It’s becoming more and more clear that 2020 is a year like no other. Just as, for most of us, the impact of COVID-19 is high, our ICC activities are also affected heavily. It’s the first time since November 1947 that we had to cancel a meeting - our Spring 2020 meeting in Palm Desert, Calif. - and it is very unlikely that we’ll have our Fall meeting in Bonita Springs, Fla.

It’s interesting to note that, during this COVID crisis, the business of insulated conductors has served our society very well. Although many things are uncertain in these days, most people can still rely on a smooth and uninterrupted electrical power supply. The ICC plays an essential role in collecting knowledge about these networks and consolidating this knowledge into good standards and practices. That’s why it’s so important that we keep on investing in our networks to keep them running in a cost-effective way. I’d like to share with you some trends that I see in our business.

I still remember my university professor teaching us that each province (12 in the Netherlands) is responsible for the generation, transmission and distribution of the electrical power within its own jurisdiction. The purpose of the EHV grid was to exchange power only in case of calamities. This philosophy has been abandoned completely.

Today, generation is more often moved to desolate areas or areas close to the natural resources such as hydro, solar and wind power. This requires a strong backbone network, transporting bulk power over long distances with HVDC or ultra-high AC voltage.

In parallel with the generation and transmission of bulk power, there is also a trend toward generating power very locally. In my country, the Netherlands, 13 percent of all new houses are built with solar power panels installed on the roofs, generating, during peak hours, more electrical power than needed for one household. The excess of power is fed back into the network. So even the LV cable network is used now for the trade of electrical power.

Another trend that will affect the use of the cable network is the introduction of electric cars. It’s obvious that these vehicles need to be charged, taking power from the network. However, an interesting development is the use the cumulative power of all these car batteries for mass energy storage that can be utilized at peak demands when power is expensive.

In order to prepare the electricity network for these developments, a revaluation of the network is needed. Cables will play an important role in this, especially in urban areas.

Therefore, I am happy to conclude this message with the observation that underground cable networks are essential and will become even more important for serving our energy needs. I compliment all of us for the good work done, but I also challenge us to prepare our networks for these future needs. The ICC is committed to play a crucial role in sharing knowledge and applying this knowledge into good standards.

Stay safe - I hope to see you soon!

Henk Geene

Underground Cables for Renewable Projects

By Arie Makovoz, Education Session Vice Chair, Con Edison of New York

Renewable energy generation is widely used as an alternative energy source throughout the world. Many of these renewable energy projects have been constructed in the US during the past decade.

This Fall’s Education Session will cover power cable requirements for renewable energy projects. The session will feature industry professionals presenting on their approach to choosing, installing and testing underground cable systems for renewable projects.

Presentations will include project-specific experience, challenges and known solutions of installing and operating such systems.

Please join us to learn more in this online event on Wednesday, October 28 from 1:00 – 5:00 p.m. Additional information, including a link to the session, will be sent out as part of the ICC meeting invitation and will be available on the ICC official site at https://pesicc.org/ICCWP/meetings/fall-2020-pes-icc-meeting/.

From the ICC Chair

Rachel Mosier
ICC Communications Chair

Harry Orton
Associate Editor

Yingli Wen
Associate Editor
Temperature Stability of Constant Force Springs Under Current Loading

By Bill Wolfe and Stéphane Tognali

Medium voltage splices using cold shrink (CS) technology have been used worldwide for almost 25 years. Today, the technology is being used in several million units to meet a variety of requirements and industry standards.

One of the benefits of CS technology is its ability to cover a range of conductor sizes per splice body as well as different cable designs. One of the components that allows for this flexibility is the use of constant force springs to make the metallic screen connection across the splice. While industry standards like IEEE 404, Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2.5 kV to 500 kV, address fault current requirements in all types of splice designs, there is little knowledge or available data to show the performance capabilities of constant force springs under current loading.

In a recent study, temperature stability was evaluated at the constant force spring interface in addition to several other locations within the splice body. The study used a 1000 kcmil aluminum conductor, tree retardant cross-linked polyethylene (TRXLPE) 25 kV cable with concentric neutrals. Several splices were constructed with strategic thermocouples placed at various locations within the splice body and a test sequence of 14 thermal cycles was carried out as required by IEEE 404. The standard specifies that sufficient AC current shall be passed through the conductor during the current-on period to achieve a cable conductor temperature within +0/-10 °Celsius (C) of the cable-rated emergency operating temperature of 130 °C for at least six hours. (The six-hour period does not include the time it takes to achieve the emergency operating temperature of 130 °C on the cable conductor.)

