

IEA SHC TASK 48

Quality assurance and support measures for Solar Cooling

www.iea-shc.org/task48

CONTEXT : A tremendous increase in the market for air-conditioning can be observed worldwide especially in developing countries. The results of the past IEA SHC Tasks and works on solar cooling (ex : Task 38 Solar Air-Conditioning and Refrigeration) on the one hand showed the great potential of this technology for building air-conditioning, particularly in sunny regions. On the other hand, it has been shown that further work is necessary in order to achieve economically competitive systems and which presents solid long term energy performance and reliability.

OBJECTIVES : The proposed project is intended to find solutions to make the solar thermally driven heating and cooling systems at the same time efficient, reliable and cost competitive. This three major targets should be reached thanks to four levels of activities:

- 1) Development of tools and procedure to make the characterization of the main components of SAC systems
- 2) Creation of a practical and unified procedure, adapted to specific best technical configurations.
- 3) Development of three quality requirements targets:
- 4) Production of tools to promote Solar Thermally Driven Cooling and Heating systems

SCOPE : The scope of the Task are the technologies for production of cold water or conditioned air by means of solar heat, i.e., the subject which is covered by the Task starts with the solar radiation reaching the collector and ends with the chilled water and/or conditioned air transferred to the application. However, although the distribution system, the building and the interaction of both with the technical equipment are not the main topic of the Task this interaction will be considered where necessary.

STRUCTURE : The project, starting in October 2011 for 3.5 years duration, is divided into 4 subtasks :

Subtask A: Quality procedure on component level

- A1: Chiller characterization
- A2: Life cycle analysis at component level
- A3: Heat rejection
- A4: Pumps efficiency and adaptability
- A5: Conventional solar collection
- A6: State of the art on new collector & characterization

Subtask B: Quality procedure on system level

- B1: System/Subsystem characterization & field performance assessment
- B2: Good practice for DEC design and installation
- B3: Life cycle analysis at system level
- B4: Simplified design tool used as a reference calculation tool : design facilitator
- B5: Quality procedure document/check lists
- B6: Self detection on monitoring procedure
- B7: Quantitative quality and cost competitiveness criteria for systems
- B8: Application for validation of preselected best practice examples

Subtask C: Market support measures

- C1: Review of relevant international standards rating and incentive schemes
- C2: Methodology for performance assessment, rating and benchmarking
- C3: Selection and standardisation of best practice solutions
- C4: Measurement and verification procedures
- C5: Labelling possibilities investigation
- C6: Collaboration with T45 for contracting models
- C7: Certification process definition for small systems

Subtask D: Dissemination and policy advice

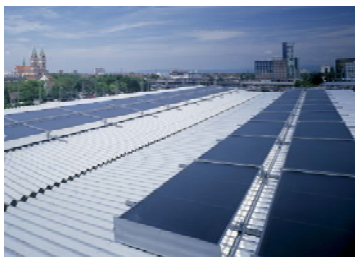
- D1: Web site
- D2: Best Practices brochure
- D3: Simplified short brochure
- D4: Guidelines for Roadmaps on Solar cooling
- D5: Updated specific training seminars adapted to the Quality procedure
- D6: Outreach report



Solar cooling installation for a wine cellar in South of France
(Source : TECSOL)



Fresnel collector field adapted for solar cooling (Source : Industrial Solar GmbH)



Solar cooling installation using DEC technology and air collectors in Central Europe
(Source : Fraunhofer ISE)



Solar cooling installation for a Tertiary building in Tropical climate
(Source : TECSOL)

SUBTASK LEADERSHIP

Subtask A : Quality procedure on component

Politecnico di Milano
Dep. Energy - Via Lambruschini 4
Milano 20156, Italy

Subtask B : Quality procedure on system level

Fraunhofer ISE
Heidenhofstraße 2
Freiburg 79110, Germany

Subtask C : Market support measures

CSIRO
PO Box 330
Newcastle, NSW 2300, Australia

Subtask D : Dissemination and policy advice

Green Chiller Association
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10559 Berlin, Germany

PARTICIPATING COUNTRIES (status in October 2011)

Australia, Austria, Canada, Belgium, France, Germany, Italy, Singapore, South Africa, Spain and USA
(no claim for completeness)

PARTICIPATING MANUFACTURERS AND COMPANIES (status in October 2011)

Aiguasol, Climatewell, Industrial Solar GmbH, Invensor, Sortech, SOLEM, SOLID, TECSOL, Thermosol.
(no claim for completeness)

SOLAR HEATING AND COOLING PROGRAMME

The Solar Heating and Cooling Programme was established in 1977, one of the first programmes of the International Energy Agency.
The Programme's work is unique in that it is accomplished through the International collaborative effort of experts from Member countries and the European Union.

OPERATING AGENT

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