TRANSFORMERS COMMITTEE
FALL 2022 MEETING

September 14, 2022

Dear Committee Members and Guests:

You and your spouse/companion are cordially invited to Charlotte, North Carolina, USA, to attend the fall 2022 meeting of the IEEE PES Transformers Committee, October 16–20. We look forward to welcoming you to our city that was named the #1 Most Up-and-Coming City in America based on a study done by Yelp and reported by *Time* magazine! Charlotte's colorful history, natural beauty and metropolitan splendor make the "Queen City" not just one of a kind, but one of every kind! With its skyscrapers, foodie options, lush parks and greenways, cozy diners, world-class museums, moving artistic performances, lively breweries and quirky boutiques, Charlotte holds something for everyone.

HOTEL INFORMATION: Our meeting will be held in uptown Charlotte at the Sheraton/Le Méridien hotel complex, 550 South McDowell Street. Offering three on-site restaurants, fitness center, comfortable rooms and suites, the Sheraton and Le Méridien are in the area of town known as the heartbeat of the city. You will find a plethora of delicious eateries and contemporary museums as well as being just steps away from the The Market at 7th Street with its lively mix of food, drink and retail offering a variety of local and global fare as well as handcrafted goods. If outdoor exercise is your thing, check out Little Sugar Creek Greenway, Elizabeth Park and Marshall Park, all just minutes away from the hotel complex.

Our discounted guestroom rates start at US$185 per night at the Sheraton and US$205 per night at the Le Méridien. All rates include complimentary wireless internet in guestrooms and hotel public space as well as complimentary fitness center access for all overnight guests. Visit the Committee's website for a link to reserve a room, or if you call one of the hotels, mention "IEEE Transformers" to receive the respective group rate. Cut-off date for the group rate is Friday, September 23, but we expect the hotel to sell out sooner.

GETTING THERE: The Sheraton/Le Méridien hotel complex is located approximately 8 miles/13 km east of Charlotte Douglas International Airport (CLT). Taxi fare is approximately US$25 one way from the airport to uptown, and taxis are required to accept credit card payments. UBER and Lyft (US$17–US$25) are also approved for ridesharing at CLT. Discounted self-parking in the hotel's garage is US$15/car per night. Valet parking is also available at a rate of US$35/car per night.

MEETING REGISTRATION: Register on-line for the meeting, Sunday night reception, Monday and Tuesday lunches, spouse/companion Monday tour and Wednesday night event: https://cvent.me/nDOG7E. This link can also be found on the Committee website Next Meeting page. Register by **Friday, September 23**, to receive a US$50 early registration discount. The on-line registration system will be disabled on Wednesday, October 12 to print name badges and finalize counts. The cost to register on-site is substantially higher than the advance registration price, and some events may not be available for on-site registration.

WEATHER: October temperatures in Charlotte are typically comfortable during the day and cooler at night with only a small chance of precipitation (average high of 67°F/19°C and low of 47°F/8°C). Dress for the meeting is business casual.

SUNDAY EVENING WELCOME RECEPTION: The reception will be held inside the Sheraton/Le Méridien hotel complex in the beautiful Carolina Ballroom. Featuring live music by The Herringbones, plenty of tasty food and cash bars, come kick off the week catching up with old friends and meeting new ones. Please indicate whether you will attend this reception during the meeting registration process.

SPOUSE/COMPANION TOUR: Monday's Historic Rosedale & Paddywax tour keeps our group close to "home base" as they explore the Rosedale Plantation and nurture their creative side by making their very own version of one of the most versatile and functional candle brands on the market. A family-style, seasonally-inspired lunch at Rooster's Wood-Fired Kitchen will be a mid-day treat featuring southern charm and the finest foods the region has to offer.

See flyer for details and register early as attendance is limited.

TECHNICAL TOURS: Tours of Siemens Energy Worldwide Energy Hub and the Duke Energy Emerging Technology Center are planned for Tuesday evening and Thursday afternoon, respectively. Register on-line for both tours. Attendance is limited – see flyers for details.

WEDNESDAY DINNER SOCIAL: NASCAR Hall of Fame is an interactive entertainment venue honoring the history and heritage of NASCAR and designed to educate and entertain race fans and non-fans alike. Guests will have time to explore the entire facility, including artifacts and hands-on exhibits while enjoying a movie in the High Octane Theater, "racing" other guests in the race simulator and performing a simulated pit stop as part of a 3-person pit crew. Partake in hors d'oeuvres and cash bars before gathering in the Grand Hall for dinner surrounded by the cars on Glory Road. After dinner, continue the experience until 9:30 PM or head out early to explore uptown Charlotte. Attendance is limited – see flyer for dinner menu and details.

ADDITIONAL MEETING INFORMATION: Along with this invitation letter, additional meeting information can be downloaded from the Committee's website:

- Registration Fees Summary – Guide to review all fees before logging into the registration system
- Meeting Schedule and General Sessions Agenda – If any noteworthy changes are made, an updated schedule will be posted on the Committee's website a few days prior to the meeting

We are certain you will enjoy everything Charlotte has to offer and look forward to seeing you at the fall 2022 meeting!

Best regards,

David & Michele Wallach

Fall 2022 Meeting Hosts

Duke Energy team: Cihangir (John), Dinesh, Kumar, Reinaldo, Scott & Tyler

IEEE PES TRANSFORMERS COMMITTEE
Fall 2022 Meeting
Charlotte, North Carolina USA

~ Meeting Registration Fees Summary ~

– Register on-line with credit card or wire transfer (extra fee applies for wire transfer) at the registration link posted on this page: https://www.transformerscommittee.org/meetings/2022-fall-charlotte/; contact the Committee at tc-meetings@ieee.org if an alternate form of payment is necessary.
– Each individual must register for meeting and pay appropriate registration fee to attend any social event or tour
– Print a receipt at the end of the registration process; paper receipts NOT provided at the meeting
– Refund provided only if request received by Wednesday, October 12 and valid once confirmation email received; US$25 service charge for a refund of entire registration or US$10 for a partial refund
– US Tax ID No. 13-1656633, Canadian Business No. 12563 4188, Euro Tax Registration No. EU826000081

REGISTRATION FEES AS SHOWN BELOW – all fees in US dollars – all fees stated are per person	**On or Before September 23**	**After Sept 23, on or before Oct 12**	**On-site**
MEETING REGISTRATION			
Attendee — IEEE member (will be verified when registering)	$365	$415	$515
Attendee — non-IEEE member	$449	$500	$620
Attendee — IEEE Life or Committee Emeritus (will be verified)	$135	$185	$285
Spouse/Companion or guest* and children age 12 and over	$165	$215	$315
– Attendee registration fee includes Sunday night welcome reception, entry into meeting area, coffee breaks and four breakfasts (Mon, Tues, Wed, Thurs) – Spouse/Companion registration fee includes Sunday night welcome reception, four breakfasts (Mon, Tues, Wed, Thurs) and ability to register for tours			
* This fee category is for anyone who is attending for non-commercial reasons, i.e. not attending the technical meetings, etc. Spouses/Companions/Guests, including children (age 12 and over) must be registered for the meeting with above meeting registration fees to attend any tour, social event and/or breakfasts.			
LUNCHEONS			
Monday Standards Development Luncheon – All SC, WG, TF leaders are encouraged to attend – Buffet lunch (no meal selection required)	$20	$20	$20
Tuesday Awards Luncheon – Meal selection required - indicate beef, chicken or vegetarian	$30	$30	$30
SOCIAL EVENTS (see flyers for details)			
Sunday Night Welcome Reception: Carolina Ballroom – Sheraton/Le Méridien Charlotte Hotel Complex	included in registration fee; *please register in advance for headcount purposes*		
Wednesday Evening Dinner Social: NASCAR Hall of Fame** – Enjoy interactive and historical exhibits, hors d'oeuvres and cash bars throughout the facility as well as a buffet dinner in the Grand Hall surrounded by Glory Road; interactive exhibits include realistic race car simulators and the PIT Crew Challenge – Experience the history of NASCAR on a 64-foot projection screen with surround sound in the High Octane Theater	$105	$105	$105
SPOUSE/COMPANION TOUR (tour includes lunch; see flyer for details)			
Monday: Historic Rosedale & Candle-Making** *SPOUSE/COMPANION TOUR LIMITED TO 25 ATTENDEES*	$115	$115	$115
TECHNICAL TOURS			
Tuesday Evening: Siemens Energy Worldwide Energy Hub** *SIEMENS ENERGY TOUR LIMITED TO ONE BUS*	$20	$20	$20
Thursday Afternoon: Duke Energy Emerging Technology Center** *DUKE ENERGY TOUR LIMITED TO 20 ATTENDEES*	$20	$20	$20
** Attendance will be limited for Wednesday evening social event, spouse/companion tour and technical tours due to space constraints, so register early! *On-site registration for these events only available if space allows.*			

