



# 14<sup>th</sup> 2026 IEEE the 14th International Conference on **SMART ENERGY GRID ENGINEERING**

August 19-21, 2026

Ontario Tech University, Oshawa, Canada

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# 2026 IEEE the 14th International Conference on Smart Energy Grid Engineering (SEGE 2026)

August 19-21, 2026

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Journal of  
***Nuclear Engineering***



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## Welcome Speech

Welcome to the 2026 IEEE 14th International Conference on Smart Energy Grid Engineering (SEGE 2026), held at Ontario Tech University, Oshawa, Canada, during August 19–21, 2026.

SEGE 2026 serves as a premier international forum for researchers, engineers, industry professionals, and policymakers to exchange ideas and share the latest advances in smart energy grid engineering. The conference brings together experts from around the world to discuss emerging technologies and innovative solutions for modern energy systems, with a focus on energy generation, grid transmission and distribution, energy storage, electrification, ICT integration, and cybersecurity for energy infrastructures.

This year's technical program features Keynote Speeches, Invited Speeches, and a series of onsite and online technical sessions, providing participants with opportunities to present their latest research, exchange ideas, and establish new collaborations. The conference also includes the Symposium on Plasma and Nuclear Systems (SPANS) and Symposium on Plasma Sciences, Technologies, and Applications (SPSTA), offering additional opportunities for interdisciplinary discussion and academic engagement.

We would like to express our sincere appreciation to all authors, speakers, reviewers, sponsors, and participants for their valuable contributions and continued support. We hope that the conference will inspire meaningful discussions, encourage innovative ideas, and strengthen international collaboration in the field of smart energy grid engineering.

We wish you a productive conference and an enjoyable stay in Oshawa, Canada.

Your Sincerely

SEGE 2026 Conference Organizing Committee

# Conference Committees

## General Chair

Hossam A. Gabbar, Ontario Tech University, Canada

## Technical Program Co-chairs

Ehab El-Saadany, University of Waterloo, Canada

Prasanta Ghosh, Syracuse University, USA

## Local Organization Co-chairs

Martin Agelin-Chaab, Ontario Tech University, Canada

Mustafa Mansour, Ontario Tech University, Canada

Roman Stetsiuk, Ontario Tech University, Canada

Manir Isham, Ontario Tech University, Canada

## Women in Engineering Chair

Ruth Milman, Ontario Tech University, Canada

## Treasurer

Tomasz Pilch, Cracow University of Technology, Poland

## Publication Chair

Siti Aishah, Science Centre Singapore, Singapore

## Session Chairs

Walid Ibrahim, Ontario Tech University, Canada

Sheldon Williamson, Ontario Tech University, Canada

## Award Chair

Filippo Genco, Ontario Tech University, Canada

## Technical Program Committee

Amr Ahmed A. Radwan, Western Washington University, USA

Duong Nguyen, Arizona State University, USA

Hamid Reza Shaker, University of Southern Denmark, Denmark

Simon Schramm, Institute for Sustainable Energy Systems, Munich University of Applied Sciences (MUAS), Germany

Zoya Pourmirza, University of Birmingham, UK

Alexander Sauer, Institute for Energy Efficiency in Production (EEP), University of Stuttgart, Germany

Nikolaos Paterakis, Eindhoven University of Technology, The Netherlands

Peter Lund, Aalto University, Finland

Rania Ibrahim, Arab Academy for Science and Technology and Maritime Transport, Egypt

Georges Abdul-Nour, Université du Québec à Trois-Rivières, Canada

Hui Lin, University of Rhode Island, USA

Thanwadee Chinda, Thammasat University, Thailand  
 Roni Irnawan, Universitas Gadjah Mada, Indonesia  
 Jamshid Aghaei, LUT University, Finland  
 Sami Iqbal, Southeast University, China  
 Gianfranco Chicco, Politecnico di Torino, Italy  
 Shamsodin Taheri, Université du Québec en Outaouais, Canada  
 Oludolapo Olanrewaju, Durban University of Technology, South Africa  
 Esad KADUSIC, University of Sarajevo, Bosnia and Herzegovina  
 Ibrahim Saeh, University Teknologi Malaysia, Malaysia  
 Elizabeth Thompson, Purdue University Fort Wayne, USA  
 Nizar Bouguila, Concordia University, Canada  
 Manar Amayri, Concordia University, Canada  
 Hamed Aly, Dalhousie University, Canada  
 Chua Kian Jon, National University of Singapore, Singapore  
 Esad Kadušić, University of Sarajevo  
 Mazyar Zand, Energy Department, Austria  
 Rania Assem Ibrahim, Strathclyde University, UK  
 Amr Radwan, Western Washington University, USA  
 ASM Ashraf Mahmud, University of West of Scotland, UK  
 Bahram Shafai, Northeastern University, USA  
 Ayaz Ahmad, King Faisal University Al Ahsa, Saudi Arabia  
 Mehmet Bozdal, University of Birmingham, UK  
 Lee McKnight, Syracuse University, USA  
 Amr Munshi, Umm Al-Qura University, Saudi Arabia  
 Daniel Galvan-Perez, Universidad Autónoma Metropolitana, Unidad Azcapotzalco, Mexico  
 Akhtar Hussain, Université Laval, Canada  
 Marc Rosen, Ontario Tech University, Canada  
 Issam Hammad, Dalhousie University, Canada  
 Gonesh Chandra Saha, Lulea University of Technology (LTU), Sweden  
 Ameni Boumaiza, Hamad Bin Khalifa University, Qatar  
 Pascal Lorenz, University of Haute-Alsace, France  
 Amir Ameli, Lakehead University, Canada  
 Edward P. Lyvers, Purdue University Fort Wayne Fort Wayne, USA

# Onsite Guideline

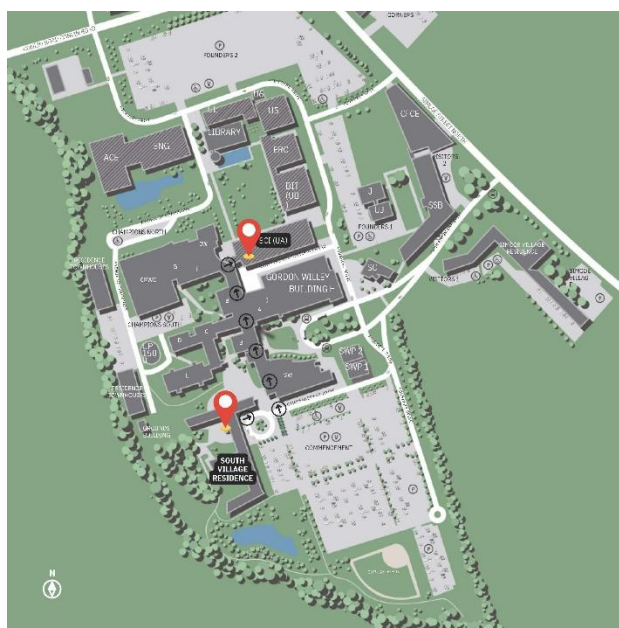
## Conference Venue



Ontario Tech University

Address: Oshawa, 2000 Somcoe Street North L1H7K4 ON

Access Map: <https://ontariotechu.ca/maps/>



## DIRECTIONAL MAP

### SOUTH VILLAGE RESIDENCE TO UA SCIENCE BUILDING

- Depart the South Village Residence
- Use the South Wing Entrance to access the building
- Take the stairs on the left side to the second floor
- Upon reaching the top of the stairs, turn left and proceed straight ahead
- Continue straight, passing Tim Hortons and walk to the end of the hall
- Turn right to enter the UA Building and follow the hallway around the corner
- You are now inside the UA Building
- UA1140 is situated within the main atrium on the right hand side
- UA1240 is situated within the main atrium on the left hand side

## Transportation

- **From Toronto Pearson International Airport (YYZ)**  
GO Train & Bus: About 90–120 min to Ontario Tech University.  
Taxi: About 50–60 min.
- **From Billy Bishop Toronto City Airport (YTZ)**  
GO Train & Bus: About 90 min.  
Taxi: About 60–70 min.
- **From Oshawa GO Station**  
Bus: About 10–15 min.  
Taxi: About 10 min.

## Guideline

### ◆ Onsite Registration & Materials Collection

 **August 19, 2026 (Wednesday, UTC/GMT-4)**

| Time        | Activities                         | Venue      |
|-------------|------------------------------------|------------|
| 08:30-09:30 | Registration & Material Collection | SCI Atrium |
| 13:00-17:00 |                                    |            |

**Onsite registration process:**

- Tell your Paper ID to the staff.
- Sign your name in the attendance list and check meal information.
- Check your conference kit, which includes conference bag, name tag, meal voucher, conference program and conference souvenir.

**Please keep all your belongings and your conference materials!**

### ◆ Onsite Presentation

- Oral presentation language: English
- Regular oral presentation: 15 minutes (including 2-3 mins for Q&A).
- Get your presentation PPT/PDF files prepared. Presentations MUST be uploaded in the conference laptop at least 15 minutes before session starts.

### ◆ Important Notes

- Please enter the meeting room at least 15 minutes before your session. Your punctual arrival and active involvement will be highly appreciated.
- Please wear your name tag during the conference activities. Lending it to others is not allowed. If you have any accompanying person, please do inform our staff in advance.
- Please show name tag and meal coupons when dining.
- Please keep all your belongings (laptop and camera etc.) at any time! The conference organizer does not assume any responsibility for the loss of personal belongings.

### ◆ Conference Rooms

| Rooms               | Activities                          | Location                                                                   |
|---------------------|-------------------------------------|----------------------------------------------------------------------------|
| SCI1140             | Invited Speeches & Keynote Speeches | 1st Floor, Science Building,<br>Ontario Tech University,<br>Oshawa, Canada |
| SCI1120             | Onsite Session 1 & 3                |                                                                            |
| SCI1220             | Onsite Session 2 & 4                |                                                                            |
| SCI Atrium          | Onsite Sign-up & Lunch              |                                                                            |
| Mandarin Restaurant | Dinner on August 20                 | Oshawa <1319 Airport Blvd,<br>Oshawa, ON L1J 8R6>                          |

## Online Guideline

### Time Zone

Oshawa, Canada Time (EDT) | UTC/GMT-4  
Please pay attention to the time difference

### Conference Rooms

|                                                                                                               | Online Room | Info.                                                  | Activities                                                   |
|---------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|--------------------------------------------------------------|
| <br><a href="#">Download</a> | Room A      | Meeting ID: <a href="#">847 8310 5427</a><br>Pwd: 1215 | Online Test<br>Online Session 1 & 4                          |
|                                                                                                               | Room B      | Meeting ID: <a href="#">823 1230 3821</a><br>Pwd: 1215 | Invited Speeches<br>Keynote Speeches<br>Online Session 2 & 5 |
|                                                                                                               | Room C      | Meeting ID: <a href="#">834 3525 7466</a><br>Pwd: 1215 | Online Session 3 & 6                                         |

### ◆ ZOOM Testing

 **August 19, 2026 (Wednesday, UTC/GMT-4)**

| Time                                                                                                                                                                                                                                                                                                                                                                                                        | Activities                           | Room                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------|
| 09:30-11:30                                                                                                                                                                                                                                                                                                                                                                                                 | ZOOM Testing for Online Participants | Meeting ID: <a href="#">847 8310 5427</a><br>Pwd: 1215 |
| <p><input checked="" type="checkbox"/> <b>Zoom Testing / Zoom</b><br/>Participants who are going to do an online presentation are required to join the Zoom pre-test. Duration: 2~3 minutes apiece. Free to leave after your rehearsal is done.</p> <p><input checked="" type="checkbox"/> <b>Name Setting before Entry!</b><br/>Author: Paper ID-Name<br/>Conference Committee/ Speaker: Position-Name</p> |                                      |                                                        |

### ◆ Environment & Equipment Needed

- A computer with camera and microphone
- Stable internet connection
- A quiet place and proper background

### ◆ Online Presentation

- Language: English
- Duration: 15 minutes (including 2-3 mins for Q&A).
- Please join the online meeting room 15 minutes in advance.

