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Education and Training

Ph.D. in Electrical Engineering with focus on Power Systems Engineering, University of Tennessee, Knoxville, '09
M.S. in Electrical Engineering with focus on Power Electronics, University of Tennessee, Knoxville, '06
B.S. in Electrical Engineering, University of Tennessee, Knoxville, '04

Research and Professional Experience

present Electrical Engineering Researcher, Power and Energy Systems, Oak Ridge National Laboratory, Oak Ridge, TN
'04-'09 Graduate Researcher at University of Tennessee
'03-'04 Future Truck Competitor

Publications

Recent publications focused on renewables, energy storage, demand response, and DC systems:

Journals and conferences

- **Starke, Michael**; Xiao, Bailu; Liu, Guodong; Ollis, Ben; Irminger, Philip; King, Dan; Herron, Andrew; Xue, Yaosuo; Architecture and Implementation of Microgrid Controller, IEEE Innovative Smart Grid Technologies, 2016.
- Xiao, Bailu; **Starke, Michael**; King, Dan; Irminger, Philip; Herron, Andrew; Ollis, Ben; Xue, Yaosuo, Implementation of System Level Control and Communications in a Hardware-in-the-Loop Microgrid Testbed, IEEE Innovative Smart Grid Technologies, 2016.
- Irminger, Philip; **Starke, Michael**; Economic Feasibility Analysis and Operational Testing of Community Energy Storage System, ECCE, September 2016.
- Liu, Guodong; **Starke, Michael R**; Ceylan, Oguzhan; Tomsovic, Kevin; Advanced Energy Storage Management in Distribution Network, The 49th Hawaii International Conference on System Sciences (HICSS), January 2016.
- Ceylan, Oguzhan; Ollis, T Ben; **Starke, Michael R**; Irminger, Philip; Tomsovic, Kevin; A Regression Based Hourly Day Ahead Solar Irradiance Forecasting Model by Labview using Cloud Cover Data, 9th International Conference on Electrical and Electronics Engineering, November 2015.
- Xiao, Bailu; Prabakar, Kumaraguru; **Starke, Michael R**; Liu, Guodong; Dowling, Kevin Ollis, T Ben; Irminger, Philip; Xu, Yan; Dimitrovski, Aleksandar D;

Development of Hardware-in-the-loop Microgrid Testbed, IEEE Energy Conversion Congress and Exposition, September 2015.