IEEE PES TRANSFORMERS COMMITTEE

Fall 2022 Meeting: Charlotte, North Carolina

Agenda - General Sessions

Chair: Ed teNyenhuis **Vice Chair:** David Wallach **Secretary:** Bill Griesacker
Treasurer: Troy Tanaka **Awards Chair/Past Chair:** Bruce Forsyth **Standards Coordinator:** Steve Shull

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Opening Session

Monday, October 17, 2022: 8:00 am - 9:15 am EDT (UTC-05:00)

(Attendance recorded by roster – attendance required to maintain Member status)

1. Welcome and Announcements ..... Ed teNyenhuis
2. Meeting Minute ..... Tammy Behrens
3. Approval of Agenda ..... Ed teNyenhuis
4. Approval of Minutes from Fall 2021 Meeting ..... Ed teNyenhuis
5. Chair's Report & Administrative Subcommittee Report ..... Ed teNyenhuis
6. Vice Chair's Report ..... David Wallach
7. Secretary's Report ..... Bill Griesacker
8. Treasurer's Report ..... Troy Tanaka
9. Standards Report ..... Steve Shull
10. Liaison Representative Reports
    - 10.1. CIGRE ..... Craig Swinderman
    - 10.2. IEC TC-14 ..... Christoph Ploetner
    - 10.3. Standards Coordinating Committee, SCC4 (Electrical Insulation) ..... Evanne Wang
    - 10.4. ASTM ..... Tom Prevost
    - 10.5. Transactions on Power and Delivery (TPWRD) Editor Liaison ..... Xose Lopez-Fernandez
11. Hot Topics for the Upcoming Week ..... Subcommittee Chairs
12. New Business & Wrap-up ..... Ed teNyenhuis

Closing Session

Thursday, October 20, 2022: 11:00 am - 12:00 pm EDT (UTC-05:00)

1. Chair's Remarks and Announcements ..... Ed teNyenhuis
2. Meetings Planning Subcommittee ..... Tammy Behrens
3. Reports from Technical Subcommittees (decisions made during the week)
    - 3.1. Bushings ..... Eric Weatherbee
    - 3.2. Dielectric Tests ..... Poorvi Patel
    - 3.3. Distribution Transformers ..... Ed Smith
    - 3.4. Dry Type Transformers ..... Casey Ballard
    - 3.5. Transformers and Reactors for HVDC Applications ..... Ulf Radbrandt
    - 3.6. Instrument Transformers ..... Thomas Sizemore
    - 3.7. Insulating Fluids ..... Scott Reed
    - 3.8. Insulation Life ..... Sam Sharpless
    - 3.9. Performance Characteristics ..... Rogerio Verdolin
    - 3.10. Power Transformers ..... Ryan Musgrove
    - 3.11. Standards ..... Dan Sauer
    - 3.12. Subsurface Transformers & Network Protectors ..... George Payerle
4. Additional Report from Standards Coordinator (issues from the week) ..... Steve Shull
5. New Business (continued from Monday) and Wrap-up ..... Ed teNyenhuis

IEEE PES TRANSFORMERS COMMITTEE

FALL 2022 MEETING: OCTOBER 16 TO OCTOBER 20

Sheraton/Le Meridien Charlotte; Charlotte, NC USA

KEY

Note: A PC projector will be furnished in each meeting room. Arrive early to ensure equipment operates/syncs correctly.

> = activity continued into another session / from another session

++ = not a Transformers Committee activity

TBD = To Be Determined

TRACK LEGEND

Admin	Administrative SC	Ins Life	Insulation Life SC
Bush	Bushings SC	Instr TR	Instrument Transformers SC
DiTests	Dielectric Tests SC	Mtgs	Meetings Planning SC
Distr	Distribution Transformers SC	PCS	Performance Characteristics SC
Dry Type	Dry Type Transformers SC	Power	Power Transformers SC
HVDC	HVDC Converter Transfs. and Smoothing Reactors SC	STNP	Submersible Transf. & Network Protectors SC
IF	Insulating Fluids SC	Stds	Standards SC

STATUS LEGEND

N	New
I	In-Progress
NC	Near Completion
B	Ballot Stage
C	Complete
E	Entity

SATURDAY, OCTOBER 15

No Events Planned

SUNDAY, OCTOBER 16

TIME	ACTIVITY	TRACK	MTG CHAIR	STATUS	ROOM (FLOOR)
12:00 PM – 4:00 PM	WG Standard Requirements for Tap Changers C57.131	Power	C. Colopy	I	Governor's 2,3 (1)
1:00 PM – 5:30 PM	Meeting Registration				Symphony Foyer (1)
2:00 PM – 5:00 PM	Administrative Subcommittee - Closed meeting, by invitation only	Admin	E. teNyenhuis	–	Mecklenburg 1 (1)
6:00 PM – 8:00 PM	Welcome Reception				Carolina Ballroom (1)

Renew old friendships and form new ones! This reception will be held inside the beautiful Carolina Ballroom, so weather will not be an issue. Cash bars, plenty of fabulous food and live music will be provided. Please indicate whether you will attend this reception during the meeting registration process. All registered attendees and spouses/companions are welcome to attend.

IEEE PES TRANSFORMERS COMMITTEE

FALL 2022 MEETING: OCTOBER 16 TO OCTOBER 20
Sheraton/Le Meridien Charlotte; Charlotte, NC USA

MONDAY, OCTOBER 17 Breaks Sponsored by JSHP Transformers*

TIME	ACTIVITY	TRACK	MTG CHAIR	STATUS	ROOM (FLOOR)
7:00 AM – 5:00 PM	Meeting Registration				Symphony Foyer (1)
7:00 AM – 7:50 AM	Newcomers Orientation - Arrive early, grab breakfast and get a good seat - Newcomers and guests are encouraged to attend		D. Wallach	–	Mecklenburg 1,2 (1)
7:00 AM – 8:00 AM	Breakfast - Attendees (no spouses/companions please)				Carolina Ballroom (1)
8:00 AM – 9:30 AM	Breakfast - Spouses/Companions (no meeting attendees please)				Craft City Social Club (1)
8:00 AM – 9:15 AM	Opening Session - All registered meeting participants are encouraged to attend - See separate document on website for meeting agenda - *Attendance required to maintain Committee Member status*		E. teNyenhuis	–	Symphony 4,5,6,7
9:15 AM – 3:15 PM	Spouses/Companions Tour: Historic Rosedale & Candle Making - Advance on-line registration required - Lunch included at Rooster's Wood-Fired Kitchen - See website/flyer for details	Tour			
9:15 AM – 9:30 AM	*Break (beverages only): JSHP Transformers*				*Symphony Foyer (1)*
9:30 AM – 10:45 AM	WG Dry Type Reactors PC57.16	Dry Type	A. Del Rio	I	Mecklenburg 1,2 (1)
9:30 AM – 10:45 AM	WG Guide of FRA for Liquid Filled Transf. C57.149	PCS	C. Sweetser	I	Mecklenburg 3 (1)
9:30 AM – 10:45 AM	WG Standard Requirements for Tap Changers C57.131	Power	C. Colopy	I	Symphony 1 (1)
9:30 AM – 10:45 AM	WG Std Transf. Terminology C57.12.80	Stds	J. Graham	I	Symphony 2,3 (1)
9:30 AM – 10:45 AM	TF Transf Efficiency & Loss Evaluation (DOE Activity)	Distr	P. Hopkinson	I	Symphony 4 (1)
9:30 AM – 10:45 AM	TF Guide for Tank Rupture Mitigation C57.156	Power	P. Zhao	N	Symphony 6,7 (1)
10:45 AM – 11:00 AM	*Break (beverages only): JSHP Transformers*				*Symphony Foyer (1)*
11:00 AM – 12:15 PM	WG Overhead Distr. Transf. C57.12.20	Distr	A. Traut	I	Mecklenburg 3 (1)
11:00 AM – 12:15 PM	WG Guide for Trfs Direct Connect to Generators C57.116	Power	W. Li	I	Mecklenburg 1,2 (1)
11:00 AM – 12:15 PM	WG Guide for App of Transf. Connections Corrig. C57.105	PCS	R. Verdolin	N	Symphony 1 (1)
11:00 AM – 12:15 PM	WG Guide for Field Testing PC57.152	Stds	M. Ferreira	I	Symphony 2,3 (1)
11:00 AM – 12:15 PM	TF Partial Discharge Tests for Class I Trfs	DiTests	D. Ayers	I	Symphony 4 (1)
11:00 AM – 12:15 PM	WG Guide for DGA in Silicone PC57.146	IF	P. Boman	I	Symphony 6,7 (1)
12:15 PM – 1:30 PM	Standards Development Review Luncheon Everyone is welcome to attend. All SC/WG/TF leaders are highly encouraged to attend. Doors open ~12:00 pm. Come early, get a good seat and start eating. Advance on-line registration required. To listen to the presentation without eating lunch, arrive by 12:30 pm.				Carolina Ballroom (1)
1:45 PM – 3:00 PM	WG 1-ph Padmount Dist Transf. C57.12.38	Distr	A. Ghafourian	I	Mecklenburg 3 (1)
1:45 PM – 3:00 PM	WG Dry Type Gen. Requirements C57.12.01	Dry Type	C. Ballard	I	Mecklenburg 1,2 (1)
1:45 PM – 3:00 PM	WG Guide for Phase Shifting Transf C57.135	Power	E. Schweiger	N	Symphony 1 (1)
1:45 PM – 3:00 PM	WG Partial Discharge Test C57.113	DiTests	A. Naderian	I	Symphony 2,3 (1)
1:45 PM – 3:00 PM	TF Audible Sound Revs & WG Sound Guide C57.136 (S. Antosz)	PCS	R. Girgis	I	Symphony 4 (1)
1:45 PM – 3:00 PM	TF App of High-Temp Insulation Matrs IEEE 1276 Annex B	Ins Life	K. Biggie	I	Symphony 6,7 (1)
3:00 PM – 3:15 PM	*Break (beverages and treats): JSHP Transformers*				*Symphony Foyer (1)*
3:15 PM – 4:30 PM	WG 3-ph Padmount Dist Transf. C57.12.34	Distr	S. Shull	I	Mecklenburg 3 (1)
3:15 PM – 4:30 PM	WG Transformer Monitoring C57.143	Power	M. Spurlock	I	Mecklenburg 1,2 (1)
3:15 PM – 4:30 PM	WG Transformer Impulse Test Guide PC57.98	DiTests	T. Hochanh	I	Symphony 1 (1)
3:15 PM – 4:30 PM	TF Test for Eval of Insulation for Dry-Type Transfs IEEE 259	Dry Type	D. Stankes	I	Symphony 2,3 (1)
3:15 PM – 4:30 PM	TF PCS Cont. Revisions to C57.12.00	PCS	T. Ansari	I	Symphony 4 (1)
3:15 PM – 4:30 PM	WG Bushing Applicat. Guide C57.19.100	Bush	T. Spitzer	I	Symphony 6,7 (1)
4:30 PM – 4:45 PM	*Break (beverages only): JSHP Transformers*				*Symphony Foyer (1)*
4:45 PM – 6:00 PM	WG Submersible Transf. C57.12.24	STNP	B. Garcia	I	Mecklenburg 3 (1)
4:45 PM – 6:00 PM	TF Tank Touch Temperatures	Distr	B. Webb	N	Mecklenburg 1,2 (1)
4:45 PM – 6:00 PM	WG Failure Investigation & Reporting PC57.125	Power	H. Sahin	N	Symphony 1 (1)
4:45 PM – 6:00 PM	TF Inverter Transf Precautions on Ground Shields C57.159	PCS	P. Hopkinson	N	Symphony 2,3 (1)
4:45 PM – 6:00 PM	TF Core Ground & Winding Insul. Resistance - Perf & Int.	DiTests	D. Robalino	N	Symphony 4 (1)
4:45 PM – 6:00 PM	SC HVDC Converter Transfs & Smoothing Reactors	HVDC	U. Radbrandt	-	Symphony 6,7 (1)

