Task 38 Follow up Definition Workshop

New IEA Task on Solar Cooling/Air Conditioning

STATUS OF NEW TASK PROPOSAL:

ORGANISATION & RESULTS

Daniel MUGNIER – Paris, 29/03/2011
Possible Task Names:

1) Qualification & promotion for solar cooling
2) Solar cooling quality measures
3) Solar cooling quality approach
4) Solar cooling quality procedures
5) High quality and cost competitive solar cooling
6) Quality procedure and support measures for solar cooling
7) Ensuring high quality solar cooling systems
8) Towards high quality solar cooling systems
9) Measures for high quality solar cooling systems
Subtask A: Quality procedure on component level

Leadership: Italy (EURAC or POLIMI: to be decided within 08/04/2011)

Objectives: Characterization of the main components of SAC systems

Deliverables/results:
- Chiller characterization (jointly with 34/44) including lab test + accelerated aging tests [ISE, EURAC, INES, POLIMI, UNIPA]
- Life cycle analysis at component level [UNIPA, SolarCoolingOpt]
- Heat rejection (collection from existing works and potential interesting development) [SolarCoolingOpt, PIMENT, EURAC, Greenchiller, ZAE]
- Pumps efficiency and adaptability [SolarCoolingOpt, ZAE]
- Conventionnal solar collection (collection and use of existing tasks and projects): existing material to be used for the tools (design, etc..) [ISE]
- Periodic state of the art on new collector characterization (certification process) [MIRROXX, SOLERA Sunpower, AEE]
Subtask B : Quality procedure on system level (1/2)

Leadership : Germany (Fraunhofer ISE)

Objectives : Upgrading existing results from T38, to create a practical and unified procedure, adapted to specific best technical configurations.

Results (1/2):

- System/Subsystem characterization ? Field performance assessment (test bench) [INES/PIMENT, ISE, EURAC, POLIMI]
- guidelines for good DEC design and installation [POLIMI, UNIPA, SolarcoolingOpt]
- Life cycle analysis at system level (transversal activity) [UNIPA, AIT, SolarcoolingOpt]
- simplified design tool used as a reference calculation tool : design facilitator [ISE, MEGAPICS, POLIMI]
**Subtask B : Quality procedure on system level (2/2)**

Results (2/2):

- quality procedure document/check lists: design/installation/commissioning/O&M [MEGAPICS, SOLID, SolarcoolingOpt]

- self detection on monitoring (mabfunctionning/deviations) + monitoring procedure (2\textsuperscript{nd} generation) [IP solar(SOLID) + AETEBA project + MEGAPICS]

- Quantitative quality criteria for systems [POLIMI, MEGAPICS, ISE, EURAC, SolarcoolingOpt]

- Application for validation of preselected best practice examples (transversal activity) [ISE, EURAC, POLIMI, TECSOL]
Subtask C : Market support measures (1/2)

Leadership : Australia (CSIRO under reserve of approval)

Objectives : 3 Quality requirements targets :

- a prescriptive approach (<20kW): manufacturers declare minimum performance level of the components => CERTIFICATES

- a prescriptive approach (>20 kW) : guarantee on the quality of the systems from components to operation (system, installation, etc..) => LABEL

- a performance-based approach (>20 kW): installers/providers of STDHC (systems ready to run) have the possibility to declare energy saving goals and to guarantee for it => CONTRACTING

Results (1/2):

- Selection of best practices (reduced and documented number) => transversal (even brochure on SbkD) [Greenchiller, THERMOSOL, SOLID America, SOLID Asia, SolarCoolingMonitor, TECSOL]
Subtask C : Market support measures (2/2)

Results (2/2):

- Methodology for institutions on performance requirements (climate, technology, application) [CSIRO, ISE, MEGAPICS, ZAE]


- Collaboration with T45 for contracting : extension for cooling [SOLID, TECSOL]

- Certification process definition for small systems : application in Australia [CSIRO, ISE, PIMENT]
Subtask D: Dissemination and policy advice (1/2)

Leadership: EU (GreenChiller Association)

Objectives: To give tools to promote STDHC systems

Results (1/2):

- Web site (Task results presentation, special dedicated page to the Quality Label) and a draft of a public database of labelled products) [TECSOL, Greenchiller]

- Brochure presenting the reduced number of Best Practices pdf [Greenchiller, THERMOSOL, SOLID America, SOLID Asia, SolarCoolingMonitor, TECSOL]

- Simplified short brochure 4-6 pages [Greenchiller, IEA]

- Guidelines for Roadmaps on Solar cooling (recommendations for policy options to develop the industry) [CSIRO, Solar Cooling America, Greenchiller/BSW/ESTIF, AIT, Singapore? (HMH), IMEDER ? (TECSOL), India (MNRE, Greenchiller)?]
Subtask D: Dissemination and policy advice (2/2)

Results (2/2):

- Updated specific training seminars adapted to the Quality procedure (different levels: one set for engineering companies, one for installers and one for building owner/contractor/utility/decision makers) [Greenchiller, AIT?] => OPTIONAL DELIVERABLE

- Outreach report (conference, seminars, workshops, lobbying actions) => periodical industry joint workshops [All experts]

⇒ Implementation of video means to organise remote expert meetings (semi annually) [All experts]

⇒ Special week in Brussel to inform parliament members [ESTIF/Greenchiller, Climatewell ?]

