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Task 45 – SUBTASK C

Large Systems

Large solar heating/cooling systems,
seasonal storages, heat pumps

2011-04-05/06
Barcelona

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SUBTASK C WORKPLAN

"Systems – configurations, operating strategies, financing issues"

- Objectives
- Activities
- Deliverables & Milestones
- Timetable
- Partners
- Installations
- Inputs of Partners / First Working Period

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SUBTASK C Objectives

- Overview on applications and system configurations

> 0,5 MW incl. heatpumps and chillers

- Large scale ST systems in the context of surrounding regional/national energy system (competition with waste heat, integration in the free market for electricity, …)
- Good basis for decision makers to decide on investment in large solar systems
- State of the art of simulation tools and models

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SUBTASK C Objectives

- General design requirements for SDH networks (comment: material is available from IEA DH task, IEE SDH Take-off, Swedish DH association)
- Parameters to identify suitable existing DH networks
- Procedures for performance guarantee – and check !
- Recommendations for monitoring and checking system output
- Criteria how to adapt solar systems to the DH networks (existing and new)

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SUBTASK C Objectives

- Sensitivity analysis of SDH systems, considering different parameters (DH distribution temperature, solar fraction, storage size, load, economics)
- Recommendations for operating strategies for large systems
- Design guidelines for “substations units” (units controlling the in- and output of heat for buildings with collectors fields on e.g. the roof)

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SUBTASK C Activities

C1. Overview

C 1.1 Overview on system categories (systematic categorisation of large solar systems with respect to applications, components, component types)

C 1.2 Detailed description of (all) existing systems with (seasonal) storage and/or heat pump **by each national representative**

C1.3 Updated database for all **(how many?)** large solar systems > 0.5 MW

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SUBTASK C Activities

C2. Feasibility

C2.1 Does a large solar system fit into the surrounding regional/national energy system (competition with waste heat, integration in the free market for electricity, …) (**each national representative)**

C2.2 Tools for facilitating feasibility studies: overview on calculation tools providing strong/weak points and user categories

C 2.3 Develop a dedicated pre-feasibility tool

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SUBTASK C Activities

C2. Feasibility

C2.4 Guidelines (including requirements from DH IEA task and parameters to identify existing suitable DH networks and sensitivity analysis) Example: Economy for realised systems

C2.5 Case studies; different application; different countries (comment: 20 case studies will be carried out within FP7 Sunstore4) – **how many in Task 45**

C2.6 Guidelines for environmental assessment

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SUBTASK C Activities

C3. Models for ESCo services

C3.1 Financing models, financial risks, ownership, system maintenance, barriers (!), funding conditions, policy support

C3.2 Description of existing examples

C3.3 Case studies; different application; different countries, potential end users

SUBTASK C Activities

C4. Performance check/monitoring/surveillance

C4.1 Procedures for performance check

Overlapping to planned Task 38FU

C4.2 Recommendation for monitoring and verification / surveillance of systems (automated failure detection)

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SUBTASK C Activities

C5. Guidelines

C5.1 Guidelines for planning, installation, commissioning, operation and monitoring

C5.2 Inputs for Design Handbook

C5.3 Inputs for handbook for the overall installation, commissioning and operation of SDH

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SUBTASK C Activities

C6. Guideline for Connection of decentralised solar thermal systems

C6.1 Inputs for handbook for direct and indirect connection of decentralised solar thermal systems distributed in the district **heating/cooling supply network** and handling both solar production and user load (e.g. in building with a large collector field on the roof)

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SUBTASK C Milestones & Deliverables

C-D1 Overview on applications and system configurations
C-D2 Report on sensitivity analysis
C-D3 Updated database for large systems > 0.5 MW
C-D4 Guidelines and tool(s) for feasibility studies
C-D5 Models and case studies for ESCo services
C-D6 Procedures for system performance guarantee/check, monitoring and surveillance
C-D7 Guidelines for planning, installation, commissioning, operation and monitoring
C-D8 Inputs for Design Handbook
C-D9 Input to Task web site
C-D10 Subtask C Summary Report

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SUBTASK C Milestones & Deliverables

	2011				2012				2013			
C-D1. Overview			D		R							
C-D2. Report on sensitivity analysis				D	R							
C-D3. Updated database large systems >0.5MW				D	R							
C-D4. Guidelines and tools for feasibility				D	R							
C-D5. Models for ESCo services			D		R_1						R	
C-D6. Procedures for performance check/monitoring/surveillance							D	R				
C-D7. Guidelines for planning, installation, commissioning, operation									D		R	
C-D8. Inputs for design handbook									D		R	
C-D9. Input to task website									D		R	
C-D10. Subtask C Summary Report									D		R	
Milestones: D: Draft reports(s); R Final reports(s); R_1: First Report												

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SUBTASK C - Countries/Partners

Country	**Active** Partner – referring to resources/respons. excel list
Austria	AEE Intec, S.O.L.I.D.
Canada	NRCan-RNCan ?
Denmark	PanEergi, DTU, Braedstrup, Marstal, Logstor, Arcon ?
Spain	Wagner Solar, Aiguasol, Irec, Cener, Unizar, IETCC, Tecnalia, Uned, UC3M ?
Italy	Polimi, Unifi ?
Norway	Sintef, ?
Sweden	Chalmars, SP ?
Germany	Solites, ITW, Fraunhofer ISE, Ritter, AGFW ?
France	CEA-Ines, Tecsol?

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SUBTASK C Installations

Installations for analysis, feasibilities, guidelines for installing and monitoring, financing models

Installation 1:

250 KW Heatpump for

3.900m² SDH Plant, Graz

Installation 2:

1,575 MW Solar Cooling

Singapore

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SUBTASK C Installations

Installation 5.:

36.000m² SDH in Saudi Arabia;

25MW th, AEE Intec

Installation 6 of.:

4 Installation > 0,5MW from Austrian subsidy and monitoring program (SC, SPH, SC)

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SUBTASK C Installations

Installations for analysis, feasibilities, guidelines for installing and monitoring, financing models

Further Installations:

- Denmark: Dronninglund, Nordby, Ulsted, Aeroskobing, Broager, Torring, Donderborg, Marstal, Gram, Breadstrup,
- Sweden: Kungälv, Falkenberg (?), Lyckebo,
- Austria: Singapur, Al Ain, SDH Graz, CGD Lissabon, Berliner Ring, Wels, Saudi Arabia, 4 plants from monitoring program,

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SUBTASK C Installations

Further Installations:

- Canada: Drake Landing Solar Community,
- Germany: Friedrichshafen, Neckarsulm, Crailsheim, 160kW heatpump Stadt:Werk:Lehen, SDH Munich, Eggenstein, Festo, Istanbul Metro shopping, Wels,
- France: large scale installations **beside** SDH? Ines recherches;
- Spain: Aiguasol: DHC Charmartin, feasibility for planned installations from Dalkia; large scale installations **beside** SDH?

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SUBTASK C Installations

Further Installations:

- Norway:

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SUBTASK C Inputs of Partners

Refering to resources/responsability excel list

Activity	**Input by Partner (responsable)**
C1. Overview	
C2. Report on sensitivity analysis	
C3. Updated database large systems >0.5MW	
C4. Guidelines and tools for feasibility	

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SUBTASK C Inputs of Partners

Activity	**Input by Partner (responsable)**
C5. Models for ESCo services	
C6. Procedures for performance check/monitoring/surveillance	
C7. Guidelines for planning, installation, commissioning, operation	
C8. Inputs for design handbook	
C9. Input to task website	

Thank you!

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