# Agenda Overview

| 📅 August 19 (Wednesday)   UTC/GMT-4                                                                                     |                                                                             |                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Invited Speeches</i> Room: <i>SCI1140 &lt;Science Building&gt;</i> Meeting ID: <i>823 1230 3821</i> Pwd: <i>1215</i> |                                                                             |                                                                                                                                                                                                                                                                                                                |
| 09:30-09:40                                                                                                             | Opening Remarks                                                             | Prof. Dr. Hossam A. Gabbar, Ontario Tech University, Canada                                                                                                                                                                                                                                                    |
| 09:40-10:00                                                                                                             | Invited Speech I (Online)                                                   | Mr. Kyohei Yoshinaga, Mitsubishi Research Institute, Inc. (MRI), Japan<br><i>Watt-Bit Integration and the Strategic Value of Nuclear Energy in Japan's AI Era</i>                                                                                                                                              |
| 10:00-10:20                                                                                                             | Invited Speech II (Online)                                                  | Dr. Kevin Pope, Memorial University of Newfoundland, Canada<br><i>Resiliency in Utility-Scale Wind-to-Hydrogen Systems</i>                                                                                                                                                                                     |
| 10:20-10:40                                                                                                             | Invited Speech III                                                          | Mr. Dave Haberman, Chair of the HBC economics working group, Canada<br>Ms. Aleisha Cerny, CEO of Serenity Power, Canada<br><i>Scalable Hydrogen for Advanced Reliable Power (SHARP)</i>                                                                                                                        |
| 10:40-11:00                                                                                                             | Invited Speech IV (Online)                                                  | Assoc. Prof. Philip W. T. Pong, New Jersey Institute of Technology, United States<br><i>Contactless Magnetic Sensing in Condition Monitoring and Anomaly Detection for Smart Grid: New Possibilities and Alternatives</i>                                                                                      |
| 11:00-13:30                                                                                                             | Student Innovation Competition                                              | General Chair: Prof. Dr. Hossam A. Gabbar, Ontario Tech University, Canada                                                                                                                                                                                                                                     |
| 13:30-14:00                                                                                                             | Break Time                                                                  |                                                                                                                                                                                                                                                                                                                |
| Parallel Oral Sessions – Online Only                                                                                    |                                                                             |                                                                                                                                                                                                                                                                                                                |
| 14:00-16:15                                                                                                             | Online Session 1<br><br>Zoom ID: <a href="#">847 8310 5427</a><br>Pwd: 1215 | <b>Topic:</b> Smart Grid Communication Security Protocol, Adaptive Protection, and Data Driven Operation Analysis<br><br><b>Session Chair:</b> Dr. Ahmed Afif Monrat, Luleå University of Technology (LTU), Sweden<br>Papers: SG047, SG048, SG065, SG012, SG016-A, SG017-A, SG025, SG060, SG087-A              |
| 14:00-16:15                                                                                                             | Online Session 2<br><br>Zoom ID: <a href="#">823 1230 3821</a><br>Pwd: 1215 | <b>Topic:</b> Dynamic Security Assessment and Adaptive Stability Control of Power Systems Driven by Artificial Intelligence<br><br><b>Session Chair:</b> Dr. Ahmed N. Sheta, Mansoura University, Egypt<br>Papers: SG116, SG014, SG058, SG073, SG088, SG098, SG112, SG093, SG111                               |
| 14:00-16:15                                                                                                             | Online Session 3<br><br>Zoom ID: <a href="#">834 3525 7466</a><br>Pwd: 1215 | <b>Topic:</b> Multi Objective Optimization Configuration and Adaptive Scheduling Strategy for Low-Carbon Operation Of Microgrids<br><br><b>Session Chair:</b> Dr. Maurel Richy AZA-GNANDJI, National University of Agriculture, Benin<br>Papers: SG070, SG045, SG010, SG063, SG064, SG069, SG080, SG082, SG079 |

## Agenda Overview

 August 20 (Thursday) | UTC/GMT-4

| Keynote Speeches                     |                                          | Room: SCI1140 <Science Building>                                                                                                                                                                                                                                   | Meeting ID: <a href="#">823 1230 3821</a> Pwd: 1215 |
|--------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 08:50-09:00                          | Welcome Speech                           | Prof. Dr. Hossam A. Gabbar, Ontario Tech University, Canada                                                                                                                                                                                                        |                                                     |
| 09:00-09:40                          | Keynote Speech I                         | Dr. Carl Ho, University of Manitoba, Canada<br><i>Development of Wireless Electric Vehicle Chargers</i>                                                                                                                                                            |                                                     |
| 09:40-10:20                          | Keynote Speech II                        | Dr. Gabriel A. Wainer, Carleton University, Canada<br><i>Digital Quadruplets and Sustainable Smart Energy Systems: A DEVS-based Framework for the Future Grid</i>                                                                                                  |                                                     |
| 10:20-10:50                          | ☕ Coffee Break                           |                                                                                                                                                                                                                                                                    |                                                     |
| 10:50-11:30                          | Keynote Speech III                       | Dr. Christine Chen, The University of British Columbia, Canada<br><i>Local Electricity Markets with Prosumer Preferences for Community Energy Systems</i>                                                                                                          |                                                     |
| 11:30-12:10                          | Keynote Speech IV                        | Dr. Madeleine McPherson, University of Victoria, Canada<br><i>M3 Modelling Platform: a Comprehensive Accounting of the Energy System Transition</i>                                                                                                                |                                                     |
| 12:10-12:20                          | 📷 Group Photo                            |                                                                                                                                                                                                                                                                    |                                                     |
| 12:20-14:00                          | 🍽️ Lunch Break                           |                                                                                                                                                                                                                                                                    | SCI Atrium <Science Building>                       |
| Parallel Oral Sessions – Onsite Only |                                          |                                                                                                                                                                                                                                                                    |                                                     |
| 14:00-15:45                          | Onsite Session 1<br><i>Room: SCI1120</i> | <b>Topic:</b> Multimodal Renewable Energy and New Energy Storage Technologies<br><br><b>Session Chair:</b> Prof. Mohamed Zayed, Prince Mugrin University, Saudi Arabia<br>Papers: SG030, SG114, SG055-A, SG304, SG021, SG094, SG095                                |                                                     |
| 14:00-15:30                          | Onsite Session 2<br><i>Room: SCI220</i>  | <b>Topic:</b> Intelligent Power System Control and Optimization Scheduling Integrated with Renewable Energy<br><br><b>Session Chair:</b> Dr. Gonesh Chandra Saha, Luleå University of Technology (LTU), Sweden<br>Papers: SG008, SG022, SG023, SG049, SG067, SG101 |                                                     |
| 15:45-16:15                          | ☕ Coffee Break                           |                                                                                                                                                                                                                                                                    |                                                     |
| 16:15-17:45                          | Onsite Session 3<br><i>Room: SCI1120</i> | <b>Topic:</b> Electric Vehicle Charging Management and Safety Analysis of Power Infrastructure<br><br><b>Session Chair:</b> Prof. Adel A. Ghoneim, College of Technological Studies, PAAET, Kuwait<br>Papers: SG024, SG050, SG068, SG105-A, SG110, SG108           |                                                     |

|                                      |                                                                                          |                                                                                                                                                                                                                                                                                                        |
|--------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16:15-17:30                          | Onsite Session 4<br><br>Room: SC11220                                                    | <b>Topic:</b> Machine Learning Based Network Security and Data Protection in Power Systems<br><br><b>Session Chair:</b> Dr. Hamed Aly, Dalhousie University, Canada<br>Papers: SG103-A, SG031, SG056, SG061, SG118                                                                                     |
| 18:00-20:00                          |  Dinner | Mandarin Restaurant<1319 Airport Blvd, Oshawa, ON L1J 8R6>                                                                                                                                                                                                                                             |
| Parallel Oral Sessions – Online Only |                                                                                          |                                                                                                                                                                                                                                                                                                        |
| 14:00-16:00                          | Online Session 4<br><br>Zoom ID:<br><a href="#">847 8310 5427</a><br>Pwd: 1215           | <b>Topic:</b> Fault Diagnosis and Operation Status Monitoring of Power System Based on Multi-Source Data Fusion<br><br><b>Session Chair:</b> Dr. Tohid Rahimi, University of New Brunswick, Canada<br>Papers: SG075, SG043, SG059, SG071, SG072, SG210-A, SG029, SG091                                 |
| 14:00-16:15                          | Online Session 5<br><br>Zoom ID:<br><a href="#">823 1230 3821</a><br>Pwd: 1215           | <b>Topic:</b> Data Driven Estimation of Battery Health Status and Performance Evaluation of Energy Storage Systems<br><br><b>Session Chair:</b> Dr. Emilio Carlos Piesciorovsky, Oak Ridge National Laboratory, United States<br>Papers: SG032, SG039, SG066, SG097, SG077, SG057, SG106, SG107, SG046 |
| 14:00-16:15                          | Online Session 6<br><br>Zoom ID:<br><a href="#">834 3525 7466</a><br>Pwd: 1215           | <b>Topic:</b> Dynamic Pricing Mechanism and Auxiliary Service Market Strategy for High Proportion New Energy Power Systems<br><br>Session Chair: To be added<br>Papers: SG076, SG009, SG078, SG038, SG074, SG033, SG096, SG113, SG001                                                                  |