IEEE PES TRANSFORMERS COMMITTEE

FALL 2022 MEETING: OCTOBER 16 TO OCTOBER 20

Sheraton/Le Meridien Charlotte; Charlotte, NC USA

TUESDAY, OCTOBER 18 Breaks Sponsored by R.L. Components*

TIME	ACTIVITY	TRACK	MTG CHAIR	STATUS	ROOM (FLOOR)
7:00 AM – 11:30 AM	Meeting Registration				Symphony Foyer (1)
7:00 AM – 8:00 AM	Breakfast - Attendees (no spouses/companions please)				Carolina Ballroom (1)
8:00 AM – 9:30 AM	Breakfast - Spouses/Companions (no meeting attendees please)				Craft City Social Club (1)
8:00 AM – 9:15 AM	TF Guide for Life Tests of Switch Contacts C57.157	Power	A. Sewell	N	Mecklenburg 3 (1)
8:00 AM – 9:15 AM	WG Condition Assessment Guide PC57.170	Power	K. Mani	I	Mecklenburg 1,2 (1)
8:00 AM – 9:15 AM	WG Power-Line Carrier Coupling Cap & Volt Transf. C57.13.9	Instr TR	Z. Roman	I	Symphony 1 (1)
8:00 AM – 9:15 AM	WG Practice for Install & Operation of Dry Type PC57.94	Dry Type	D. Stankes	I	Symphony 2,3 (1)
8:00 AM – 9:15 AM	WG Encl Int C57.12.28, C57.12.29, C57.12.31, C57.12.32	Distr	D. Mulkey	I	Symphony 4 (1)
8:00 AM – 9:15 AM	TF on Revision of Impulse Tests C57.12.00 & C57.12.90	DiTests	P. Riffon	I	Symphony 6,7 (1)
9:15 AM – 9:30 AM	*Break (beverages only): R.L. Components*				*Symphony Foyer (1)*
9:30 AM – 10:45 AM	WG Low Frequency Test Guide PC57.168	DiTests	D. Sauer	I	Mecklenburg 3 (1)
9:30 AM – 10:45 AM	WG Transportation Issues C57.150	Power	G. Anderson	I	Mecklenburg 1,2 (1)
9:30 AM – 10:45 AM	TF Instrument Transf. Accuracy	Instr TR	I. Ziger	I	Symphony 1 (1)
9:30 AM – 10:45 AM	WG Bushings IEC/IEEE 65700.19.03 Dual Logo	Bush	A. Del Rio	I	Symphony 2,3 (1)
9:30 AM – 10:45 AM	TF PCS Cont. Rev. to Test Code C57.12.90	PCS	H. Sahin	I	Symphony 4 (1)
9:30 AM – 10:45 AM	WG Guide for DGA Applied to Factory Temp Rise Test C57.130	IF	B. Forsyth	N	Symphony 6,7 (1)
10:45 AM – 11:00 AM	*Break (beverages only): R.L. Components*				*Symphony Foyer (1)*
11:00 AM – 12:15 PM	WG Distrib. Transf. Bushings PC57.19.02	Bush	S. Shull	I	Mecklenburg 3 (1)
11:00 AM – 12:15 PM	WG Liquid-immersed Sec. Network TRs C57.12.40	STNP	D. Blew	I	Mecklenburg 1,2 (1)
11:00 AM – 12:15 PM	WG Requirements for Instrument Transformers PC57.13	Instr TR	D. Wallace	I	Symphony 1 (1)
11:00 AM – 12:15 PM	WG Guide for Loading Dry Type Transformers C57.96	Dry Type	A. Narawane	I	Symphony 2,3 (1)
11:00 AM – 12:15 PM	TF Standard Requirements for Arc Furnace Transf. C57.17	Power	D. Corsi	N	Symphony 4 (1)
11:00 AM – 12:15 PM	TF Guide for the Reclamation of Mineral Oil C57.637	IF	S. Denzer	N	Symphony 6,7 (1)
12:15 PM – 1:30 PM	Awards Luncheon All meeting attendees are encouraged to attend to show appreciation and recognize accomplishments. Doors open ~12:00 pm. Come early, get a good seat and start eating. Advance on-line registration is required.				Carolina Ballroom (1)
1:45 PM – 3:00 PM	WG Consolidation Insulating Fluid Guides PC57.166	IF	T. Prevost	I	Mecklenburg 3 (1)
1:45 PM – 3:00 PM	WG Bar Coding for Distr Transf. C57.12.35	Distr	R. Chrysler	I	Mecklenburg 1,2 (1)
1:45 PM – 3:00 PM	TF Cont. Revision to Low Frequency Tests C57.12.90	DiTests	A. Varghese	I	Symphony 1 (1)
1:45 PM – 3:00 PM	WG Guide for Mitigating Corrosion on Sub Trfs C57.12.53	STNP	W. Elliott	I	Symphony 2,3 (1)
1:45 PM – 3:00 PM	WG Volts per Hertz C57.107	Power	J. Watson	I	Symphony 4 (1)
1:45 PM – 3:00 PM	WG Sw Transients Ind by TR/Bkr Interaction PC57.142	PCS	J. McBride	I	Symphony 6,7 (1)
3:00 PM – 3:15 PM	*Break (beverages and pretzels): R.L. Components*				*Symphony Foyer (1)*
3:15 PM – 4:30 PM	WG Recommend Practice for Routine Impulse Tests C57.138	DiTests	H. Sahin	N	Mecklenburg 3 (1)
3:15 PM – 4:30 PM	TF Guide for Install & Maintenance of Power Trf C57.93	Power	S. Reed	I	Mecklenburg 1,2 (1)
3:15 PM – 4:30 PM	WG Dry Type PD Detection PC57.124	Dry Type	T. Prevost	I	Symphony 1 (1)
3:15 PM – 4:30 PM	WG Geomagnetic Disturbances PC57.163	Stds	D. Blaydon	I	Symphony 2,3 (1)
3:15 PM – 4:30 PM	TF Continuous Rev Clause 11 Temp Rise Tests C57.12.90	Ins Life	D. Sankarakurup	I	Symphony 4 (1)
3:15 PM – 4:30 PM	WG Guide DGA in Ester-Immersed Transformers PC57.155	IF	A. Sbravati	N	Symphony 6,7 (1)
4:30 PM – 4:45 PM	*Break (beverages only): R.L. Components*				*Symphony Foyer (1)*
4:45 PM – 6:00 PM	WG Guide for PD Measure HV Bushings & Inst Trf C57.160	DiTests	T. Hochanh	NC	Mecklenburg 3 (1)
4:45 PM – 6:00 PM	WG Guide for Monitoring Distr Transf. PC57.167	Distr	G. Hoffman	I	Mecklenburg 1,2 (1)
4:45 PM – 6:00 PM	TF Revision of Guide for DGA in LTCs C57.139	IF	R. Frotscher	N	Symphony 1 (1)
4:45 PM – 6:00 PM	WG Loading Guide PC57.91	Ins Life	D. Wallach	I	Symphony 2,3 (1)
4:45 PM – 6:00 PM	TF Guide for Paralleling Transformers C57.153	Power	M. Tostrud	N	Symphony 4 (1)
4:45 PM – 6:00 PM	WG Dry Type Test Code C57.12.91	Dry Type	D. Walker	N	Symphony 6,7 (1)
6:15 PM – 10:00 PM	Technical Tour: Siemens Energy Worldwide Hub Advance registration required—space is limited to one bus! Admission confirmed with badge at bus. Start loading bus for this facility that manufactures and services generators, gas and steam turbines for the power generation market at hotel's main entrance at ~6:15 PM and depart promptly at 6:30 PM. Dinner provided on-site at the Siemens Energy facility. Return at ~10:00 PM. See website/flyer for more information.	Tech Tour			

