Electronic Components Certification Corporation, received the Elihu Thomson Electrotechnology Medal for exceptional contributions to the field of electrotechnology standardization.

George Arnold, national coordinator for Smart Grid interoperability at the National Institute of Standards and Technology (NIST), received the George S. Wham Leadership Medal, for outstanding contributions to the voluntary standardization community. Mr. Arnold actively cooperates with the IEC Strategic Group (SG) 3, *Smart Grids*.

Megan A. Hayes, senior manager of technology and standards for the Consumer Electronics Association, received the Next Generation Award, which honors individuals who have been engaged in standardization or conformity assessment activities for less than eight years and have demonstrated exemplary vision, leadership, and dedication. Ms. Hayes is a member of five technology-area Project Teams (PTs) and MTs of IEC TC 100, *Audio, video and multimedia systems and equipment*.

Three of the six individuals to receive the Meritorious Service Award demonstrated outstanding service in electrontechnology:

Kenneth E. Gettman, director of international standards, National Electrical Manufacturers Association; member of the SMB SG 4, *Low-voltage direct current (LVDC) distribution systems up to 1,500 volts DC in relation to energy efficiency;* secretary of IEC SC 22G, *Adjustable speed electric drive systems incorporating semiconductor power converters*.

William G. Lawrence, Jr., senior engineering specialist, FM Approvals; convenor of IEC TC 31, *Equipment for explosive atmospheres*, WG 22; member of TC 31, Chairman's Advisory Group (AG) 36, and four TC 31 MTs and PTs.

Ronald F. Silletti, retired corporate director, standards, IBM; member of the International Organization for Standardization (ISO)/IEC Joint Technical Committee (JTC) 1 on Information Technology, Special Working Group (SWG) D, *Directives*.

The USNC would like to congratulate all of the esteemed recipients. ■

2010 ANSI Leadership and Service Awards recipients

USNC NEWS

USNC Congratulates 1906 Award Recipients

(l – r) Bob Williams, Jim Matthews, Roger Wicks, Jim Melton, Kevin Lippert, Frank Goodman, Frank Kitzantides, Phil Piqueira

The Officers and membership of the USNC wish to extend their sincere appreciation and thanks for the work accomplished by the 15 USNC recipients of the 2010 IEC 1906 Award. This award was initiated to recognize experts who have contributed in an exceptional way to the technical work of IEC through their engagement in IEC technical committees (TCs), subcommittees (SCs), and other fora.

U.S. RECIPIENTS OF THE 2010 IEC 1906 AWARD

Curtis Bender, Tennant Company, SC 59F, SC 61J
Thomas V. Blewitt, Underwriters Laboratories Inc., TC 61
Gregory Cowle, JDSU, SC 86C
Trudy Forsyth, NRE, TC 88
Frank Goodman, Electric Power Research Institute, TC 57
Patrick J. Grother, National Institute of Standards and Technology (NIST), ISO/IEC Joint Technical Committee (JTC) 1
Robert J. Hill, TC 36, SC 36B, SC 36C
Paul Jeran, Hewlett Packard Co., ISO/IEC JTC 1, SC 28
Kevin J. Lippert, Eaton Corp., SC 17B, SC 17D
Scott MacLeod, Underwriters Laboratories Inc., TC 111, TC 113
Jim Melton, Oracle, ISO/IEC JTC1, SC32
John Penczek, NIST, TC 110
Ronald W. Watson, Tyco Electronics, TC 15
Roger C. Wicks, E.I. DuPont De Nemours Co., TC 15, TC 112
Murthy Yalla, Beckwith Electric Company, TC 95 ■

In Their Own Words: The USNC Selectees for the 2010 IEC Young Professionals Workshop

IEC YOUNG PROFESSIONALS - GO AHEAD, GET AHEAD

The USNC's participants for the first-ever IEC Young Professionals Workshop to be held in conjunction with the 2010 General Meeting (GM) in Seattle were successful in their submissions due in no small part to the strength of their nomination essays. The panel of judges received strong applications from very qualified candidates, making the selection committee's job a tough one.

The three winners, Marcus K. Boolish of Energizer Battery Manufacturing, Inc., Michael S. Kurzeja of Exelon Nuclear, and Daniel W. O'Shea of Underwriters Laboratories (UL), will be on hand in Seattle to take part in almost all aspects of the GM.

