NEETRAC
National Electric Energy Testing, Research, and Applications Center

NEETRAC NEWS

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In This Issue...

NEETRAC LEADERSHIP

Rick Hartlein
Interim NEETRAC Director
Rick.Hartlein@neetrac.gatech.edu

Joe Goldenburg
Associate Director
Joe.Goldenburg@neetrac.gatech.edu

Caryn Riley
Associate Director
Caryn.Riley@neetrac.gatech.edu

Laquita Wright
Director of Business Operations
Laquita.Wright@neetrac.gatech.edu

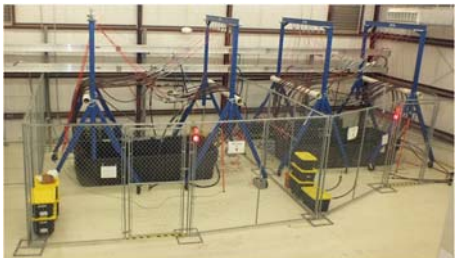
Baseline Project Recently Completed

The following Baseline project closeout was presented at the May 2022 Management Board Meeting. The report will be finalized and distributed to eligible Members in the coming months. In the meantime, please contact the project PI listed below for more information.

Medium Voltage Joints - Research into Endurance in Wet Environments

Baseline Project Number 19-081
PI: Thomas Parker, thomas.parker@neetrac.gatech.edu

The standards that govern the qualification test for underground distribution cables insulated with EPR or TRXLPE includes a one-year accelerated aging test. However, the standard that governs the qualification of underground cable joints includes only a 30-day accelerated aging test. In this project, NEETRAC continued the work performed under the 16-061 project by testing four additional joint designs and studying how each performed relative to a typical 300-foot field cable run.



Samples under test, joints were sub-merged in the tanks(~1 ft depth) with spacing off the bottom of the tank and between each other.

The joint designs were installed per the manufacturers' instructions and commercial kits were used. The test program was proven to age the joint designs tested. All of the tested joint designs exhibited decreased ac breakdown voltage with aging time; however, the ac breakdown voltage of the joints deteriorated at different rates as they aged. Most of the joint designs aged faster than cable when aged in the same way that cable is aged for qualification. Joints of one design did fail during aging, but the failures appeared to be caused by overheating connectors. Additionally, the HVTT breakdown paths to ground through the joints varied, but each joint design had a predominant path.

Through the results of this project, utilities now have more engineering information to make decisions about the application of joints in underground systems and underground system repair strategies. Manufacturers can use this work to support industry discussions about joint qualification programs and examine new design strategies. Both groups can more effectively understand the interaction of cable and joints and their combined impact on system reliability.

Baseline Project Recently Launched

NEETRAC launched the following Baseline project proposals presented during the May 2022 Management Board Meeting. If you would like to serve as an advisor for any of these projects, please email suzanne.schmidle@neetrac.gatech.edu and indicate which project interests you.

Evolution of Diagnostic Technologies Deployed for Power Cable Systems

Baseline Project Number 22-099

PI: J.C. Hernandez, jean.hernandez@neetrac.gatech.edu

The underground cable system infrastructure is complex and aging. As the system ages, failures become more and more frequent, generally following a bath-tub curve model. This brings concerns with electric reliability and, if not addressed, the old infrastructure will not support a reliable system operation. To address this issue, utility engineers need tools to address the failures before they happen as part of a predictive condition assessment cable testing and replacement program. These tools already exist; in fact, in 2015, NEETRAC concluded a major project (i.e., Cable Diagnostic Focused Initiative) that looked at all available power cable diagnostic technologies at the time. This project was supported by the Members, the U.S. Department of Energy, and other interested parties. Since 2015, Members continue to request information on diagnostic tools and seek advice on the diagnostic technologies. Additionally, power cable systems, as well as the technologies, continue to evolve. New alternative cable system restoration options are being considered, considerable amounts of diagnostic data have been generated, and applicable standards are being updated. Therefore, this project looks at the evolution of cable diagnostic technologies in several aspects and gathers and analyzes cable diagnostic data in order to provide NEETRAC Members with the most recent information on the applicable alternatives, practices, performance, and diagnostic tools.