IEEE PES TRANSFORMERS COMMITTEE

FALL 2022 MEETING: OCTOBER 16 TO OCTOBER 20
Sheraton/Le Meridien Charlotte; Charlotte, NC USA

WEDNESDAY, OCTOBER 19 Breaks Sponsored by Baron USA*

No Meeting Registration, Technical Tours, Spouse/Companion Tours, or Social Events Planned

TIME	ACTIVITY	TRACK	MTG CHAIR	STATUS	ROOM (FLOOR)
7:00 AM – 8:00 AM	Breakfast - Attendees (no spouses/companions please)				Carolina Ballroom (1)
7:00 AM – 8:00 AM	SC Meetings Planning - Breakfast Meeting - arrive early - All interested individuals welcome	Mtgs	T. Behrens	–	Governor's 2,3 (1)
7:00 AM – 8:30 AM	IEC TC-14 Technical Advisory Group - Breakfast Meeting - arrive early - All interested individuals welcome		P. Hopkinson	–	Mecklenburg 1,2 (1)
8:00 AM – 9:30 AM	Breakfast - Spouses/Companions (no meeting attendees please)				Craft City Social Club (1)
8:00 AM – 9:15 AM	SC Instrument Transformers	Instr TR	T. Sizemore	–	Symphony 2,3 (1)
8:00 AM – 9:15 AM	SC Insulation Life	Ins Life	S. Sharpless	–	Symphony 4 (1)
9:15 AM – 9:30 AM	*Break (beverages only): Baron USA*				*Symphony Foyer (1)*
9:30 AM – 10:45 AM	SC Distribution Transformers	Distr	E. Smith	–	Symphony 2,3 (1)
9:30 AM – 10:45 AM	SC Bushings	Bush	E. Weatherbee	–	Symphony 4 (1)
10:45 AM – 11:00 AM	*Break (beverages only): Baron USA*				*Symphony Foyer (1)*
11:00 AM – 12:15 PM	SC Submersible Transf. & Network Protectors	STNP	G.Payerle	–	Symphony 2,3 (1)
11:00 AM – 12:15 PM	SC Dielectric Test	DiTests	P. Patel	–	Symphony 4 (1)
12:15 PM – 1:30 PM	*Lunch Break*				
1:30 PM – 2:45 PM	SC Dry Type Transformers	Dry Type	C. Ballard	–	Symphony 2,3 (1)
1:30 PM – 2:45 PM	SC Power Transformers	Power	R. Musgrove	–	Symphony 4 (1)
2:45 PM – 3:00 PM	*Break (beverages and treats): Baron USA*				*Symphony Foyer (1)*
3:00 PM – 4:15 PM	SC Insulating Fluids	IF	S. Reed	–	Symphony 2,3 (1)
3:00 PM – 4:15 PM	SC Performance Characteristics	PCS	R. Verdolin	–	Symphony 4 (1)
4:15 PM – 4:30 PM	*Break (beverages only): Baron USA*				*Symphony Foyer (1)*
4:30 PM – 5:45 PM	SC Standards	Stds	D. Sauer	–	Symphony 2,3 (1)
6:30 PM – 9:30 PM	NASCAR Hall of Fame - Advance on-line registration required; admission confirmed with name badge at location - *Easy walking distance from hotels;* shuttle bus will be available with first run departing hotel at 6:30 PM and running every 15 minutes until 7:30 PM; first return shuttle departs Hall of Fame at 8:30 PM and will run approximately every 15 minutes until 9:30 PM - Reception followed by dinner; enjoy interactive and historical exhibits before and after dinner, including realistic race car simulators, PIT Crew Challenge, Glory Road and High Octane Theater with its 64-foot projection screen and surround sound - Hors d'oeuvres, buffet dinner and cash bars (credit cards accepted and ATM on-site); see flyer for details and website for videos!	Social			

THURSDAY, OCTOBER 20

No Meeting Registration, Technical Tours, Spouse/Companion Tours, or Social Events Planned

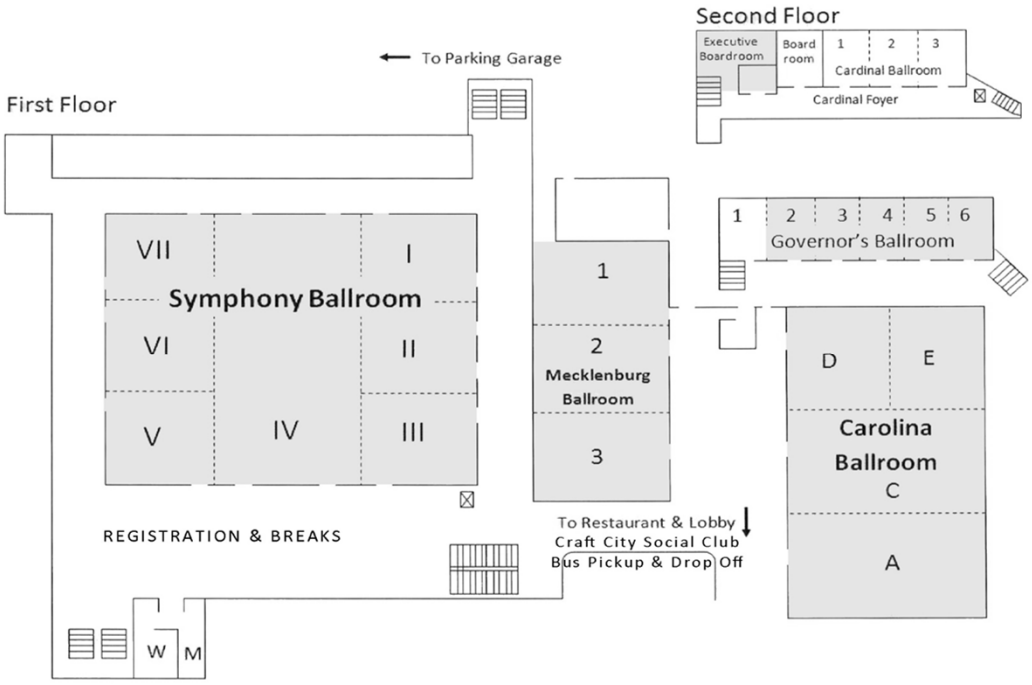
TIME	ACTIVITY	TRACK	MTG CHAIR	STATUS	ROOM (FLOOR)
7:00 AM – 8:00 AM	Breakfast - Attendees (no spouses/companions please)				Carolina Ballroom (1)
8:00 AM – 9:30 AM	Breakfast - Spouses/Companions (no meeting attendees please)				Craft City Social Club (1)
8:00 AM – 9:15 AM	Technical Presentation 1 Tutorial on Impact of GIC on Power Transformers and Power Systems – Case Studies by Ramsis Girgis, Thomas Hartmann, Gary Hoffman, Mark Olson, Anastasia O'Malley, Chris Slattery - See flyer on website for details **	Tutorial			Symphony 4,5,6,7
9:15 AM – 9:30 AM	*Break (beverages only)*				
9:30 AM – 10:45 AM	Technical Presentation 2 Tutorial on Grid-Ready Flexible Transformers by Enrique Betancourt, Juan Castellanos, Dr. Ibrahima Ndiaye - See flyer on website for details **	Tutorial			Symphony 4,5,6,7
10:45 AM – 11:00 AM	*Break (beverages only)*				
11:00 AM – 12:00 PM	Closing Session - All attendees are encouraged to attend - See separate document on website for meeting agenda		E. teNyenhuis		Symphony 4,5,6,7
12:00 PM	*Lunch (on your own)*				
12:30 PM – 4:30 PM	NEMA Transformers - Closed meeting, by invitation only	++	J. Stewart		Governor's 4 (1)
12:15 PM – 3:45 PM	Technical Tour: Duke Energy's Emerging Technology Center Advance registration required. Space is limited to 20 attendees! Admission confirmed with badge at bus. Start loading bus at ~12:15 PM and depart promptly at 12:30 PM. Return at ~3:45 PM; bus will stop at Charlotte Douglas Airport (CLT) at approx. 3:30 PM upon request before returning to hotel. Box lunch provided on bus to optimize time spent on-site. See website/flyer for more information.	Tech Tour			

