

In This Issue

- Electrical Energy in the 21st Century
- TC 114 Update
- USNC News
- Latest from the IEC
- The Electrical World
- Laugh Track
- Conformity Assessment
- Save the Dates

ALTERNATIVE ENERGIES

Electricity is the most versatile and easily controlled form of energy. At the point of use it is practically loss-free and essentially non-polluting. At the point of generation it can be produced clean with renewable methods. The IEC believes that smart electrification will be one of the most significant factors in addressing the global energy challenge. Energy must be produced in the most efficient and least damaging ways, without inhibiting economic development, through renewable production including hydro, wind, and advanced nuclear power. And the delivered energy must be used in the most efficient and effective ways, such as through the advancement of electric vehicle technologies.

Electrical Energy in the 21st Century

*A personal observation by Morgan Cox, Chairman,
IEC Technical Committee (TC) 45, Nuclear instrumentation*

The entire electrical grid – or the system of transmission of electricity from the sources to the points of usage including factories, businesses, and homes – in the United States must be modernized. But how? By updating the equipment and transmission lines, including “hardening” against severe electrical storms and weather, cyber attacks, and geomagnetic storms originating from the sun.

The current grid is an old system showing signs of wear and tear. And with the addition of new sources and new users, things may only get worse. The great eastern United States “brownout” of August 2004 illustrated how fragile the electrical grid is, and how much improvement is really needed. Updating and modernizing the grid is a massive undertaking and should be initiated immediately and incrementally to cope with changes.

The following is an overview of energy sources currently in use in the United States.

Coal

Coal is basically carbon, and is generally termed bituminous or soft coal. Coal is plentiful in the United States and elsewhere in the world. The technology of burning coal as a fuel has improved over the years with emphasis on “low sulfur” coal, “clean burning” coal, and the uses of “scrubbers” in the effluent stacks of coal-burning electrical power plants.

Is producing electricity by burning coal the best possible use of this natural resource with a finite availability? Probably not.

Coal can also be used to produce valuable plastics such as nylon and rayon. Pulverized coal, otherwise termed “culm,” has been processed to produce plastics, using a technology that became important during World War II.



Diablo Canyon Power Plant,
Avila Beach, California

Given our current and growing need for electricity, coal will continue being an important contributor to the electrical grid well into the future. However, the bottom line with coal is finding cleaner ways to burn it, and taking measures to reduce the effluent from coal-burning power plants in the short term. In the longer term, the percent of electricity produced by coal should be reduced by increasing production from other sources. *(continued)*

Electrical Energy in the 21st Century *(continued)*

Natural gas

Natural gas is currently plentiful in the United States and elsewhere in the world. For example, there are approximately 65,000 gas wells in the state of Ohio alone.

The use of natural gas to produce electricity could be seen as a waste of a valuable natural resource that should otherwise be used for heating homes, businesses, and factories; cooking foods; and, in pressurized form, fueling vehicles, autos, trucks, and even trains. Natural gas and other similar gases such as propane and butane are clean burning and so contribute very little to air pollution. Natural gas itself is methane, a simple organic gas found in nature. Methane and similar other organic gases can be produced from biomass and other waste products that are otherwise discarded and treated as garbage.

Nuclear

About 20 percent of the electricity in the United States is currently produced by nuclear power reactors. There are now 105 U.S. nuclear power reactors producing electricity at 90+ percent of the capacity factors of those power plants! In other words, the plants are producing electricity at more than 90 percent

U.S. Electricity Sources (%)	
Coal	50
Natural gas	20
Nuclear	20
Hydro	8
Other (biomass, geothermal, solar, wind, etc.)	2

of electrical generation from nuclear reactors is the similar to that of fossil fuel-burning plants. Nuclear fission produces tremendous quantities of heat used to boil water and produce steam to drive turbines. After the nuclear fuel containing uranium 235 has reached the end of its useful lifetime, the spent fuel is stored either in deep water canals or in well-shielded above-ground or underground repositories.

The spent fuel should not be treated as waste because of the intrinsic value of some radionuclides produced during the fissioning process in producing electricity. Among the resultant products is plutonium, a most valuable radionuclide that can be removed for later electrical production in what is termed the “reprocessing” of spent nuclear fuel. Strontium 90 and cesium 137 can also

plants. France even exports electricity to some of its neighbors such as Italy, Germany, and the United Kingdom, rendering nuclear power production in the country not only efficient but profitable. Clearly, the United States needs much more nuclear power that is safe, clean, and economical.

The recent enormous earthquake and ensuing tsunami in Japan badly damaged several nuclear power plants. However, it is important to realize that the earthquake caused no damage to the reactors. The resulting tsunami flooded out and destroyed local power first, then backup, diesel-generated power, and finally battery power. Thus, the reactors were crippled by lack of cooling to the reactor cores and to the spent fuel containers. There were several hydrogen explosions and some release of airborne radioactivity. The prevailing winds blow across Japan from the west and northwest, blowing most airborne material into the Pacific Ocean. The recovery process will take time – first to fully characterize the damages, and then to determine the final disposition of the reactors.