In recognition of their hard work and dedication to standards development, the USNC presents their winning essays here in their entirety. Their words give insight into the issues currently facing national and international electrotechnical standardization and provide an exciting vision of what's to come.

Marc Boolish, Energizer Battery Manufacturing, Inc.

The IEC represents a fascinating mix of electro-industry products and technologies that impact nearly every facet of daily life, whether observed or not. Some of these products are emerging and represent exciting opportunities for the future. Others have been part of our daily lives for decades and are fundamental to our economy.

Whether a technology is young or old, exciting or mundane, all technologies share the need for viable standards to realize or continue to realize potential. While older products are, by definition, not emerging, to be a successful and standardized product for decades requires reaction to marketplace trends and new thinking of the technology. Whether establishing a standard for an emerging product or revising an existing standard with new ideas, there are several fundamental practices that lead technical committees on the path of success.

Strong leadership, transparency in the standardization process, and the production of timely and relevant standards will provide the basis for a technical committee to discover the other often unique ingredients that will lead to success.

Leadership. The IEC process is intentionally deliberate to maximize accuracy and fairness, especially with the different languages involved. Detailed technical discussions and the requirement of multiple document drafts prior to publication can mean time commitments of several years per revision. It is also common, especially with new standards, to spend days on items such as definitions alone. These deliberate discussions and the possibility of controversy are where a strong and skillful leader can balance technical integrity with timely results. Through preparation, negotiation, and the use of available electronic tools, a skillful chairman, secretary, or team leader can effectively move a standard forward while satisfying most if not all of the member and national committee concerns.

Transparency. It is essential to have the appropriate parties involved in the standardization process as early as possible. Recruitment may be necessary. Even with the appropriate parties initially involved, maintaining openness and transparency in the development of the standard, from project initiation to international standard publication, will allow for input from everyone impacted by the standard. Allowing fair input leads to greater acceptance of a published standard.

Timeliness. Issues facing industries can be long-term, or they may come and go. Standards help address these issues, but only if their timing is right. The lack of a standardized "answer" can often lead to

In Their Words: USNC Participants for 2010 IEC Young Professionals Workshop (continued)

local or regional standards or regulations developed in haste, standards with requirements outside their scope, and non-harmonized standards globally. A technical committee and its leadership need to anticipate these future needs in standards and be prepared to react appropriately to assure the answer sought by users is available.

Relevance. The ultimate goal of a standard is relevance. A technical committee can have savvy leadership, be as transparent as possible, and produce timely standards, but if the standard content is not easily understood or does not contain information pertinent to users, the standard is not relevant. What is relevant differs for various products and can change with time. It is likely that there will be items that are both important and controversial to intended users of the standard. It is important to address these items and come to resolution. Avoiding controversial yet important issues risks marginalization of a standard. In today's market, along with the key technical information making up a standard, some important additional details that should be considered for all standards include safety, reliability, and sustainability.

What ultimately works will be different for every committee. These four items – strong leadership, transparency in the standardization process, and the production of timely and relevant standards – will provide the basis for a technical committee to discover the other often unique ingredients that will lead to success.

Michael Kurzeja, Exelon Nuclear

My time as president of the North American Young Generation in Nuclear (NA-YGN) has been filled with numerous enriching experiences. One theme has consistently emerged from nearly every engagement: Young professionals can and want to make a difference. They are passionate, capable, and have a sense of purpose and advocacy. However, engaging young professionals has been a challenge.

With the advent of Wi-Fi, text messaging, Twitter, and Facebook, young professionals have found numerous new ways to communicate with each other. Historic communication mediums no longer reach this vast resource. So in many cases, the message that "standards are important, and help is needed in their development" never reaches its targeted audience. Energizing and engaging this group is simply a matter of crafting a message and communicating it in a way that successfully reaches its target.

There is no better example of this than the effort that the North American Young Generation in Nuclear displayed in our successful Congressional Communications Plan. A priority of our organization has always been growing awareness about the benefits of nuclear science and technology. Traditionally, this has taken the shape of classroom visits to local schools.

With the advent and of Wi-Fi, text messaging, Twitter, and Facebook, young professionals have found numerous new ways to communicate. Historic communication mediums may no longer reach this vast resource.

