

High-Temperature Molten-Salt Storage for Brayton Cycles



A joint India-U.S. research consortium funded under the *Joint Clean Energy Research & Development Center (JCERDC)*

Scientific Achievement:

Design and develop a research (laboratory) molten-salt-loop system for storage for Brayton cycles in concentrating solar power.

Significance and Impact:

Research system

- Provides for assessing the feasibility of the thermocline concept
- Visualizes the flow pattern and temperature distribution profile of the molten salt
- Checks the thermal stability of the loop under normal operating conditions
- Identifies the thermal abnormalities within the loop

Research Details:

- Thermal stratification is affected by a number of factors:
 - Mixing due to the inlet and outlet streams and tank configuration
 - Initial melt temperature profile of the salt
- The height-to-length ratio (AR) influences stratification, which may be enhanced by the proper design of tank parameters.

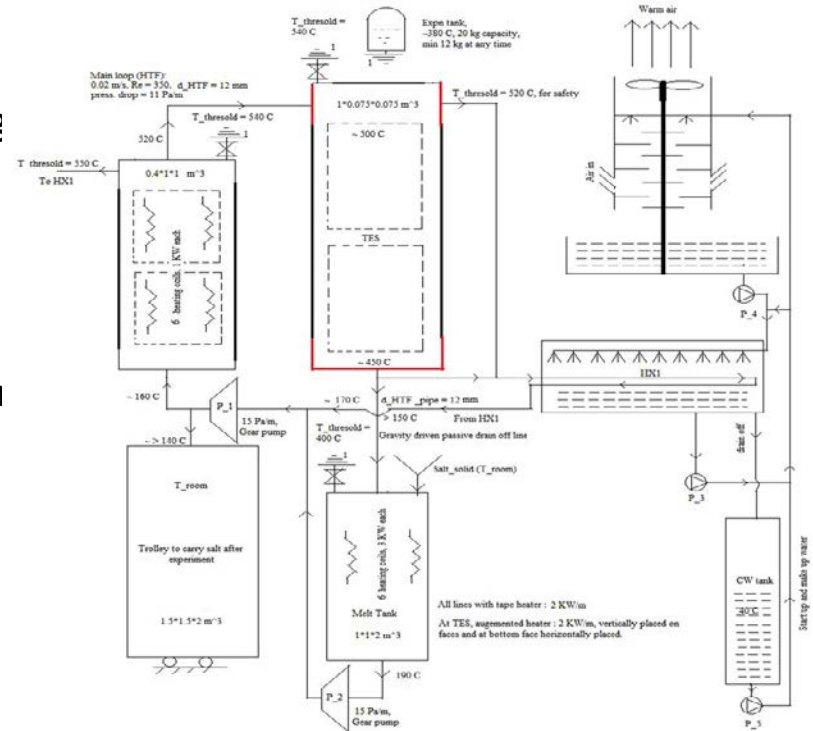


Fig. 1. Molten-storage loop design

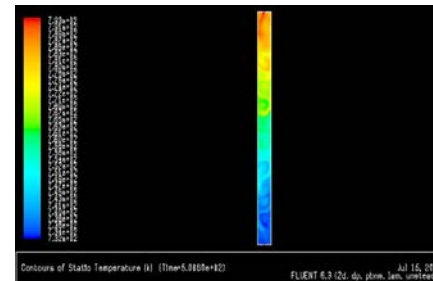


Fig. 2. Static temperature distribution

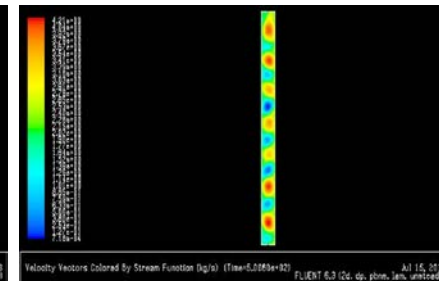


Fig. 3. Stream function

Contact(s):

S. Garimella (sureshg@purdue.edu); P.V.C. Rao (drpvcr Rao@hpcl.co.in); S. Basu (sbasu@mecheng.iisc.ernet.in)