## Agenda Overview

| SPANS & SPSTA                                                                                                    |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  August 21 (Friday)   UTC/GMT-4 |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                          |
| Keynote Speeches                                                                                                 | Room: SCI1140 <Science Building>                                                                                                                                                                                                                                                                         | Meeting ID: <a href="#">823 1230 3821</a> Pwd: 1215                                                                                                                      |
| 08:00-08:30                                                                                                      | Student Innovation Competition                                                                                                                                                                                                                                                                           | General Chair: Prof. Dr. Hossam A. Gabbar, Ontario Tech University, Canada                                                                                               |
| 08:30-09:00                                                                                                      | Keynote Speech I                                                                                                                                                                                                                                                                                         | Prof. Dr. Hossam A. Gabbar, Ontario Tech University, Canada<br><i>Advances in Plasma-Based Radioactive Waste Treatment</i>                                               |
| 09:00-09:30                                                                                                      | Keynote Speech II                                                                                                                                                                                                                                                                                        | Prof. Dr. Ralf Peter Brinkmann, Ruhr University Bochum, Germany<br><i>Plasma Sheaths: Classical Theory and Modern Perspectives</i>                                       |
| 09:30-10:00                                                                                                      | Keynote Speech III                                                                                                                                                                                                                                                                                       | Dr. Luc Stafford, Université de Montréal, Canada<br><i>Hyperspectral Imaging of A Atmospheric Pressure Plasma Jets in Interaction with Surfaces</i>                      |
| 10:00-10:30                                                                                                      | Keynote Speech IV (Online)                                                                                                                                                                                                                                                                               | Dr. Chijin Xiao, University of Saskatchewan, Canada<br><i>Fusion Energy R&amp;D-Progress, Challenges, and Outlook</i>                                                    |
| 10:30-10:50                                                                                                      |  Coffee Break                                                                                                                                                                                                         |                                                                                                                                                                          |
| 10:50-11:20                                                                                                      | Keynote Speech V                                                                                                                                                                                                                                                                                         | Dr. LODOVICO RATTI, University of Pavia, INFN Pavia, Italy<br><i>Radiation Damage in Single-Photon Avalanche Diodes: from Microscopic Defects to Macroscopic Effects</i> |
| 11:20-11:50                                                                                                      | Keynote Speech VI                                                                                                                                                                                                                                                                                        | Dr. Tomohiko Asai, Nihon University, Japan<br><i>Unique Properties of Field-Reversed Configurations and Their Potential for Advanced Plasma Applications</i>             |
| 11:50-13:30                                                                                                      |  Closing Ceremony &  Group Photo &  Lunch Break |                                                                                                                                                                          |
| SCI Atrium <Science Building>                                                                                    |                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                          |

## SEGE-Keynote Speaker I

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09:00-09:40 | August 20, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215

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**Dr. Carl Ho**

University of Manitoba, Canada

### *Development of Wireless Electric Vehicle Chargers*

Autonomous Electric Vehicles (EVs) are poised to play a transformative role in the evolution of a decarbonized, decentralized, and digitized electric power grid. With rapid advancements in EV technology and growing market adoption, these vehicles offer significant economic and environmental benefits. In the near future, services such as taxis and ride-sharing platforms like Uber may operate entirely without human drivers, delivering seamless door-to-door transportation. However, one major barrier to full automation remains: the manual process of battery charging, which currently requires physical connection via heavy cables. Wireless Power Transfer (WPT) presents a promising solution. This technology enables EVs to charge automatically by simply parking over a designated charging pad—eliminating the need for human intervention and aligning perfectly with the vision of fully autonomous mobility. This presentation will introduce the fundamental principles behind wireless EV charging systems, showcase a laboratory-developed wireless charging module, and explore emerging trends and future directions in this exciting field.

Biography: Dr. Carl Ho received his B.Eng., M.Eng., and Ph.D. degrees in Electronic Engineering from the City University of Hong Kong. He has held prominent roles in both industry and academia, including serving as a Principal Scientist at ABB Switzerland and as a Canada Research Chair at the University of Manitoba. He is currently a Professor and Associate Head in the Department of Electrical and Computer Engineering at the University of Manitoba, and he is a Registered Professional Engineer in the Province of Manitoba. Dr. Ho's research covers several cutting edge areas, including microgrid technologies, renewable energy systems, real time digital simulation, heavy duty electric vehicles (EVs), and applications of wide bandgap (WBG) power semiconductors.

## SEGE-Keynote Speaker II

09:40-10:20 | August 20, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Dr. Gabriel A. Wainer**

Carleton University, Canada

### *Digital Quadruplets and Sustainable Smart Energy Systems: A DEVS-based Framework for the Future Grid*

Modern smart energy grids require rigorous methods to ensure safety, resilience, sustainability, and operational efficiency. As grids evolve to integrate distributed renewable generation, electric mobility, intelligent buildings, and real-time control systems, the need for accurate modeling, validation, prediction, and synchronized digital representations becomes increasingly urgent.

This keynote introduces a Modeling and Simulation (M&S)-based approach for the systematic development of Digital Twins and Digital Quadruplets for smart grid and smart energy systems. Built on the DEVS (Discrete Event system Specification) formalism, the proposed methodology enables rigorous model continuity—from conceptual modeling and formal analysis to simulation, hardware integration, and experimental validation.

We present the concept of a Digital Quadruplet, consisting of:

1. A physical system (e.g., microgrid, building automation infrastructure, distributed energy resource).
2. A virtual 3D representation (Digital Twin) for visualization and interaction.
3. A formal DEVS-based model (Digital Triplet) enabling simulation, verification, and predictive analysis.
4. A physical experimental platform enabling cyber-physical integration and validation under real-world conditions.

The talk will demonstrate how Digital Quadruplets ensure consistency, reusability, and a closed feedback loop across simulation, hardware, and operational layers—making them ideal for smart grid research, deployment, and education.

We illustrate the methodology through case studies including autonomous aerial systems and intelligent building automation, and extend these examples toward energy-system-specific applications for IEEE SEGE participants.

**Biography:** Gabriel Wainer, FSCS, is a Professor in the Department of Systems and Computer Engineering at Carleton University. He is the founder of the ARS Lab and a leading researcher in Modeling and Simulation, DEVS formalism, real-time simulation, and digital twins. He has authored hundreds of publications and serves as Editor-in-Chief of SIMULATION and on multiple editorial boards. His awards include the IBM Eclipse Innovation Award, the SCS Leadership Award, IEEE Ottawa Outstanding Engineering Award, and others. He is an ACM Distinguished Speaker and Fellow of SCS.

## SEGE-Keynote Speaker III

10:50-11:30 | August 20, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Dr. Christine Chen**

The University of British Columbia, Canada

### *Local Electricity Markets with Prosumer Preferences for Community Energy Systems*

We present a data-driven method for establishing local electricity markets in community energy systems that enable prosumers to trade electricity with the utility and amongst themselves while ensuring safe distribution network operation. The method calculates real-time distribution locational marginal prices (DLMPs) and peer-to-peer (P2P) trade prices without the use of an offline model of the underlying power network. Instead, it relies only on online measurements collected at a subset of distribution system buses to estimate a linear sensitivity model mapping bus voltages to injections, which is in turn embedded in an optimal power flow (OPF) problem as an equality constraint. The DLMPs arise as the optimal Lagrange multipliers of the linear equality constraint. They are accurate when compared to the model-based benchmark solved with an up-to-date model and greatly outperform it when the model is out of date. Furthermore, optimal trade prices incorporating prosumer preferences in P2P trades are mutually beneficial for both sellers and buyers relative to the alternative of trading with the utility.

**Biography:** Christine Chen is an Associate Professor with the Department of Electrical and Computer Engineering and an Associate Director of the Clean Energy Research Centre at The University of British Columbia. Her research interests include power system modelling, control, and operation. She received the B.A.Sc. degree in engineering science from the University of Toronto in 2009, and the M.S. and Ph.D. degrees in electrical engineering from the University of Illinois at Urbana-Champaign in 2011 and 2014, respectively. Her work has been recognized with a Best Paper Award from the IEEE Transactions on Energy Conversion in 2018, a “Best of the Best” Prize Conference Paper Award at the IEEE Power and Energy Society General Meeting in 2022, and a Best Paper Award Finalist at the IEEE Innovative Smart Grid Technologies Conference North America in 2024. She also co-authored the 2021 IEEE Power and Energy Society Prize Paper. Christine has served on the editorial boards of the IEEE Transactions on Power Systems, IEEE Transactions on Energy Conversion, and IEEE PES Letters.

## SEGE-Keynote Speaker IV

11:30-12:10 | August 20, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Dr. Madeleine McPherson**

University of Victoria, Canada

### *M3 Modelling Platform: a Comprehensive Accounting of the Energy System Transition*

This presentation introduces the M3 Modelling Platform as an integrated, open-source framework designed to provide a comprehensive assessment of energy systems and policy impacts. The platform combines open data (CODERS), a modular suite of interoperable models, built-in linkages, and a visualization interface (IDEA) to enable coordinated analysis across multiple spatial scales and sectors. At its core, M3 links diverse modelling approaches—including capacity expansion, production cost, resource adequacy, energy-economy interactions, macroeconomic dynamics, and labour market modelling—into a unified workflow. This structure allows outputs from one model to inform others iteratively, ensuring internal consistency and capturing system-wide feedbacks. The novelty of the M3 Platform lies in both its breadth and integration. Unlike traditional studies that rely on a single model or focus narrowly on the electricity system, M3 connects multiple domains—technical and economic—within a single analytical framework. Its open, modular design also enables transparency, extensibility, and policy relevance, making it a powerful tool for decision-makers. This is particularly important because many key benefits of energy system transformations—such as economic growth, trade impacts, and labour dynamics—are often excluded from conventional analyses.

In this paper, the M3 Platform is applied to the study of grid integration in Canada. By linking six models, the analysis quantifies a wide range of benefits—from system costs and reliability to macroeconomic and employment outcomes—demonstrating the value of interprovincial transmission expansion.

**Biography:** Dr. Madeleine McPherson is an Associate Professor in the department of Civil Engineering and the Associate Director of the Institute for Integrated Energy Systems at the University of Victoria. As the principal investigator of the Sustainable Energy Systems Integration & Transitions (SESIT) Group, Dr. McPherson and her team have developed an integrated suite of models to explore the evolution of our energy system. Her team applies those models in collaboration with governments, civil society, Indigenous rights holders, and industry to co-create decarbonization pathways. Dr. McPherson is a co-founder and co-director of the Energy Modelling Hub, which is convening a national dialogue between modelers, policymakers and stakeholders around Canada's energy system.

# SPANS&SPSTA-Keynote Speaker I

08:30-09:00 | August 21, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



## Prof. Dr. Hossam A. Gabbar

Ontario Tech University, Canada

*Fellow IET (FIET), Distinguished Lecturer IEEE NPSS,  
Director of Advanced Plasma Engineering Lab (APEL)*

### *Advances in Plasma-Based Radioactive Waste Treatment*

This talk presents advanced approaches for plasma-based radioactive waste treatment. Different designs of plasma torches and generation systems are discussed, including RF, DC, and MW plasma, are analysed and compared for waste-to-energy applications. Novel plasma torch design is proposed to support different scales and types of radioactive waste treatment. Process engineering techniques for gasification and pyrolysis process are integrated with the radioactive waste treatment process, which are illustrated with waste characterization. The proposed approaches showed reduced radioactive treatment costs, risks, volumes, in addition to reduced greenhouse gas emissions and improved lifecycle performance. Plasma systems are utilized for nuclear waste treatment for low, intermediate, and high radioactive waste. Process design is discussed for plasma torch that can reduce the volume of radioactive waste. Potential approaches are explored for mass separation that could be utilized for high-level radioactive waste. Simulation methods and experimental setups demonstrate lab-scale process technologies for plasma-based radioactive waste treatment.

