

72nd Annual Georgia Tech Protective Relaying Conference

May 2-4, 2018

Georgia Tech Hotel & Conference Center - Atlanta, GA

Tuesday May 1, 2018

4:30 - 6:30 PM Registration – Salon 1-2-3-4-5-6

5:00 - 9:00 PM Vendor Exhibits Open

Wednesday May 2, 2018

8:30 AM - 5:30 PM Open Registration

Salon 1-2-3-4-5-6 Session Chair: **Marion Cooper**, POWER Engineers
Backup: **Andre Smit**, Siemens Industry

7:50 - 8:00 AM **Conference Opening – Welcoming Remarks**
Sakis Meliopoulos, School of Electrical and Computer Engineering

8:00 - 8:35 AM **What's New in IEEE Standard C37.113 - 2015 – Guide for Protective Relay Applications to Transmission Lines**
WA-0-P1 **Gustavo Brunello**, IEEE Power System Relaying and Control Committee

8:35 - 9:10 AM **Hidden Failure Detection in Protection System via Centralized Substation Protection**
WA-0-P2 **Sakis Meliopoulos**, **George Cokkinides**, Georgia Institute of Technology
Hussain Albinaly, Aramco
Paul Myrda, **Evangelos Farantatos**, Electric Power Research Institute

9:10 - 9:25 AM *Break*

Salon 4-5-6 Session Chair: **Mike Collum**, Schweitzer Engineering Laboratories, Inc.
Backup: **Alexander Apostolov**, OMICRON electronics

9:25- 10:00 AM **Analysis of Ground Distance Protection Response on a Non-Bolted Fault at National Grid**
WA-1-P1 **Yujie Irene Lu**, **Song Ji**, National Grid

10:05 - 10:40 AM **Adaptive Protection – What Does It Mean and What Can It Do?**
WA-1-P2 **Roy Moxley**, **Farel Becker**, Siemens Industry

10:45 - 11:20 AM **A Creative Line Differential Protection Scheme for the Hudson River Crossing Section of a 345kV Transmission Line**
WA-1-P3 **Mike Kockott**, **Bharadwaj Vasudevan**, ABB Inc.
Alex Echeverria, **Eric Anderson**, NYPA

11:25 - 12:00 PM **Analyzing Faulted Transmission Lines: Phase Components as an Alternative to Symmetrical Components**
WA-1-P4 **Steven Chase**, **Sumit Sawai**, **Amol Kathe**
Schweitzer Engineering Laboratories, Inc.

12:00 - 1:15 PM *Lunch - On Your Own*

Salon 4-5-6 Session Chair: **Stephen Ladd**, Duke Energy
Backup: **Colin Mott**, Dominion Virginia Power

1:15 - 1:50 PM **High-Impedance Differential Applications With Mismatched CTs**
WP-1-P1 **Russ Franklin**, Alliant Energy
Hossein Nabi-Bidhendi, ABB Inc.
Michael Thompson, **Héctor Altuve**, Schweitzer Engineering Laboratories, Inc.

1:55 - 2:30 PM **Interfacing IEC 61850 Station Bus Protection to Existing Protection in a Brown-Field Substation**
WP-1-P2 **Donald Pratt**, **Mark Seiter**
Consolidated Edison Company of New York, Inc.

2:35 - 3:10 PM **Distance Protection: Why Have We Started With a Circle, Does It Matter, and What Else Is Out There?**
WP-1-P3 **Edmund Schweitzer**, **Bogdan Kasztenny**
Schweitzer Engineering Laboratories, Inc.

3:10 - 3:40 PM *Break*

3:40 - 4:15 PM **Tutorial on Protection of Three Single-Phase Transformers**
WP-1-P4 **Stephan Picard**, GE Grid Solutions
Yujie Yin, Quanta Technology, LLC
Nicolas Keough, Nalcor Energy

4:20 - 4:55 PM **Performance of Differential Protection Under the Influence of Ferroresonance**
WP-1-P5 **Hemanth Kumar Vemprala**, **Bruce Mork**
Michigan Technological University

4:55 PM *Adjourn*

5:00 - 9:00 PM Vendor Exhibits Open

Salon 1-2-3 Session Chair: **Craig Wester**, GE Grid Solutions
Backup: **Tom Austin**, Southern Company

9:25- 10:00 AM **Summary of Revision, IEEE C37.119-2016, Guide for Breaker Failure Protection of Power Circuit Breakers**
WA-2-P1 **Bruce Mackie**, IEEE Power System Relaying and Control Committee

10:05 - 10:40 AM **A Unified Approach to Controlled Switching of Power Equipment**
WA-2-P2 **Gabriel Benmouyal**, **Normann Fischer**,
Douglas Taylor, **Mark Talbott-Williams**, **Ritwik Chowdhury**
Schweitzer Engineering Laboratories, Inc.

