

CHPB-3-2018: Investigation of Chemical Looping for High Efficiency Heat Pumping

Objective

- Evaluate underlying principles of a novel chemical looping cycle and assess component performance to demonstrate feasibility

Motivation

- Alternative technologies may be needed to cost effectively meet ever increasing efficiency and environmental targets

Expected Results / Impact

- Identification of optimal cell characteristics to drive reaction
- Modeling of component performance and system optimization
- Assessment of technical and economic feasibility

Approach

- Fabricating cell assemblies and testing of reaction performance using experimental setup
- Developing component level models capable of identifying losses and aiding in design.
- Using system modeling for heat pump performance predictions and optimization



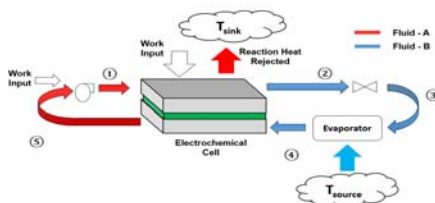
Schedule

Tasks	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
MEA Parametric Assessment												
Development of Electrochemical Cell Models												
System Model Development												
System Optimization												
Economic Assessment												



Investigation of Chemical Looping for High Efficiency Heat Pumping

Thermodynamic Modeling



Fabrication and Experimentation



Electrochemical Cell Modeling