**Biography:** Dr. Gabbar is a full Professor in the Department of Energy and Nuclear Engineering, the Faculty of Engineering and Applied Science, at Ontario Tech University (UOIT), where he has established the Energy Safety and Control Lab (ESCL), Smart Energy Systems Lab, and Advanced Plasma Engineering Lab. He is the recipient of the Senior Research Excellence Award for 2016, UOIT. He is recognized among the top 2% of worldwide scientists with high citation in the area of energy. He is a Fellow IET (FIET) and Distinguished Lecturer – IEEE NPSS on Nuclear-Renewable Hybrid Energy Systems and Plasma-based Waste-to-Energy. He is leading national and international research in the areas of smart energy grids, energy safety and control systems, and waste-to-energy using advanced plasma technologies. Dr. Gabbar obtained his B.Sc. degree in 1988 with first class of honor from the Faculty of Engineering, Alexandria University (Egypt). In 2001, he obtained his Ph.D. degree from Okayama University (Japan). From 2001 till 2004, he joined Tokyo Institute of Technology (Japan), as a research associate. From 2004 till 2008, he joined Okayama University (Japan) as an Associate Professor, in the Division of Industrial Innovation Sciences. From 2007 till 2008, he was a Visiting Professor at the University of Toronto. He also worked as process control, safety, and automation specialist in energy and oil & gas industries. Dr. Gabbar has more than 290 publications, including patents, books / chapters, journal and conference papers.

Dr. Hossam Gaber has been collaborating with Japan and Indonesia to promote nuclear-renewable hybrid energy systems, where he was invited to the panel discussions in Indonesia as part of IAEA and was the representative of Canada in IAEA to develop the roadmap of nuclear-renewable hybrid energy system deployments with different energy scenarios based on regional resources and requirements. Dr. Gaber developed novel integrated hybrid energy system simulator to synthesize and optimize different nuclear-renewable scenarios and evaluate different nuclear power plant and SMR technologies based on energy load profiles and local resources. Dr. Gaber prepared nuclear deployment strategies and training programs, and explored in different countries including Canada, USA, Indonesia, UK, Norway, South Africa, Brazil, Egypt, UAE, and Hungary. Dr. Gaber has presented his scholarly research in Wisconsin, Budapest, Tokyo, Cairo, Jakarta, and other cities around the world. Dr. Gaber is also leading national research related to radioactive waste for SMR deployment as part of University Network of Nuclear

Engineering (UNENE), Canadian National Laboratory (CNL), Ontario Power Generation (OPG), and NSERC. His research led to patents and products in the market with industrial applications and projects.



## SPANS&SPSTA-Keynote Speaker II

09:00-09:30 | August 21, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Prof. Dr. Ralf Peter Brinkmann**

Ruhr University Bochum, Germany

### *Plasma Sheaths: Classical Theory and Modern Perspectives*

Plasma boundary sheaths occupy only a small fraction of a discharge volume, yet they play a decisive role in determining its global behavior. Their internal structure and governing principles differ fundamentally from those of the quasineutral plasma itself, reflecting the transition from extended, weakly coupled regions to thin, strongly non-neutral layers with intense electric fields and depleted electron populations.

Since the pioneering works of Irving Langmuir and Clement D. Child, and the introduction of the sheath criterion by David Bohm, a variety of dedicated sheath models have been developed to capture these distinct features. A major impulse was provided in the 1980s by the emergence of radio-frequency plasma processing, culminating in the influential models of Michael A. Lieberman, which established a widely used framework for RF sheath dynamics. The lecture will review this historical development and outline selected modern perspectives, including recent efforts to reformulate sheath theory in a more systematic and transparent manner, and to extend classical approaches toward more general excitation conditions and physically consistent descriptions.

**Biography:** Ralf Peter Brinkmann is Professor of Theoretical Electrical Engineering at Ruhr University Bochum, Germany. He studied electrical engineering and physics at the same institution and received his doctorate in theoretical physics in 1986. Following postdoctoral and research positions in Chicago and Norfolk, USA, he worked at the Labs of Siemens Corporate Research in Munich before returning to academia. Since 2000, he holds a professorship in Bochum, where he conducts research in plasma science and technology with a focus on modeling and diagnostics. His work includes contributions to RF sheath theory and other subjects of that field.

# SPANS&SPSTA-Keynote Speaker III

09:30-10:00 | August 21, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Dr. Luc Stafford**

Université de Montréal, Canada

## *Hyperspectral imaging of a atmospheric pressure plasma jets in interaction with surfaces*

A detailed characterization of electron parameters, particularly electron temperature and electron number density, is essential to understand the physics and chemistry governing non-equilibrium reactive plasmas and their interactions with surfaces during materials processing. Although optical emission spectroscopy is widely used as a non-intrusive diagnostic tool, obtaining spatially resolved plasma properties at surface vicinities remains challenging. Conventional line-of-sight measurements lack two-dimensional (2D) resolution, while filter-based imaging provides limited spectral information. Conversely, full spectral acquisition across a 2D region typically requires time-consuming point-by-point scanning, hindering real-time diagnostics. In recent years, these limitations were overcome by implementing hyperspectral imaging in non-equilibrium plasma processing of materials. The tool used in our lab is based on a tunable Bragg-grating imager coupled to a scientific complementary metal-oxide - semiconductor camera. The working principle of the system and the associated post-processing procedures will be exposed. Spatial-spectral datasets will be analyzed using a collisional-radiative modelling in the specific case of a microwave argon plasma jet open to ambient air. This approach will be used to extract space-resolved 2D mappings of key plasma parameters. with exceptionally high spatial resolution and within a reasonable acquisition time, of electron temperature, electron number density, argon excitation temperature, argon molecular ion number density, argon and oxygen populations, Ar metastable density, and electric field intensity. It will be highlighted that Bragg-grating-based hyperspectral imaging combined with advanced modelling of optical emission spectroscopy data provides an advanced and efficient diagnostic framework for comprehensive, spatially resolved analysis of microwave plasma jets used in a wide range of applications.

Biography: Luc Stafford is a Full Professor in the Département de physique at the Université de Montréal, where he holds a Canada Research Chair in the Physics and Diagnostics of Low-Temperature Plasmas and Their Applications to Complex Materials Processing. His research is driven by the fundamental need to deepen our understanding of energy transfer mechanisms in plasmas exhibiting strong non-equilibrium between electronic, vibrational, rotational, and translational states. By elucidating how energy flows and redistributes across these degrees of freedom, his work aims to enable more selective, energy-efficient, and sustainable transformations of matter across different phases. Professor Stafford has made major contributions to the development and implementation of advanced optical diagnostic techniques coupled with state-of-the-art collisional-radiative modeling. These tools have provided new insights into electron heating dynamics, energy dissipation pathways, and reactive species formation in both low-pressure and atmospheric-pressure plasmas. Beyond fundamental plasma physics, his research has led to innovative applications in advanced materials processing. These include the value maximization of materials derived from woody biomass, the plasma functionalization of monolayer graphene films, the plasma deposition of (multi)functional thin films for aeronautics and aerospace, and the development of water-soluble, bio-based electrodes for stable aqueous lithium-ion batteries. Through this interdisciplinary work, he bridges fundamental plasma science with sustainable surface engineering and advanced materials technologies.

## SPANS&SPSTA-Keynote Speaker IV

10:00-10:30 | August 21, 2026 | Zoom [Link](#) Pwd: 1215



**Dr. Chijin Xiao**

University of Saskatchewan, Canada

### *Fusion Energy R&D-Progress, Challenges, and Outlook*

Fusion energy has been considered the ultimate solution to energy demand due to its intrinsic safety, low carbon footprint, and abundant fuel resources. Over the last seven decades, scientists and engineers have tirelessly worked on fusion energy development, and significant progress has been made. Laser fusion has achieved scientific fusion energy gain factor of  $Q=4$  and quasi steady-state tokamak operation over 1000 seconds has been demonstrated in superconducting tokamaks. The accumulated private investment in fusion energy has hit the \$10B mark. This talk will discuss the status, main challenges, and outlook of fusion energy development.

Biography: Chijin Xiao is a professor in the Department of Physics and Engineering Physics, University of Saskatchewan. He obtained his B.Sc. and M.Sc. degrees from the University of Science and Technology of China, and the Ph.D. degree from the Ruhr-University Bochum, Germany. He has been working on magnetically confined plasmas for over four decades. His research topics include plasma confinement studies on many types of devices (including the STOR-M tokamak at the University of Saskatchewan), compact torus (CT) injection experiments, and other aspects of plasma physics and engineering. He is currently one of the editors of the journal Radiation Effects and Defects in Solids -Incorporating Plasma Science and Plasma Technology. He is serving on the advisory board of Fusion Energy Council of Canada.

# SPANS&SPSTA-Keynote Speaker V

10:50-11:20 | August 21, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Dr. LODOVICO RATTI**

University of Pavia, INFN Pavia, Italy

## *Radiation Damage in Single-Photon Avalanche Diodes: from Microscopic Defects to Macroscopic Effects*

SINGLE-photon avalanche diodes (SPADs) are solid-state devices that can detect individual photons by operating a reverse-biased pn junction above its breakdown voltage, a working regime also known as Geiger mode. SPADs offer extremely high time resolution and sensitivity, which makes them well suited for a wide range of photon timing and counting applications, such as light detection and ranging (LiDAR), nuclear medicine and quantum imaging. In relatively recent times, SPAD based on CMOS (Complementary Metal Oxide Semiconductor) technologies are emerging as a flexible platform for the design of large sensor arrays with monolithically integrated readout electronics, with advantages in terms of cost, system functionalities, power consumption and ruggedness as compared to more traditional approaches based on dedicated processes.

Exposure to radiation is well known to alter the performance of electronic devices and circuits, and SPADs are no exception. In some circumstances, such as in space applications or in fundamental physics experiments (e.g., at particle accelerators or synchrotron light/free electron laser sources), SPADs may experience performance degradation upon exposure to high energy photons, charged particles or neutrons. The detected effects depend on several parameters, among which the bias

conditions and dimensions of the irradiated device, the fabrication technology (materials, processes), dose/dose rate/energy/type of radiation, temperature during irradiation, thermal history of the device after irradiation and time after irradiation. The presentation will provide an overview of the key challenges associated with radiation damage study in CMOS SPADs, intertwined with the research conducted in this field by the Electronic Instrumentation Laboratory at the University of Pavia. Results from the characterization of irradiated devices will be presented, with insights into the underlying damage mechanisms. Tools for radiation tolerance assessment will be briefly reviewed and possible radiation hardening measures outlined.

**Biography:** LODOVICO RATTI (IEEE M'2000, SM'2013) is full professor of electronics with the University of Pavia, Department of Electrical, Computer and Biomedical Engineering, Italy. His main expertise is in the design of front-end electronics for highly segmented radiation detectors, photodetectors (SPADs) and monolithic sensors, in particular based on CMOS processes. His work is also concerned with the study of ionization and substrate damage caused by radiation, as well as the characterization of noise, in microelectronic devices and circuits. The target applications are in the area of high energy physics, astrophysics and photon science experiments. Lodovico Ratti is secretary of the Radiation Instrumentation Steering Committee (RISC) of the Nuclear and Plasma Sciences Society (NPSS). He is a technology research fellow with the Italian Institute for Nuclear Physics (INFN). He is author or co-author of about 360, including papers published in peer-reviewed journals or conference proceedings, works presented at international conferences and book chapters, and editor for IEEE Transactions on Nuclear Science, Frontiers in Physics and MDPI Electronics.