⇒ Proposal to provide solar cooling material for workshop organisers + contact to National Solar associations
Related IEA SHC ongoing Tasks

- Task 43 (Advanced Solar Thermal Testing and Characterization for Certification of Collectors and Systems): there is a strong link with this starting Task aimed at certifying solar systems. The present task could be an extension on that side for solar cooling.

- Task 40 (Towards net zero solar energy buildings): the proposed project could provide technical solutions to Task 40 for solar cooling in specific buildings.

- Task 41 (Solar Architecture): results of Task 41 on placing solar thermal collectors in the building envelope have to be analyzed regarding their impact on the solar heating and cooling system.

- Task 44: (Systems Using Solar Thermal Energy in Combination with Heat Pumps) (2010-2013)

- Task 45 (Large systems): in particular issues related to contracting as a business model which are part of the proposed Subtask D of Task 45 would be very helpful also for STDHC systems.
Focus on Task 45: Large Systems
(Large solar heating/cooling systems, seasonal storages, heat pumps)

Status in March 2011

Subtask A: Collectors (DTU, DK)

Subtask B: Storages (SOLITES, DE)

Subtask C: Systems (SOLID, AT)

Subtask C includes systems with heat pumps and chillers – so use of HPs and chillers in systems will/could be investigated / demonstrated.

Maybe exclusion of the R&D work on HPs and chillers at the component level (so no quality assurance measures / pre-standardisation work on chillers included)
Proposal of coordination between T45 and T38fu
(from T45 operating agent : JE Nielsen)

**Task 45** deals with / focus on solar heating and cooling systems with more than 0.5 MW thermal input (> 700 m²):

**Sub task A** (no/low risk of overlap)
Collectors suited for large collector fields
Large collector fields
Guaranteed performance of large collector fields

**Subtask B** (no/low risk of overlap)
Large storages (short term storage to long term storage)
Guaranteed performance of large storages – if possible?

**Subtask C** (risk of overlap)
Large systems (mainly for district heating and cooling)
ESCo arrangements (risk of overlap – to be coordinated by SOLID!))
Guaranteed performance of large solar systems – if possible? (risk of overlap – start work in task 45 – take over refine in task 38fu)
Proposal of coordination between T45 and T38fu
(from T45 operating agent: JE Nielsen)

Task 38fu deals with / focus on thermally driven cooling systems with less than 0.5 MW thermal input (< 700 m²):

Sub task A (risk of overlap)
No limits should given a priory for system size in these market analysis – but focus could be on systems attached to buildings. The risk is of course that you find that only solar cooling systems more 700 m² are feasible => risk?

Subtask B (low risk of overlap)
Tools etc. for thermally driven cooling systems (no risk of overlap)
Commissioning, monitoring, operating / maintenance procedures (risk of overlap) – exchange documents and inspire each other.

Subtask C (low risk of overlap)
Standardisation / certification (no risk of overlap) – this subtask can be done by task 38fu participants together with CEN / ISO work group people
Guaranteed results (no risk of overlap): Results from the SDH-TO project will be incorporated in the task 45 – Proposal task 38fu put work on guaranteed results in a late phase of the task – in order to be able to utilise what has been made in task 45.
Proposal of coordination between T45 and T38fu
(from T45 operating agent : JE Nielsen)

Proposal from T38fu not to consider between the 2 Task any chiller capacity, **BUT**:

- T45 is dedicated to DISTRICT heating systems while T38fu cannot consider it in its scope

- T38fu is covering all the systems including ANY solar thermal COOLING systems

=> Will be proposed jointly by TECSOL/SOLID during the T45 kick off meeting in Barcelona (06/04/2011)
**Task38fu planning**

**Preparation phase:** nearly six months from November 2010 to May 2011

1) **Approval by Exco** in Cape Down of the Task38fu principle (11/2010)

2) **Concept paper** including a first general proposal of a Task work plan elaborated until end of January 2011.

3) **Draft document** disseminated on 01/02/2011 to interested institutes and companies to be reviewed and completed and serves as a basis for Task definition Workshop taking place in end of March 2011.

4) **Discussion in Task definition** Workshop leading to a final draft

5) **Final version of the consolidated Task work plan** (structure, scope and content) will be produced in May 2011 to be presented to the Exco meeting in June 2011 for final approval.
Task38fu planning

The working phase

Project aimed at starting (in case of approval of the Task work plan by the Exco) in October 2011 for a duration of 3 years within September 2014.

ESTEC conference in Marseille (October 20-21, 2011) very accurate place for the Kick-Off meeting.

=> Organisation of the Kick off meeting on 18 and 19/10 in Marseille (if Exco approval in June)