Concentrated Solar Receiver for Converting CO_2

Dimensional Energy

Technology Summary

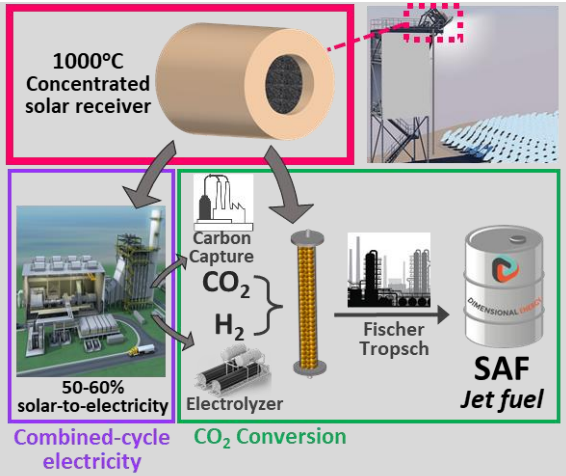
- 100 $kW_{thermal}$ ceramic ultra-high temperature heliostat receiver
- Cavity of porous Silicon Carbide acts as absorber / heat exchanger
- Air is thermal fluid (cheap / stable / sufficient)
- Contest would include design, modeling, manufacture, and testing of prototype on-sun at a heliostat site to determine solar-to-thermal efficiencies with forced air.

Technology Impact

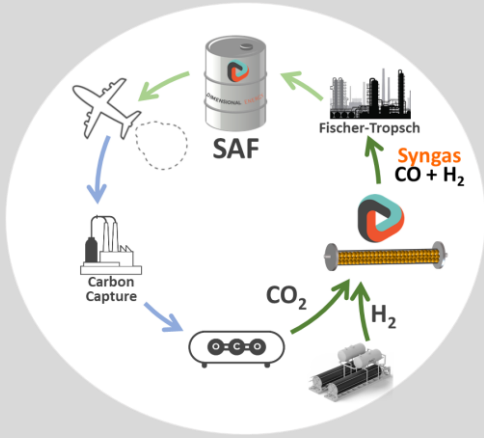
- Low-cost route for ultra-high temperature receiver
- Provides 1000°C heat for use with DE thermocatalytic reactors for jetfuel production.
- Provides heat for a combined-cycle power plant for Balance-of-Plant electricity.
- Vital solar energy component for a solar-to-fuels plant

Challenges

Challenge	Description	Goals
SET! Demo Day	Manufactured Solar Receiver	*Optimize reactor with modeling, prepare CAD drawings, and fabricate.*
GO! Demo Day	Testing of Solar Receiver on-sun with heliostat	*Show >80% of heliostat solar energy that enters cavity transferred into 1000°C hot air.*



Mile-High View



Circular Carbon Economy for Jetfuel

Team

AMERICAN MADE SOLAR PRIZE

Producing Fuels from CO_2 and Sunlight