

SOUTHEAST ENERGY STORAGE WORKSHOP SERIES

Presented by the DOE Office of Electricity Energy Storage Program, Southern Research, Sandia National Laboratories, and Oak Ridge National Laboratory.

Session 3: Technology Life Cycle

Tuesday, May 3, 2022

1:00 PM – 3:00 PM (Central Time)

The need to transition from fossil fuels to renewable energy is becoming ever more obvious and urgent. Energy storage is a critical component of the energy transition. Advances in energy storage technology, policy, and applications are quickly increasing around the world, and keeping up with those changes is an ongoing challenge. This workshop series—targeting many issues specific to the Southeast—addresses those advances in energy storage to help stakeholders stay up to date on energy storage roles and capabilities.

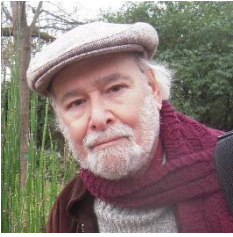
Agenda

Session 3: Technology Life Cycle (5/3/2022)

1:00 – 1:10	Introductory Remarks Dr. Imre Gyuk, Director, Energy Storage Program, U.S. DOE Office of Electricity
1:10 – 1:35	Medium & Long Duration Energy Storage Dr. Imre Gyuk, Director, Energy Storage Program, U.S. DOE Office of Electricity
1:35 – 2:00	How National Labs Are Working on Second Life Dr. Michael Starke, Power Systems Research Engineer, Oak Ridge National Laboratory
2:00 – 2:25	Second Life in the Real World Dr. Alyssa McQuilling, Advanced Environmental Engineer, Southern Research
2:25 – 2:50	Recycling & End of Life Austin Ornelas, Li-Cycle
2:50 – 3:00	Q&A/Discussion



Speaker Biographies



After taking a B.S. from Fordham University, **Dr. Imre Gyuk** did graduate work at Brown University on Superconductivity. Having received a Ph.D. in Theoretical Particle Physics from Purdue University he became a Research Associate at Syracuse. As an Assistant Professor he taught Physics, Civil Engineering, and Environmental Architecture at the University of Wisconsin. Dr. Gyuk became an Associate Professor in the Department of Physics at Kuwait University where he became interested in issues of sustainability. Dr. Gyuk joined the Department of Energy to manage the Thermal and Physical Storage program. For the past two decades he has directed the Electrical Energy Storage research program in the Office of Electricity, developing a wide portfolio of storage technologies for a broad spectrum of applications. He supervised the \$185M ARRA stimulus funding for Grid Scale Energy Storage Demonstrations and is now partnering with the States on numerous storage projects for grid resilience. His work has led to 12 R&D 100 awards, two EPA Green Chemistry Challenge Awards, and Lifetime Achievement Awards from ESA and NAATBatt. He is internationally recognized as a leader in the energy storage field.



Michael Starke is a Power Systems Research Engineer at the Oak Ridge National Laboratory. He has been at ORNL for over 7 years performing research in different areas of power systems analysis. He received his B.S, M.S. and Ph.D. in electrical and computer engineering at The University of Tennessee in 2004, 2006, and 2009 respectively. Michael is a member of IEEE and of the Power and Energy Society with over 30 publications in power systems and power electronics. His research areas have been primarily focused on energy storage, demand response, and microgrids, but he has been actively engaged in wind and solar generation research as well. In the microgrid area of research, he has led a team that developed an open-source microgrid controller called CSEISMIC and is currently engaged in the planning of demonstration projects related to this controller. This microgrid controller utilizes new strategies in communications and controls unlike other microgrid controllers. Michael also led a team that has successfully constructed a secondary use energy storage system composed of Chrysler FIAT Li-ion batteries with ORNL designed inverter controls and communications interface. This energy storage system is being deployed on a project titled the Advanced Manufacturing and Integrated Energy (AMIE) in which CSEISMIC is able to operate and optimize a heating, ventilation, and air conditioning system, energy storage, and PV to minimize grid impact and cost. He has also worked on several demand response projects with industrial load partners and received a patent on a tool developed to estimate the demand response potential of industrial plants.



Alyssa McQuilling, Ph.D., provides onsite testing support and data analysis for the Front-of-Meter and Behind-the-Meter Storage Testing programs in Birmingham. She has worked at Southern Research since early 2016 and joined the energy storage research team in 2017. Including her doctoral research, Dr. McQuilling has nearly 10 years of research experience in air quality, energy, and agricultural topics.

During her time at Southern Research, Dr. McQuilling has worked on projects ranging from energy storage to greenhouse gas emissions inventories and nutrient management in agricultural systems. She was awarded funding through the USDA-NIFA program as a co-PI on a project investigating “Nutrient use efficiency in multi-trophic aquaculture production” with Auburn University. She also oversaw the operation and commissioning of two energy storage systems at Southern Research during the past year.

Her scientific record includes peer-reviewed publications and presentations on a wide range of topics, from agricultural ammonia emissions, the national ammonia emissions inventory, nutrient cycling, and energy storage testing and its role for the grid in the Southeastern United States.

Alyssa received her BS in Environmental Engineering from North Carolina State University in Raleigh, NC and her MS and PhD from Carnegie Mellon University in Pittsburgh, PA.



Austin Ornelas began his career in the battery business with the largest aftermarket battery distributor in the world where he learned about the power of branding through market distribution and service. Applying proven principles of the Interstate Battery System, he led his market to top growth for 3 consecutive years. Believing that the growth of a great product comes only

with the strength of the team behind it, he joined Fullriver Battery USA who was looking for just that. 9 years on the Fullriver Battery USA team proved to be a pivotal experience in creating a brand through selling in SLI and deep cycle channels that demanded the best of AGM products. Now at Li-Cycle, Austin is working on the commercial battery supply team and closing the gap of Li battery recycling across all industries. Li-Cycle is the model for sustainability to the people, profits, and the environment of a growing demand for Li batteries across the globe.