Fall 2016, Volume 5, Issue 2

ICC Newsletter

Special offer for first-time utility attendees to the ICC Fall meeting: ten complimentary registrations are available. Act now! Please contact thomasarnold@pesicc.org

From the ICC Chair

Our ICC Spring 2016 meeting in Ft. Lauderdale, FL. was a great success! There were 445 attendees, making this one of the best-attended spring meetings ever.

The Education session was also well attended. I received significant positive feedback from many of the participants, particularly regarding the topic of partial discharge (PD). No matter how many presentations you see on PD, you will always learn something new when top industry experts share their knowledge, experience and findings. As the overall experience in our industry diminishes due to retirements or other career changes, these educational sessions are a great vehicle for sharing knowledge of design, operation and maintenance of underground cables while attracting new engineers to our conference.

As we gear up for our fall meeting in Scottsdale, AZ, I want to thank all attendees, members and volunteers for making the ICC the successful committee that it has become. Please continue to share the benefits of attending the ICC with your colleagues and new engineers that are not familiar with it or are looking to expand their knowledge.

Looking forward to seeing everyone in Scottsdale this fall.

Frank Frentzas
Commonwealth Edison
IEEE PES ICC 2016 – 2017 Chair

Fall 2016 Education Session – Accessories in HV Cable Systems

By Rachel Mosier, Education Session Chair, PDC and Jared Jajack, Education Session Vice Chair, AEP

Back by popular demand – the Fall 2016 Education session will focus on high-voltage cable accessories. Featured topics will include joints and terminations of cables with extruded insulation, workmanship and quality control during installation, and maintaining the integrity of accessories of cables with extruded insulation. The session will be presented on behalf of the CIGRE Tutorial Advisory Group, chaired by Willem Boone. Detlef Wald and Harry Orton will be among the presenters. Plan to attend at the Scottsdale Doubletree Resort on Wednesday, November 2, from 1:00 – 5:00 p.m. don't miss it!

Utility Industry Survey

By Ram Ramachandran, SRValueconsulting LLC

The annual "Strategic Directions: Electric Industry Report" presents yearly snapshots of the state of the electric utility industry. This year's online survey reflects the input of 672 qualified utility, municipal, commercial and community stakeholders. The report also includes perspectives from leaders in key markets abroad. The top four issues identified as the most important among those surveyed were reliability, cybersecurity, environmental regulations and the aging infrastructure

The complete report can be downloaded at: http://bv.com/reports/2016/electric.

ICC Newsletter Team

Harry Orton,
ICC Communications Chair

Wim Boone,
ICC Advisory Committee Chair

Ram Ramachandran,
AC Task Force Chair

ICC AWARDS

By Lauri Hiivala, ICC Awards Chair

Certificates of Appreciation (COAs) were awarded for the best presentation at a subcommittee, working group, discussion group or educational program for the Fall 2015 meeting:

- John T. Smith, III, Subcommittee A Meeting, *ICEA Standard S-97-682-97 Hyperbaric Accelerated Water Treeing Test (AWTT) Performed at 1, 250 and 310 bar*
- Martin Zapf, Subcommittee B Meeting, *Significant Parameters of a Good Splice Connector*
- Sudhakar Cherukupalli, Subcommittee C Meeting, *BC Hydro Experience Using Distributed Temperature Monitoring Systems to Monitor High Voltage Cable Corridors*
- Drew Mantey, Subcommittee D Meeting, *Evaluation and Insights from Nuclear Power Plant Tan Delta Testing and Data Analysis - Update*
- Yimsan Gau, Subcommittee D Meeting, *Impact of Char Integrity on Flame Retardant Performance of Low Smoke Zero Halogen Compounds*
- Jean-Francois Drapeau, Subcommittee F Meeting, *Evolution of Dielectric Loss Diagnostic Features for Miniature Cables with PE Insulation Through Various Stages of Degradation*
- Simon Bernier, Subcommittee F Meeting, *Evolution of Dielectric Loss Diagnostic Features for Miniature Cables with PE Insulation Through Various Stages of Degradation*

COAs were also presented to all outgoing subcommittee, working group and discussion group chairs and vice chairs, or upon publication of their IEEE standard or guide:

- Thomas C. Champion III, Chair, Insulated Conductors Committee, Spring 2014 – Fall 2015

Thomas Champion (L) receives ICC Award from Lauri Hiivala

- Kraig Bader, Chair, Subcommittee B, *Accessories*, Spring 2013 – Fall 2015
- Peter Tirinzoni, Chair, Educational Programs, Spring 2014 – Fall 2015
- Gabe Taylor, Chair, Working Group D19, *IEEE 1844-2015 Test Procedure for Determining Circuit Integrity Performance of Fire Resistive Cable Systems in Nuclear Facilities*
- Eric Rasmussen, Vice-Chair, Working Group D19, *IEEE 1844-2015 Test Procedure for Determining Circuit Integrity Performance of Fire Resistive Cable Systems in Nuclear Facilities*
- Pierre Argaut, for his strong leadership and continuously fostering close international cooperation, on both technical and organizational issues, between IEEE PES ICC and CIGRE Study Committee B1.

