

SOLAR COOLING AND HEATING SYSTEM

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Sponsor: NSF, Grundfos, Broad, Duratherm, and AutomatedLogic

Research Objectives

- Provide a test bed for high temperature solar cooling and heating (SACH) system
- Investigate the technical feasibility and system integration
- Assess economic and environmental performance



Research Tasks or Findings

- Test efficiencies of solar collectors
- Test performance of the absorption chiller
- Develop an integrated optical and thermal model for external compound parabolic concentrators
- Propose advanced operation and control strategies



Solar cooling and heating system

Project Description:

The solar absorption cooling and heating system (SACH) located at Bowen Lab of Purdue is the first high temperature SACH system composed of stationary solar concentrators and a double effect absorption chiller. This system primarily uses 100 m² stationary eXternal Compound Parabolic Concentrating collectors (XCPC) and a 23 kW double-effect absorption chiller to provide the cooling and heating demands.

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