## SPANS&SPSTA-Keynote Speaker VI

11:20-11:50 | August 21, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



**Dr. Tomohiko Asai**

Nihon University, Japan

### *Unique Properties of Field-Reversed Configurations and Their Potential for Advanced Plasma Applications*

Field-reversed configurations (FRCs) are compact torus plasmas characterized by a simply connected plasma region, high beta, and strong self-organization, offering a unique alternative to conventional magnetic confinement systems. Their high-beta nature also provides a platform to explore plasma behavior in regimes where kinetic effects become dominant. In addition, FRC plasmas can generate high-velocity plasmoids with flow speeds exceeding characteristic velocities such as the sound and Alfvén speeds, enabling studies of supersonic and super-Alfvénic phenomena.

In this talk, we discuss the fundamental properties of FRC plasmas and their potential as a versatile platform for advanced plasma applications, including aneutronic fusion, laboratory astrophysics, and space utilization.

Biography: Tomohiko Asai is a Professor in the Department of Physics, Nihon University, Japan. He received his Ph.D. from Osaka University in 2002. After serving as a researcher at the University of Saskatchewan, Canada, he has been in his current position at Nihon University since 2017. He has developed Japan's only experimental device for supersonic FRC merging, achieving velocities of up to 500 km/s. His research focuses on advanced fusion concepts and laboratory astrophysics. He is also the founder of LINEA Innovations Inc., a startup pursuing advanced fusion systems and space applications based on compact torus plasmas.

## SEGE-Invited Speaker I

09:40-10:00 | August 19, 2026 | Zoom [Link](#) Pwd: 1215



### KYOHEI YOSHINAGA

Mitsubishi Research Institute, Inc. (MRI), Japan

#### *Watt-Bit Integration and the Strategic Value of Nuclear Energy in Japan's AI Era*

As AI and digital infrastructure expand rapidly, data centers are becoming one of the most important new sources of large-scale electricity demand. For nuclear systems research, this raises a practical question: under what conditions can stable, low-carbon nuclear power be valued not only as a source of electricity, but also as a strategic asset for supporting future digital growth?

This presentation introduces a Japan-focused perspective on watt-bit integration, a concept that links electricity systems and information infrastructure as one planning problem. It positions nuclear-powered data centers as a case for considering how nuclear energy could be connected with AI infrastructure, while recognizing that implementation would depend on grid connection, siting, institutional design, additionality, and local acceptance. Advanced nuclear systems, including SMRs, are discussed as medium- to long-term options that may expand the design space for future energy and industrial infrastructure.

A central question is how the value of nuclear energy should be evaluated when future demand is shaped by AI, flexible workloads, and location-sensitive digital infrastructure. Rather than presenting a detailed engineering or business model, the talk identifies key issues for further research and discussion, including system configuration, additionality, grid integration, demand-side flexibility, local acceptance, and the potential role of SMRs. By connecting nuclear systems research with a concrete and fast-growing demand sector, the talk offers a framework for considering where and how nuclear energy can become a valued piece of Japan's AI-era growth strategy.

**Biography:** KYOHEI YOSHINAGA is a Senior Researcher at the Center for Policy and the Economy, Mitsubishi Research Institute, Inc. (MRI), working on energy systems, decarbonization, and policy-oriented analysis for future industrial infrastructure. His recent work focuses on the interaction between electricity systems and emerging digital demand, including watt-bit integration, AI infrastructure, clean power supply, and the role of nuclear energy in carbon neutrality and energy security.

## SEGE-Invited Speaker II

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10:00-10:20 | August 19, 2026 | Zoom [Link](#) Pwd: 1215

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**Dr. Kevin Pope**

Memorial University of Newfoundland, Canada

### *Resiliency in Utility-Scale Wind-to-Hydrogen Systems*

Large scale wind farms are effective for producing large quantities of renewable power, however, they are often constrained by the inherent intermittency of wind and geographical distance from energy demand. Clean hydrogen is a promising solution to these spatiotemporal challenges, capable of long-range transport and long-term energy storage. This talk presents innovative modeling and predictive techniques for wind-to-hydrogen systems that overcome the inherent variability of large-scale wind power. The discussion will cover new design and operation strategies, focusing on matching variable wind power output to electrolyser requirements for enhanced efficiency and longevity. A systems-level approach to forecasting local energy supply and demand, alongside mitigation strategies for wind turbines in ice prone conditions, will be presented. This will highlight wind-powered green hydrogen as a cost-effective, sustainable pathway to resilient energy infrastructure.

Biography: Dr. Kevin Pope is a Professor of Mechanical Engineering at Memorial University of Newfoundland, Canada, with nearly 20 years of research experience in sustainable energy systems, specializing in wind power and clean hydrogen. An expert in thermo-fluids and renewable energy, he has published over 140 journal and conference papers and 4 book chapters internationally. Dr. Pope received the Canadian Society for Mechanical Engineering's (CSME) I.W. Smith award for outstanding achievement in creative mechanical engineering and led program development of the university's Master of Applied Science in Energy Systems Engineering.

## SEGE-Invited Speaker III

10:20-10:40 | August 19, 2026 | SCI1140 <Science Building> | Zoom [Link](#) Pwd: 1215



### Dave Haberman and Aleisha Cerny

#### *Scalable Hydrogen for Advanced Reliable Power (SHARP)*

The SHARP project architecture and technology roadmap will be presented at this conference. The SHARP pilot located at OTU is designed to evaluate the techno-economic performance of a hybridized energy system which delivers electricity to power distribution grids or directly to high value loads. The system uses advanced electrolysis in concert with a new generation of solid oxide fuel cells (SOFC) to deliver high quality power that has a minimized carbon burden. The only energy input to the system is a source of methane. Notably this system is configured to meet its operational power requirement without any reliance on outside sources of electricity. It uses grey or storm water as the hydrogen feedstock for the electrolysis without reliance on potable water sources. A noteworthy attribute of SHARP's architecture is the use of the oxygen output of the electrolysis to treat grey/storm water. The key objective of SHARP is to offer a versatile power source that is scalable and sustainable. The SHARP team assembled by HBC includes nine organizations and is positioned to proceed to scale-up within two years. The Hydrogen Business Council of Canada (HBC) is a non-profit champion working to advance the use of hydrogen energy to achieve sustainability and decarbonization. HBC convenes the Canadian Annual Hydrogen Conference every autumn which is scheduled to be hosted by OTU in 2026.

Biography: (1) Mr. Dave Haberman is the SHARP system architect and chair of the HBC economics working group. Mr. Haberman has over 45 years of professional experience as an innovator, technology team leader and has served in multiple executive roles in technical businesses. He has commercialized hydrogen sensors, fuelcells and a variety of hydrogen production technologies. He holds seven awarded patents in energy systems and associated devices as well as four patents pending. Mr. Haberman has lectured on hydrogen at OTU on multiple occasions. He is a co-founder and a board member of the HBC.

(2) Aleisha Cerny, CEO of Serenity Power, is passionate about climate action and advancing clean energy solutions for remote and off-grid communities. With a background in materials engineering and fuel cell research, she leads Serenity Power in developing next-gen solid oxide fuel cell systems to accelerate the energy transition and deliver reliable, affordable power where it's needed most.

## SEGE-Invited Speaker IV

10:40-11:00 | August 19, 2026 | Zoom [Link](#) Pwd: 1215



**Assoc. Prof. Philip W. T. Pong**

New Jersey Institute of Technology, United States

### *Contactless Magnetic Sensing in Condition Monitoring and Anomaly Detection for Smart Grid: New Possibilities and Alternatives*

Our physical and cyber environments are becoming increasingly intertwined with smarter sensing, communication, and data analytics. Our daily livings are indeed surrounded by a wide variety of sensors, IoT connectivity, and edge computing devices, constituting smart grid, smart city, smart transportation, and so on. The availability of sensing devices with measurement, communication, and processing capabilities is providing fine-grained data. Together with multimodal sensory data collection and sensor fusion can result in actionable insights and decisions. This synergy can lead to improved ways and quality of life in what we call smart living.

Magnetism is one of the six energy forms of measurands in sensing. Magnetic sensing plays a critical role in smart living due to various sources of magnetic fields such as magnetic fields from current-carrying wires and permanent magnets which are geometrically determined by Biot-Savart Law and Ampere's Law respectively. These magnetic fields can range from DC to AC, from low frequency to high frequency. Modern civilization heavily relies on electricity which are generated, transmitted, and utilized through various kinds of transmission medium and electrical machines that are composed of current-carrying conductors, electromagnets, and permanent magnets. As such, magnetic field sensing is an important source of data and thus information for condition monitoring of power generation, transmission, and distribution. In this talk, we will discuss the various opportunities and alternatives magnetic field sensing can offer in condition monitoring and anomaly detection in smart grid and smart city. Since it is contactless sensing, its installation is easy and it can be easily retrofitted to the existing plant and equipment. This will minimize cost, avoid wear and tear, and meet stringent reliability requirement. Contactless magnetic sensing can complement the traditional contact measurement techniques and help to overcome the major obstacle towards pervasive sensing due to its scalability.

**Biography:** Philip W. T. Pong received a B.Eng. from the University of Hong Kong (HKU) with 1st class honours. Then he obtained a PhD in engineering at the University of Cambridge. He was a postdoctoral researcher at the Magnetic Materials Group at the National Institute of Standards and Technology (NIST). Currently he is an Associate Professor in the Department of Electrical and Computer Engineering at New Jersey Institute of Technology (NJIT). His research interest focuses on the fault detection, predictive maintenance, and anomaly detection of power grid. He is the Founding Director of the Power Systems Engineering Center, Green Technology Research and Training Laboratory, and Sensor Research Laboratory, leading the research and education activities of power engineering at NJIT. Philip Pong is a Fellow of the Institution of Engineering and Technology (FIET), a Fellow of the Institute of Physics (FInstP), a Fellow of the Energy Institute (FEI), a Fellow of the Institute of Materials, Minerals and Mining (FIMMM), a Fellow of the Hong Kong Institution of Engineers (FHKIE), a chartered physicist (CPhys), a chartered engineer (CEng), a chartered energy engineer, a registered professional engineer (R.P.E. in Electrical, Electronics, Energy), and a Senior Member of IEEE (SMIEEE). He serves on the editorial boards for several IEEE and SCI journals. Recently he received the IEEE Power and Energy Society North Jersey Chapter – Outstanding Power Engineer Award, NJIT Nexus of Excellence Award – Excellence in Graduate Instruction, and NJIT Newark College of Engineering – Excellence in Teaching Award.

