



Nick Edwards

Masters of Science
Mechanical Engineering

Office: 1338a Engineering Research Building
Email: nmedwards2@wisc.edu
Hometown: San Francisco, CA

Project: Development and Assessment of CSP Plant
Operator Training Simulator Runtime
Advisor(s): Mike Wagner, Douglas Reindl
Sponsor: Department of Energy



Background

TRNSYS, developed at UW, uses a component based successive substitution approach to simulation transient systems. It complies to several standards for simulating solar thermal and building models.

The Solana Generating Station is a 280 MW parabolic trough concentrating solar power (CSP) plant in Gila Bend, AZ. At commission, it was the first US solar plant with molten salt thermal energy storage (TES). Solana wants a computer simulation to train operators on plant operation without risking plant infrastructure.



Troughs used at Solana



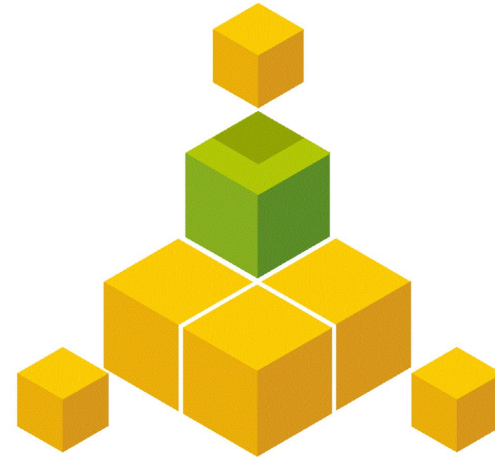
Project Goals

Develop a runtime in Python that facilitates communication between TRNSYS simulations of CSP plants and the web server handling the trainee interaction.

- Programmatically start and manage computer processes that communicate through HyperText Transfer Protocol and Advanced Message Queueing Protocol.

Develop assessment tools to determine and improve operator performance in training scenarios.

- Analyze data generated from TRNSYS simulation and trainee interaction to show cause and effect relationships to operators.



TRNSYS 18