Two years ago, I along with other leaders in the organization saw the need to focus our efforts towards Washington, D.C. We needed to engage Congressional leaders to provide a grassroots perspective on the many benefits of nuclear science and technology. We decided to incorporate a Hill visit as part of our annual conference in Washington, D.C., and developed all the materials necessary for the visit to send a consistent message. We then sent out a call to action to our members. We engaged them in emails, Facebook posts, tweets, and blogs. In short, we put the message out everywhere our members were. The response was dramatic.

The 2009 NA-YGN Professional Development Conference took place May 17 – 19, 2009, in Washington, D.C. With 375 attendees, this was the organization's most successful conference to date. At the conclusion of the conference, NA-YGN organized the largest-ever pro-nuclear delegation to visit the Hill. On May 19, 2009, over 250 young professionals armed with a message and appointments canvassed Capitol Hill. Over 200 scheduled visits and drop-ins occurred with Congressmen and their staffers.

Our visible engagement with Congressional leaders helped us obtain an invitation to provide testimony to a Senate subcommittee about the impact of policy on nuclear power. On June 8, 2009, I provided those senators in attendance with the young professionals' perspective.

Seeing that our message was being heard, we then called for a second round of visits to congressmen. In all, we eclipsed all previous metrics for public information hours from our organization during this past year. While

In Their Words: USNC Participants for 2010 IEC Young Professionals Workshop (continued)

our collective voice was only one of many echoing the same message, it was a voice that was heard. President Obama's State of the Union address and subsequent budgetary actions are evidence that our message has gotten through.

This is but one example of how, when engaged correctly, young professionals can achieve outstanding results. Standards are key to our economic prosperity, and incorporation of emerging technology is vital to their continued relevance. Development of these standards does not need to fall solely on those currently engaged in the practice. The next generation of standards developers are simply waiting for someone to give them a call, or a text, or tweet, or an instant message on Facebook.

Daniel O'Shea, Underwriters Laboratories

The value of strategic standardization to American industry can not be overstated. In an often referenced metaphor put forth by Donald Purcell from the Center for Global Standards Analysis, "Standards form a bridge between technology and users. Whoever controls the bridge, controls the future."

Putting a more old-time American twist on the concept, you can consider the organizations and people that write standards as the ones that "own the bat and ball." The user (the player), whether it is the consumer, the producer, the testing house, or even the government, can always show up ready to play. At the player's disposal is the field; these are the methods, products, and services that technological progress has to offer. However, if the kid who owns the bat and ball does not let you play, even the most gifted player will not get a chance to shine on the biggest and best-known fields.

A tactical example can be found in the use of vinyl in many North American appliances. When different compliance schemes use a different set of material acceptance criteria, its use is essentially excluded. Unable to get the North American method of material acceptance adopted as an alternative, a potential market for these vinyl manufacturers remains out of reach.

The *U.S. Standards Strategy* (USSS) emphasizes the need to work to prevent standards and their application from becoming technical trade barriers to U.S. products and services. It seems a simple and direct concept, but the question arises regarding how to rectify this position when it is a common tenet across the standardization framework of most of the top global economies. That is why the USSS also recognizes the need to promulgate how the U.S. standards development process (based on voluntary, consensus-based, market-driven sectoral standards) can benefit businesses, consumers, and society as a whole. If we are involved as players in not only setting the rules of play, but also the core methods at how those rules are devised, we can help ensure the field will be open to U.S. products and services. By setting in place a global market-driven process, we reduce the possibility of standards intended solely to change the rules and disadvantage others.

At present, the IEC Master Plan, when referencing standardization as a strategic tool, acknowledges that industry will gravitate to the most cost-effective standardization structures which it can influence and/or control. And in order for the products of these standardization structures to have market relevance, it will need to maximize the input from its principal markets.

As the world's leading consumer economy, the U.S. needs to be strongly positioned within the prevailing standardization structure, whatever it may be, in order to fully benefit our nation and economy. The U.S. standardization system has met the challenge of a wide range of sectoral needs. We need to demonstrate that it can perform this task as well on a global scale.