- B. Johnson, **M. Starke**, A. Dimitrovski, “Examining the Potential Impact of Plug-In Electric Vehicles on Residential Sector Power Demand,” IEEE PES General Meeting, July 2015.
- Dimitrovski, Aleksandar D; Gurralla, Gurunath; **Starke, Michael R**; Pannala, Sreekanth; Simunovic, Srdjan; Parareal in Time for Fast Power System Dynamic Simulations, IEEE Transactions on Power Systems, July 2015.
- Irminger, Philip; **Starke, Michael R**; Ollis, T Ben; King, Daniel J; Labaza, Christine; Valencia, Pablo; Karlson, Peter; Thambiappah, Seelan; Parn, Karl; Massin, “Demand Charge Reduction, Power Factor Control, and Other Functions Using Secondary-Use Batteries”, Advanced Automotive Battery Conferences June 2015.
- J. Nutaro, D. Fugate, T. Kuruganti, J. Sanyal, **M. Starke**, Cost Effective Retrofit Technology for Reducing Peak Power Demand in Small and Medium Commercial Buildings, Science and Technology for the Built Environment, 2015.
- B. Johnson, **M. Starke**, O. Abdelaziz, R. Jackson, and L. Tolbert, “A Dynamic Simulation Tool for Estimating Demand Response Potential from Residential Loads,” in 6th Conference on Innovative Smart Grid Technologies (ISGT 2015), Washington, D.C., February 2014.
- J. Li, P. Jones. O. Onar, **M. Starke**, "Coupling electric vehicles and power grid through charging-in-motion and connected vehicle technology," *Electric Vehicle Conference (IEVC), 2014 IEEE International* , vol., no., pp.1,7, 17-19 Dec. 2014
- P. Irminger, **M. Starke**, A. Dimitrovski, M. Young, J. Stovall, D. Rizy, P. Overholt, “A Testing Platform for Validation of Aging Models and Understanding Thermal Limits of Overhead Conductors,” IEEE PES General Meeting, July 2014.
- **M. Starke**, J. Nutaro, P. Irminger, B. Ollis, T. Kuruganti, D. Fugate, “Integration of Photovoltaics into Building Energy Usage through Advanced Control of Rooftop Units,” 3rd International High Performance Buildings Conference at Purdue, July 14-17, 2014.
- J. Nutaro, D. Fugate, T. Kuruganti, **M. Starke**, “An inexpensive retrofit technology for reducing peak power demand in small and medium commercial buildings”, Proceedings of the 3rd International High Performance Buildings Conference at Purdue, July 14-17, 2014.
- **M. Starke**, P. Irminger, B. Ollis, G. Andrews, O. Onar, P. Karlson, P. Valencia, S. Massin, A. Goodson, P. Rosenfeld, “Community Energy Storage with Secondary Use EV/PHEV Batteries,” TechConnect 2014.
- B. Johnson, **M. Starke**, O. Abdelaziz, R. Jackson, and L. Tolbert, “A Method for Modeling Household Occupant Behavior to Simulate Residential Energy Consumption,” in 5th Conference on Innovative Smart Grid Technologies (ISGT 2014), Washington, D.C., Feb. 19-22, 2014.
- B. Johnson, **M. Starke**, O. Abdelaziz, R. Jackson, and L. Tolbert, “A MATLAB Based Occupant Driven Dynamic Model for Predicting Residential Power Demand,” in Transmission & Distribution Conference & Exposition (T&D 2014), Chicago, IL, Apr. 14-17, 2014

- **M. Starke**, D. Letto, N. Alkadi, R. George, B. Johnson, K. Dowling, S. Khan, Demand-side Response from Industrial Loads, TechConnect 2013.
- N. Alkadi, **M. Starke**, O. Ma, K. Dowling, B. Johnson, S. Khan, S. Nimbalkar, D. Cox, “IGATE-E (Industrial Geospatial Analysis Tool for Energy Evaluation),” 35th Industrial Energy Technology Conference.
- O. Ma, N. Alkadi, P. Cappers, P. Denholm, J. Dudley, S. Goli. M. Hummon, S. Kilicotte, J. MacDonald, N. Matson, D. Olsen, C. Rose, M. Sohn, **M. Starke**, B. Kirby, M. O’Malley, “Demand Response for Ancillary Services,” IEEE Transactions on Smart Grid, December 2013.
- D. F. Howard, T. Smith, **M. Starke**, R. G. Harley, “Short circuit analysis of induction machines-wind power application” IEEE PES Transmission and Distribution Conference and Expo, May 2012.
- O. Onar, **M. Starke**, G. Andrews, R. Jackson, “Modeling, Controls, and Applications of Community Energy Storage Systems with Used EV/PHEV Batteries,” IEEE Transportation Electrification Conference and Expo, June 2012.
- M Bradt, W Dilling, B Lanz, K Louis, T Nicolai, **M. Starke**, “Wind power plant testing and commissioning,” PES General Meeting, July 2011, Page(s): 1-4.
- M. Bradt, B. Badrzadeh, E. Camm, D. Mueller, J. Schoene, T. Siebert, T. Smith, **M. Starke**, R. Walling, “Harmonics and Resonance Issues in Wind Power Plants,” PES General Meeting, July 2011, Page(s): 1-8.
- D. F. Howard, J. Restrepo, T. Smith, **M. Starke**, J. Dang, R. G. Harley, “Calculation of Fault Current Contribution of Type I Wind Turbine-Generators” IEEE PES General Meeting, July 2011.
- M. Bradt, M. R. Behnke, T.A. Bellei, W. G. Bloethe, C. Brooks, E.H. Camm, W. Dilling, B. Goltz, J. Li, J. Niemira, K. Nuckles, J. Patiño, M. Reza, B. Richardson, N. Samaan, J. Schoene, T. Smith, I. Snyder, **M. Starke**, K. Tay, R. Walling, G. Zahalka, “Power Transformer Application for Wind Plant Substations,” 2010 IEEE PES, April 2010.
- M. Bradt, M. R. Behnke, T.A. Bellei, W. G. Bloethe, C. Brooks, E.H. Camm, W. Dilling, B. Goltz, J. Li, J. Niemira, K. Nuckles, J. Patiño, M. Reza, B. Richardson, N. Samaan, - J. Schoene, T. Smith, I. Snyder, **M. Starke**, K. Tay, R. Walling, G. Zahalka, “Design and Application of Cables and Overhead Lines in Wind Power Plants,” 2010 IEEE PES, April 2010.
- M. Bradt, M. R. Behnke, T.A. Bellei, W. G. Bloethe, C. Brooks, E.H. Camm, W. Dilling, B. Goltz, J. Li, J. Niemira, K. Nuckles, J. Patiño, M. Reza, B. Richardson, N. Samaan, J. Schoene, T. Smith, I. Snyder, **M. Starke**, K. Tay, R. Walling, G. Zahalka, “Arc-Flash Hazard in Wind Power Plants,” Transmission and Distribution Conference and Exposition, 2010 IEEE PES, April 2010.
- Dale Kaiser, G Palanisamy, S Santhana Vannan, Y Wei, T Smith, **M Starke**, M Wibking, Y Pan, Ranjeet Devarakonda, BE Wilson, The Wind ENergy Data and Information (WENDI) Gateway: New Information and Analysis Tools for Wind Energy Stakeholders,” AGU Fall Meeting, December 2010.
- **M. Starke**, L. Tolbert, B. Ozpineci, “AC Vs. DC: A Loss Comparison,” IEEE PES Transmission and Distribution Conference, April 2008, page(s): 1-7

