

WP5 Training measures

Status and next steps..

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Bergamo

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Content

- **Goals, concept & synergies**
- **Planning**
- **Development of material**
- **Organisation events/courses**

* **Goals** : To create a comprehensive set of training units and didactic material. For the participating countries, training courses will be prepared and evaluated through pilot courses.



Practical training



Real installation feedback

* **Audience** : Supply side
Mainly installers (+ planners)



WP5 Training on package solutions

* Task 5.1 Preparation of training materials

Inputs from Manufacturers and especially from WP4 (month 20 = May 2009)

Task 1	Preparation of training material TECSOL will guide the Industry partners in preparing their training material and planning the courses	D5.1-D5.5, D5.6	TECSOL, together with industry partners
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Deliverable(s) of this work package:

- D5.1 Training material related to the package solution – ROTARTICA (month 22)
- D5.2 Training material related to the package solution – CW (month 22)
- D5.3 Training material related to the package solution – SorTech (month 22)
- D5.4 Training material related to the package solution – SOLution (month 22)
- D5.5 Training material related to the package solution – SK (month 22)
- D5.6 Training material on SolarCombi+ to be included in trainings organized by related projects as e.g. SOLAIR (month 22)

WP5 Training on package solutions

* Task 5.2 Implementation of pilot trainings

3 pilot training courses/industry partner for 20-30 people => 350 installers

2 day course : 1 theory + 1 practice

Task 2	<p>Implementation pilot trainings</p> <p>Three pilot training courses per industry partner for 20 – 30 people in the different participating countries (at least one per target country, distribution depends also on chiller partners' target markets and solar thermal partners)</p> <p>The general concept foresees 2 day-courses: 1 day theory and 1 day practice on the package. This time is needed, because not only installation, but also maintenance and exploitation need to be described, which are quite specific, and in general not known for absorption/adsorption chillers.</p> <p>The training courses will be announced online (on project and partner websites), on fairs and through the usual dissemination channels of the industry partners</p>	D5.7	Industry partners, together with their solar thermal partners
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D5.7 Pilot training courses on package systems organised by each industry partner (at least 3 per partner → 15 courses with 20 – 30 participants each → more than 350 participants (month 27)

WP5 Training on package solutions

* **Task 5.3 Evaluation of the trainings** (Report on pilot training courses, recommendations for optimisation)

Task 3	Evaluation of the trainings and optimisation of materials for further trainings (to be implemented outside the project frame)	D5.8	TECSOL
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D5.8 Report on pilot training courses, recommendations for optimisation (month 28)

An example...

WP5 Training on package solutions

Outcome of this work package

- Each industry partners has elaborated tailored training material on its package solution(s)
- Moreover training material to be included in trainings in related project (e.g. SOLAIR, but also upcoming ones) has been prepared
- More than 350 solar thermal installers have been informed and trained on package solutions in pilot training courses.
- These pilot training courses have been evaluated and suggestions for optimisation have been made
- Optimised training materials and concepts are ready for application.

The countries covered by the courses will be held are a priori the ones, where the industrial partners are implemented or present (but the list can be enlarged in the next months), however also Greece will be covered.

Rotartica → Spain, France, Italy

CW → France, Spain, Italy

Sortech → Germany, Spain, Italy

SOLution → Austria, Germany, France, Spain, Portugal

SK → France, Germany, Spain

?????

WP5 Training on package solutions

Benefits by target groups

- *TG1 Producers of small scale sorption chillers* included as direct partners
Benefit: Training material prepared, installers trained on their solutions, relation with solar thermal partners on training courses established, first experiences evaluated.
- *TG2 Solar thermal enterprises:*
Benefit: On the one hand relation with chiller partners on training courses can be established, on the other hand, if no such partnership exists, the participation in training courses might open new collaborations and markets
- *TG3 Professional groups:*
Benefit: detailed information on concrete package solutions
- *TG5 Potential consumers:*
Benefit: installers trained on package solutions guarantee for high quality installations