Standardization can be approached from many perspectives. Wherever you consider it on the scale of the "benign language" versus the "fierce battleground" for the global economy, the value of strategic standardization is real and attainable for the U.S. through voluntary public-private partnerships. So will we play with a Louisville Slugger, a Kookaburra cricket bat, or do we let others just take the bat and ball and go home?

Will we play with a Louisville Slugger, a Kookaburra cricket bat, or do we let others just take the bat and ball and go home?

Further Information

To learn more about the IEC Young Professionals Workshop, click here. To keep up with IEC 2010 in Seattle, visit the event's Facebook page. ■

CONFORMITY ASSESSMENT

IECQ Is Critical to Fighting Counterfeiting in Aerospace and Beyond

Counterfeiting has become a major issue in global trade, affecting nearly all industry sectors. Watches, perfumes, and other luxury goods may represent a big chunk of the counterfeit trade, but copying a designer handbag won't pose a safety threat. Counterfeiting in electronic components is another story altogether.

Because of the rapid growth of the electronic component market in the past two decades, and the increasingly shorter life span of these products, a gray market has emerged. This has prompted unscrupulous manufacturers and suppliers to make easy money peddling substandard and counterfeit components. Counterfeit integrated circuits, capacitors, batteries, connectors, power-management devices, and other electronic parts are making their way into electronic goods, equipment, and systems, ultimately endangering the lives of those who use them.

Safety, reliability, and performance issues are crucial in transportation, where substandard electronics can have the most dramatic consequences. Malfunctioning, non-responding electronic systems are often the cause of car or train accidents. The consequences may be even worse for the aerospace industry, which depends heavily on electronics.

When electronic devices and systems were first incorporated in aircrafts, military and commercial aerospace manufacturers could rely on a well-established military electronic component sector to ensure long-term availability of components. In the early days, the military market comprised about 25 percent of the total market. This is no longer the case.

Nowadays, the aerospace industry consumes less than one percent of the electronic components produced, the major market being computers and consumer electronics. In consequence, the electronic industry sector has adapted to meet market needs, and the aerospace industry has to make do with what the market offers.

However, the aerospace sector cannot take the risk of incorporating defective or substandard electronic components into its engine control or navigation systems. Extreme vigilance has to be exercised and proper mechanisms put into place to ensure that only genuine components are used in aircraft electronic devices, equipment, and systems.

The IEC Quality Assessment System for Electronic Components (IECQ) is a worldwide approval and certification system that covers electronic components and related materials and processes, providing a business-to-business supply chain management system. It uses quality assessment specifications based on International Standards prepared by the IEC. IECQ offers a modular approach to its certification schemes to cover components that meet specifications and related processes – for example, the electrostatic discharge (ESD) management scheme and the IECQ Hazardous Substance Process Management (HSPM) scheme.

IECQ has a specific scheme for the aerospace industry, the IECQ Electronic Component Management Plan (ECMP). This plan covers the component and assembly supply chain for avionics, enabling the aerospace industry to control the quality of the components it uses. With effective conformity assessment plans like these in place, IECQ is helping to reduce the counterfeiting dangers around the world. ■

Counterfeit components could have dire consequences in the aerospace industry.

CONFORMITY ASSESSMENT

IECEE Addresses Rewable Energy

The IEC System of Conformity Testing and Certification for Electrotechnical Equipment and Components (IECEE) recently held its annual meetings in Tel Aviv, Israel. These meetings present the chance to discover the ways in which the IECEE is evolving and taking into account new developments in electrotechnology.

The weeklong event was a unique opportunity for delegates to discuss all issues of importance to the IECEE, and for Working Groups (WGs) and other entities to have recommendations and decisions pertaining to their operations approved by the IECEE Certification Management Committee (CMC).

First on the agenda was the IEC Conformity Assessment Board (CAB), the IEC outfit that supervises IEC conformity assessment activities. Energy efficiency, Smart Grid, and wind power were among the issues under discussion.

Noting that many countries are considering or implementing regulations pertaining to energy efficiency, a coordination of efforts between IEC CAB WG 12, *Energy efficiency,* and IECEE WG 2, *Business development*, was deemed necessary. Further meetings were scheduled to prepare a plan of action for setting up the relevant services and offering proper testing and certification in the future.