*** Contact Ed Smith (edsmith@ieee.org) if you are interested in sponsoring a day of coffee breaks at a future meeting.**

**** Contact Tom Prevost (tprevost@ieee.org) if you are interested in making a technical presentation at a future meeting.**

FUTURE COMMITTEE MEETINGS

Spring 2023: Milwaukee, Wisconsin USA, March 19 – 23, 2023
Fall 2023: Kansas City, Missouri USA, October 22 – 26, 2023
Spring 2024: TBD USA, March 22 – 26, 2024


Second Floor
Executive Boardroom
Board room
1
2
3
Cardinal Ballroom
Cardinal Foyer
To Parking Garage
First Floor
1
2
3
4
5
6
Governor's Ballroom
VII
I
Symphony Ballroom
VI
II
V
IV
III
1
2
Mecklenburg Ballroom
3
D
E
Carolina Ballroom
C
A
REGISTRATION & BREAKS
To Restaurant & Lobby
Craft City Social Club
Bus Pickup & Drop Off
W
M

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IEEE PES TRANSFORMERS COMMITTEE

SUBCOMMITTEE MEETING LIST

FALL 2022 MEETING: OCTOBER 16 TO OCTOBER 20
Sheraton/Le Meridien Charlotte; Charlotte, NC USA

Date	Time Start	Time End	Session Title	Track	Chair	Room/Location
10/16/2022	2:00 PM	5:00 PM	Administrative Subcommittee - Closed meeting, by invitation only	Admin	E. teNyenhuis	Mecklenburg 1 (1)
10/17/2022	3:15 PM	4:30 PM	WG Bushing Applicat. Guide C57.19.100	Bush	T. Spitzer	Symphony 6,7 (1)
10/18/2022	9:30 AM	10:45 AM	WG Bushings IEC/IEEE 65700.19.03 Dual Logo	Bush	A. Del Rio	Symphony 2,3 (1)
10/18/2022	11:00 AM	12:15 PM	WG Distrib. Transf. Bushings PC57.19.02	Bush	S. Shull	Mecklenburg 3 (1)
10/19/2022	9:30 AM	10:45 AM	SC Bushings	Bush	E. Weatherbee	Symphony 4 (1)
10/17/2022	9:30 AM	10:45 AM	TF Transf Efficiency & Loss Evaluation (DOE Activity)	Distr	P. Hopkinson	Symphony 4 (1)
10/17/2022	11:00 AM	12:15 PM	WG Overhead Distr. Transf. C57.12.20	Distr	A. Traut	Mecklenburg 3 (1)
10/17/2022	1:45 PM	3:00 PM	WG 1-ph Padmount Dist Transf. C57.12.38	Distr	A. Ghafourian	Mecklenburg 3 (1)
10/17/2022	3:15 PM	4:30 PM	WG 3-ph Padmount Dist Transf. C57.12.34	Distr	S. Shull	Mecklenburg 3 (1)
10/17/2022	4:45 PM	6:00 PM	TF Tank Touch Temperatures	Distr	B. Webb	Mecklenburg 1,2 (1)
10/18/2022	8:00 AM	9:15 AM	WG Encl Int C57.12.28, C57.12.29, C57.12.31, C57.12.32	Distr	D. Mulkey	Symphony 4 (1)
10/18/2022	1:45 PM	3:00 PM	WG Bar Coding for Distr Transf. C57.12.35	Distr	R. Chrysler	Mecklenburg 1,2 (1)
10/18/2022	4:45 PM	6:00 PM	WG Guide for Monitoring Distr Transf. PC57.167	Distr	G. Hoffman	Mecklenburg 1,2 (1)
10/19/2022	9:30 AM	10:45 AM	SC Distribution Transformers	Distr	E. Smith	Symphony 2,3 (1)
10/17/2022	11:00 AM	12:15 PM	TF Partial Discharge Tests for Class I Trfs	DiTests	D. Ayers	Symphony 4 (1)
10/17/2022	1:45 PM	3:00 PM	WG Partial Discharge Test C57.113	DiTests	A. Naderian	Symphony 2,3 (1)
10/17/2022	3:15 PM	4:30 PM	WG Transformer Impulse Test Guide PC57.98	DiTests	T. Hochanh	Symphony 1 (1)
10/17/2022	4:45 PM	6:00 PM	TF Core Ground & Winding Insul. Resistance - Perf & Int.	DiTests	D. Robalino	Symphony 4 (1)
10/18/2022	8:00 AM	9:15 AM	TF on Revision of Impulse Tests C57.12.00 & C57.12.90	DiTests	P. Riffon	Symphony 6,7 (1)
10/18/2022	9:30 AM	10:45 AM	WG Low Frequency Test Guide PC57.168	DiTests	D. Sauer	Mecklenburg 3 (1)
10/18/2022	1:45 PM	3:00 PM	TF Cont. Revision to Low Frequency Tests C57.12.90	DiTests	A. Varghese	Symphony 1 (1)
10/18/2022	3:15 PM	4:30 PM	WG Recommend Practice for Routine Impulse Tests C57.138	DiTests	H. Sahin	Mecklenburg 3 (1)
10/18/2022	4:45 PM	6:00 PM	WG Guide for PD Measure HV Bushings & Inst Trf C57.160	DiTests	T. Hochanh	Mecklenburg 3 (1)
10/19/2022	11:00 AM	12:15 PM	SC Dielectric Test	DiTests	P. Patel	Symphony 4 (1)
10/17/2022	9:30 AM	10:45 AM	WG Dry Type Reactors PC57.16	Dry Type	A. Del Rio	Mecklenburg 1,2 (1)
10/17/2022	1:45 PM	3:00 PM	WG Dry Type Gen. Requirements C57.12.01	Dry Type	C. Ballard	Mecklenburg 1,2 (1)
10/17/2022	3:15 PM	4:30 PM	TF Test for Eval of Insulation for Dry-Type Transfs IEEE 259	Dry Type	D. Stankes	Symphony 2,3 (1)
10/18/2022	8:00 AM	9:15 AM	WG Practice for Install & Operation of Dry Type PC57.94	Dry Type	D. Stankes	Symphony 2,3 (1)
10/18/2022	11:00 AM	12:15 PM	WG Guide for Loading Dry Type Transformers C57.96	Dry Type	A. Narawane	Symphony 2,3 (1)
10/18/2022	3:15 PM	4:30 PM	WG Dry Type PD Detection PC57.124	Dry Type	T. Prevost	Symphony 1 (1)
10/18/2022	4:45 PM	6:00 PM	WG Dry Type Test Code C57.12.91	Dry Type	D. Walker	Symphony 6,7 (1)
10/19/2022	1:30 PM	2:45 PM	SC Dry Type Transformers	Dry Type	C. Ballard	Symphony 2,3 (1)
10/17/2022	4:45 PM	6:00 PM	SC HVDC Converter Transfs & Smoothing Reactors	HVDC	U. Radbrandt	Symphony 6,7 (1)
10/17/2022	11:00 AM	12:15 PM	WG Guide for DGA in Silicone PC57.146	IF	P. Boman	Symphony 6,7 (1)
10/18/2022	9:30 AM	10:45 AM	WG Guide for DGA Applied to Factory Temp Rise Test C57.130	IF	B. Forsyth	Symphony 6,7 (1)
10/18/2022	11:00 AM	12:15 PM	TF Guide for the Reclamation of Mineral Oil C57.637	IF	S. Denzer	Symphony 6,7 (1)
10/18/2022	1:45 PM	3:00 PM	WG Consolidation Insulating Fluid Guides PC57.166	IF	T. Prevost	Mecklenburg 3 (1)
10/18/2022	3:15 PM	4:30 PM	WG Guide DGA in Ester-Immersed Transformers PC57.155	IF	A. Sbravati	Symphony 6,7 (1)
10/18/2022	4:45 PM	6:00 PM	TF Revision of Guide for DGA in LTCs C57.139	IF	R. Frotscher	Symphony 1 (1)
10/19/2022	3:00 PM	4:15 PM	SC Insulating Fluids	IF	S. Reed	Symphony 2,3 (1)
10/17/2022	1:45 PM	3:00 PM	TF App of High-Temp Insulation Matrs IEEE 1276 Annex B	Ins Life	K. Biggie	Symphony 6,7 (1)
10/18/2022	3:15 PM	4:30 PM	TF Continuous Rev Clause 11 Temp Rise Tests C57.12.90	Ins Life	D. Sankarakurup	Symphony 4 (1)
10/18/2022	4:45 PM	6:00 PM	WG Loading Guide PC57.91	Ins Life	D. Wallach	Symphony 2,3 (1)
10/19/2022	8:00 AM	9:15 AM	SC Insulation Life	Ins Life	S. Sharpless	Symphony 4 (1)
10/18/2022	8:00 AM	9:15 AM	WG Power-Line Carrier Coupling Cap & Volt Transf. C57.13.9	Instr TR	Z. Roman	Symphony 1 (1)
10/18/2022	9:30 AM	10:45 AM	TF Instrument Transf. Accuracy	Instr TR	I. Ziger	Symphony 1 (1)
10/18/2022	11:00 AM	12:15 PM	WG Requirements for Instrument Transformers PC57.13	Instr TR	D. Wallace	Symphony 1 (1)
10/19/2022	8:00 AM	9:15 AM	SC Instrument Transformers	Instr TR	T. Sizemore	Symphony 2,3 (1)
10/19/2022	7:00 AM	8:00 AM	SC Meetings Planning - Breakfast Meeting - arrive early - All interested individuals welcome	Mtgs	T. Behrens	Governor's 2,3 (1)