Time schedule

Sept 2007

March 2009

December 2009

Project phase / Duration of the project (in months)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30				
Work package 1: Management	[Grey bar]																																	
Work package 2: Market analysis	[Green bar]		[Light Green bar]				[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]		[Light Green bar]					
Work package 3: Virtual case studies	[Yellow bar]		[Yellow bar]				[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]		[Yellow bar]					
Work package 4: Determination of standard applications and most promising markets	[Red bar]													[Red bar]		[Red bar]		[Red bar]		[Red bar]		[Red bar]		[Red bar]		[Red bar]		[Red bar]		[Red bar]				
Work package 5: Training on package solutions	[Dark Blue bar]																		[Dark Blue bar]		[Dark Blue bar]		[Dark Blue bar]		[Dark Blue bar]		[Dark Blue bar]		[Dark Blue bar]		[Dark Blue bar]		[Dark Blue bar]	
Work package 6: Dissemination and Communication	[Blue bar]		[Blue bar]				[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]		[Blue bar]			
Work package 7: Common Dissemination Activities	[Purple bar]																																	
Project meetings ^a	x						x						x							x			x							x				
Project reports to IEEA ^b										PR										IR										FR*				
Project deliverables ^c			D6.1 D6.5				D2.1 D2.2 D2.3 D2.4	D2.5 D6.5			D6.2		D3.1 D3.2 D3.3			D4.1		D2.6 D2.7		D4.2 D4.3 D4.4 D4.5 D4.6 D4.7 D4.8 D4.9 D4.10 D6.2		D5.1 D5.2 D5.3 D5.4 D5.5 D5.6 D6.3 D6.5 D6.9					D5.7 D5.8			D1.1 D6.2 D6.4 D6.6 D6.7 D6.8 D6.10 D6.11 D6.12 D6.13				

Contributions

Role and contribution (tasks) of each partner in this work package:

No	Participant	Role & Contribution	Tasks	Hours
4	AEE INTEC	Support of SOLution in preparing training material	Task 1	68
6	TECSOL	WP leader Coordination, Training material on SolarCombi+, support of SK, evaluation of the pilot training courses	Task 1, Task 3	280
8	ROTARTICA	Preparation of training material, 3 2-day training courses	Task 1, Task 2	168
9	CW	Preparation of training material, 3 2-day training courses	Task 1, Task 2	168
10	SorTech	Preparation of training material, 3 2-day training courses	Task 1, Task 2	168
11	SOLution	Preparation of training material, 3 2-day training courses	Task 1, Task 2	100
12	SK	Preparation of training material, 3 2-day training courses	Task 1, Task 2	100

SOLAIR COURSE...

Duration : 1 day theoretical course + ½ day technical tour (optional)

1st day : Theory

Schedule :

Start : 9 am

End : 6 pm

- A) Introduction
- B) Basics
- C) Predesign
- D) Design
- E) Economics & environnement
- F) Realised systems and best practice examples

2nd day : Visit

If a solar cooling system is close to the training course site, a visit can be interesting. It can be coupled with a visit of a large solar domestic hot water system to show the large solar collector fields.

No systematic visits in the courses

 **Flexibility**

Duration variable in the countries : ½ day in Germany, 2 in France



solarcombi+

4th SOLARCOMBI+ meeting – 03/04 03 2009 Bergamo



Synergies

SOLARCOMBI+

Day1 : Theory

Morning :

- A) Introduction (15 min)
- B) Basics (1h30)
- C) Predesign (0h30)
- D) Economics (0h30)
- E) Realised systems (0h30)

Afternoon :

- A) Concept (30 min)
- B) Technical descriptions (2h)
- C) Realised applications (1h)
- D) Debriething (45 min)

Day 2 : Practice day

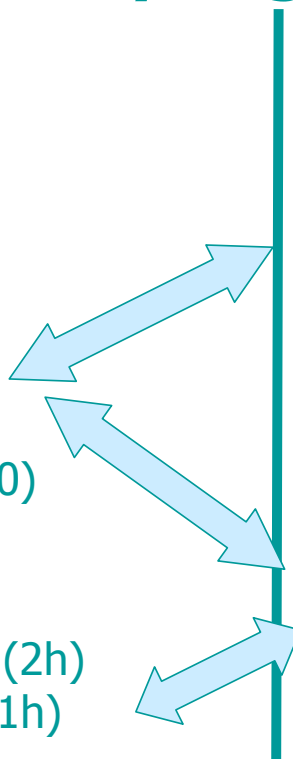
SOLAIR

Morning :

- A) Introduction (15 min)
- B) Basics (1h45)
- C) Predesign (1h15)

Afternoon :

- A) Design (1h30)
- B) Economics & environment (1h)
- C) Realised syst. & best practice (1h30)
- D) Debriething (15 min)



Inputs from manufacturers : 1st part

	SK	ROTARTICA FAGOR	SOLUTION	SORTECH	CLIMATEWELL
Basics	√	√		√	√
Pre-design / Results from SC+ WP4	-	-	-	-	-
Economics.					
Environment					

Inputs from manufacturers : 2nd part

	SK	ROTARTICA FAGOR	SOLUTION	SORTECH	CLIMATEWELL
Concept	√	√	√	√	√
Technical descriptions	√	√	√	√	√
Realised systems	√	√	√	√	√
Misc.					



