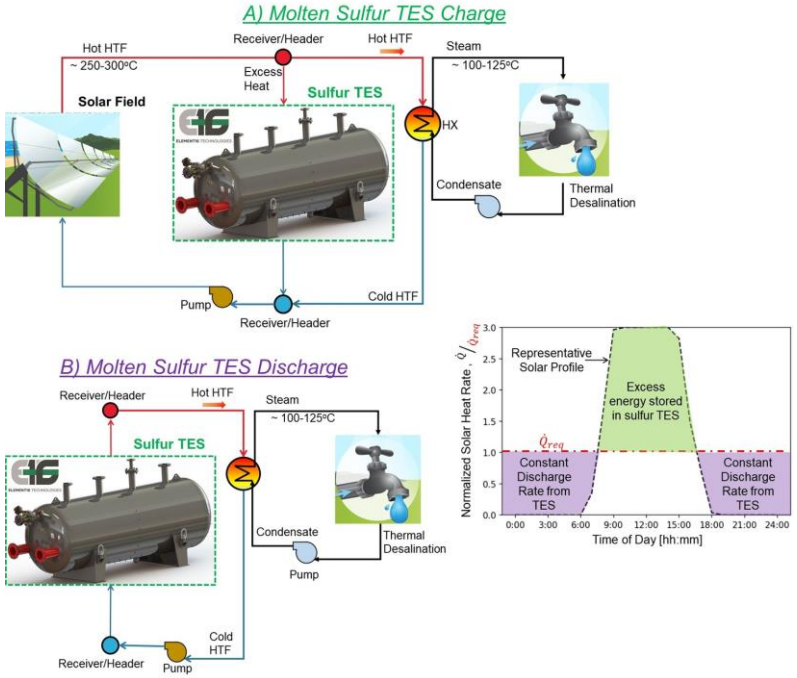
Heat Storage for 24-Hour Solar Desalination

ELEMENT16 TECHNOLOGIES

Making solar thermal desalination economical through integration of ultra-low-cost thermal storage

Project Summary

An innovative cost-effective thermal energy storage technology that increases the utilization of the solar collector can make solar thermal desalination cost-competitive by reducing levelized cost of heat (LCOH) and subsequently reducing levelized cost of water (LCOW). This can be achieved by enabling continuous operation of the thermal desalination plant at its maximum efficiency and reducing maintenance cost due to thermal cycling. Element 16 will develop and demonstrate an ultra-low-cost sulfur thermal energy storage that can be integrated with low-cost solar collector technology for dispatchable solar thermal desalination operation. The development and integration of these disruptive technologies for collection, storage and delivery of solar heat enables LCOH <0.01 $/kWht and LCOW < 0.80 $/m3.



Team Members

- Advisian Worley (Multi effect desalination expert)
- Hyperlight Energy (Primary Site and Solar thermal provider)
- Trevi System, GreenBlu (Other desalination experts)
- NELHA, BGNDRF (Alternate options for demonstration site)
- PCL Industrial Services (Fabrication partner)

Project Impacts

Security: Reduce US reliance on foreign fossil fuels and enable increased penetration of domestic renewable solar resources strengthening the nation's energy security,

Environment: Decrease fossil fuel use and resulting emissions.

Economy: Reducing LCOW will stabilize and reduce water rates to consumers