To date, there have been few operational personnel examined for radiation exposures. Small releases of radioactivity have been detected in the environment. High radiation levels at and near the reactors are decreasing.

Other sources

Hydroelectric, solar, wind, and wave power, biomass production, and geothermal sources of electricity are among the other “alternative energy” sources in various stages of use and development in the United States. Some look more promising than others in providing an economically viable and significant source of electricity in the future, but all have limitations and require modification and in most cases localization of the electrical grid.

Further information

Details of the IEC’s smart energy agenda can be found at www.iec.ch/smartenergy. ■

Nuclear power production in France, for example, is not only efficient but profitable for the country. Clearly, the United States needs much more nuclear power that is safe, clean, and economical.

of their rated capacity annually. The current cost of nuclear power in the United States is less than 2 cents per kilowatt-hour. This value compares favorably with electricity produced by hydroelectrical facilities such as the Hoover Dam on the Arizona-Nevada border. The average U.S. nuclear power plant produces 1,000+ megawatts of electricity.

The only issue with nuclear power generation is what to do with the radioactive materials in “spent” nuclear fuel. The process

be rescued in reprocessing, and can be used elsewhere in industry and in medicine.

The reprocessing process was regulated out of existence in the mid-1970’s. This regulation is being reviewed and should be reversed to allow and even promote reprocessing. Reprocessing is currently underway in France, Japan, Russia, and the United Kingdom, and it is expected that other “high-tech” countries will follow suit.

In France, 80 percent of the country’s electricity is produced by nuclear power

An Update on TC 114's Work in Marine and Hydrokinetic Technology

By Frederick Driscoll, Senior Engineer, Offshore Wind and Ocean Power Systems, NREL, U.S. Administrator, IEC TC 114; Neil Rondorf, Vice President, SAIC Maritime, Technical Advisor, U.S. TAG to IEC TC 114; Daniel Folsom, Old Dominion University Systems Engineering Graduate Student, SAIC Intern

As the investment in marine and hydrokinetic (MHK) energy development grows, there is an increasing demand and role for international standards. Consistent international standards for MHK energy will help to promote an international market and accelerate cross-border acceptance of new technologies. These standards are also essential for helping technology and project developers to obtain investment funding and insurance, and to ensure that safety and other key factors are addressed in order for the industry to succeed.

TC 114: History and Work Program

In 2007 the IEC created Technical Committee (TC) 114, *Marine energy - Wave, tidal and other water current converters*, with a mandate to develop the standards for marine energy conversion systems. In fall 2007 the USNC Technical Management Committee (TMC) appointed the National Renewable Energy Laboratory (NREL) as the U.S. Technical Advisory Group (TAG) Administrator to TC 114. Science Applications International Corp. (SAIC) provides the Technical Advisor, Neil Rondorf, for this U.S. TAG effort.

TC 114 has 14 Participant- (P-) Member countries and 7 Observer- (O-) Member countries. The U.S. TAG to TC 114 has approximately 60 members representing industry, government, and academic institutions engaged in the maritime renewable industry. This cross-section of participants creates a healthy balance of interests, capabilities, and priorities for developing these standards.

The U.S. TAG's task is to ensure that the U.S. perspective is recognized in the international standards process and that the standards will serve the needs of U.S. industry and the international marketplace. A major goal is to ensure the TAG has a participating member in each work area and, to date, the group has been very successful in that.

This TAG effort is organized by "shadow committees" – ad hoc groups of U.S. technical experts formed to generate input into the development of standards. Each shadow committee chair coordinates the U.S. effort and represents the United States as an IEC designated expert in TC 114 work by serving on the associated project team or working group. The challenge in the United States is to balance funding and national, industry, and organizational priorities, as well as the interests of the IEC and international political considerations.

The TC 114 U.S. TAG is working closely with the U.S. TAG to TC 88, *Wind Turbines*, as they begin efforts on offshore wind standards. TC 114 and TC 88 have recognized the overlap in technology with the in-water aspect of the two industries in the future. There is a strong effort to coordinate the work to avoid conflicts in these standards when they are applied to the overlapping maritime technologies.

The initial work of TC 114 focused on developing technology specifications (TSs) in four areas of marine hydrokinetics: tidal current, ocean surface waves, open-ocean current, and in-stream river. The scopes of the TSs under development are as follows:

- IEC TS 62600-1: uniform terminology to apply to all documents produced by TC 114 and aid in the communication between individuals and organizations
- IEC TS 62600-2: design requirements with site-specific conditions, safety factors, and



failure probability and consequences

- IEC TS 62600-100: assessment of the electrical power production performance of a wave energy converter (WEC) based on the testing site, but also allowing for estimating the performance at other sites
- IEC TS 62600-200: assessment of the power and energy performance of a tidal energy converter (TEC) for use on utility-scale or localized grids
- IEC TS 62600-101: a system for analyzing, measuring, and estimating wave energy resources for a region
- IEC TS 62600-201: a system for analyzing, measuring, and estimating tidal energy resources

The five areas providing the base for TC 114 work are terminology, wave and tidal device performance, wave and tidal resource assessment, and design. One additional project team is being formed to establish standards for the assessment of mooring systems. As technology applications progress, additional topics may be added to the work program.