Recognition for development of a published standard/guide, a published technical report or other technical document was awarded to:

Working Group C2 - *Guide for High Voltage Cable Sheath Bonding (IEEE 575-2014 Guide for Bonding Sheaths and Shields of Single-Conductor Power Cables Rated 5 - 500 kV).* Chair, Michael Buckweitz; Vice Chair, Thomas Champion.

Nirmal Singh received the 2016 Technical Committee Distinguished Service Award for leadership in Dissolved Gas Analysis (DGA) of high-voltage gas- and liquid-filled cable systems, and furthering the understanding of gas analysis and its meaning.


Nirmal Singh

CIGRE Update

By Pierre Argaut, Past Chair, CIGRE SC B1

The 46th CIGRE Session was held from August 21 - 26 and had a record-breaking attendance with 3290 international delegates and more than 8000 participants from 93 countries. More than 200 exhibitors covered three floors of the Convention Center.

Rob Stephen from South Africa was elected President of CIGRE and eight new study committee chairmen (out of 16 study committees) started their term of office at the end of the session. Awards were presented to three SCB1 members: Wim Boone (NL) was named CIGRE Fellow, Pierre Argaut (FR) was named Honorary Member, and Frank De Wild (NL) received the Technical Committee Award.

Authors of the 38 papers met with the audience and explained in detail their work in the B1 Poster Session, attended by 300 people. Some SCB1 Working Groups and Advisory Groups also took this opportunity to introduce their work.

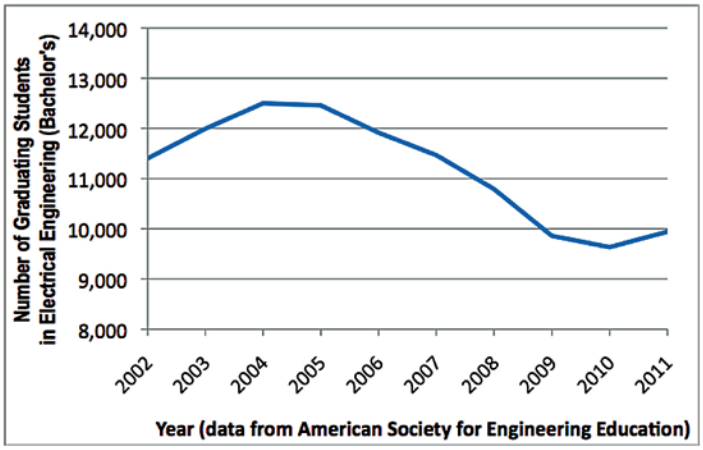
Marco Marelli (IT), new Chairman of SCB1, attended his first Meeting of the Technical Committee (now Technical Council) of CIGRE, where he presented the SCB1 Preferential Subjects for CIGRE 2018. Congratulations and best wishes to Marco and Secretary Alain Gille (BE) from the CIGRE cable community.

CIGRE is French for 'International Council on Large Electric Systems'

ICC – the View from Here

By Earle C. (Rusty) Bascom, III, ICC Vice Chair/Treasurer

It seems like yesterday when, as a young engineer in 1991, I left my first ICC meeting honored to be a part of a technical organization that was doing worthwhile work to benefit the electric power industry. Since then, the demographics in the utility ranks have changed notably. Sadly, as the accompanying graph indicates, electrical engineering is not attracting the number of students required to address the industry's needs. Despite an expanding demand for underground and submarine cables throughout the world, there seem to be fewer engineers entering the industry, perhaps because electric power engineering, and specifically the discipline of insulated conductors, is not glamorous. I think prospective cable engineers fail to recognize that these fields of study can still offer life-long careers with utilities, manufacturers, engineering consulting firms and, to a lesser extent, academia.



Encouragingly, ICC's overall attendance has grown from 214 at the Spring 1991 Meeting to 445 at the Spring 2016 Meeting. Hopefully, in the future, we will continue to see an expansion in the ranks of utility engineers as well.

I am enthusiastic about the steps we are taking to grow the ICC, including expanding first-time utility engineer attendance and exploring enhanced integration in the IEEE organization as a whole along with collaborative efforts with CIGRE's B-1 Group.

As the singular Technical Committee representing all items related to cables and accessories in North America, ICC serves an important function to the critical operations of electric utilities such as standards development, training, education and, most important, providing networking opportunities with experienced utility engineers to help resolve issues and not re-invent the wheel.

I'm hopeful that as ICC continues to promote the merits of joining the underground cable engineering community, we can look forward to increased electric utility representation at the meetings.