The data proved that, at current loadings of 100 Amperes (A) and 150A, the thermal stability of the metallic screen was constant throughout the loading cycle. Based on the results, it can be concluded that the use of constant force springs provides a reliable connection, even during high-loading conditions.

New Guide for Design of Transmission Vaults

By Arie Makovoz, Past Chair of AEIC Cable Engineering Committee

The Association of Edison Illuminating Companies (AEIC) Cable Engineering Committee (CEC) has published the 1st edition of AEIC CG14 “Guide of the Design of Transmission Vaults.” This voluntary guide covers the design variables that should be considered when specifying vaults for pipe type and extruded dielectric shielded power cable systems rated at 69 kV and above.

There are many aspects of underground cables vault design that each utility must consider. Utilities with underground transmission feeders will utilize vaults for cable pulling, splicing and maintenance operations. Each utility will have unique challenges depending on the cable design, the feeder route, and other external factors to find the optimal vault design. These factors include splicing space requirements, availability of space to install vaults in congested urban environments, and construction feasibility.

As a US power utility representative, CEC recognized the need for an underground vault design guide and took action to create it. AEIC CG14 and nineteen other cable specifications and guides are available by visiting AEIC’s website, www.aeic.org, and clicking on the “Cable Specs” heading on the first page. Viewers will be taken to AEIC’s interactive store, where cable specifications and guides, as well as the AEIC Load Research Manual, may be purchased in either written form, digitally, or both.

AEIC is very pleased to offer this new guide to cable engineers and contractors. It and the other AEIC cable guides and specifications are used by practitioners across the United States and internationally.
IEEE Guide 400.1 Updated
By Bill Larzelere, Working Group Chair

The recent republication of IEEE Guide 400.1, IEEE Guide for Field Testing of Laminated Dielectric, Shielded AC Power Cable Systems Rated 5 kV to 500kV Using High Voltage Direct Current (HVDC), has several changes that reflect an increased knowledge base for this type of testing.

This guide was last published in 2007 and the members of the update Working Group (WG) were a diverse assembly of test equipment manufacturers, users of the equipment in the field and manufacturers of laminated cables. The group represents decades of experience using DC to test laminated AC cables such as pressurized fluid-filled paper cables that are both all paper or paper/polypropylene laminates.

In general, the application of DC test voltages for these types of cables has been in place for decades. The revision of the guide makes it clear that the values recommended for test voltages apply only to DC tests on laminated cables for AC applications. The new IEEE Guide 400.5 will deal with DC testing of cables operating on DC systems.

Changes to the guide include:
- additional precautions that should be taken to reduce the effects of space charges, trapped charges, or polarization that may result in long-time constants for the cable to relax to a zero-voltage state throughout the length of the cable.
- more information on methods to discharge cables charged with DC voltages that involve large stored energy.
- enhanced test procedure guidelines to present additional information and precautions to the users along with new safety recommendations.

Even though this is an old document, the WG believes the revision brings valuable information to the owners and users of HVAC laminated cable systems.

ICC Standards Corner
By Gary Clark, P.E., ICC Standards Chair

There has been a major nomenclature update to Working Group leadership structures. This is the result of the requirement that the ICC’s latest Policies and Procedures for Working Groups align with the new IEEE Standards Association (SA) Baseline Policies & Procedures. The major change is that ICC must now have a Secretary rather than a Vice-Chair for each Working Group. The Secretary will have the same duties as the former Vice-Chair position.

The Chair and Secretary titles will only apply to the ICC Working Groups. We will continue to have Chairs and Vice-Chairs everywhere else including Executive Committees, Administrative Committees and Subcommittees. Discussion Groups will also maintain the traditional Chair and Vice-Chair structure, but they must transition to a Chair and Secretary arrangement if they become a Working Group.

