

Sandia National Laboratories

Energy Storage R&D Program Update



PRESENTED BY

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Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Energy Storage R&D at Sandia

BATTERY MATERIALS

Large portfolio of R&D projects related to advanced materials, other battery chemistries, electrochemical methods, and



CELL & MODULE LIFE CYCLE

Assess the safety and performance of selected energy storage systems common to the cell, module, and system.



POWER CHAIN SYSTEMS

Research and development regarding the safety and performance of power electronics and power conversion systems.



SYSTEMS ANALYSIS

Test laboratories evaluate and optimize performance of integrated power systems in grid and applications.



GRID ANALYTICS

Analyze grid data to make strategic grid and interconnection performance system optimizations, plan efficient utilization and optimization of data on the grid, and understand the role of energy storage.



DEMONSTRATION PROJECTS

Work with industry to develop, test, validate, and demonstrate energy storage systems.



STRATEGIC OUTREACH

Manage the ESS website and DOE Global Energy Storage Database, organize the annual Power Electronics and Energy Storage Workshops and conferences.



For more information, visit www.sandia.gov/ess-ssl

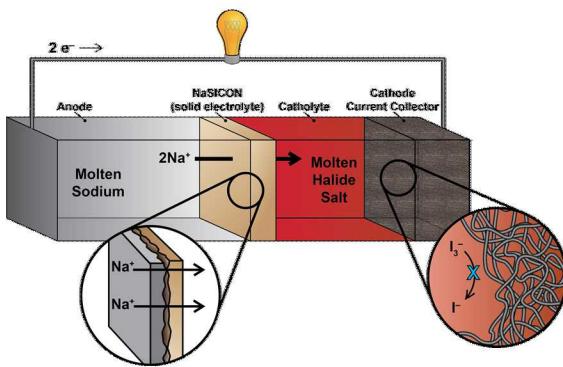
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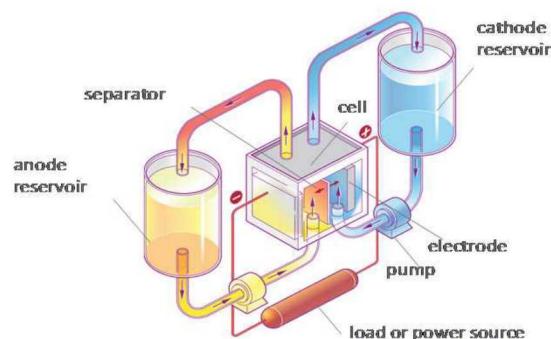
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Researching Materials Innovations to Enable Safe, Low-Cost, Long Cycle Life Grid-Scale Batteries