IEEE PES TRANSFORMERS COMMITTEE

SUBCOMMITTEE MEETING LIST

FALL 2022 MEETING: OCTOBER 16 TO OCTOBER 20
Sheraton/Le Meridien Charlotte; Charlotte, NC USA

Date	Time Start	Time End	Session Title	Track	Chair	Room/Location
10/17/2022	9:30 AM	10:45 AM	WG Guide of FRA for Liquid Filled Transf. C57.149	PCS	C. Sweetser	Mecklenburg 3 (1)
10/17/2022	11:00 AM	12:15 PM	WG Guide for App of Transf. Connections Corrig. C57.105	PCS	R. Verdolin	Symphony 1 (1)
10/17/2022	1:45 PM	3:00 PM	TF Audible Sound Revs & WG Sound Guide C57.136 (S. Antosz)	PCS	R. Girgis	Symphony 4 (1)
10/17/2022	3:15 PM	4:30 PM	TF PCS Cont. Revisions to C57.12.00	PCS	T. Ansari	Symphony 4 (1)
10/17/2022	4:45 PM	6:00 PM	TF Inverter Transf Precautions on Ground Shields C57.159	PCS	P. Hopkinson	Symphony 2,3 (1)
10/18/2022	9:30 AM	10:45 AM	TF PCS Cont. Rev. to Test Code C57.12.90	PCS	H. Sahin	Symphony 4 (1)
10/18/2022	1:45 PM	3:00 PM	WG Sw Transients Ind by TR/Bkr Interaction PC57.142	PCS	J. McBride	Symphony 6,7 (1)
10/19/2022	3:00 PM	4:15 PM	SC Performance Characteristics	PCS	R. Verdolin	Symphony 4 (1)
10/17/2022	9:30 AM	10:45 AM	TF Guide for Tank Rupture Mitigation C57.156	Power	P. Zhao	Symphony 6,7 (1)
10/17/2022	9:30 AM	10:45 AM	WG Standard Requirements for Tap Changers C57.131	Power	C. Colopy	Symphony 1 (1)
10/17/2022	11:00 AM	12:15 PM	WG Guide for Trfs Direct Connect to Generators C57.116	Power	W. Li	Mecklenburg 1,2 (1)
10/17/2022	1:45 PM	3:00 PM	WG Guide for Phase Shifting Transf C57.135	Power	E. Schweiger	Symphony 1 (1)
10/17/2022	3:15 PM	4:30 PM	WG Transformer Monitoring C57.143	Power	M. Spurlock	Mecklenburg 1,2 (1)
10/17/2022	4:45 PM	6:00 PM	WG Failure Investigation & Reporting PC57.125	Power	H. Sahin	Symphony 1 (1)
10/18/2022	8:00 AM	9:15 AM	TF Guide for Life Tests of Switch Contacts C57.157	Power	A. Sewell	Mecklenburg 3 (1)
10/18/2022	8:00 AM	9:15 AM	WG Condition Assessment Guide PC57.170	Power	K. Mani	Mecklenburg 1,2 (1)
10/18/2022	9:30 AM	10:45 AM	WG Transportation Issues C57.150	Power	G. Anderson	Mecklenburg 1,2 (1)
10/18/2022	11:00 AM	12:15 PM	TF Standard Requirements for Arc Furnace Transf. C57.17	Power	D. Corsi	Symphony 4 (1)
10/18/2022	1:45 PM	3:00 PM	WG Volts per Hertz C57.107	Power	J. Watson	Symphony 4 (1)
10/18/2022	3:15 PM	4:30 PM	TF Guide for Install & Maintenance of Power Trf C57.93	Power	S. Reed	Mecklenburg 1,2 (1)
10/18/2022	4:45 PM	6:00 PM	TF Guide for Paralleling Transformers C57.153	Power	M. Tostrud	Symphony 4 (1)
10/19/2022	1:30 PM	2:45 PM	SC Power Transformers	Power	R. Musgrove	Symphony 4 (1)
10/17/2022	9:30 AM	10:45 AM	WG Std Transf. Terminology C57.12.80	Stds	J. Graham	Symphony 2,3 (1)
10/17/2022	11:00 AM	12:15 PM	WG Guide for Field Testing PC57.152	Stds	M. Ferreira	Symphony 2,3 (1)
10/18/2022	3:15 PM	4:30 PM	WG Geomagnetic Disturbances PC57.163	Stds	D. Blaydon	Symphony 2,3 (1)
10/19/2022	4:30 PM	5:45 PM	SC Standards	Stds	D. Sauer	Symphony 2,3 (1)
10/17/2022	4:45 PM	6:00 PM	WG Submersible Transf. C57.12.24	STNP	B. Garcia	Mecklenburg 3 (1)
10/18/2022	11:00 AM	12:15 PM	WG Liquid-immersed Sec. Network TRs C57.12.40	STNP	D. Blew	Mecklenburg 1,2 (1)
10/18/2022	1:45 PM	3:00 PM	WG Guide for Mitigating Corrosion on Sub Trfs C57.12.53	STNP	W. Elliott	Symphony 2,3 (1)
10/19/2022	11:00 AM	12:15 PM	SC Submersible Transf. & Network Protectors	STNP	G.Payerle	Symphony 2,3 (1)

SPOUSE/COMPANION TOUR

Monday, October 17, 2022

Historic Rosedale & Candle Making

We will begin the day with a visit to historic Rosedale. Rosedale has been a part of Charlotte's history since 1815. In those early days, it was three miles outside of town. Today, it is an urban oasis that has survived the development around it. Located on about nine acres, the restored historic house, recreated blacksmith shop, and verdant and blooming gardens provide visitors an opportunity to experience a look back at life in earlier times, as well as an invitation to explore the grounds and the big tree museum. historicrosedale.org

Next up is lunch, served family style, at Rooster's Wood-Fired Kitchen. Their high-quality, seasonally-inspired Southern cuisine with Spanish, French and Italian influences is a tribute to all the craftsmen, artisans and small local farmers with whom they have built strong relationships over the years. roosterskitchen.com

Following lunch, you will craft your own signature scented candle at Paddywax Candle Bar. Choose your favorite vessel and fragrance before being led through each step of the candle-pouring process, and take home one of the most versatile and functional candle brands on the market. Paddywax.com

Lunch Menu

Please advise of any special dietary needs at registration.

First Course:

- Brisket Burger
- Vegetarian Spinach Salad
- Roasted Chicken Flatbread

Family shared sides:

- Margaux's Succotash
- Frites

Dessert:

- Chocolate Torte

// served with coffee, tea or soft drink //

WEAR COMFORTABLE WALKING SHOES!

Itinerary (times are approximate)

~ Bottled water and snacks provided on bus ~

9:30 am:	Depart Sheraton/Le Méridien on coach bus (bus pickup outside hotels' main entrance)
10:00 am:	Arrive at Historic Rosedale for private tour
11:15 am:	Depart on bus for Rooster's
11:30 am:	Lunch
12:45 pm:	Depart on bus for Paddywax Candle Bar
1:00 pm:	Make your own candle
3:00 pm:	Depart on bus for Sheraton/Le Méridien
3:15 pm:	Arrive back at hotel complex

Meeting hosted by

Attendance is limited to one mini bus...REGISTER EARLY!

DINNER SOCIAL
Wednesday, October 19, 2022
NASCAR Hall of Fame

This evening's event will be held at the NASCAR Hall of Fame, an interactive entertainment venue honoring the history and heritage of NASCAR. Designed to educate and entertain race fans and non-fans alike, this high-tech facility includes artifacts, hands-on exhibits, a 64-foot projection screen with surround sound and Hall of Honor.

