

**Task 38 Follow up Definition Workshop**  
**New IEA Task on Solar Cooling/Air Conditioning**

**STATUS OF NEW TASK PROPOSAL :**

**ORGANISATION & RESULTS**



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## 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]
- conventional 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 (mafunctioning/deviations) + monitoring procedure (2<sup>nd</sup> 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]
- Labelling possibilities investigation (LEED extension ? Green Building Council tool extension ?New Label ?) OPTIONAL [PIMENT, UNIPA] => survey (brainstorming workshop need)
- 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 Task40 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 m<sup>2</sup>):

## **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 m<sup>2</sup>):

## **Sub task A** (risk of overlap)

No limits should be given a priori 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 m<sup>2</sup> 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 Town 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)