# Onsite Session 1

**Topic: Multimodal Renewable Energy and New Energy Storage Technologies** 14:00-15:45  
**Session Chair: Prof. Mohamed Zayed, Prince Mugrin University, Saudi Arabia** Thursday, August 20  
SCI1120 <1F>

| Time        | Paper ID | Presenters                                                                                                                                             |
|-------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG030    |  Adel A. Ghoneim, College of Technological Studies, PAAET, Kuwait     |
| 14:15-14:30 | SG114    |  Murugan Sivalingam, National Institute of Technology Rourkela, India |
| 14:30-14:45 | SG055-A  |  Mohammad H. Entezari, Ferdowsi University of Mashhad, Iran           |
| 14:45-15:00 | SG304    |  Satsuki Ishiwata, Nihon University, Japan                            |
| 15:00-15:15 | SG021    |  Muhammad Saad Iqbal, University of Huddersfield, UK                  |
| 15:15-15:30 | SG094    |  Suresh Vishwakarma, North Vancouver, Canada                         |
| 15:30-15:45 | SG095    |  Suresh Vishwakarma, North Vancouver, Canada                        |

| Paper ID | Titles and Authors                                                                                                                                                                                                                                            |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG030    | Title: Grid-Interactive High-Concentrated Photovoltaic–Thermal Assisted Solar Heat Pump System for Near-Zero Energy Residential Buildings<br>Author(s): Kandil M. Kandil, Haitham A. Alabdulali, Ibrahim M. Kadad and Adel A. Ghoneim                         |
| SG114    | Title: An experimental study of charging and discharging characteristics of phase change material for thermal energy storage application<br>Author(s): Mrunmay Parida, Debi Prasad Sahoo and Murugan S                                                        |
| SG055-A  | Title: Design and Development of a Graphene/FeS <sub>2</sub> Composite Anode for High-Performance Sodium-ion Batteries<br>Author(s): Mohammad H. Entezari and Sara Ramandi                                                                                    |
| SG304    | Title: Mirror Field Dependence of Collisional-Merging Field-Reversed Configurations in the FAT-CM Device<br>Author(s): Satsuki Ishiwata, Ryo Matsuzawa, Himeka Suzuki, Ryunosuke Kikuchi, Loren Steinhauer and Tomohiko Asai                                  |
| SG021    | Title: Constraint-Consistent Multi-Service Scheduling of Grid-Connected Battery Energy Storage Systems for Frequency and Demand Flexibility Support<br>Author(s): Muhammad Saad Iqbal, Hamza Aagela, Nigel Schofield, Xingyu Liu, Yiheng Hu and Youssif Ahmed |
| SG094    | Title: The Role of Energy Storage Systems in Enabling a Sustainable Hydrogen Economy: Opportunities, Challenges, and Global Perspectives<br>Author(s): Suresh Vishwakarma and Ruchi Tyagi                                                                     |

SG095

Title: Advancing Wind Energy in Small Island Developing States: Opportunities and Challenges in a Changing Global Landscape  
Author(s): Suresh Vishwakarma and Ruchi Tyagi

Please enter the conference room 15 mins in advance.

## Onsite Session 2

**Topic: Intelligent Power System Control and Optimization Scheduling Integrated with Renewable Energy** 14:00-15:30  
**Session Chair: Dr. Gonesh Chandra Saha, Luleå University of Technology (LTU), Sweden** Thursday, August 20  
 SCI1220 <1F>

| Time        | Paper ID | Presenters                                                                                                                                                                              |
|-------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG008    |  Davis Adedayo Eisape, Technische Universität Berlin, Germany                                          |
| 14:15-14:30 | SG022    |  Mitra Nabian Dehaghani, Tallinn University of Technology, Estonia                                     |
| 14:30-14:45 | SG023    |  Jakob Geiges, Karlsruher Institute of Technology, Germany                                             |
| 14:45-15:00 | SG049    |  Furqan Amjad, Tallinn University of Technology, Estonia                                               |
| 15:00-15:15 | SG067    |  Lidia Shanti Singavarapu, Teesside University, United Kingdom                                         |
| 15:15-15:30 | SG101    |  Seyedsaeid Hosseini, Energy Technology Laboratory Hydro-Québec Research Institute Shawinigan, Canada |

| Paper ID | Titles and Authors                                                                                                                                                                                                                                           |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG008    | Title: A Carbon-Aware Household Flexibility Exchange: PBMC-Guided Rulebook, Carbon- Weighted Double Auction, and Trace-Driven Evaluation with Open GB Data<br>Author(s): Davis Adedayo Eisape                                                                |
| SG022    | Title: Distributed AI (DAI)-Based Controller via Imitation Learning for Voltage Regulation in Distribution Feeders<br>Author(s): Mitra Nabian Dehaghani, Zeeshan Ali Shah, Tarmo Korotko, Furqan Amjad, Md Asif Abbas and Argo Rosin                         |
| SG023    | Title: Flexible Coupling of Distributed Energy System Models via Remote Method Invocation<br>Author(s): Jakob Geiges, Julian Hoffmann, Kevin Förderer, Xuanhao Mu, Thorsten Schlachter, Ralf Reussner and Veit Hagenmeyer                                    |
| SG049    | Title: Assessment of Workflow Generation, Validation, and Runtime Overhead in LLM-Based Power System Analysis<br>Author(s): Furqan Amjad, Tarmo Korotko, Mitra Nabian Dehaghani and Argo Rosin                                                               |
| SG067    | Title: SAGE-GridNet: A Self-Adaptive Generative Graph-Transformer Model for Energy Generation, Grid Transmission–Distribution, and Storage Optimization<br>Author(s): Lidia Shanti Singavarapu and Michael Short                                             |
| SG101    | Title: Automated Energy-Temperature Sensitivity Analysis and Baseload Estimation Using Piecewise Change-Point Regression in Commercial Buildings<br>Author(s): Farshad Etedadi, Seyedsaeid Hosseini, Karine Lavigne, Marc-André Richard and José Luis Suarez |

Please enter the conference room 15 mins in advance.

## Onsite Session 3

**Topic: Electric Vehicle Charging Management and Safety Analysis of Power Infrastructure** 16:15-17:45  
 Session Chair: Prof. Adel A. Ghoneim, College of Technological Studies, PAAET, Thursday, August 20  
 Kuwait SCI1120 <1F>

| Time        | Paper ID | Presenters                                                                                                                                                           |
|-------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16:15-16:30 | SG024    |  Sebastian Beichter, Karlsruhe Institute of Technology (KIT), Deutschland           |
| 16:30-16:45 | SG050    |  Tristan Morin, Laval University, Canada                                            |
| 16:45-17:00 | SG068    |  Zahid Ullah, University of Campania "Luigi Vanvitelli", Italy                      |
| 17:00-17:15 | SG105-A  |  Mohamed Ibrahim Abdi, National Taiwan University of Science and Technology, Taiwan |
| 17:15-17:30 | SG110    |  Shuang Zhao, The Univeristiy of Alabama in Huntsville, United States               |
| 17:30-17:45 | SG108    |  Tahsin Altay K k, Galatasaray University, Turkey                                  |

| Paper ID | Titles and Authors                                                                                                                                                                                                                                                          |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG024    | Title: An Electric Vehicle Measurement System to Investigate the Pause and Resume Behavior of Electric Vehicle Charging<br>Author(s): Sebastian Beichter, Alexander Stein, Marius Dettki, Friedrich Wiegel, Richard Jumar, Simon Waczowicz, Marc Hiller and Veit Hagenmeyer |
| SG050    | Title: Managing the Charge, Managing the Mine: Smart Charging as an Upstream Strategy for Critical Mineral Demand Reduction<br>Author(s): Akhtar Hussain, Tristan Morin and Innocent Kamwa                                                                                  |
| SG068    | Title: Grid-Aware Deep Learning Electricity Demand Forecasting for future EV Charging Infrastructure Planning<br>Author(s): Zahid Ullah, Michele DeSantis, Luigi Rubino and Ahsan Zafar                                                                                     |
| SG105-A  | Title: Multi-Objective EV Charging Optimization for Peak Demand Reduction and User Satisfaction in Renewable-Integrated Campus Microgrids<br>Author(s): Mohamed Ibrahim Abdi and Abib Mohamud                                                                               |
| SG110    | Title: Spatiotemporal Drivers of U.S. Power Grid Reliability: A Decade-Scale Machine Learning Attribution (2015-2024)<br>Author(s): Danlu Cai, Shuang Zhao, Chao Fan, Di Shi and Fengyu Wang                                                                                |
| SG108    | Title: Real-Time Household Appliance Activity Detection from Aggregate Smart Meter Data Using IoT Ground Truth and Deep Learning<br>Author(s): Tahsin Altay K k                                                                                                             |

Please enter the conference room 15 mins in advance.

## Onsite Session 4

**Topic: Machine Learning Based Network Security and Data Protection in Power Systems**

Session Chair: Dr. Hamed Aly, Dalhousie University, Canada

16:15-17:30

Thursday, August 20

SCI1220 <1F>

| Time        | Paper ID | Presenters                                                                                                                                                                |
|-------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16:15-16:30 | SG103-A  |  Adugnaw Lake Temesgen, Addis Ababa University, Ethiopia                                 |
| 16:30-16:45 | SG031    |  Gonesh Chandra Saha and Ahmed Afif Monrat, Luleå University of Technology (LTU), Sweden |
| 16:45-17:00 | SG056    |  Hao Yang, Texas A&M University, College Station, TX, USA                                |
| 17:00-17:15 | SG061    |  Mohamed Zayed, Prince Mugrin University, Saudi Arabia                                   |
| 17:15-17:30 | SG118    |  Gonesh Chandra Saha, Luleå University of Technology (LTU), Sweden                       |

| Paper ID | Titles and Authors                                                                                                                                                                                            |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG103-A  | Title: Analyzing cost-optimal electrification technologies for universal electricity access at the subnational level in Ethiopia using OnSSET<br>Author(s): Adugnaw Lake Temesgen                             |
| SG031    | Title: Mitigating Cyber Risks in EV Infrastructure through Immutable Ledger and Decentralized Authentication<br>Author(s): Gonesh Chandra Saha, Ahmed Afif Monrat and Karl Andersson                          |
| SG056    | Title: A data-driven adaptive protection scheme for microgrids using K-means cluster analysis and intelligent electronic devices<br>Author(s): Jyh-Cherng Gu, Yu Yen, Hao Yang and Ming-Ta Yang               |
| SG061    | Title: Machine Learning-Based Intrusion Detection for Cyber-Physical Security of Digital Substations Using Multi-Layer IEC-61850 Features<br>Author(s): Ahmed Abdelmoety and Mohamed Zayed                    |
| SG118    | Title: A Blockchain-Based Smart Contract Framework for Trusted Metering and Secure Charging Session Management in EV Charging Systems<br>Author(s): Gonesh Chandra Saha, Ahmed Afif Monrat and Karl Andersson |

Please enter the conference room 15 mins in advance.