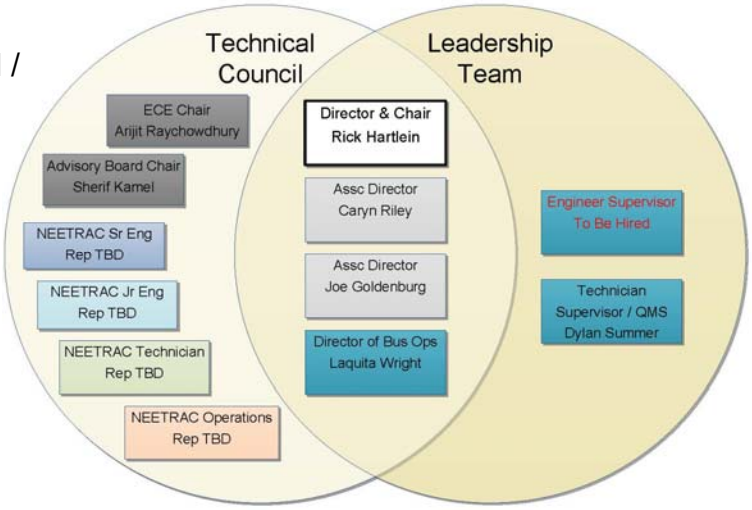
May 2022 Management Board & Advisory Board Meetings

After six virtual Management Board meetings, NEETRAC was excited to welcome the Management Board and Advisory Board representatives back to Atlanta! On May 18-19, approximately 50 representatives received updates on active and recently completed Baseline projects. In addition to the meeting, attendees visited the NEETRAC campus in Forest Park, GA for dinner, drinks, tours, and demos. We also got the chance to finally celebrate NEETRAC's 25th Anniversary! It was wonderful to see everyone again and have the chance to catch up and network with each other.

NEETRAC Reorganization & Career Opportunities

As discussed at the January NEETRAC Management Board Meeting, NEETRAC is working to update our organization to make it more relevant for today's workplace environment. This included a review of our organizational structure with an eye towards providing employees with more autonomy and greater advancement opportunities. The resulting reorganization was announced to the Members at the May Advisory Board Meeting. The new structure will:

a) Offer NEETRAC staff more opportunities to provide input into how NEETRAC is governed / managed
b) Offer NEETRAC Members more input on NEETRAC's strategic operations
c) Provide better training and development opportunities
d) Expand and more clearly define progression opportunities
e) Increase leadership and growth opportunities
f) Separate technical and supervisory responsibility to reduce workload issues and facilitate c), d) and e) above
g) Improve the Director selection process



In addition, NEETRAC will be overseen by two groups—the Technical Council and the Leadership Team. The Technical Council is made up of members of the NEETRAC staff, the Georgia Tech ECE Chair, and Member representative, Sherif Kamel, who was elected at the May 2022 Management Board Meeting. This group provides high level governance while the Leadership Team, made up of NEETRAC managers, provides day-to-day leadership and management of NEETRAC activities. The chart above shows the way these teams work together.

NEETRAC has also made a renewed effort into filling some of the job positions made vacant over the past few years. The following positions are currently open and accepting resumes.

- Research Engineer I – Open Rank **Job ID 245630**
- Research Engineer – Open Rank **Job ID 242397**
- Director of NEETRAC (Research Engineer – Open Rank) **Job ID 243955**
- Tech Temp (Technician) **Job ID 241822**

If you or anyone you know may be interested in any of these positions, the job descriptions and application instructions can be accessed at https://hr.gatech.edu/careers. When visiting this webpage, select "**start your search here**" under external applicants and then select "**view all jobs**" and search "**NEETRAC**".