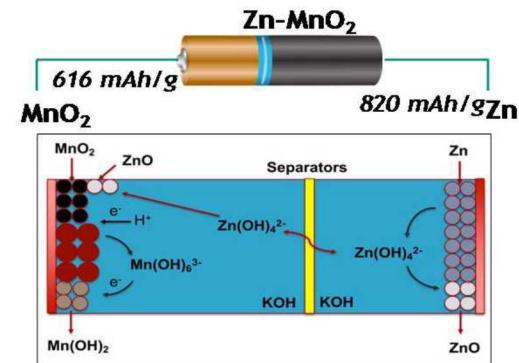
Low Temperature Molten Sodium Batteries



Aqueous and Non-aqueous Redox Flow Batteries



Rechargeable Alkaline Zn-MnO₂ Batteries



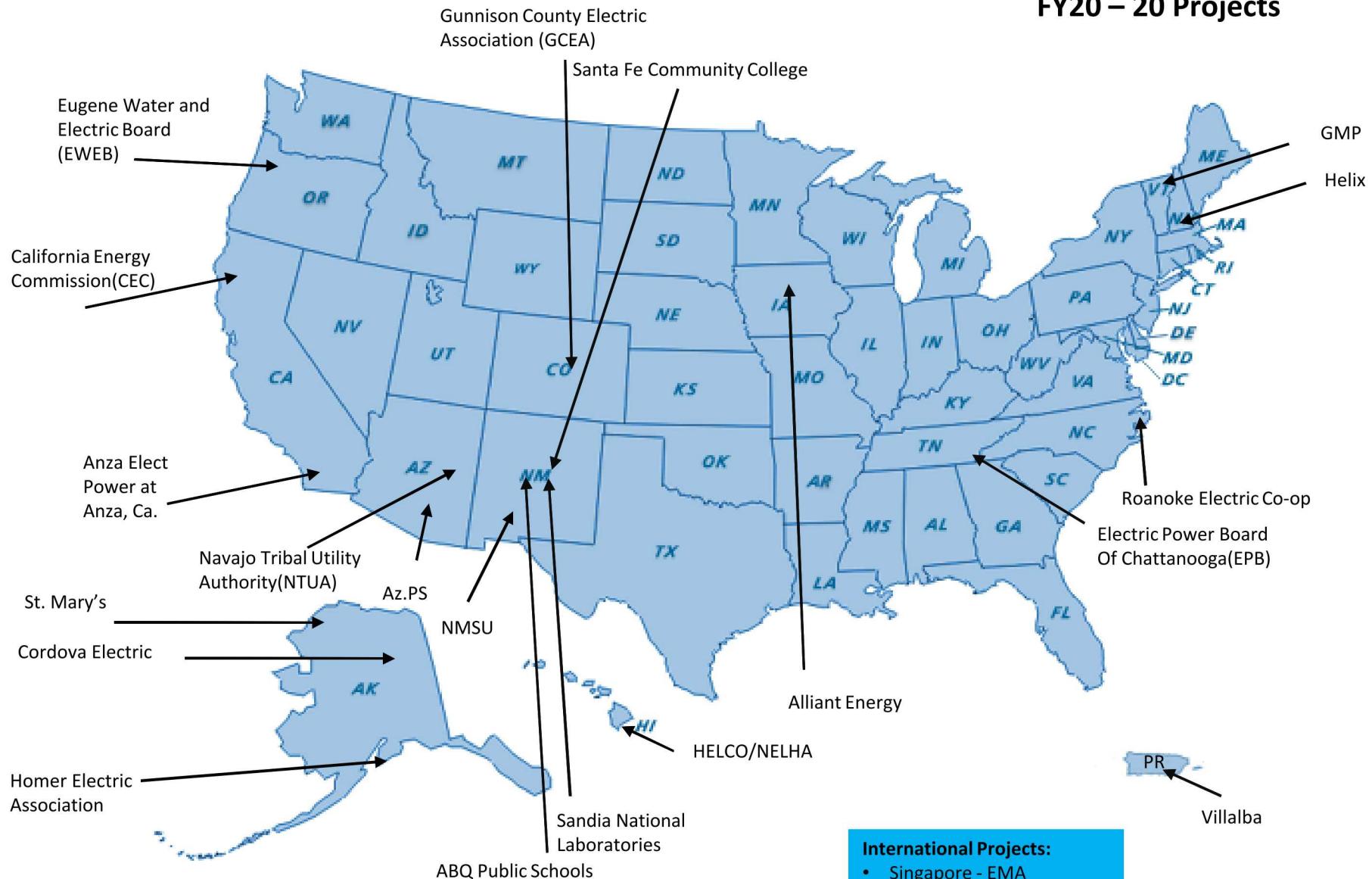
- Exploring safe new cathode chemistries to reduce temperature. from ~300°C to ~100°C
- Developing robust, selective, zero-crossover solid state separators.
- Optimize cell design for low temperature operation.

- Innovating separators for reduced crossover and high conductivity.
- Investigating low cost, high energy density, stable active materials.
- Uncovering integrated material interactions governing battery performance.

- Improving stable utilization of MnO₂ cathodes and Zn anodes for high capacity, long-lifetime.
- Extending battery life with reduced crossover separators.
- Advancing manufacturing science for large-scale production.

Demonstration Projects

FY20 – 20 Projects



Contact Information

- **See us at our Booth for more information**

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This work is supported by Dr. Imre Gyuk through the Department of Energy - Office of Electricity.