Training courses from manufacturers...

... already planned or to be planned

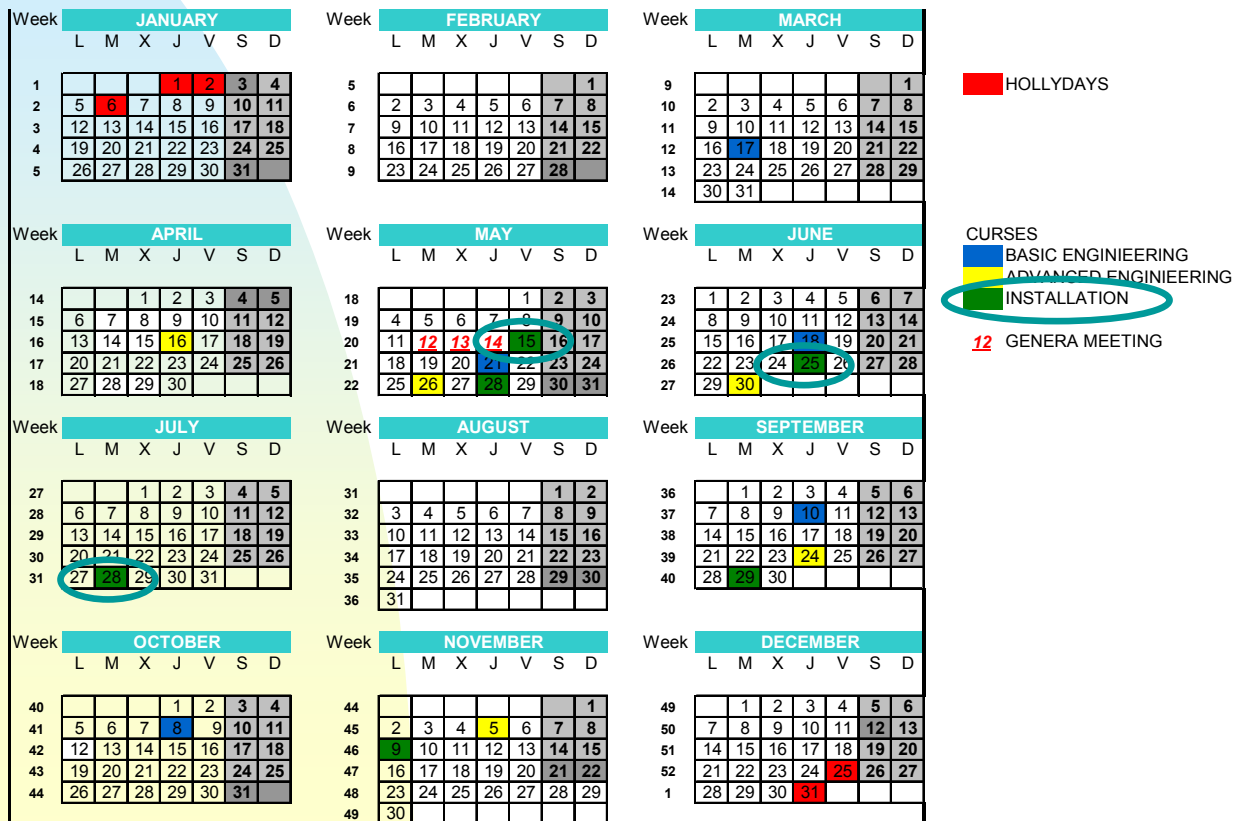
	SK	ROTARTICA FAGOR	SOLUTION	SORTECH	CLIMATEWELL
1st course	?	05/02/09	04-05 2009	26/03/2009	15/05/2009
2nd course	?	?	?	04 2009	25/06/2009
3rd course	?	?	?	?	28/07/2009
...					

Request on the 2 specific topics on 21/01

Feedback...

