UNIVERSITY OF ALBERTA – FUTURE ENERGY SYSTEMS

GRIDS & STORAGE

$9.4M in research funding to 2023

16 active grids & storage projects

35 Principal Investigators and Co-Investigators

109 students & post-doctoral fellows

RENEWABLE ENERGY SAFELY ON DEMAND

Harnessing renewable energy requires the ability to control and adapt to the complex interaction between multiple sources and users. Smart grid technology will enable systems that can adapt to the variation in supply, and storage technologies will make it possible to retain energy generated during non-peak times to be held for later use, and to generate synthetic fuels to be used for other applications such as heating, transportation, and fertilizer production. Developing hybrid grids that can accommodate both AC and DC power, accommodating distributed generation, and effectively interfacing with legacy grid systems will be essential to our energy future.

CURRENT RESEARCH PROJECTS

Additive manufactured porous transport layers and bipolar plates for proton exchange membrane electrolyzer cells
Principal Investigator: Ahmed Qureshi

Dependable and Autonomic Computing Platform for Managing Transactive Microgrids
Principal Investigator: Hamzeh Khazaei

Distributed Energy Management for More Electronics Smart Grids
Principal Investigator: Yunwei (Ryan) Li

Distributed Energy Storage
Principal Investigator: Pierre Mertiny

Economic Policy and the Future Electricity Grid
Principal Investigator: Andrew Leach

Energy Management Strategies for Distributed Energy Resources
Principal Investigator: Omid Ardakanian

Future Smart Grids Structures
Principal Investigator: Yunwei (Ryan) Li

Next Generation Energy Storage Using Unconventional Materials
Principal Investigator: Jonathan Veinot

Novel Rechargeable Battery Technology based on Zinc-Ion Intercalation Materials
Principal Investigator: Xiaolei Wang

Operational Decision Support for Smart Grids
Principal Investigator: Petr Musilek

Rational Design of Next-generation Lithium-Sulfur Batteries for Clean Energy Storage
Principal Investigator: Ge Li

Regulating lithium nitrate solvation chemistry in carbonate electrolytes for high-voltage Li-metal batteries
Principal Investigator: Zhehui Jin

Research on Interfacial Control of Solid State Lithium Batteries
Principal Investigator: Zhehui Jin

Surface Science Hub for Clean Technology (SSH-CT)
Principal Investigator: Prashant Waghmare

Utility Scale Energy Storage
Principal Investigator: Marc Secanell

Vanadium Redox Flow Battery (VRFB) - technology comparison, acquisition of experience, development of use cases and energy management strategies
Principal Investigator: Petr Musilek

RECENT NEWS STORY

- Spinning up electric buses

For the latest information:
futureenergysystems.ca/grids-storage

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