



THE UNIVERSITY
of ADELAIDE

Investigation of the flow and particle behaviour in a Solar Expanding-Vortex Particle Receiver-Reactor (SEVR)

School of Mechanical Engineering

Project description

One of the emerging applications of high-temperature solar energy is the generation of process heat in a solar-tower system. This project involves investigation of the flow and particle behaviour in the newly designed and patented Solar Expanding-Vortex Particle Receiver (SEVR). For details see:

Chinnici A., Arjomandi M., Tian Z., Lu Z. and Nathan G.J. (2015). A novel solar expanding-vortex particle reactor: influence of vortex structure on particle residence times and trajectories, *Solar Energy*, 122, 58–75

Primary aim

The primary aim of this project is to improve the efficiency of the SEVR using:

- a high-fidelity model of flow-field and particle trajectories
- heat transfer models
- sealing gas systems
- concentrated solar radiation tests
- techno-economic feasibility studies



Student attributes

Applicants with a strong background in fluid mechanics and heat transfer with a Bachelor (honours H2A or higher) or Masters Degree in Mechanical, Aerospace or Chemical Engineering are encouraged to apply. Familiarity with CFD and experimental fluid mechanics is an advantage.

For further enquiries

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