Training courses from manufacturers...

CLIMATEWELL



ClimateWell 



ClimateWell Ibérica
January, 19 2009

TRAINING CURSES



Training Climatewell 2009

Course contents:

Basic Engineering

General course.

Basic knowledge about traditional and solar air-cooling, Solar cooling. Normative and energy efficiency . Installation design guideline (Solar field including). Basic design practice (Familiar house and little office). Software practice with *Frio Solar Ver.4*.

Duration: 1 day (8 hours)

Documentation to give: Technical documentation + pen drive (Frio Solar Ver.4)

Course price: 250 € +IVA

Training Climatewell 2009

Course contents:

Advanced Engineering

Course for Design specialists

Advanced installation components design (Solar field, heat sink, heat/cool distribution). Calculation cooling charges Introduction . Installation control and regulation. Advanced design practices (Big buildings). Software practices with *Frio Solar Ver.6*.

Duration: 1 day (8 hours)

Documentation to give: Technical documentation + CD (Frio Solar Ver.6)

Course price: 250 € +IVA

Training Climatewell 2009

Course contents:

Installation

Course for installation specialist.

Basic knowledge about traditional and solar air-cooling, Solar cooling.. Installation design guideline (Solar field including). Basic design practice (Familiar house and little office). Software practice with *Frio Solar Ver.4*.

Installation, commissioning and maintenance. Use and regulation of CW10 control panel and CWIC software. Real commissioning practice.

Duration: 2 day (16 hours)

Documentation to give: Technical documentation + pen drive (Frio Solar Ver.4)

Course price: 300 € +IVA

Training courses from manufacturers...

ROTARTICA / FAGOR

- * Last Fagor/Rotartica training course : ETSI. Bilbao, 5/02/2009
- * No calendar received for next courses in 2009
- * Proposal to include Training courses of 2008 not accepted
- * Content of the last training course in the following slides

Solar Air-conditioning Training course

Curso de Formación en Sistemas Solares de Aire Acondicionado

ETSI. Bilbao, 5 febrero 2009

Profesora: Rakel Loubet De La Peña

0. INDEX

1. COMPANY BRIEF INTRODUCTION
2. SOLAR AIR-CONDITIONING: BASIC, CONCEPT AND MARKET
3. STATE OF THE ART OF THE TECHNOLOGIES
4. ROTARTICA UNIT: BASICS AND PERFORMANCE
5. MAIN COMPONENTS OF THE ROTARTICA UNIT
6. CATALOGUE OF SOLUTIONS
7. DESIGN CONSIDERATIONS IN SOLAR COMBI + INSTALLATIONS:
SOME BASIC CONFIGURATIONS
8. PRACTICAL CASES OF SOLAR COMBI + INSTALLATIONS
9. REFERENCE INSTALLATIONS
10. REAL PERFORMANCE DATA OF A INSTALLATION
11. OTHER APPLICATIONS: MICROTRIGENERATION
12. INSTALLATION PROCEDURE AND DETAILS
13. START-UP AND MAINTENANCE

Training courses from manufacturers...

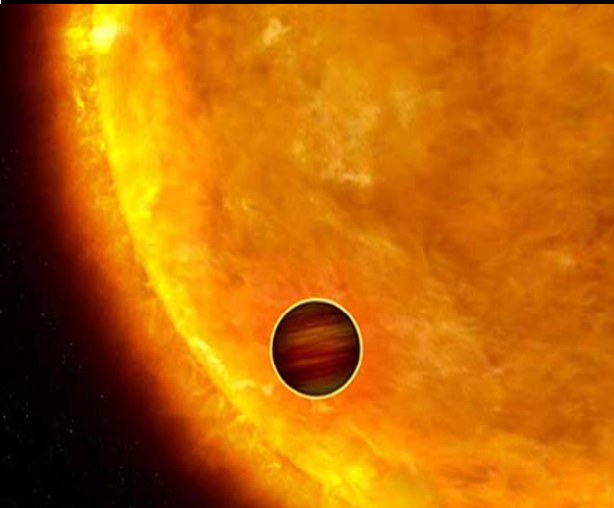
SOL-UTION

- * Planned training courses : April/May 2009
- * Content of the training course material in the following slides
- * Training course program to be defined and precised so long..

Training courses from manufacturers...

