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### Project Objectives

University of Oklahoma, Kansas State University, and Baker Hughes's Energy Innovation Center propose a 2-year project to address AOI 3, entitled "~~AOI 3 B, "~~ Innovative Concepts & Technologies." The project's objective is to conduct a comprehensive R&D program that demonstrates the suitability and future advancement and integration of reversible methane electrochemical reactors as an Efficient Energy Storage (EES) technology within fossil fuel power plants. Fundamental processes and system models will be developed to conduct a preliminary conceptual study and answer the power plant system integration requirements, performance requirements, technical and non-technical gaps for eventual implementation at system level. Technology maturation requirements will also be investigated through networking with industrial technology developers and end-users (e.g., utilities).

**Project Team**

- The UNIVERSITY of OKLAHOMA
- KANSAS STATE UNIVERSITY
- Baker Hughes

**24 months, \$250 K , 20% Cost Share Program to "Reversible Methane Electrochemical Reactor as an Efficient Energy Storage for Fossil Power Generation"**

**Program Objectives:** The objective is to conduct a comprehensive R&D program to demonstrate the suitability and future advancement and integration of reversible methane electrochemical reactors as an Efficient Energy Storage (EES) with fossil fuel power plants. Fundamental process and system models will be developed to conduct a preliminary conceptual study and answer the power plant system integration requirements, performance requirements, technical and non-technical gaps for eventual implementation at system level. Technology maturation requirements will also be investigated through networking with industrial technology developers and end-users (e.g., utilities).

**Program Deliverable**

- Define the proposed energy storage system
- Develop experimental performance curves for Reversible methane protonic ceramic electrochemical reactors
- Develop Reduce order models for Reversible methane protonic ceramic electrochemical reactors

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Aug 12, 2020

Delete: "entitled "AOI 3"

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