In these early stages of the MHK industry it is necessary to balance the detail of the standard and the scope of applicability to the technology. Presently, there *(continued)*

An Update on TC 114's Work in Marine and Hydrokinetic Technology *(continued)*

are many design concepts being considered, and convergence on a single or set of designs has yet to occur (and may never occur).

Thus, these standards will not preclude the development of new concepts. However, the technology is sufficiently mature to justify decisions on design principles.

MHK Technology Basics

The energy in tidal currents can be captured from tides by using the ebb and flow of the tides to turn a turbine. While tidal energy is intermittent, tides are very predictable; the electricity production can be estimated accurately years or even decades into the future. Present technologies have moved away from the dam-type structures to small systems that harness the kinetic energy in a tidal flow and aim to have little to no impact on ecology and the environment. Designs range from conventional two- and three-bladed axial-turbine technologies to horizontal cross-flow turbines similar to vertical-axis turbines used in early wind power.

The U.S. in-stream hydrokinetic river resource has significant energy potential as well. Many technologies being considered for in-stream energy development use the same principles as tidal energy systems, but there are also unique systems that can harvest

the flow using the vortices shed off of bluff bodies. Several designs are also utilizing ducting and other techniques to improve efficiency and energy capture.

The U.S. ocean wave resource is located along the unprotected coastlines and has the greatest domestic potential of all ocean energy resources. Present estimates indicate that the U.S. wave resource can provide the same power as conventional hydroelectric dams, but in a more diffuse way. However, as compared to tidal energy, wave energy is less predictable as it is dependent on weather patterns.

Wave energy converters capture the energy of waves as they move past a location. Because waves are very energetic, devices must be robust to survive the constant abuse and extreme weather events. A wide range of wave energy concepts and designs are being developed, including wave attenuators, point absorbers, over-topping devices, oscillating water columns, and terminators.

Unlike wave and tidal energy sources, open-ocean currents are typically sustained and have the potential to provide base-load power. However, harvesting open-ocean current resources will be technically challenging because they are located far from shore in deep water, and often in environmentally and ecological sensitive locations. While no technologies have been deployed, concepts are tending toward horizontal-axis designs.

To facilitate uniform discussions of technical maturity across different types of technologies, the U.S. Department of Energy (DOE) adapted Technology Readiness Level (TRL) definitions for MHK devices from the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA) TRL definitions. The DOE TRLs utilize a scale of one to nine in five groupings. These range from TRL 1-3: Discovery/Concept Definition/Early Stage Development, through TRL 9: Commercial-Scale Application.

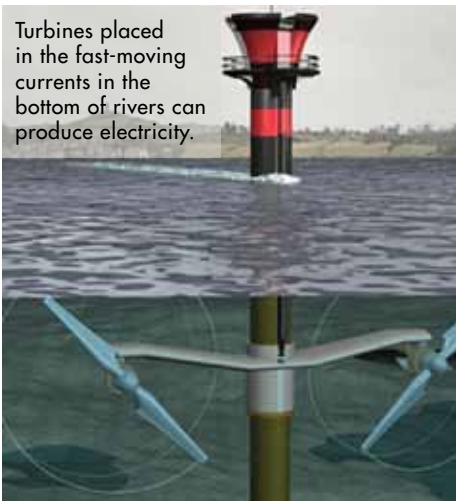
As MHK technologies progress through

TRLs, an incremental, rigorous, and cautious testing approach is needed to mitigate technical, environmental, and financial risk prior to commercial rollout. Standards development should address consistent and standardized testing. Within the United States, some smaller scale MHK testing capabilities do exist but are typically limited to technologies at TRL 4 and lower. No U.S.-based open-water testing facilities exist that are readily accessible by MHK developers to support MHK testing at TRLs 5 to 9. Facilities are being proposed, or are in the early stages of development, for all MHK resources, but they generally lack sufficient funding and regulatory authority. The U.S. TAG has succeeded in obtaining active participation by the organizations that are developing the open-water testing facilities.

While the MHK industry is actively developing technologies, it is still at a relatively early stage when compared to other renewable energy sources. As a result, standards developers must consider and look past the many new-technology hurdles. These hurdles include understanding real environmental impacts and required mitigation, developing reliable technologies that produce cost-competitive energy, establishing governmental permitting requirements, understanding of penetration and role within the U.S. national grid, development of underwater transmission technologies, establishing offshore deployment, and operating methods and technologies.

Another set of near-term challenges for the U.S. TAG is the coordination of information between the shadow committees, the TAG itself and the various industry groups around the country. Several of these groups have called for standards development outside of the TC 114 actions. This can be very disruptive, creating multiple uncoordinated requirements that challenge the technological advancement of an emerging industry. ■

Turbines placed in the fast-moving currents in the bottom of rivers can produce electricity.