Internationality

The ICC is celebrating its "internationality" with a special social event for all international attendees at the fall meeting. No matter what language you speak, please plan to attend! Hosted by Grace Jiang and Yingli Wen, the event will be held at the Scottsdale Doubletree Paradise Resort on Sunday, October 31 at 4:00 p.m. Hope to see you there!

ICC STANDARDS CORNER

By John Merando, ICC Standards Coordinator

Congratulations to WG B16W chairman Tim Wall and vice chair David Hughes for successfully completing a revision to IEEE 386, "*Standard for Separable Insulated Connector Systems for Power Distribution Systems Rated 2.5 kV through 35 kV.*"

Congratulations also to WG D03W chairman Art Maldonado and vice chair Ken Bow for successfully completing a revision to IEEE 1242, "*IEEE Guide for Specifying and Selecting Power, Control, and Special-Purpose Cable for Petroleum and Chemical Plants.*"

PAR P2470 for WG D22W, chaired by Phil Laudicina, was approved for a new standard entitled "*Guide for the Selection and Installation of Flexible Electrical Cables and Systems in Hazardous (Classified) Locations on Land Drilling Rigs.*"

PAR P1234 for WG F12W, chaired by Rachel Mosier, was approved for a revision to "*Guide for Fault Locating on Shielded Power Cables Systems.*"

Sixteen standards are due for revision before the end of 2018 and must be updated to avoid being withdrawn. Four more standards are due in 2019, and seven are due in 2020. These 27 documents represent almost half of the 62 standards and guides that ICC sponsors. Each has a technical and financial impact on our economy, environment, and society. We appreciate all of those that continue to participate in the standards development process and encourage ICC attendees to contribute to these working groups.

Calendar
of International Events
Compiled by Wim Boone & Harry Orton

2016

(CEIDP) Conference on Electrical Insulation and Dielectric Phenomena
October 16 - 19, Toronto, Canada
http://sites.ieee.org/ceidp/

2017

CIRED
June 12 – 15, Glasgow, UK
http://www.cired-2017.org/

20th International Symposium on High Voltage Engineering
August 28 – September 1, Buenos Aires, Argentina
http://www.ish2017.org/

8th International Symposium on Electrical Insulating Materials (ISEIM)
September 12-15, Toyohashi, Japan
http://www2.iee.or.jp/~adei/ISEIM2017/index.html

CIGRE
October 9 – 13, New Delhi, India
http://www.cigre.org/Events

JICABLE HVDC
November 20-22, Dunkirk, France
www.jicable.org

Calendar

Current Cycle Test on Mechanical Connectors with Copper and Aluminum Alloy Conductors

By Vern Buchholz, Consultant, Canadian Copper and Brass Development Association

In the U.S. and Canada, 8000 series aluminum alloy wire has recently replaced pure aluminum for most low-voltage, industrial, commercial and residential applications. Sold under two trademarked brand names, the aluminum alloy is often marketed as "equivalent" to copper, but the results of connector current cycle testing differ from these claims.

Sixty mechanical connectors were tested on 1 AWG copper and 2/0 AWG Al alloy stranded conductors installed on copper and dual-rated Al/Cu connectors. IEC Standard 61238-1 and ANSI C119.4 Standard were used as a guide in the setup and preparation. The initial bolt torques were set at 70, 100 and 125 percent of manufacturers' recommended values on the connector samples. The Al alloy wires were tested with and without abrasion and oxide inhibitor. Copper conductors had no abrasion nor oxide inhibitor. A total of 1500 current cycles were applied to all samples, with a short circuit after the 200th current cycle. The connectors' conditions were evaluated throughout the tests by measuring contact resistance and temperature rise. The test was more stringent than the standard UL or ANSI test used in North America.

Connector laboratory test arrangement

The overall test conclusions were:

- Copper connectors on copper conductors performed without failures in all tests.
- Dual rated Al/Cu connectors lessened the performance when used on copper conductor.
- Dual rated Al/Cu connectors on aluminum alloy conductor performed poorly in all tests.
- 8000 Series aluminum alloy does NOT perform equally to copper conductor.

The full report is available at:
http://www.copper.org/publications/pub_list/pdf/A6163-Connectability Testing.pdf

Upcoming ICC Events

October 30 - November 2, 2016 ..... Fall ICC - Scottsdale, Arizona
Visit www.pesicc.org to view all Fall ICC presentations and activities or to register for the meeting, the Transnational Lunch and the Networking Lunch.

May 7 – 10, 2017..... Spring ICC – San Diego, California
Please return frequently to www.pesicc.org for updates on presentations, event registration and other meeting information.

Tell Us What You Think!

ICC welcomes your feedback. If you'd like to suggest topics for upcoming issues of the ICC Newsletter or add a colleague to our email database, please contact Harry Orton at h.orton.1966@ieee.org.