Promoting the Use of Solar Cooling and Heating (PUSCH) in Australian Buildings

Partners: CSIRO, Coolgaia, AIRAH
Project background

- Funded as a part of Australian Renewable Energy Agency emerging renewables program

**Objective**: Capacity building and knowledge sharing to address awareness and skills barriers to increased utilization of SHC technologies in Australian buildings.

**key questions**:

- What are the barriers to large scale deployment of solar heating and cooling technologies in Australian buildings

- How to improve the skills and knowledge of Australian building industry in providing SHC based technical services
Project details

Current status of technology

Built environment applications

Market & policy environment (players, skills, policies)

Industry Roadmap (Coolgaia)

Solar absorption cooling

Solar desiccant cooling

Solar air heating

Case Studies (CSIRO)

Pre-Design tool (online)

3 annual seminars

Publish industry roadmap, case study brochures

Knowledge Dissemination (AIRAH+ CSIRO)
## Project outcomes

<table>
<thead>
<tr>
<th>Number</th>
<th>Output details</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Publish <strong>industry roadmap</strong> on Solar Heating and Cooling (SHC) technologies. This roadmap will include both market and technology perspectives and provide a number of possible pathways to achieve set targets for increased uptake of SHC technologies.</td>
</tr>
<tr>
<td>2</td>
<td>Publish <strong>three case studies</strong> on functional SHC technologies. This will include performance data of these technologies for at least one annual cycle, key learnings during implementation and operation of these technologies.</td>
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<tr>
<td>3</td>
<td><strong>A predesign tool</strong> for sizing and down selection of components for three SHC technologies. This tool will provide guidance to engineers as well as building owners in identifying a suitable SHC technology for a given location and application.</td>
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<tr>
<td>4</td>
<td>Deliver <strong>three SHC seminars suitable for engineers and architects</strong>. These seminars will include learnings from case studies, findings from industry roadmap.</td>
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</table>
Project inputs

- Current status of technology
- Built environment applications
- Market & policy environment (players, skills, policies)
- Industry Roadmap (Coolgaia)
- Solar absorption cooling
- Solar desiccant cooling
- Solar air heating
- Case Studies (CSIRO)
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- 3 annual seminars
- Publish industry roadmap, case study brochures
- Knowledge Dissemination (AIRAH+ CSIRO)

Steering group, industry expert group (AU)
IEA task 53 (international)
<table>
<thead>
<tr>
<th>Case study type</th>
<th>technology</th>
<th>location</th>
<th>Data collection approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (public building – hospital)</td>
<td>Solar absorption chiller</td>
<td>Echuca, Victoria</td>
<td>Working with Echuca on phase I data access, PID changes for phase II</td>
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<tr>
<td>I (Public building - Educational)</td>
<td>Solar assisted heating &amp; cooling &amp; DHW</td>
<td>TAFE, Hamilton, Newcastle</td>
<td>Existing instrumentation. Add few more specific instrumentation</td>
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<tr>
<td>III (residential property)</td>
<td>Solar air heating + ventilation</td>
<td>Sydney suburbs, NSW</td>
<td>Air collector heat delivered, room temp data. Site visits done, instrumentation design</td>
</tr>
</tbody>
</table>
WP2 : Echuca hospital

144 collectors ; 500 kW Broad chiller
WP2 : Echuca hospital
15,000 m$^3$/hr air flow, ~80 KWc solar desiccant air conditioning + hot water
WP2 : Sydney houses
Thank you

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