USNC NEWS

The Evolution of the TAG Administrators' Workshop

By Megan Hayes, TAG Leadership Workshop Chair, TC 100 TAG Secretary

During the U.S. Leadership in ISO and IEC Conference in Phoenix, AZ, in 2005, sponsored by the American National Standards Institute (ANSI), I suggested that the USNC should consider providing a venue for Technical Advisory Group (TAG) leaders to communicate with each other. It was clear to me, as a new TAG Secretary, that I could learn from hearing about the challenges and good practices from my colleagues.

This suggestion led to the creation of the USNC TAG Administrators' Workshop, held from 2006 to 2008. These meetings allowed U.S. TAG Secretaries to freely discuss issues they face regarding TAG operations and administration and to have an open forum with the USNC staff and leadership.

Through these discussions it became clear that within the USNC there are a multitude of ways that TAGs operate. Some TAGs use their Administrators and Secretaries solely for administrative tasks – retaining rosters and submitting votes. Others use Administrators and Secretaries as a technical resource or for project management. In some cases, TAG Secretaries work very closely with the Technical Advisor on TAG operations and, in other TAGs, not so much.

Based on those observations, the USNC decided to broaden the audience for the workshop to include all of those with a role in TAG leadership. Thus, in 2009 the TAG Administrators' Workshop was renamed the TAG Leadership Workshop. The change in name was meant to encourage everyone that could benefit from discussions of TAG operations to become involved.

What did not change was the focus and scope of the meetings. The point is for those involved in TAG leadership, along with the USNC officers and staff, to have a venue for open discussions, shared insights, and helpful feedback on all the ups and downs of running a TAG. In the four Leadership Workshops that have been held to date, there have been presentations on topics such as:

- Recruiting and retaining TAG members
- Developing a toolkit for TAG Secretaries
- Good practices for two TAGs working together
- Adoption and adaptation of IEC standards
- The role of the group manager
- Navigating the IEC website
- How to host IEC Technical Committee (TC) and Subcommittee (SC) meetings in the United States

When I offered up the suggestion in 2005 that the USNC should gather together the U.S. TAG leadership to provide them with a setting for discussing all the issues facing them, I would have never guessed that, six years later, I would still be involved in planning, organizing, and chairing such a great program. However, I am still amazed at how much I personally learn from the other TAG Secretaries, Technical Advisors, and other leaders during each of these meetings.

Further information

If you are involved in the management of a U.S. TAG, I highly encourage you to attend this year's **USNC TAG Leadership Workshop on September 13, 2011, in Arlington, VA.** TAG Leaders include Secretaries, Technical Advisors, Deputy Technical Advisors, group managers, and any other TAG members who take a leadership role. Please contact me directly (mhayes@CE.org or 703-907-7660) if you have suggestions for the meeting agenda.

The TAG Leadership Workshop is an incredible opportunity for all of us involved in TAG management and operations, and we should take advantage of it to help build an even stronger USNC. ■



Megan Hayes

USNC NEWS

ANSI Site Licenses Support USNC



To obtain the greatest value and convenience for your organization when buying IEC standards, USNC members should consider purchasing a site license from the American National Standards Institute (ANSI).

ANSI site licenses enable specific standards or collections of standards to be shared within a network. They provide real-time access to standards data and offer automatic notification of updates and revisions. And the revenue ANSI receives directly supports the activities and initiatives of the USNC.

The USNC/IEC is a totally integrated committee of ANSI. As such, the Institute provides administrative support to the USNC and its nearly 1,400 participants. ANSI also provides the fiduciary framework by which the USNC's financial obligations are met, including the payment of annual dues to IEC. And since ANSI is a non-profit organization, the revenue earned from your purchase helps to support the programs and services offered to USNC members.

When you purchase a site license from ANSI you are making a commitment to bolster U.S. leadership at the IEC table – and gaining the benefits of easy accessibility, total customization, and affordable pricing for your organization's standards needs.

Further information

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- Mark Brown (western territory, 212.642.4935, mbrown@ansi.org)
- Julie Wallace (central territory, 212.642.4949, jwallace@ansi.org)
- Hank Buczynski (eastern territory, 212.642.4942, hbuczynski@ansi.org) ■

USNC NEWS

Last Chance! Nominations for Young Professionals Workshop Due April 29

The April 29 deadline to submit nominations for participants in the IEC Young Professionals 2011 Workshop is just around the corner. The USNC is seeking nominations for three U.S. participants to take part in the program to be held in conjunction with the 75th IEC General Meeting in Melbourne, Australia, October 24-28, 2011.

The Young Professionals Workshop brings together candidates selected from IEC National Bodies around the globe who are at the start of their careers in electrotechnical standardization and conformity assessment. The program aims to cultivate long-term national involvement in the international arena, strengthen the future of technology transfer, and encourage the participation of young professionals in shaping the future of standardization and conformance.

The Young Professionals Workshop debuted at the USNC-hosted IEC 2010 General Meeting in Seattle. The inaugural program welcomed 53 young professionals from 27 countries to encourage their continued participation in standardization and conformity assessment activities. Ninety-six percent of last year's participants reported their interest in becoming more involved in IEC work as a result of the workshop.

