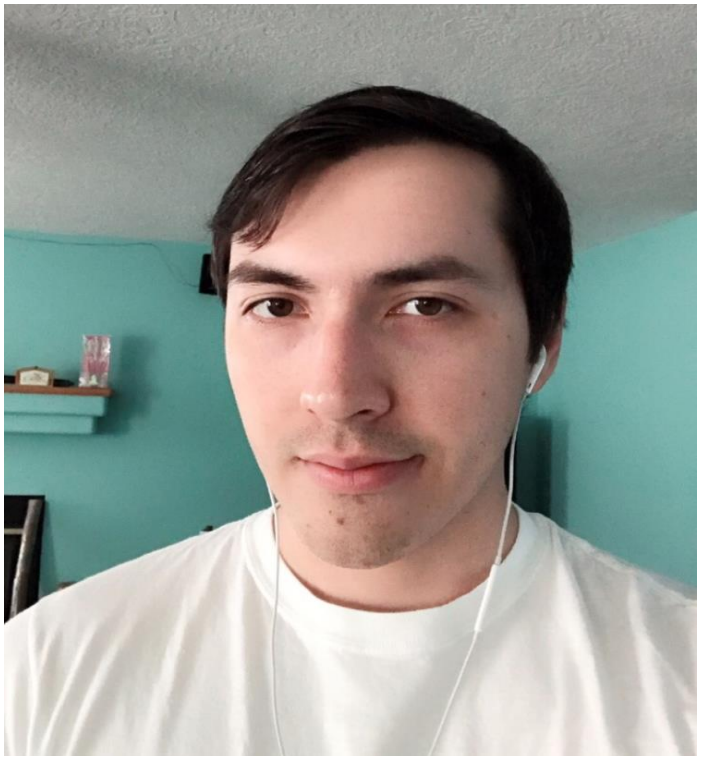

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Development and Integration of an Optical and Thermal Model for Cavity-Type Central Receivers for Solar Advisor Model Software

SCL.

NREL
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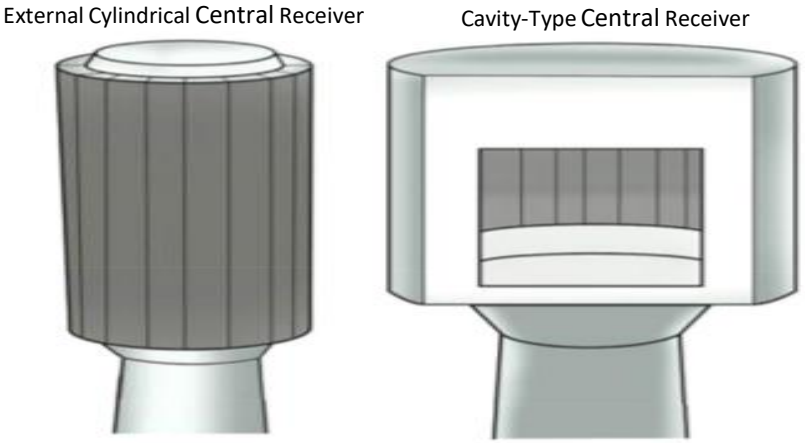
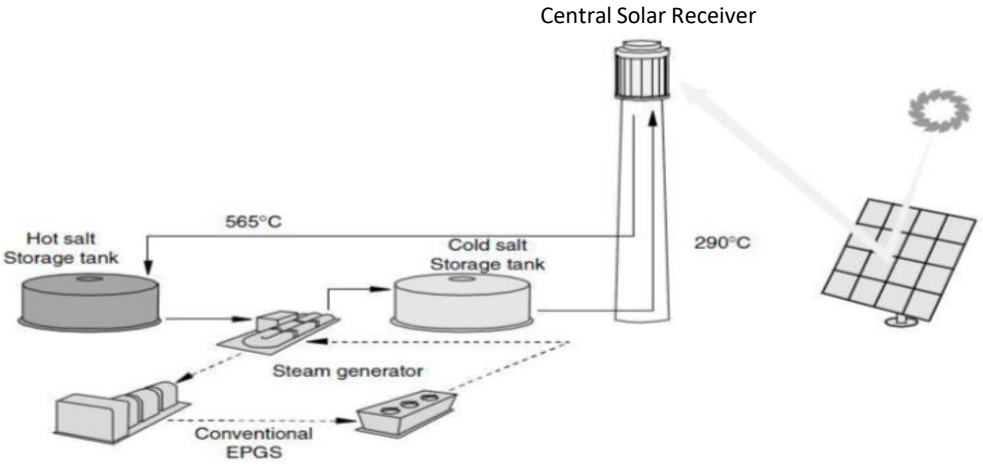
Background

- Central Solar Power (CSP) systems concentrate thermal radiation from a heliostat field on to a centralized receiver that in turn transfers the thermal energy to a heat transfer fluid.
- Software that examines the performance of CSP systems currently only supports external cylindrical receivers but, can be developed to include cavity type receivers which will provide industry and outside researches the ability to determine the impacts of different cavity-type based designs.



C. Ho. Review of high-temperature central receiver designs for concentrating solar power (2013).



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Objectives

- Develop methodology to compute the flux through the aperture of a cavity receiver using the National Renewable Energy Lab's (NREL) current flat plate flux model.
- Integrate existing code developed by the University of Wisconsin – Madison's Solar Energy Lab for "baseline" cavity-type central receivers into the Solar Advisor Model's (SAM) molten salt power technology model.
- Develop optical and thermal loss model for complex cavity-receiver design(s) for incorporation into SAM software.