# Online Session 1

**Topic: Smart Grid Communication Security Protocol, Adaptive Protection, and Data Driven Operation Analysis**

Session Chair: Dr. Ahmed Afif Monrat, Luleå University of Technology (LTU) , Sweden

14:00-16:15

Wednesday, August 19

UTC/GMT-4

Room A <Link> Pwd: 1215

| Time        | Paper ID | Presenters                                                                                                                                                   |
|-------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG047    |  Dave Mercier, Dalhousie University, Canada                                 |
| 14:15-14:30 | SG048    |  Mishca de Costa, Dalhousie University, Canada                              |
| 14:30-14:45 | SG065    |  Sahan Abeysinghe, Sri Lanka Institute of Information Technology, Sri Lanka |
| 14:45-15:00 | SG012    |  Emmanuel Ahatsi, Durban University of Technology, South Africa             |
| 15:00-15:15 | SG016-A  |  Emilio Piesciorovsky, Oak Ridge National Laboratory, United States         |
| 15:15-15:30 | SG017-A  |  Emilio Piesciorovsky, Oak Ridge National Laboratory, United States        |
| 15:30-15:45 | SG025    |  Soheil Nazari, Dalhousie University, Canada                              |
| 15:45-16:00 | SG060    |  Chi Fai David Lam, University of Birmingham, United Kingdom              |
| 16:00-16:15 | SG087-A  |  Solomon Baye Ayalew, Ethio Telecom, Addis Ababa, Ethiopia                |

| Paper ID | Titles and Authors                                                                                                                                                                                                             |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG047    | Title: AI-Assisted Knowledge Access for Legacy Enterprise Asset Management in Energy Operations: A Practical Retrieval System<br>Author(s): Dave Mercier, Mishca de Costa, Muhammad Saleh Anwar, Mark Randall and Issam Hammad |
| SG048    | Title: From Naïve RAG to Deep Agentic Retrieval: An Evolving Context Engineering Pipeline for Regulatory Compliance<br>Author(s): Mishca de Costa, Muhammad Saleh Anwar, Dave Mercier and Issam Hammad                         |
| SG065    | Title: OceanSense: An IoT-Based Hybrid System for Real-Time Detection and Tracking of Marine Debris<br>Author(s): Sahan Abeysinghe, Sadeep Rathnayake, Charatha Jayasak, Dinithi Pandithage and Narmadha Gamage                |
| SG012    | Title: Optimised Microcontroller-Based Smart Energy Management System for Telecommunication Base Stations<br>Author(s): Emmanuel Ahatsi and Oludolapo Olanrewaju                                                               |
| SG016-A  | Title: Speed Enhancement for Inverse-Time Overcurrent Curves with Radio Antenna and Optical Fiber Communication with High- and Low-Inertia Generators                                                                          |

|         |                                                                                                                                                                                                                                                         |
|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | Author(s): Emilio Carlos Piesciorovsky, Trupal Rajeshbhai Patel and Matthew J. Reno                                                                                                                                                                     |
| SG017-A | Title: Advanced Digital Grid Twin Test Bed with Real Time Simulators for Assessing Point-to-Point Radio Antenna and Fiber-Optic Communication Protection Systems<br>Author(s): Emilio Carlos Piesciorovsky, Trupal Rajeshbhai Patel and Matthew J. Reno |
| SG025   | Title: An Adaptive Cloud-Integrated SCADA Platform with Embedded Fault Classification for Intelligent Smart Grids<br>Author(s): Soheil Nazari, Bailee Ens, Nicole Bevin, David MacDonald and Hamed Aly                                                  |
| SG060   | Title: Control Validation Gateway for Energy Management Systems under Data Integrity Attacks<br>Author(s): Chi Fai David Lam, Aad van Moorsel and Zoya Pourmirza                                                                                        |
| SG087-A | Title: Cybersecurity at the Convergence: A Multi-Tiered Architecture for Bridging IT and OT in Smart Energy Systems<br>Author(s): Solomon Baye Ayalew                                                                                                   |

Please enter the conference room 15 mins in advance.



## Online Session 2

**Topic: Dynamic Security Assessment and Adaptive Stability Control of Power Systems Driven by Artificial Intelligence**

Session Chair: Dr. Ahmed N. Sheta, Mansoura University, Egypt

14:00-16:15

Wednesday, August 19

UTC/GMT-4

Room B <[Link](#)> Pwd: 1215

| Time        | Paper ID | Presenters                                                                                                                                      |
|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG116    |  Tohid Rahimi, University of New Brunswick, Canada             |
| 14:15-14:30 | SG014    |  Amr Radwan, Western Washington University, United States      |
| 14:30-14:45 | SG058    |  Hamed Aly, Dalhousie University, Canada                       |
| 14:45-15:00 | SG073    |  Dira Tri Puspita, Universitas Gadjah Mada, Indonesia          |
| 15:00-15:15 | SG088    |  Chun-Ming Chang, National Cheng Kung University, Taiwan       |
| 15:15-15:30 | SG098    |  Xinchao Shao, Xi'an Jiaotong University, China               |
| 15:30-15:45 | SG112    |  Tigran Hakobyan, The University of British Columbia, Canada |
| 15:45-16:00 | SG093    |  Sidik Nkwankwa Yasin, University of Buea, Cameroon          |
| 16:00-16:15 | SG111    |  Supraja Jayanthi Baskaran, RMIT University, Australia       |

| Paper ID | Titles and Authors                                                                                                                                                                                                                                                                                         |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG116    | Title: Dual-Function Redundant-Leg Single-Phase Inverter for Active Power Filtering and Fault-Tolerant Operation<br>Author(s): Tohid Rahimi and Liuchen Chang                                                                                                                                              |
| SG014    | Title: Grid-Connected Current and Voltage Source Converters Interfacing Photovoltaic Generators Under Fault Conditions<br>Author(s): Amr Radwan, Xichen Jiang and Isabella Mize                                                                                                                            |
| SG058    | Title: Design and Preliminary Validation of a Boost-Based AC-DC Interface for Connecting a Three-Phase Micro Wind Turbine to PV MPPT Inverters<br>Author(s): Trent MacNeil, Kaden Katelnikoff, Josh Boudreau, Michael Lesanko and Hamed Aly                                                                |
| SG073    | Title: Optimizing Power System Flexibility through Retrofitting Coal-Fired Power Plants into Thermal Storage Power Plants<br>Author(s): Dira Tri Puspita, Lesnanto Multa Putranto and Sarjiya                                                                                                              |
| SG088    | Title: Comparative Stability Analysis of an Offshore Wind Farm Fed to a Multimachine Power System Using a High-Voltage DC Link based on a Voltage-Source Converter and a High-Voltage AC Line<br>Author(s): Li Wang, Chun-Ming Chang, Chin-Chang Chou, Zhi-Kuan Tsai, Yu-Tang Zhuang and Ching-Chung Tseng |

|       |                                                                                                                                                                                                                                                            |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG098 | Title: Multi-Objective Optimization of a Pulse Forming Network-Based Driving Source for Long-Stroke Electromagnetic Repulsion Mechanisms<br>Author(s): Jiangang Ding, Xinchao Shao, Hao'en Sun, Shuaibing Wang, Zaixing Peng, Lingfeng Luo and Xiaofei Yao |
| SG112 | Title: Control of Converter-Interfaced Resources for Coordinated Underfrequency Load Shedding<br>Author(s): Tigran Hakobyan, Arash Safavizadeh and Juri Jatskevich                                                                                         |
| SG093 | Title: Electro-thermal Mismatch and Relative-Reliability Analysis of High-Voltage Series-Stacked Si, SiC and GaN Buck Converter Cells for DC Microgrids<br>Author(s): Sidik Nkwankwa Yasin and Divine Khan Ngwashi                                         |
| SG111 | Title: Multi-Swarm Particle Swarm Optimisation (MPSO) of XGBoost for Cascading Failure Prediction in Offshore Wind Farms*<br>Author(s): Supraja J Baskaran, Malka N Halgamuge and Kazi N Hasan                                                             |

Please enter the conference room 15 mins in advance.



## Online Session 3

**Topic: Multi Objective Optimization Configuration and Adaptive Scheduling Strategy for Low-Carbon Operation of Microgrids** 14:00-16:15  
 Session Chair: Dr. Maurel Richy AZA-GNANDJI, National University of Agriculture, Benin Wednesday, August 19  
 UTC/GMT+4  
 Room C <[Link](#)> Pwd: 1215

| Time        | Paper ID | Presenters                                                                                                                                                              |
|-------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG070    |  Manh Tri Dao, Center for Environmental Economics and Climate Change Studies, Viet Nam |
| 14:15-14:30 | SG045    |  Muhammad Saleh Anwar, Dalhousie University, Canada                                    |
| 14:30-14:45 | SG010    |  Emmanuel Ahatsi, Durban University of Technology, South Africa                        |
| 14:45-15:00 | SG063    |  Ali Doostmohammadi, Lakehead University, Canada                                       |
| 15:00-15:15 | SG064    |  Ali Doostmohammadi, Lakehead University, Canada                                       |
| 15:15-15:30 | SG069    |  Aissa HENNI, University of Haute-Alsace, France                                     |
| 15:30-15:45 | SG080    |  Moses Kabeyi, Durban University of Technology, South Africa                         |
| 15:45-16:00 | SG082    |  Moses Kabeyi, Durban University of Technology, South Africa                         |
| 16:00-16:15 | SG079    |  Moses Kabeyi, Durban University of Technology, South Africa                         |

| Paper ID | Titles and Authors                                                                                                                                                                               |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG070    | Title: Resilience-Equity Screening for PV+Storage Allocation in Puerto Rico Using Public LMI Solar Potential Data<br>Author(s): Manh Tri Dao, Manh Tien Dao, Huong Giang Dao and Anh Thu Le Phan |
| SG045    | Title: Automated Classification of Nuclear Power Plant Condition Records Using Large Language Models<br>Author(s): Muhammad Saleh Anwar, Mishca de Costa, Dave Mercier and Issam Hammad          |
| SG010    | Title: Smart Solar Energy Expansion in Ghana: How Local Entrepreneurs Drive Last-Mile Access and Market Scalability<br>Author(s): Emmanuel Ahatsi and Oludolapo Olanrewaju                       |
| SG063    | Title: Integrated Electric Bus Fleet Optimization and Distribution Transformer Sizing for Opportunity Charging<br>Author(s): Ali Doostmohammadi, Abdulsalam Yassine and Amir Ameli               |
| SG064    | Title: Opportunity Charging of Electric Buses for Public Transit Systems<br>Author(s): Ali Doostmohammadi, Amir Ameli and Abdulsalam Yassine                                                     |

|       |                                                                                                                                                                                         |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG069 | Title: Double Deep Q-Network-Based Energy Routing for the Energy Internet<br>Author(s): Henni Aissa, Boualem Boukezata, Jaafar Gaber, Pascal Lorenz, Lina Abou-Abbas and Khadidja Henni |
| SG080 | Title: Intergration Of Reneables To Traditional Grids<br>Author(s): Moses Kabeyi                                                                                                        |
| SG082 | Title: Hydrogen Production From Biogas and Biomethane<br>Author(s): Moses Kabeyi                                                                                                        |
| SG079 | Title: COMPARATIVE ANALTSYSIS GRID-CONNECTED SOLAR POWER PLANTS<br>Author(s): Moses Kabeyi                                                                                              |

Please enter the conference room 15 mins in advance.