The three young professionals selected to represent the United States at the IEC 2011 General Meeting in Melbourne will attend a dedicated workshop alongside recipients from other nations where they will learn more about the IEC, standardization strategies, and conformity assessment. They will also

have the opportunity to attend the technical meetings where standards are developed, observe a meeting of the IEC Standardization Management Board, and benefit from extensive networking opportunities in an international setting.

Recipients will be financially supported for their travel and up to three nights of accommodation by the USNC and the IEC.

U.S. stakeholders are encouraged to nominate young professionals who work for industry, the government, academia, consumer organizations, or any entity within the U.S. voluntary standards and conformity assessment community. Candidates should be involved with standardization or conformance from a technical or managerial perspective within their organization. This program is targeted towards individuals in the early years of their professional career, post university.

The selection process is based on the nominee's demonstrated leadership and dedication, vision of the strategic or commercial impact of standards and conformance, and significant accomplishments in their chosen field of activity. Candidates will be assessed by a selection panel comprised of USNC Officers, standing committee officers, and a pool of USNC Honorary Life Members. The three winners will be notified in July 2011.

Further Information

The nomination form is [available here](#). Nominations must be submitted electronically by April 29, 2011, to Charlie Zegers, USNC/IEC general secretary at czegers@ansi.org. ■

USNC NEWS

You're Invited! Join the New USNC CAPCC



By Timothy T. Duffy, CAPCC Vice Chair

The USNC has established a new standing committee called the Conformity Assessment Policy Coordination Committee (CAPCC) to address all conformity assessment issues related to the IEC and the electrotechnical area. Nominations for membership are reviewed by the USNC Nominations Committee and endorsed by the USNC Council.

The primary purpose of the CAPCC is to coordinate USNC positions on electrotechnical conformity assessment (CA) issues that are specifically related to or impact the IEC global agenda. The CAPCC has the responsibility to ensure that when such issues are identified, USNC consensus positions are developed and represented in appropriate national, regional, and international CA groups. In addition, the committee reviews and provides direction on other CA-related issues both regionally and globally.

With the role that this committee plays in providing input into various conformity assessment fora, it is important that this group be composed of individuals representing a large stakeholder community to ensure the best representative positions for the United States.

Further Information

Anyone interested in participating in the CAPCC committee should contact Charlie Zegers, USNC/IEC general secretary, at 212-642-4965 or czegers@ansi.org. ■



USNC NEWS

AWEA Releases 2010 Wind Power Market Report

By John Dunlop, P.E., Senior Outreach and Technical Programs Manager, American Wind Energy Association; Deputy Technical Advisor, IEC TC 88

LATEST FROM THE IEC

IEC Publishes Universal Phone Charger International Standard



The IEC has announced the publication of the first globally relevant universal phone charger standard for data-enabled mobile telephones. This new IEC International Standard covers all aspects of the charger, connector and plug, as well as safety, interoperability, and environmental considerations.

This new standard opens the way to a significant reduction of mobile phone-related electronic waste and, when widely adopted by industry, will allow consumers to use a single one-fits-all charger with all new smartphones. Manufacturers will be able to achieve cost-savings in production, packaging, and shipping, since they will no longer need to provide a charger with each phone. This may also positively impact end-consumer prices and will reduce the overall CO₂ footprint of this industry, potentially cutting greenhouse gas emissions by 13.6 million metric tons per year.

The International Standard IEC 62684, *Interoperability specifications of common external power supply (EPS) for use with data-enabled mobile telephones*, has been accepted by the National Committees participating in IEC Technical Committee (TC) 100: *Audio, video and multimedia systems and equipment*.

The heart of the standard is based on the micro USB plug specifications issued by the USB Implementers Forum (USB-IF), with which the IEC has recently signed a Memorandum of Understanding (MOU). ■

America's wind power industry grew by 15 percent in 2010 and provided 26 percent of all new electric generating capacity in the United States, according to a new report from the American Wind Energy Association (AWEA). With the 5,116 megawatts (MW) added last year, U.S. wind installations now stand at 40,181 MW, enough to supply electricity for over 10 million American homes, according to the report.

Wind power has added 35 percent of all new generating capacity since 2007, second behind new natural gas installations, but twice the combined capacity of new U.S. coal and nuclear power plants brought on line during that period.

The *AWEA U.S. Wind Industry Annual Market Report*, released April 7, also reveals that technical improvements have reduced the cost of wind-generated electricity to be competitive with electricity prices from any other new power plant.

Wind turbine manufacturing increased in 2010 to meet the increasing demand, with

turbine suppliers opening additional U.S. wind turbine assembly plants and sourcing additional wind turbine components in the United States.

The wind industry brought 14 new manufacturing facilities online, consistent with 2009. AWEA estimates that approximately 20,000 people are employed in wind turbine component manufacturing jobs spread across 42 states in the United States.

The U.S. wind market entered 2011 with 5,600 MW under construction – more than twice the wind capacity under construction at the start of 2010 and more than the total wind capacity brought on line in 2010. Wind energy installations in the U.S. are on track to produce 20 percent of the nation's electricity annually within two decades, as outlined by the U.S. Department of Energy 2008 study, "20% Wind Energy by 2030."