In addition to enjoying a movie in the High Octane Theater and viewing all the displays, participate in three interactive exhibits facilitated by Hall of Fame staff. The first—and by far the most popular!—is the Race Simulator. A group of up to 14 guests at a time can experience a 3-minute simulated race experience in a race car that remains stationary. The iRacing software keeps track of each individual's performance, and the person with the fastest elapsed lap wins. Before competing in the Race Simulator, practice in the Qualifying area and get a chance to experience the simulated race track and steering wheel before you race against other attendees! Lastly, the Pit Crew Challenge is a group activity where a 3-person "pit crew" performs a simulated pit stop like you'd see in a NASCAR race. Each team races against the clock to see who can get the fastest pit time. www.nascarhall.com

Buffet Dinner Menu

Please advise of any special dietary needs at registration.

- Caesar salad
- Au gratin potatoes
- Seasonal vegetables
- Garlic herb chicken breast
- Braised beef tips and mushrooms
- Vegetable lasagna
- Dessert
- Iced tea and water
- Freshly brewed regular coffee, decaffeinated coffee & assorted teas

Itinerary (times are approximate)

6:15 pm: Walk to NASCAR Hall of Fame (~10 minutes/4 blocks) or shuttle runs continuously from 6:30 pm to 7:30 pm

6:30 pm: Doors to Hall of Fame open, including Gift Shop; enjoy ALL exhibits, hors d'oeuvres and cash bars; credit cards accepted and ATM on site

7:30 pm: Dinner buffet in the Grand Hall surrounded by Glory Road; exhibits remain open until 9:30 pm

8:30 pm: First shuttle bus* departs for the meeting hotel complex; shuttle runs continuously until 9:30 pm

9:30 pm: Exhibits close and last shuttle departs Hall of Fame for meeting hotel complex

Attendance is limited...

REGISTER EARLY!

Meeting hosted by

DUKE ENERGY®

Technical Tour – Tuesday, October 18, 2022

Siemens Energy will be pleased to welcome a tour group from the IEEE at our location at 101 Siemens Avenue, Charlotte NC 28273. Our tour takes roughly two hours, including a short Siemens Energy Charlotte overview and safety briefing.

Products come to life at the Siemens Charlotte Energy Hub, a major manufacturing and service location specializing in power generation equipment. Opened in 1969, the site originally encompassed a generator and steam turbine facility and added gas turbine manufacturing and servicing in 2011. The campus follows LEAN manufacturing principles and is committed to a Zero Harm culture with respect to safety, quality, and the environment. Overall, the Siemens Charlotte Energy Hub has more than one million square feet of production and office space, with 80 to 100-foot manufacturing bays. Siemens Energy in Charlotte has become one of the largest manufacturers in the city and also one of the largest among the 250+ Energy companies based in Charlotte.

Itinerary (times are approximate)

6:15 pm	Board bus at Sheraton Charlotte
6:30 pm	Bus departs Sheraton Charlotte
7:00 pm	Facility arrival and enjoy catered Carolina BBQ meal
8:00 pm	Start to tour the manufacturing areas of the Siemens Energy Hub
9:30 pm	Bus leaves facility back to the Sheraton Charlotte hotel
10:00 pm	Arrive back at Sheraton Charlotte

TOUR IS OPEN TO ALL**

Spouses/Companions are welcome.

Please sign up on-line when you register for the meeting.

Tour participants must bring valid government-issued ID (passports for non-U.S. citizens) and wear sleeved shirts, long pants, and flat, hard soled, closed shoes. Regular business flats or running / hiking shoes are fine. Siemens Energy will provide safety glasses. All tour participants must be fully mobile in the event of an emergency (no crutches, canes, etc.).

* Please advise of any special dietary needs at registration

* Capacity on the tour is limited to one bus

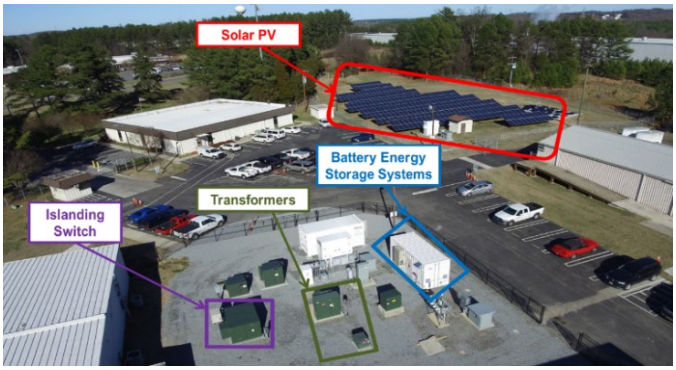
** Siemens Energy reserves the right to approve guests prior to the event date, and any required adjustments will be communicated in advance of the visit.

Please note that Siemens Energy will provide a meal for this tour. If you register and your plans change, please inform IEEE staff ASAP, so Siemens Energy can adjust its counts for the caterer.

Technical Tour

Duke Energy's Emerging Technology Center

Thursday, October 20, 2022



Participate in a technical tour of Duke Energy's Emerging Technology Center, where R&D takes place and new approaches are tested for broad application on today's and tomorrow's grid.

Our purpose:

- Support solution development domains to deliver pipeline growth
- Inform internal business units of technology trends
- Harness innovation and enhance Duke Energy's reputation
- Drive strategic growth opportunities
- Identify resulting growth opportunities and risks in a shifting technology, customer and regulatory environment

See a real microgrid!

Duke's Emerging Technology Center implements an idea conceived in 2014 to build a research and development center to alleviate testing on customer circuits, establishing a microgrid that can seamlessly island the R&D lab from the utility grid and then seamlessly reconnect. It also provides a forum for 25 different vendors working on a project called "Coalition of the Willing."

Itinerary (times are approximate)

12:15 pm:	Board bus at Sheraton/Le Meridian Hotel
12:30 pm:	Bus departs Sheraton/Le Meridian Hotel
12:30 pm – 1:15 pm:	Enjoy a box lunch* while relaxing on the ride to the facility
1:30 pm – 3:00 pm:	Tour the Duke Energy Emerging Technology Center
3:10 pm:	Bus leaves for Sheraton/Le Meridian Hotel
3:30 pm:	OPTION: Bus can stop at Charlotte Douglas Intl Airport upon request
3:45 pm:	Arrive back at Sheraton/Le Meridian Hotel

TOUR IS OPEN TO ALL BUT LIMITED TO 20 ATTENDEES

(small fee will be charged to cover bus cost)

NOTE: Closed toe shoes are required to attend this tour.

Spouses/Companions are welcome.

*Please advise of any special dietary needs at registration.

Sign up on-line when you register for the meeting.

Please note that Duke Energy will provide a meal for this tour. If you register and your plans change, please inform IEEE staff ASAP, so Duke Energy can adjust its counts for the caterer.

IEEE PES Transformers Committee
Fall 2022 Meeting
Charlotte, North Carolina

Impact of GIC on Power Transformers and Power Systems – Case Studies

— Technical Presentation —
Thursday, October 20, 2022

By Ramsis Girgis, Thomas Hartmann, Gary Hoffman, Mark Olson, Anastasia O'Malley, Chris Slattery

1. Abstract

Geomagnetically induced currents (GIC) can cause part-cycle core saturation depending on the magnitude of the GIC and the design of the transformer. This core saturation leads to additional Var demand and injects current harmonics into the grid. When large enough, a GMD can result in voltage instabilities and subsequent blackouts. Another consequence of core part-cycle saturation is additional heating of transformer windings and structural parts.

In May 2013, FERC issued Order 779, which directs NERC to submit reliability standards that address the impact of GMD on the reliable operation of the bulk power system. In response to this order, NERC developed the GIC TPL007 Standard. In response to requirements of this standard, power utilities in North America have been performing GIC system flow studies, GIC magnetic and thermal assessment studies of their fleet of power transformers, GIC system vulnerability studies and many installed GIC monitoring devices.

The IEEE Transformers Committee also produced the GIC Guide, IEEE PC57.163-2015, which is now being updated with the most recent information and new developments.

2. Learning Objectives

This tutorial provides opportunities to learn about the following:

- Objectives, tasks and timeline of NERC's GIC Standard TPL007
- Experiences of two utilities with GIC fleet assessment
- GIC thermal capability of core and shell form power transformers
- FirstEnergy's experience with GIC additional VAR demand study
- On-line monitoring of GIC and its thermal impact on transformers in real time

3. Learning Outcomes

By attending this tutorial, attendees will gain an understanding of the following:

- What is required of power utilities to comply with requirements of the TPl007 Standard
- GIC magnetic and thermal fleet assessments
- GIC thermal capability of different power transformer types and designs
- Impact of correct calculation of VAR demand
- Opportunities for on-line monitoring of thermal impact of GIC on a transformer in real time

4. Presenters' Biographies

Dr. Ramsis Girgis (IEEE Life Member) is presently the leader of Hitachi Energy's global R&D activities in the areas of Transformer Core Performance, GIC, and Low Noise Transformers. He has lead Westinghouse's, ABB's, and now Hitachi Energy's investigations in the area of magnetic and thermal effects of GIC on power transformers since the 1989 GMD event. Over the past 12 years, he has contributed to the activities of the NERC GMD task force, was a main contributor of the original IEEE GIC Guide and is presently the Vice Chairman of the working group updating the IEEE GIC Guide with latest information on the subject. Ramsis received his Ph.D. degree from the University of Saskatchewan, Canada, in Electrical Power Engineering in 1978. In 2013, he was awarded the IEEE Standards medallion for "Significant contributions to the Transformer Industry and Transformer Standards." In the mid 1980s, Dr. Girgis was the Technical Advisor, representing the US National Committee in the IEC "Power Transformers" Technical Committee – 14.