- X. Yu, **M. Starke**, L. Tolbert, B. Ozpineci, “Fuel cell power conditioning for electric power applications: a summary,” *Electric Power Applications*, Vol. 1, Issue 5, Sept. 2007, page(s): 643-656.
- BL Burks, M Huffer, S Gabbert, **M Starke**, MJ Rennich, TW Burgess, SM Killough, JC Rowe, “Portable Manipulator Systems for Remote Maintenance at the ORNL Spallation Neutron Source Project,”

Reports

- Roderick Jackson, Omer C. Onar, Harold Kirkham, Emily Fisher, Klaehn Burkes, **Michael Starke**, Olama Mohammed, George Weeks, Opportunities for Efficiency Improvements in the U.S. Electricity Transmission and Distribution System, ORNL/TM-2015/5, April 2015
- M. Starke, N. Alkadi, O. Ma, “Assessment of Industrial Load for Demand Response across US Regions of the Western Interconnect” 2013, ORNL/TM-2013/407.
- C. Narual, R. Martinez, O. Onar, **M. Starke**, G. Andrews, “Final report economic analysis of depleting used batteries in power systems,” 2011, ORNL/TM6.
- **M. Starke**, O. Onar, B. Devault, “Key Residential Building Equipment Technologies for Control and Grid Support – PART I (Residential),” ORNL/TM-2011/143, August 2011.
- D. Todd, M. Caufield, B. Helms, **M. Starke**, B. Kirby, J. Kueck, “Providing reliability services through demand response: A preliminary evaluation of the demand response capability of Alcoa Inc, 2008, ORNL/TM233.
- J. Hsu, M Staunton, **M. Starke**, “Barriers to the application of high-temperature coolants in hybrid electric vehicles,” 2006, ORNL/TM514.
- **M. Starke**, “Potential refrigerants for power electronics cooling,” 2005, ORNL/TM219.

Professional activities

- Member of IEEE Power and Energy Society (Institute of Electrical and Electronics Engineers) – Power Engineering Society