10:45 - 11:20 AM **Deploying Digital Substations: Experience with a Digital Substation Pilot in North America**
WA-2-P3 **Wojciech Szela**, **Edward Gdowik**, PECO Philadelphia
Harsh Vardhan, **Mike Ramlachan**, GE Grid Solutions

11:25 - 12:00 PM **Circuit Breaker Ratings – A Primer for Protection Engineers**
WA-2-P4 **Joe Rostron**, Southern States, LLC
Bogdan Kasztenny, Schweitzer Engineering Laboratories, Inc.

12:00 - 1:15 PM *Lunch - On Your Own*

Salon 1-2-3 Session Chair: **Benjamin Kazimier**, Basler Electric Company
Backup: **Flavio Graciaa**, Southern Company

1:15 - 1:50 PM **AEP Experience with Sub-Synchronous Oscillation Phenomenon**
WP-2-P1 **Zachary Campbell**, **Kiril Andov**, **Shawn Coppel**, American Electric Power

1:55 - 2:30 PM **Directional Element Design for Protecting Circuits with Capacitive Fault and Load Currents**
WP-2-P2 **Mike Benitez**, Electric Power Systems International
Joe Xavier, **Karl Smith**, **David Minshall**, ABB Inc.

2:35 - 3:10 **Microgrid Protection and Control Strategies at Duke Energy**
WP-2-P3 **Aleksandar Vukojevic**, Duke Energy

3:10 - 3:40 PM *Break*

3:40 - 4:15 PM **Teleprotection with MPLS Ethernet Communications - Development and Testing of Practical Installations**
WP-2-P4 **Tariq Rahman**, **James Morales**, San Diego Gas & Electric Company
Eric Udren, **Solveig Ward**, Quanta Technology, LLC
Michael Bryson, **Kamal Garg**, Schweitzer Engineering Laboratories, Inc.

4:20 - 4:55 PM **Revision of IEEE Std C37.238, Power Profile for IEEE-1588: Why The Big Changes?**
WP-2-P5 **Galina Antonova**, IEEE Power System Relaying and Control Committee

