Annual Conference of the IEEE Industrial Electronics Society (IECON 2021)

Special Session on

"Advances in Component and System Modeling and Simulation of Power Systems in Transition to Converter-Dominated Systems"

Organized by

Principal Organizer: Dr. Phylicia Cicilio (pcicilio@alaska.edu)
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Organizer 1:
Organizer 1: Dr. Timothy Hansen (Timothy.Hansen@sdstate.edu)
Affiliation: South Dakota State University

Organizer 2: Dr. Reinaldo Tonkoski (reinaldo.tonkoski@sdstate.edu)
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Call for Papers

Theme: Accurate modelling tools are essential to plan and operate a reliable electric power system. The increasing penetration of converter-based resources is challenging our ability to use established modelling approaches that have been shaped by the fundamental physics and standardized control methods associated with synchronous machines. This is particularly challenging for systems greater than 50% and less than 100% penetration of converter-based resources, which are transitioning to being fully converter-dominated. A converter-dominated power system will be driven by smaller physical time constants and by controllers that are still evolving today. Advancements in dynamic and transient modelling, simulation, and control of converter-dominated systems and those transitioning into being converter-dominated systems, including systems with small synchronous generators, distributed generation, and microgrids, are needed to ensure reliable operation and planning of future electric power systems.

Topics of interest include, but are not limited to:

- Converter-based resource dynamic and transient modelling
- Data-driven dynamic and transient modelling techniques
- Microgrid dynamic modelling and simulation
- Power Electronics modelling for integration in power systems

Good quality papers may be considered for publication in the IEEE Trans. on Industrial Electronics, subject to further rounds of review.

- Modeling advanced inverter controllers for power systems simulation
- Simulation and control of low inertia systems
- Distributed energy resource dynamic and transient modelling and simulation
- Converter-dominated power system operation and planning methods
- Advanced Converter control strategies

Submissions Procedure: All the instructions for paper submission are included in the conference website**: https://attend.ieee.org/iecon-2021/**

Deadlines:

Full paper submission:	June 25, 2021
Paper acceptance notification:	July 30, 2021
Camera-ready paper submission:	Aug. 27, 2021

Brief Biography of the SS Organizers

Phylicia Cicilio is a Research Assistant Professor at the Alaska Center for Energy and Power at the University of Alaska, Fairbanks. She received the B.S. degree in chemical engineering in 2013 from the University of New Hampshire, Durham, NH, USA. She received the M.S. and Ph.D. degrees in electrical and computer engineering in 2017 and 2020 from Oregon State University, Corvallis, OR, USA. Her research interests include power system reliability and dynamic power system modeling particularly of loads, inverter-based resources, and distributed energy resources.

Timothy M. Hansen received the B.S. in computer engineering degree from the Milwaukee School of Engineering, Milwaukee, WI, USA, in 2011, and the Ph.D. in electrical engineering degree from Colorado State University, Fort Collins, CO, USA, in 2015. He is currently an Assistant Professor with the Electrical Engineering and Computer Science Department, South Dakota State University, Brookings, SD, USA. His research interests are in the areas of optimization, high-performance computing, and electricity market applications to sustainable power and energy systems, low-inertia power systems, smart cities, and cyber-physical-social systems. Dr. Hansen is also an active member in ACM SIGHPC. He was the recipient of the 2019 IEEE-HKN C. Holmes MacDonald Outstanding Teaching Award, and was the inaugural recipient of the Milwaukee School of Engineering Graduate of the Last Decade award in 2020. Within IEEE he is the IEEE Siouxland Section Chair (since 2019) and is active within the IEEE PES Power Engineering Education Committee, currently serving as the Awards Subcommittee Chair.

Reinaldo Tonkoski is the Harold C. Hohbach Endowed Professor in the Electrical Engineering and Computer Science Department at South Dakota State University, USA and a Visiting Professor at Sandia National Laboratories. He received his B.A.Sc. degree in Control and Automation Engineering, in 2004 and his M.Sc. in Electrical

Engineering in 2006 from PUC-RS (Pontifícia Universidade Católica do RS), Brazil, and, his Ph.D. in 2011 from Concordia University, Canada. Dr. Tonkoski has authored over one hundred technical publications in peer reviewed journals and conferences and is currently an Editor of IEEE Transactions on Sustainable Energy, IEEE Access and IEEE Systems Journal. His research interests include grid integration of sustainable energy technologies, energy management, power electronics and control systems.

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