New NEETRAC Staff Member

Please join us in welcoming our newest staff member, Qasim Khan. Qasim received a Bachelor degree in electrical engineering in 2012 and a Masters degree in high-voltage and insulation engineering from Aligarh Muslim University, India in 2015. Additionally, he received a Ph.D. in electrical engineering from Texas A&M University in 2022. Qasim conducted research in the area of high-voltage engineering and diagnostic techniques at many universities around the world. He has authored many research items, including transactions, journals, and conference proceedings. His current research interests include fault diagnostics, computational modeling, condition monitoring, risk assessment, partial discharge analysis, aging, and nano-dielectrics. Dr. Khan is also a member of the IEEE- Dielectric and Electric Insulation Society.

New NEETRAC Member

NEETRAC would like to welcome our newest Member, Slacan Industries. Slacan Industries serves the electrical utility and communication market with a complete line of distribution, EHV transmission, and other poleline hardware, as well as substation and structural steelwork. Slacan operates from a stand-alone 150,000 sq.ft. facility, on over 11 acres of land, in Brantford, Ontario, 70 miles from Toronto and Buffalo.

2022 IEEE PES T&D Show

Thank you to everyone who stopped by the NEETRAC booth at the April IEEE PES T&D Show! It is great to see everyone in person again and to share what NEETRAC has been up to and what to expect from NEETRAC in the coming months and years.

New Faculty Advisor for IEEE PES at Georgia Tech

Please join me in welcoming Dr. Jean Carlos Hernandez-Mejia, Senior Researcher at NEETRAC and Georgia Tech, as the new Faculty Advisor for IEEE PES at GT. We are extremely grateful for the guidance and support from our previous faculty advisor, Professor Lukas Graber. We are also very thankful to Dr. Hernandez-Mejia for taking the time, and excited for this new phase of our student chapter.

Georgia Tech NEETRAC
National Electric Energy Testing, Research and Applications Center

NEETRAC Campus

5351 Kennedy Road
Forest Park, GA 30297

Telephone: 404-675-1875

Fax: 404-675-1885

www.neetrac.gatech.edu

Management Board Meetings

The next three Management Board meetings have been scheduled for the following dates:

September 21 - 22, 2022

January 25 - 26, 2023

May 17 - 18, 2023

For details, please visit the Member Section of the NEETRAC website at www.neetrac.gatech.edu.

2022/2023 NEETRAC Member Management Board Representatives

1. Aluma-Form…….. Pete Landsgaard
2. Ameren…… James Huss
3. American Electric Power…….. Jim Salerno
4. BC Hydro……Fred Dennert
5. Borealis Compounds, Inc.……..Susan Song
6. Conductores Monterrey…… Raul Garcia
7. Consolidated Edison…… Frank Doherty
8. Dominion Energy…….. Liz Sullivan
9. Dow ……..…….. Paul Caronia
10. DTE Energy……TBD
11. Duke Energy……...Chris Fletcher
12. Eaton…….. Alan Yerges
13. Exelon…… Lisa Perrone
14. FirstEnergy……..Randy Coleman
15. Gresco Utility Supply……..Brad Schafer
16. Hubbell Power Systems……Charles Worthington
17. LS Cable & System……Tim West
18. Nova Scotia Power……Jim McFadgen
19. NRECA……Reed Cooper
20. Okonite……...Bill Crawford
21. Pacific Gas & Electric…….. Jim Gill
22. PPL Corporation……..……Chris Fatzinger
23. Prolec GE…….. Carlos Gaytan
24. Prysmian Group……Jared Weitzel
25. Public Service Electric & Gas..…... Ed Gray
26. Rauckman Utility Products……..Jim Rauckman
27. S&C Electric……..Marshall Mauney
28. San Diego Gas & Electric……..…. Kevin Galloway
29. Slacan Industries……..Ian Pollock
30. Smart Wires…….. Haroon Inam
31. Southern California Edison……Alan Kasanow
32. Southern Company……..Michael Pearman
33. Southern States, LLC…….. Joe Rostron
34. Southwire Company……... Yuhsin Hawig
35. Tacoma Power……..Joe Rempe
36. TE Connectivity……Brian Ayres
37. TVA…… Steven Coley
38. WEC Energy Group…….. Michael Smalley