Further information

More information on the *AWEA U.S. Wind Industry Annual Market Report* is available at www.AWEA.org. ■

The U.S. wind industry had 40,181 megawatts of wind power capacity installed at the end of 2010.



A Giant Step for Electric Vehicles on the International Stage

Electric vehicle (EV) stakeholders from all sectors and areas, including utilities, car, and equipment manufacturer and key industry and standardization bodies, participated in a high-level strategic roundtable event organized by the IEC and e8 on January 19, 2011, in Washington, DC.

In the past, little communication took place at the international level between automotive manufacturers, electric equipment suppliers, and utilities to coordinate work around EVs. Now the IEC, in cooperation with e8, has provided a global platform for discussing mutual needs and requirements.

The event's objective was to determine priorities for the development of EV-related International Standards, to define future needs, and to accelerate the broad adoption of the relevant International Standards that will enable global interoperability and connectivity.

The stakes in EVs are high and growing. The car industry considers EVs to be one of the key solutions for maintaining sustainable individual transportation. Governments are increasingly pushing for electrified transportation to reduce CO₂ emissions as one of the tools to fight climate change. Today, only approximately 1 percent of electricity produced is used in transportation while contributing to 20 percent of CO₂ emissions.

While all parties work intensely on developing the technologies that will enable a more energy efficient future, utilities are simply expected to deliver the “fuel” that drive those electric cars. But without significant investment into infrastructure, a broad EV roll-out will remain fiction.

Frank Kitzantides, former IEC Vice-President, chaired the round table as IEC senior technology consultant and stated, “To make mass charging possible, global solutions are needed. Charging systems must be user-friendly, largely the same, and safe and easy to operate and use. To achieve this, all stakeholders need to cooperate to better understand each others’ roles.”

To ensure sufficient energy supply and develop the necessary charging infrastructures, future e-mobility developments must be considered, and all stakeholders need to be involved. Standardization must be quick and international to achieve global technology roll-out and durable infrastructure development without market fragmentation due to incompatible charging systems.

In Washington, the IEC offered a platform for high-level representatives of major car manufacturers, including BMW, Ford, Mitsubishi, Nissan, Renault, and Toyota, and equipment manufacturers such as Eaton,

General Electric, Hubbell, and Schneider to sit together with utilities such as AEP, Duke, EDF, Electrobras, Hydro Quebec, Kansai Electric Power, State Grid Corporation of China, and TEPCO.



These organizations were joined by the Electric Power Research Institute (EPRI) as well as the International Organization for Standardization (ISO). All stakeholders confirmed that the IEC's existing and proposed International Standards for EV charging (on the charger side: plug, socket, and cord; on the vehicle side: connector and inlet) satisfy their global needs. Four charging modes have been retained, covering AC and DC charging.

All participants underlined their preference for IEC, ISO, and International Telecommunication Union (ITU) International Standards. And all parties underlined the importance and usefulness of this new joint platform initiated by the IEC and e8. Follow-up meetings are already being planned. ■

Powering EVs: IEC Technical Committee (TC) and Subcommittee (SC) Work

TC 69, Electric road vehicles and electric industrial trucks, developed the IEC 61851-1 conductive charging standard. This standard foresees four modes for the charging of EVs:

- Mode 1 (AC) – slow charging from a standard household-type socket-outlet
- Mode 2 (AC) – slow charging from a standard household-type socket-outlet with an in-cable protection device
- Mode 3 (AC) – slow or fast charging using a specific EV socket-outlet and plug with control and protection function permanently installed
- Mode 4 (DC) – fast charging using an external charger

TC 23, Electrical accessories, SC 23H, Industrial plugs and socket-outlets, published IEC 62196-1 covering general requirements for EV connectors and is currently close to finalizing IEC 62196-2, which standardizes the following elements needed for AC charging:

- Type 1 – single phase vehicle coupler (vehicle connector and inlet), for example Yazaki or SAE J1772 (Japan, North America)
- Type 2 – single and three phase vehicle coupler and mains plug and socket-outlet without shutters, for example VDE-AR-E 2623-2-2
- Type 3 – single and three phase vehicle

coupler and mains plug and socket-outlet with shutters, for example SCAME plug developed by the EV Plug Alliance

SC 23H is also developing IEC 62196-3 (DC) on requirements for the vehicle coupler. The work is at an early stage and several proposals are on the table, including the DC quick-charging CHAdeMO coupler and the possibility of using the same vehicle inlet both for DC and AC charging.

Further Information

Contact TC 69 TAG Technical Advisor Sonya Bird (Sonya.M.Bird@us.ul.com) or SC 23H Chairman Greg Nieminski (silvergregn@verizon.net)

LATEST FROM THE IEC

IEC Shortens Voting Time to Speed Standards Delivery



The IEC has announced a pilot program to cut down voting time for the inquiry stage of a standard, the Committee Draft for Vote (CDV), by nearly half to accelerate the delivery of the final standard.

CDV is the last possible moment at which changes can still be made to the content of an International Standard. The CDV period currently runs for five months, and during this time a future standard can be made available for comments.