Thank you for taking note of these title changes with the next round of volunteer nominations and approvals at our Fall 2020 meeting. As soon as the final details are approved by IEEE-SA, you will be able to read more about the changes to the Policies and Procedures for Working Groups at the ICC website: www.pesicc.org/ICCWP/guidelines.
International Events Calendar
Compiled by Harry Orton

AWEA Offshore Windpower
13-14 October 2020
New York, NY, USA
www.AWEA.org

CEIDP (Conference on Electrical Insulation and Dielectric Phenomena)
18-22 October 2020
East Rutherford, NJ, USA
www.ceidp.org

Subsea Power Cables Virtual
1-2 September 2020
https://energy.knect365.com/subsea

CIGRE Canada Conference and Exposition
19-22 October 2020
Toronto, Canada
www.cigre.org

Subsea Americas
17-18 November 2020
Washington DC, USA
www.capacitymedia.com/events/subsea-americas

Offshore Wind Connections 2021
21-22 April 2021
Hessle, East Riding of Yorkshire, UK
Marygreen@thma.co.uk

Interwire
10-13 May 2021
Atlanta, GA, USA
www.wirenet.org

ICPADM (International Conference on the Properties and Applications of Dielectric Materials)
11-15 July 2021
Johor Bahru, Malaysia
zulkurnain@utm.my

CIGRE General Session
21-25 August 2021
Paris, France
www.cigre.org

IEEE PES T&D Conference
25-28 April 2022
New Orleans, LA, USA
TDGeneral@ieee.org

Upcoming ICC Events
18-21 April 2021,
Spring ICC, Denver, CO

31 October-3 November 2021,
Fall ICC, Tampa, FL

New Officers Voted In
By Rachel Mosier, Communications Chair, PDC

Every two years, the roles of the ICC officers change. The procedure is outlined in the recently approved Policies and Procedures for Standards Development for the Insulated Conductors Committee (ICC).

ICC Vice Chair Art Maldonado recently resigned due to work obligations. Since there were two openings, two nominees were put forth to AdCom, and both were approved. Pending approval by the Technical Council, the new officers are:

Chair: Henk Geene
Vice Chair/Treasurer: Yingli Wen
Second Vice Chair: Bert Spear
Immediate Past Chair: Rusty Bascom
Secretary: Bill Taylor
Assistant Secretary: Thomas Arnold
Standards Coordinator: Gary Clark
Awards Chair: Lauri Hiivala

Get to know the two new officers, Yingli Wen and Bert Spear.

Yingli Wen has been attending ICC since 1996. She holds a PhD in Electrical Engineering from the University of Connecticut and an MBA in Global Management from the University of Phoenix. Over the past 25 years, while working for Pirelli Cables and for Consolidated Edison of New York, she developed technical knowledge and leadership skills by chairing working group F01 - Field Testing and Evaluation of Shielded Cables (IEEE 400), writing group C30 - Extending the Life of Power Cable (P1879), and discussion group A20 - Low Voltage Cable Systems. She also chaired Subcommittee A and served on the IEEE SA Standards Board.

Yingli wants to enhance ICC’s value for its members and the power community. She plans to focus on increasing utility attendance and encouraging women to volunteer in leadership positions. She points out that utility participation is important for developing IEEE standards/guides that are objective, practical and user oriented. Yingli plans to develop a program to address utilities’ concerns and use her experience as a long-time utility attendee to help utilities see the value of ICC. She also plans to start a mentoring program to help women to volunteer more actively.

Bert Spear, a Florida native, graduated from St. Petersburg College with an Associate Degree in Arts and the University of South Florida with a Bachelor of Science in Electrical Engineering. He began his engineering career with Florida Power Corporation and then joined Duke Energy as cable system engineer at Oconee Nuclear Station. He is presently Lead Nuclear Engineer on the Duke Subsequent License Renewal team that is extending the nuclear fleet operating licenses.

Bert has attended ICC meetings since 2000. In addition to membership in various working and discussion groups, he has served as Chair and Vice-Chair of Subcommittee D (Generating Station and Industrial Cable) and Vice-Chair of D5W (IEEE 848). He is presently Chair of D12D (Plant Life Extension).

His goals for the ICC are to have well-attended meetings with a balance between manufacturers, service suppliers, government agencies, consultants and utilities. He will strive to have meeting locations in attractive venues without excessive cost and to create tangible value for both the attendees and their employers while maintaining ICC’s financial viability.

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 Rachel Mosier at r-mosier@pdc-cables.com or Yingli Wen at weny@coned.com.