Dr. Thomas Hartmann has over 30 years of experience in the electric power industry. For the past five years, he has been working as an equipment expert for Pepco, the Washington, DC utility. Thomas' technical experience ranges from gas and oil-filled to solid insulated equipment. In research and development, he has dealt with the issue of magnetic losses, introduced the concept of extended range current transformers and made contributions to the field of dry-type power transformers. In the area of operations, Thomas took part in starting and developing two HV instrument transformer factories, one in Germany and one in the U.S. He also restructured a third factory in Mexico. In sales and marketing, he covered markets such as North America, Australia and Russia. In addition to working in the U.S. for a number of years, Thomas held positions in Germany, Mexico and the Ukraine. He graduated from Dresden University of Technology in Germany with a PhD in Electrical Engineering.

Gary Hoffman is an IEEE Life Fellow and Founder and President of Advanced Power Technologies. Prior to starting APT, Gary was the general manager of ALSTOM T&D Protection and Control Division in the United States. Prior to ALSTOM, he was with RFL Electronics, where he held various executive positions including Senior Vice President of Sales and Marketing, Vice President of Operations and Vice President of Engineering. Mr. Hoffman holds 13 U.S. and foreign patents in the areas of transformer monitoring and protection. He is also Working Group Chair of C57.12.10, C57.116, PC57.167 as well as Vice Chair of the working group that developed the original IEEE GIC Guide PC57.163. He is a member of CIGRE and a member of WG A2.57 and A2/D2,65. He is also Past Chair of the IEEE SA Standards Board, member of the IEEE-SA Board of Governors. He holds a BS in Engineering and MS in Electrical Engineering from the State University of New York at Stony Brook.

Mark Olson is the Manager of Reliability Assessments at the North American Electric Reliability Corporation (NERC). Since joining NERC in 2012, Mark has led several projects for developing reliability standards to reduce operating, cyber and physical risks to the reliability and security of the North American electric grid. He coordinates NERC's research partnerships and data collection program for assessing and reducing space weather impacts to the interconnected transmission system. Before joining NERC, Mark was a career officer in the U.S. Navy. He has a master's degree in electrical engineering from the Naval Postgraduate School and a bachelor's degree from the U.S. Naval Academy.

Anastasia O'Malley has been with Consolidated Edison Company of New York since 1990. She is currently a project manager in the Asset Management Section of Central Engineering and provides guidance on the purchase, installation, maintenance and replacement of power transformers on Con Edison's fleet. Anastasia is an active member of the IEEE PES Transformers Committee and served as an officer of the Doble Engineering Transformer and Advisory Committees. She also collaborates with EPRI to support projects that impact transformer condition assessment and life extension. She received her MSc in Electrical Engineering from Manhattan College, a BSc in Mechanical Engineering from Rutgers University and an MBA from Fordham University.

Christopher Slattery joined FirstEnergy in 2007 as a Substation Design Engineer. He moved into a role with FirstEnergy's Major Equipment Group in 2012 and began managing FirstEnergy's External Engineering, Equipment and Standards Group in 2015. He is currently in Distribution Engineering Support as the Manager of Applications and Systems Support while continuing as a transformer SME and advisor for FirstEnergy's Transmission and Substation teams. Christopher graduated from Ohio State University in 2004 with a BSc in Electrical Engineering.

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Grid-Ready, Flexible Transformers to Enhance Resiliency and Operational Flexibility of Transmission Networks

— Technical Presentation —
Thursday, October 20, 2022

By Enrique Betancourt, Juan Castellanos, Dr. Ibrahima Ndiaye

1. Abstract

Power transformers are one of the most difficult electric transmission network components to replace in emergency situations. If a spare is not available, a new power transformer must be designed and manufactured, a process that can span many months, even if raw materials and components are readily available. The use of mobile substations and transformers as well as the application of available spares can provide an adequate temporary response when transformers fail due to high overloads, excessive ambient temperatures or other damaging weather events. Flexible characteristics of such emergency components, such as reconnectable voltage, significantly enhance network resilience at generally affordable costs.

In the case of less frequent but more severe events that could cause the failure of massive numbers of transformers, the interconnected grid could collapse for an extended period of time. Repair of failed units is frequently an option; however, as with new transformers, repairs are dependent on availability of long lead-time components and field service personnel.

Prolec GE and GE Research developed a solution specifically for large utilities or groups of utilities where different voltages and impedances may be required when considering the purchase of spares. Instead of being solely dependent on a large pool of highly customized spare units, flexible transformers with multiple low voltage ratings and adjustable impedance capabilities could be a simpler and more cost effective solution, not only for emergencies, but as permanent replacements. This subject has been the topic of U.S. DOE reports and is currently being evaluated by different utility programs, including Grid Assurance, EPRI's STEP and others.

In response to two RFPs from the DOE, the concept of a Flexible Transformer was proposed and tested first by the development of 345kV and 230kV high voltage designs and then by a 100 MVA, 165/69kV prototype autotransformer that was installed on the transmission network of Cooperative Energy Utilities. This process started in September 2016 and was recently completed by successfully field testing the 100 MVA prototype transformer in its operating environment.

In this tutorial, we will present the concept of the Grid-Ready, Flexible Transformer (GRFT), and the electrical system landscape that makes a flexible replacement strategy necessary. We will outline the experience gained by funding, developing, building and testing the prototype unit described above and the challenges associated with integrating such a transformer with common protection systems. Finally, we will discuss opportunities to enhance the flexible operation of future networks with the expectation that those networks will have a higher content of renewable generation resources and energy storage systems not available full-time.

2. Learning Objectives

This presentation is intended to introduce the new concept of GRFT from a technical perspective, to highlight its inherent simplicity and reliability. New operating features come along with the concept of being able to adjust the impedance of a transformer on-line and at full load, allowing the GRFT to compete in the low range with phase shifters. An off-line adjustable impedance will also be demonstrated as an attractive feature.

As a second general interest subject, authors will share experience on overcoming typical challenges for an innovation project involving strong interaction among manufacturers (research, technology development, engineering, manufacturing and test entities), research centers (conceptual validation, specialized testing and interface with funding entities) and users (supply, substation controls, protections, installation and maintenance, interface with TSO).

3. Learning Outcomes

By attending this tutorial, attendees will gain an understanding of the following:

- Typical composition in power ratings, voltages and impedance levels of a population of transmission transformers
- Potential for reduction of the number of replacement units by application of flexible transformers
- Impact of having an off-line adjustable impedance, which would allow for better matching of local replacement conditions and could even be exploited by evolving needs of the network
- Impact of having an on-line adjustable impedance, which would allow for the reduction of short circuit currents at convenience or for regulation of active power flow in a meshed network

4. Presenters' Biographies

Enrique Betancourt-Ramirez is currently Technical Manager for Prolec GE's transformer plants, with responsibility to develop technology transfer strategies and control of advanced technology projects. Enrique was an assistant professor for High Voltage Engineering and Simulation of Electromagnetic Transients at the Graduate School of Nuevo Leon State University (UANL) from 1992 to 2012 and is currently a member of the IEEE PES Transformers Committee and of CIGRE SC A2. He is co-developer of several patents, has published several scientific and technical articles and organized multiple Transformer Technology Seminars on behalf of Prolec GE. Enrique graduated from Nuevo Leon State University (UANL) in 1983 with a Bachelor of Science Degree in Electromechanical Engineering. In 1988, he received his master's degree in Electric Power Engineering from the Technical University of Aachen (RWTH-Aachen).

Juan Castellanos-Gonzalez has worked in a number of different areas within Prolec GE since 1994, including design, manufacturing, test, R&D, forensic engineering and standards. He is author of several technical articles published by IEEE, CIGRE and other institutions. He is a member of the IEEE Transformers Committee and the IEC Technical Committee 14 (Transformers), and the convenor of the Mexican Transformers Committee. He is a technical expert listed in IEC TC14 for thermal design of electrical transformers, overload capacity and thermal evaluation tests. Juan obtained his BSEE and MSEE degrees at the ITESM- Monterrey (Monterrey Tech) in 1991 and 1994 respectively.

Dr. Ibrahima Ndiaye received his Ph.D. from University of Quebec in Chicoutimi in 2007. He has over 15 years of experience in power systems and high voltage engineering and leads technical teams on both government and internal programs. His research includes power transformer design, power system transients, medium voltage DC technologies and integration of renewable energy resources. He has authored and co-authored over 20 scientific papers and technical reports for utility customers. Dr. Ndiaye is also a professional engineer registered in the Ordre des Ingenieurs du Quebec.