While overall standards development time has been significantly reduced over the years, the CDV period was never reduced, as some countries needed this time to efficiently consult with their industries and other stakeholders before submitting their final comments. But with broad access to information technology, the IEC now feels that it may be reasonable to reduce the length of this consultation period.

The Standardization Management Board (SMB) has decided to put in place a pilot project involving three Technical Committees (TCs) that work in fast-moving technical fields and produce a considerable number of publications. The three TCs will have the option to reduce the CDV inquiry time and voting from five months to three months. The TCs participating in the pilot are TC 40, *Capacitors and resistors for electronic equipment*; TC 86, *Fibre optics*; and TC 100, *Audio, video and multimedia systems and equipment*.

Based on this experience, the IEC SMB will decide one year from now if it can extend this practice to all IEC TCs so that the whole IEC can benefit from the decrease in time it takes to develop a globally relevant, voluntary International Standard. ■

THE ELECTRICAL WORLD

Standardization Roadmap for Electric Drive Vehicles Called for at ANSI Workshop

More than 120 stakeholders and an additional 30 webinar attendees gathered for the April 5-6

ANSI Workshop: *Standards and Codes for Electric Drive Vehicles* in Bethesda, MD, to examine the standards and conformance activities needed to drive the safe, effective, and large-scale deployment of electric drive vehicles (EDV).

In his January 2011 State of the Union address, President Barack Obama announced the goal to have one million electric vehicles on U.S. roads by 2015. To help accommodate this major shift in our national automotive landscape, the American National Standards Institute (ANSI) convened this standards-needs-assessment workshop on behalf of the U.S. Department of Energy (DOE) and the Idaho National Laboratory. A workshop report outlining priority areas where standards and conformance activities are needed will be submitted to the DOE in the coming weeks.

Keynote speaker Patrick Davis, program manager of vehicle technologies in the Energy Efficiency and Renewable Energy office of the DOE, gave an overview of federal initiatives to support EDV technology, including DOE's Transportation Electrification Demonstration Project. The initiative, which puts 13,000 passenger and commercial electric drive vehicles on roads nationwide, seeks to mine detailed operational data on electric vehicles and charging infrastructure.



(l-r) IEC Senior Technology Consultant Frank Kitzantides, CEN/CENELEC Director of Innovation John Ketchell, Senior Technology Advisor for Argonne National Laboratory Keith Hardy, IEC SC 23H Chair Greg Nieminski, and U.S. Executive Director for TransAtlantic Business Dialogue Kathryn Hauser

Get Involved! ANSI Electric Vehicles Standards Panel Announced

On March 9, ANSI announced its intention to form an Electric Vehicles Standards Panel (EVSP) to take up the development of a standardization roadmap that will ensure a coordinated U.S. approach to this critical issue. Anyone interested in participating in the EVSP or receiving more information about the activity should email evsp@ansi.org.

Kathryn Hauser, U.S. executive director of the TransAtlantic Business Dialogue (TABD), stressed the importance of trans-Atlantic cooperation and collaboration in this area to foster economic growth and innovation. Other panel speakers included Frank Kitzantides, IEC senior technology consultant, and Greg Nieminski, chair of IEC Subcommittee (SC) 23H, *Industrial plugs and socket-outlets*.

Workshop participants considered current and future domestic, regional, and international standards and conformance activities. From vehicle charging modes and connectors to battery safety standards to training for first responders, attendees assessed the wide-ranging challenges and priorities for successful EDV deployment.

One common theme that emerged was the call for greater coordination, participation, and harmonization of standardization efforts, and a concern about the number of forums

in which stakeholders currently must participate. Participants agreed that it would be helpful to have a standardization roadmap to help them navigate the various activities taking place.

Further information

The final workshop report will be available at www.ansi.org/edv in the coming weeks. ■

New WSC Newsletter Promotes Competitive Value of International Standardization

The IEC and its partners the International Organization for Standardization (ISO) and the International Telecommunication Union (ITU) have launched an electronic newsletter aimed at communicating to business leaders the value and strategic advantage their companies can gain through international standardization. It will offer concrete examples of how standards impact the bottom line, stimulate economic growth, productivity and innovation, and allow small and large businesses to access broader markets.

The *WSC eNewsletter* will be published three times a year, under the banner of the World Standards Cooperation (WSC), which IEC, ISO, and ITU established in 2001 in order to strengthen and advance their voluntary consensus-based international standards systems.

The first issue featured the following success stories:

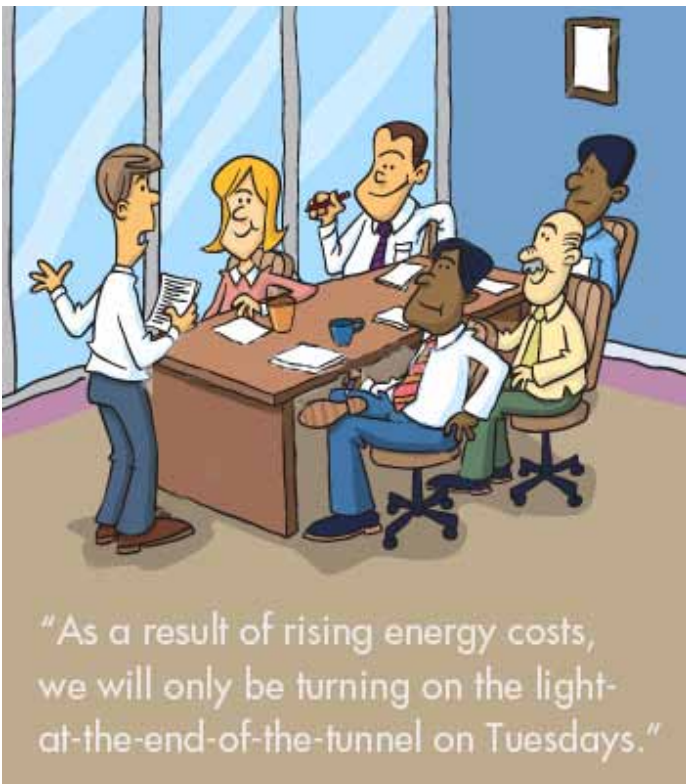


- How Tyco Electronics achieved additional profits of \$50 million through participation in standardization activities
- Why the former CEO of Mitsubishi believes that standardization and certification are now crucial for Japanese companies' continued success
- Why the CEO of Rockwell, the world's largest automation company, recommends that businesses participate in standardization
- How a 50-employee company succeeded in opening up the European market for its medical devices

Further Information

Subscribe at newsletter.worldstandardscooperation.org. Access the latest issue at www.worldstandardscooperation.org/newsletter.html. For additional information, visit the WSC website at www.worldstandardscooperation.org. ■

LAUGH TRACK



StandardsBoostBusiness.org

An Awareness Campaign for Business Leaders



The Standards Boost Business outreach campaign, a partnership between leading companies and organizations across the standards community, is working to bring the powerful message of the strategic value of standardization to corporate America.

Find out more about how strategic standardization can help build innovation and enterprises by visiting www.standardsboostbusiness.org.

CONFORMITY ASSESSMENT

SAVE THE DATES

New UNECE Publication Offers Regulatory Framework on Safety in Ex Environments for Smaller Countries

The United Nations Economic Commission for Europe (UNECE) has issued a publication that helps address the hazards in environments with a high risk of explosion such as mines, refineries, chemical plants, and mills. The booklet, *A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere*, can be used by countries that lack regulation in this sector as a blueprint for their legislation, and also for aligning existing national regulations with internationally harmonized best practice.

“Ex equipment” for use in hazardous environments needs to be specially designed, installed, maintained, and repaired to eliminate potential sparks and open flames. The equipment undergoes extensive testing and certification, which is very costly. Because differing legislation often does not allow countries to accept the testing and certification done in another country, manufacturers generally must have devices re-tested and

Ex equipment plays an important part in many areas of economic activity, and represents an important component of international trade.



re-certified whenever they want to enter a new market. For some companies, this investment simply may not be worthwhile for smaller markets. Without certification, state-of-the-art equipment will remain unavailable, resulting in reduced safety levels both for local industry and for the populations that live around the sites that harbor potential explosion risks. Countries that have not represented a sufficient market opportunity have in the past been unable to access state-of-the-art equipment for use in explosive environments.

The UNECE common regulatory framework is based on and encompasses international best practice and IEC International Standards. It also formally endorses the the IEC System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEx) as the recommended global best practice model for verifying conformity to international standards.

Uwe Klausmeyer of Germany, winner of the prestigious IEC Lord Kelvin Award for his work in standardization, said that, “the UNECE framework regulation builds on the positive experience of multilateral schemes for assessing conformity to standards, such as the IECEx. Under these schemes, testing and certification are carried out through agreed procedures and by peer assessment. These systems are transparent, fully democratic and self-financing.”

Further Information

The UNECE publication is available at www.iecex.com/docs/UNECE_CRO_en.pdf. ■

Upcoming Meetings & Events



May 2011
COPANT Assembly
May 11 – 13, 2011
Santiago, Chile

MAY 2011
TMC/CAPCC/Council Meetings
May 18 – 19, 2011
Cooper Lighting, Peachtree City, GA

JUNE 2011
CAB Meeting
June 9, 2011, Stockholm, Sweden

SMB Meeting
June 10, 2011, Stockholm, Sweden

CB Meeting
June 15, 2011, Geneva, Sweden

SEPTEMBER 2011
TAG Leadership Workshop
September 13, 2011, Arlington, VA

TMC/Council Meetings
September 14 – 15, 2011, Washington, DC

FINCA Meeting
September 28 – 29, 2011, Mexico City

OCTOBER 2011
ANSI World Standards Week
October 11 – 14, 2011, Washington, DC

75th IEC General Meeting
October 24 – 28, 2011
Melbourne, Australia

Visit www.ansi.org/calendar and enter “USNC” or “IEC” in the key word search for more event information.



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information of interest to members of the electrotechnical community.

DISCLAIMER

The opinions expressed by the authors are theirs alone and do not necessarily reflect the opinions of the USNC/IEC nor ANSI.

HOW TO CONTRIBUTE

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