Among other plans for action, IEC CAB also proposed to work closely with experts from IEC Technical Committee (TC) 88, *Wind turbines*, to set up a WG that would investigate how to meet the certification needs of the wind turbine industry. ■

ON THE GRID

Well connected: IEC Contributes to Various Smart Grid Fora around the World

The IEC continues to be extremely active in global Smart Grid projects. The latest activities include participation at the pre-cursor to the G20 Summit meeting, when the world's energy experts will be meeting in South Korea's Jeju Island for Korea Smart Grid Week; the GridCom Forum and ConnectivityWeek in California; GridWeek and Gridwise in Washington, DC; GridInterop 2010 in Chicago; the Smart Grid Latin American Forum in São Paulo; and the World Smart Grid China Focus in Beijing. Richard Schomberg, leader of the IEC Standardization Management Board (SMB) SG (Strategic Group (SG) 3, *Smart Grid*, has been invited to the World Smart Grid China Focus on October 26-29, 2010, as a keynote speaker.

Mr. Schomberg and Amaury Santos, regional manager of the Latin America Regional Centre (IEC-LARC), attended the Smart Grid Latin America forum in August 2010 in São Paulo, Brazil. The Forum provided an ideal opportunity to develop the Latin America Smart Grid platform while giving foreigners an excellent opportunity to learn about the projects going on in Brazil and Latin America. The event was attended by eminent local and international specialists from utilities, large consumers and power generators, governments, regulatory agencies, equipment manufacturers, providers of IT systems and solutions for measurement, control, and automation, and development agencies for research and development.

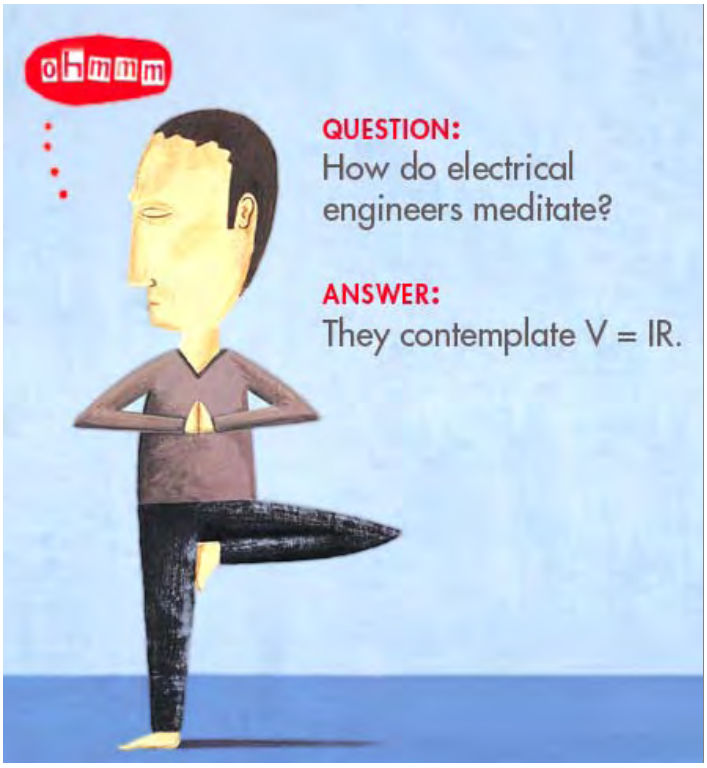
In July in Seoul, South Korea, another specialist conference on Smart Grids was attended by delegates from more than 10 countries. The Electricity Innovation Smart Grid Conference was more like a workshop, with the attendees sharing their experiences on pilot projects that have taken place in Europe, the U.S., Korea, and Japan.

Participants underlined the need for further products relating to Smart Grid (smart metering) and the importance and need for interoperability and integration among Smart Grid capable devices.The speaker representing the IEC was Dennis Chew, officer of the Asia-Pacific Regional Centre (IEC-APRC) office.