## Online Session 4

**Topic: Fault Diagnosis and Operation Status Monitoring of Power System Based on Multi-Source Data Fusion**

Session Chair: Dr. Tohid Rahimi, University of New Brunswick, Canada

14:00-16:00

Thursday, August 20

UTC/GMT-4

Room A <[Link](#)> Pwd: 1215

| Time        | Paper ID | Presenters                                                                                                                                                                     |
|-------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG075    |  Fitra Rachmad Tullah, Universitas Gadjah Mada, Indonesia                                     |
| 14:15-14:30 | SG043    |  Mahmoud Kiasari, Dalhousie University, Canada                                                |
| 14:30-14:45 | SG059    |  Akash Wishvajith Karunanayake, Sri Lanka Institute of Information Technology, Sri Lanka      |
| 14:45-15:00 | SG071    |  Tat Cuong Nguyen, Center for Environmental Economics and Climate Change Studies, Viet Nam    |
| 15:00-15:15 | SG072    |  Hoang Nguyen Nguyen, Center for Environmental Economics and Climate Change Studies, Viet Nam |
| 15:15-15:30 | SG210-A  |  Mouctar TCHAKALA, Universite of Quebec in Abitibi-Temiscamingue (UQAT), Canada             |
| 15:30-15:45 | SG029    |  Alişan Sarı, Siemens AS, Research and Development, Türkiye                                 |
| 15:45-16:00 | SG091    |  Rai Pramesti Suteja, Universitas Gadjah Mada, Indonesia                                    |

| Paper ID | Titles and Authors                                                                                                                                                                                                                                                     |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG075    | Title: Data-Driven Approach for Power System Voltage Stability Assessment and Critical Bus Detection with Incomplete PMU Measurements using TCN-SVM<br>Author(s): Fitra Rachmad Tullah, Lesnanto Multa Putranto, Husni Rois Ali and Rian Fatah Mochamad                |
| SG043    | Title: Physics-Informed Neural Network Hybrid with LSTM and Lagged Steps for Real-Time Harmonic Distortion Prediction in Smart Grids<br>Author(s): Mahmoud Kiasari and Hamed Aly                                                                                       |
| SG059    | Title: Day-Ahead Net Load Forecasting on a PV-Rich Tropical Distribution Feeder Using CEEMDAN and a Transformer Encoder<br>Author(s): Daraniyagala G. K, Wickramaratne A. J. S. de Z, Prasansa H. G. R, Karunanayake K. P. A. W, Jeewaka Perera and Poorna Panduwawala |
| SG071    | Title: Active Learning for Wind-Station Network Design Under Information-Regime Constraints<br>Author(s): Manh Tri Dao, Tat Cuong Nguyen and Hoang Nguyen Nguyen                                                                                                       |
| SG072    | Title: Selecting Aggregate Load Telemetry for Coherent Subregional Demand Reconstruction<br>Author(s): Manh Tri Dao, Hoang Nguyen Nguyen, Tat Cuong Nguyen and Manh Tien Dao                                                                                           |
| SG210-A  | Title: Artificial Neural Network Framework for Short-Term Load Forecasting in Multi-Source, Renewable-Diversified Energy Systems                                                                                                                                       |

|       |                                                                                                                                                                                                                                         |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | Author(s): Mouctar Tchakala, Tahar Tafticht, Md. Jahidur Rahman and Ntumba Marc-Alain Mutombo                                                                                                                                           |
| SG029 | Title: Refinement of COMTRADE Records for Double-Ended Fault Location on Transmission Lines<br>Author(s): Alisan Sari, Zuleyha Ipek Alagoz and Yunus Can Olmez                                                                          |
| SG091 | Title: Information Gap Decision Theory and Monte Carlo Simulation for Line Hardening under Seismic Uncertainty<br>Author(s): Rai Pramesti Suteja, M. Isnaeni Bambang Setyonegoro, Lesnanto Multa Putranto , Hossam A.Gabbar and Sarjiya |

Please enter the conference room 15 mins in advance.



## Online Session 5

**Topic: Data Driven Estimation of Battery Health Status and Performance Evaluation of Energy Storage Systems**

Session Chair: Dr. Emilio Carlos Piesciorovsky, Oak Ridge National Laboratory, United States

14:00-16:15

Thursday, August 20

UTC/GMT-4

Room B <[Link](#)> Pwd: 1215

| Time        | Paper ID | Presenters                                                                                                                                                          |
|-------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG032    |  Fawaz Alhadi, Najran College of Technology, Saudi Arabia                          |
| 14:15-14:30 | SG039    |  Ankurbhai Harshadbhai Patel, Charotar University of Science and Technology, India |
| 14:30-14:45 | SG066    |  Keerthi Vadhani Malarvannan, Purdue University Fort Wayne, United States          |
| 14:45-15:00 | SG097    |  John Salama, University of Waterloo, Canada                                       |
| 15:00-15:15 | SG077    |  Maria Fernanda Huerta Sanchez, Universidad Autonoma de Queretaro, México          |
| 15:15-15:30 | SG057    |  Liang-Cheng Huang, National Cheng Kung University, Taiwan                        |
| 15:30-15:45 | SG106    |  Maurel Richy AZA-GNANDJI, National University of Agriculture, Benin             |
| 15:45-16:00 | SG107    |  Ahmed N. Sheta, Mansoura University, Egypt                                      |
| 16:00-16:15 | SG046    |  Wenting Zhao, Taiyuan University of Technology, China                           |

| Paper ID | Titles and Authors                                                                                                                                                                                        |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG032    | Title: Deep Reinforcement Learning-Based Adaptive Frequency Selection for Dynamic Wireless Power Transfer Systems<br>Author(s): Hmeda Musbah, Fawaz M Alhadi and Hamed Aly                                |
| SG039    | Title: Hybrid JAYA FFRLS UKF LSTM Framework for Ageing-Aware SOC and SOH Estimation of Lithium-Ion Batteries in Electric Vehicles<br>Author(s): Ankur Patel, Nilaykumar A Patel and Tigmanshu Patel       |
| SG066    | Title: Analysis of Active Cell Balancing in Lithium-ion batteries with LT8584 and LTC3300-1 using DC2100B-C Board<br>Author(s): Keerthi Vadhani Malarvannan, Dr.Elizabeth Thompson and Dr.Edward P Lyvers |
| SG097    | Title: A Simulation Framework for Configurable Data Generation in Multi-Stack Lithium-Ion Battery Energy Storage Systems<br>Author(s): John Salama, Hakim Abogharaf and Sagar Naik                        |
| SG077    | Title: State Estimation of Photovoltaic Panels Under Variable Environmental Conditions Using Kalman Filter and Neural Network Corrector                                                                   |

|       |                                                                                                                                                                                                                                                                                                                                                                   |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | Author(s): María Fernanda Huerta-Sánchez, David A. Elvira-Ortiz, Juan J. Saucedo-Dorantes, Arturo Y. Jaen-Cuellar and Eduardo Perez-Anaya                                                                                                                                                                                                                         |
| SG057 | Title: Power Smooth/Stability Improvement of a Large-scale Offshore Wind Farm Connected to a Power System Using a Vanadium Redox Flow Battery-based Energy Storage System<br>Author(s): Li Wang, Liang-Cheng Huang, Yu-Hsung Chang, Wei-Yow Hsu, Jyun-Hao Hu and Ching-Chung Tseng                                                                                |
| SG106 | Title: Optimal Sizing and Probabilistic Assessment of a PV-Biomass-Battery Microgrid under Climatic Variability: A Case Study in Central Benin<br>Author(s): Maurel Richy AZA-GNANDJI, Isaac AMOUSSOU, Melhyas KPLE, K. B. Audace DIDAVI, Steve BAGAN, Rhétice GRIMAUD, Johnson Herlich Roslee MENSAH, Cossi Télésphore NOUNANGNONHOU and François-Xavier FIFATIN |
| SG107 | Title: A Predictive Energy Management Framework for Low-Emission and Resilient Waterfront Microgrids<br>Author(s): Ahmed N. Sheta and Hossam A. Gabbar                                                                                                                                                                                                            |
| SG046 | Title: A Study on Investment Decision-Making and Optimal Operation Strategies for Grid-Side Independent Energy Storage Stations in Shanxi Province<br>Author(s): Jiayang Zhang and Wenting Zhao                                                                                                                                                                   |

Please enter the conference room 15 mins in advance.

## Online Session 6

**Topic: Dynamic Pricing Mechanism and Auxiliary Service Market Strategy for High Proportion New Energy Power Systems**

Session Chair: To be added

14:00-16:15

Thursday, August 20

UTC/GMT-4

Room C <[Link](#)> Pwd: 1215

| Time        | Paper ID | Presenters                                                                                                                                                     |
|-------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14:00-14:15 | SG076    |  Matthew Moosavian, Quanta Services Inc, United States                        |
| 14:15-14:30 | SG009    |  Sk. A. Shezan, Northern Border University, Saudi Arabia                      |
| 14:30-14:45 | SG078    |  Moses Kabeyi, Durban University of Technology, South Africa                  |
| 14:45-15:00 | SG038    |  Abdussalam Mohamed, Dalhousie University, Canada                             |
| 15:00-15:15 | SG074    |  Matthew Moosavian, Quanta Services Inc, United States                        |
| 15:15-15:30 | SG033    |  Fawaz Alhadi, Najran College of Technology, Saudi Arabia                    |
| 15:30-15:45 | SG096    |  Pratapa Raju Moola, University of Technology and Applied Sciences, Oman    |
| 15:45-16:00 | SG113    |  Diego Câmara Sales, Federal Institute of Amazon (FAM), Brazil              |
| 16:00-16:15 | SG001    |  Anthony Ademola Adeyanju, University of the West Indies, Trinidad & Tobago |

| Paper ID | Titles and Authors                                                                                                                                                                                                                                                                                         |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG076    | Title: Poisson–Monte Carlo Approach for Optimal Data Center Placement in Power Grids<br>Author(s): Masoud Barati and Matthew Moosavian                                                                                                                                                                     |
| SG009    | Title: Techno-Economic Feasibility and Power System Assessment of Solar–Hydro–BESS–EVCS Grid-Connected Microgrid by Using SSHO (Solar-Storage-Hydro Optimizer) Optimization Algorithm and Droop Control<br>Author(s): Md. Fatin Ishraque, Md. Nimul Hasan, Sk. A. Shezan, Innocent Kamwa and Gm Shafiullah |
| SG078    | Title: Biomethane Market: Future Prospects As Hydrogen Feedstock<br>Author(s): Moses Kabeyi                                                                                                                                                                                                                |
| SG038    | Title: Planning Renewable-Powered Electric Vehicle Microgrids: Levelized Cost of Energy Minimization under Strict Green Charging and Discount-Rate Uncertainty<br>Author(s): Abdussalam Mohamed, Yousef Ali and Hamed Aly                                                                                  |
| SG074    | Title: Resilient Off-Grid EV Charging Infrastructure for Rural Highway Corridors: A Site-Specific Techno-Economic Analysis<br>Author(s): Matthew Moosavian, Mohammad Rezvani and Masoud Barati                                                                                                             |

|       |                                                                                                                                                                                                                                                                                                                                                     |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SG033 | Title: A Machine Learning Framework for Renewable Energy Site Suitability Assessment Using Synthetic Data: A Case Study of Libya<br>Author(s): Fawaz Alhadi, Hmeda Musbah, Shokri Khalifa and Hamed Aly                                                                                                                                             |
| SG096 | Title: Quantum Feature-Enhanced Day-Ahead Solar Irradiance Forecasting: A Circuit Depth Study<br>Author(s): Pratapa raju Moola, Praveen N and Mazin al himali                                                                                                                                                                                       |
| SG113 | Title: A Proposed Framework Using a Hybrid Structural-XGBoost Model for Brazilian Electricity Spot Price Forecasting Considering Hydrological Regimes<br>Author(s): Clarissa do Nascimento Evangelista, Gabriel Almeida Santos de Oliveira, Diego Camara Sales, Victor Beltrao Valente Duarte, Lawany da Silva Souza and Luiz Eduardo Sales e Silva |
| SG001 | Title: Exploiting Sea Thermal Energy for Sustainable Electricity Generation. A case Study of Trinidad and Tobago<br>Author(s): Anthony Ademola Adeyanju                                                                                                                                                                                             |

Please enter the conference room 15 mins in advance.



# Note

A series of 20 horizontal dashed lines for taking notes.