4:55 PM *Adjourn*

5:00 - 9:00 PM Vendor Exhibits Open

Thursday May 3, 2018

Salon 4-5-6	Session Chair: Bridget Coffman , Santee Cooper Backup: Bruce Mackie , Nashville Electric Service	Salon 1-2-3	Session Chair: Jorge Pardo , Duke Energy Florida Backup: Murty Yalla , Beckwith Electric Company
8:00 - 8:35 AM TA-1-P1	Fault Induced Delayed Voltage Recovery – What it is and How IEC 61850 can Help Alexander Apostolov , OMICRON electronics	8:00 - 8:35 AM TA-2-P1	Considerations and Benefits of Using Five Zones for Distance Protection Ricardo Abboud , Jordan Bell , Brian Smyth Schweitzer Engineering Laboratories, Inc.
8:40 - 9:15 AM TA-1-P2	Utilizing the IEC 61850 Process Bus Architecture for Robust Protection Functionality in Digital Substations Paul Robinson , National Grid	8:40 - 9:15 AM TA-2-P2	Locating Faults Before the Breaker Opens – Adaptive Autoreclosing Based on the Location of the Fault Bogdan Kasztenny , Armando Guzmán , Mangapathirao Mynam , Titiksha Joshi Schweitzer Engineering Laboratories, Inc.
9:20 - 9:55 AM TA-1-P3	CCVT Failures and Their Effects on Distance Relays Sophie Gray , CenterPoint Energy Ryan McDaniel , Derrick Haas , Schweitzer Engineering Laboratories, Inc.	9:20 - 9:55 AM TA-2-P3	Analysis of Cascading Operations for Adjacent Line Faults at National Grid Yujie Irene Lu , Song Ji , Scott Slaski , National Grid
9:55 - 10:10 AM	Break	9:55 - 10:10 AM	Break
10:10 - 10:45 AM TA-1-P4	What Can We Learn From a Failed Transformer? Roy Moxley , Stefan Nohe , Siemens Industry	10:10 - 10:45 AM TA-2-P4	Transmission and Generation Misoperations During an Extreme Weather Event Taylor Raffield , Duke Energy
10:50 - 11:25 AM TA-1-P5	Impact of Incipient Faults on Sensitive Protection Zhihan Xu , Ilia Voloh , GE Grid Solutions Leonardo Torelli , CSE Uniserve	10:50 - 11:25 AM TA-2-P5	Generator Third-Harmonic Protection Explained Ritwik Chowdhury , Dale Finney , Normann Fischer , Jason Young Schweitzer Engineering Laboratories, Inc.
11:40 - 12:30 PM	Conference Awards and Keynote Speaker Keynote Speech: Grid Modernization – Opportunities and Challenges Damir Novosel , President of IEEE Power and Energy Society (PES)	11:40 - 12:30 PM	Conference Awards and Keynote Speaker Keynote Speech: Grid Modernization – Opportunities and Challenges Damir Novosel , President of IEEE Power and Energy Society (PES)
12:30 - 1:30 PM	Lunch - Main Dining Room - 1st Floor	12:30 - 1:30 PM	Lunch - Main Dining Room - 1st Floor
Salon 4-5-6	Session Chair: David Busot , Tampa Electric Company Backup: Russell Patterson , Patterson Power Engineers	Salon 1-2-3	Session Chair: Ralph Mazzatto , Consolidated Edison Backup: Joe Schaefer , Florida Power & Light
1:30 - 2:05 PM TP-1-P1	Critical Telecoms Issues for Grid Control Roger Bryant , Southern Company Leonard Leech , Bruce Mackie , Nashville Electric Service Matt Schnell , Nebraska Public Power District Bob Lockhart , Utilities Technology Council	1:30 - 2:05 PM TP-2-P1	Optimizing HV Capacitor Bank Design, Protection, and Testing Benton Vandiver III , ABB Inc.
2:10 - 2:45 PM TP-1-P2	Protection and Control Dependencies on Time – Applications, Challenges and Solutions Davis Erwin , Pacific Gas & Electric Company Marc Weiss , Marc Weiss Consulting Galina Antonova , ABB Inc.	2:10 - 2:45 PM TP-2-P2	New Method of Capacitors Failure Detection and Location in Shunt Capacitor Banks H. Jouybari-Moghaddam , Western University Tarlochan Sidhu , University of Ontario Institute of Technology Ilia Voloh , Mark Adamiak , GE Grid Solutions Mohammad Zadeh , ETAP
2:45 - 3:15 PM	Break	2:45 - 3:15 PM	Break
3:15 - 3:50 PM TP-1-P3	Beyond the Knee Point: A Practical Guide to CT Saturation Ariana Hargrave , Michael Thompson , Brad Heilman Schweitzer Engineering Laboratories, Inc.	3:15 - 3:50 PM TP-2-P3	What's the Frequency, Heinrich? – From the Æther into the Wire Benjamin Kazimier , Randy Hamilton , Basler Electric Company Rick Gamble , Tennessee Valley Authority
3:55 - 4:30 PM TP-1-P4	Directional Elements - How Fast Can They Be? Armando Guzman , Mangapathirao Mynam , Veselin Skendzic , Jean Leon Eternod Schweitzer Engineering Laboratories, Inc Rafael Martinez Morales , Comision Federal de Electricidad	3:55 - 4:30 PM TP-2-P4	Using Protective Relays for Microgrid Controls Scott Manson , William Edwards Schweitzer Engineering Laboratories, Inc.
4:35 - 5:10 PM TP-1-P5	Testing Superimposed-Component and Traveling-Wave Line Protection Thomas Hensler , Christopher Pritchard , OMICRON electronics Normann Fischer , Bogdan Kasztenny Schweitzer Engineering Laboratories, Inc.	4:35 - 5:10 PM TP-2-P5	A Tutorial on the Application and Setting of Collector Feeder Overcurrent Relays at Wind Electric Plants Martin Best , Stephanie Mercer , UC Synergetic, LLC
5:10 PM	Adjourn	5:10 PM	Adjourn
5:00 - 9:00 PM	Vendor Exhibits Open	5:00 - 9:00 PM	Vendor Exhibits Open

Friday May 4, 2018

Salon 1-2-3-4-5-6	Session Chair: Steve Kunsman , ABB Inc. Backup: Robert Frye , Tennessee Valley Authority
8:00 - 8:35 AM FA-P1	Delayed Current Zero Crossing Phenomena During Switching of Shunt-Compensated Line Paul Nyombi , Xcel Energy Pratap Mysore , Pratap Consulting Services, LLC
8:35 - 9:10 AM FA-P2	Systematic Assessment of Line Loadability Karl Iliev , Ahsan Mirza , Lori Marshall , San Diego Gas & Electric Jeff Shiles , Dmitriy Klempner , Juan Santillan , Southern California Edison Saman Alaeddini , Tim Chang , Guanhua Wen , Mohamed Maria , Quanta Technology, LLC
9:10 - 10:40 AM FA-RWE	Real World Experiences Chair: Andre Smit , Siemens Industry / Vice Chair: Joe Schaefer , Florida Power & Light This session provides a forum for short presentations on "real life" experiences. Presenters will share protection related events in areas of operations, lessons learned, best practices and/or information on unique events.
10:45 - 12:00 NOON FA-PANEL	Panel Session: IEC61850 Digital Substations Chair: Alexander Apostolov , OMICRON electronics / Vice Chair: Steve Kunsman , ABB Inc. This session will provide several short presentations by each panelist and a question & answer period with all panelists on IEC61850 digital substations related to engineering, design, redundancy, cyber security, communications, and testing.
12:00 NOON	Conference Ends