Further Information

To learn more about the IEC's Smart Grid activities, click here. ■

LAUGH TRACK



SAVE THE DATES

OCTOBER 2010

74th IEC General Meeting
Wednesday – Friday,
October 6 – 15, 2010
Seattle, WA

IEC Young Professionals Workshop
Sunday – Tuesday,
October 10 – 12, 2010
Seattle, WA

JANUARY 2011

Technical Management Committe (TMC)/ Conformity Assessment Policy Coordinating Committee (CAPCC)/Council Meetings
Wednesday – Thursday,
January 19 – 20, 2011
San Marcos, TX
Hosted by Thermon Industries

February 2011

SMB Meeting
February 16, 2011
Geneva, Switzerland

MAY 2011

TMC/CAPCC/Council Meetings
(tentative) Wednesday - Thursday, May 18 – 19, 2011
Peachtree City, GA
Hosted by Cooper Lighting

For a complete schedule of upcoming meetings, or for more information on any of the events listed above, visit www.ansi.org/calendar.

Enter "USNC" or "IEC" in the key word search field to narrow the list of results.

IEC 2010 General Meeting in Seattle

The United States is hosting the General Meeting of the International Electrotechnical Commission for only the sixth time since 1904. The event will be held in Seattle, Washington, during the period of October 6 – 15, 2010. More than 2,300 of the world's foremost electrotechnical experts are expected to attend, making it the largest GM in IEC history. More than 100 IEC Technical Committees and Subcommittees have been invited to the event.

To learn more, visit the USNC website at www.ansi.org/usnc or the IEC 2010 website at www.iec2010.org.

General Sponsors by Category as of October 2010

The USNC/IEC gratefully acknowledges the 58 General Sponsors that have already stepped forward to commit financial resources in support of IEC 2010:

Diamond Level
American National Standards Institute (ANSI)
Siemens Industry, Inc.
Underwriters Laboratories (UL)
U.S. National Committee/IEC

Platinum Level
Corning Incorporated
General Electric Co.
IEEE
Legrand North America
Microsoft
NEMA
Rockwell Automation
Sony Electronics
Telecommunications Industry Association

Gold Level
ABB, Inc.
AREVA NP, Inc.
CommScope, Inc.
Consumer Electronics Association (CEA)
Cooper Power Systems
Eaton Corporation
FM Approvals
Hubbell Inc.
Intertek
International Society of Automation (ISA)
National Fire Protection Association (NFPA)
Panasonic
Philips North America

Silver Level
Hewlett Packard Co.
Pilz Automation Safety LP
Schneider Electric/Square D
U.S. National Committee/IECEE

Bronze Level
American Speech-Language-Hearing Association
Apple
Dell Inc
Edison Electric Institute (EEI)
Harger Lightning and Grounding
Intel Corp.
JEDEC Solid State Technology Association

Sponsor Level
ADALET Enclosure Systems
Air Conditioning, Heating and Refrigeration Institute (AHRI)
ASME
Association for the Advancement of Medical Instrumentation (AAMI)
ASTM International
Electronic Components, Assemblies and Materials Association (ECA)
EGS Electrical Group
Emerson Process Management
FCI USA Inc
Ludlum Measurements, Inc.
Medtronic, Inc.
Qualcomm, Inc.
Rohde and Schwarz
Schweitzer Engineering Laboratories, Inc.
Sharp Laboratories of America
Society of Motion Picture and Television Engineers (SMPTE)
TechAmerica
Thermon Industries
Toshiba America Consumer Products, L.L.C.
TUV Rheinland of North America, Inc.
U.S. National Committee/IECEQ
U.S. National Committee/IECEx

Thanks are also due to the 94 Technical Sponsors that have committed their support to specific Technical Committee and Subcommittee meetings during the 2010 General Meeting in Seattle.

ANSI American National Standards Institute

Published in the NYC Operations Office
25 West 43rd Street
Flr. 4
New York, NY 10036
www.ansi.org

ABOUT THIS PUBLICATION
The USNC *News and Notes* newsletter is distributed to the constituency of the United States National Committee (USNC) of the International Electrotechnical Commission (IEC). It provides updates on technical activities and other information of interest to members of the electrotechnical community.

HOW TO CONTRIBUTE
Contributions are gladly accepted for review and possible publication. Submit proposed news items to Tony Zertuche, USNC/IEC Deputy General Secretary, American National Standards Institute.
Tel: 212.642.4961;
tzertuche@ansi.org

Upcoming Issues of News & Notes

2010 Quarter IV
System Standardization: Networking to Benefit Industry, Government, and Society