SOL-UTION

There are energy sources that will never dwindle.
There are those who do not wish to open their eyes
and comprehend.



www.sol-ution.com

Index

- About SOLution, principle
- History of Solar Cooling
- Overview
- How Solar Cooling works, Principle
- Kinds of Cooling Machines
- Cooling tower
- Cold distribution system
- Project Management SOLution
- Demo installation and Contact

Training courses from manufacturers...


SONNENKLIMA

- * Planned training courses : no dates received till now
- * Content of the training course material in the following slides
- * Training course program to be defined..




Training courses from manufacturers...


SONNENKLIMA


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Fichier Affichage Contrôle Aide



Content information- CD-ROM

Solar Cooling - <i>suninverse</i> Absorption Cooling		
Contents - Introduction to solar cooling. - Benefits and characteristics of solar cooling. - Applications of <i>suninverse</i> .	Use - Responding to clients' initial questions. - Background and discussion information for distribution.	
<i>suninverse</i> - Data Sheet		
Contents - Technical data of <i>suninverse</i> , such as temperatures, volumetric flow and fitting dimensions.	Use - Hydraulic and electrical dimensions. - Explanations for the Data Sheet are located in the Technical Description.	
<i>suninverse</i> - Technical Description		
Contents - Technical information on the solar cooling system. - Practical information on <i>suninverse</i> . - Explanatory information on control, hydraulic connections and return cooling.	Use - For a technical understanding of <i>suninverse</i> . - Explanation of the components of solar cooling.	






Démarrer | Boît... | Ado... | févr... | RE: ... | SOL... | Micr... | USB ... | SC+... | Inte... | Goo... | Micr... | Mac... | 17:24




Training courses from manufacturers...


SONNENKLIMA

Macromedia Flash Player 8
Fichier Affichage Contrôle Aide



Content information- CD-ROM

<i>suninverse</i> - Descriptions and sample calculations		
Contents - Detailed explanation of the absorption cooling process. - Detailed descriptions of the main components of solar cooling. - Basic calculations for the solar cooling system.	Use - For an understanding of the <i>suninverse</i> absorption chiller. - Background information for PowerPoint presentations.	
PowerPoint - Sample for a Specialist Audience		
Contents - Detailed presentation on principles of solar cooling. - Description of the whole system, applications and system components of suninverse. - Planning tips for the solar cooling system.	Use - Training support for service personnel. - Technical information for the audience. - Provides a basis for presentations lasting approximately 60-90 minutes.	
PowerPoint - Sample for End Users		
Contents - Rapid introduction to solar cooling and solar systems. - Provides convincing arguments in favour of the technology.	Use - End user presentation and introduction. - Appropriate as well for a specialist audience.	




Démarrer | Bo... | Ado... | Post... | RE: ... | SOL... | Micr... | USB ... | SC+... | Inte... | Goo... | Micr... | Mac... | 17:30

Training courses from manufacturers...




SONNENKLIMA





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Fichier Affichage Contrôle Aide

SONNENKLIMA
suninverse 

Content information- CD-ROM

Solar Cooling - Check list		
<p>Contents</p> <ul style="list-style-type: none"> - Short questions to determine the end user's requirements. - Rapid data acquisition for system planning. 	<p>Use</p> <ul style="list-style-type: none"> - Preliminary system design. - Appropriate as well for laymen. 	
Solar Cooling - Questionnaire		
<p>Contents</p> <ul style="list-style-type: none"> - Basics for system simulation in TRNSYS. 	<p>Use</p> <ul style="list-style-type: none"> - Detailed system design using a simulation. - Only appropriate for specialists. 	
Solar Cooling - Maintenance Contract		
<p>Contents</p> <ul style="list-style-type: none"> - Maintenance agreement with client. - Issued by SK SonnenKlima GmbH or their associated partners. - Optional, on-line maintenance available. 	<p>Use</p> <ul style="list-style-type: none"> - System dependent and customer-specific maintenance contracts. 	

Démarrer | Boît... | Ado... | Post... | RE: ... | SOL... | Micr... | USB ... | SC+... | Inte... | Goo... | Micr... | Mac... | 17:31

Training courses from manufacturers... SORTECH

* Planned training courses :

February 2-3
February 3-4
February 18-19
February 25-26

March 3-4
March 4-5
March 25-26
March 26-27

April: two sessions not fixed

* Content of the training course material in the following slides

* Remarks :

- no first general part on solar cooling

Training courses from manufacturers...

SORTECH

Copyright SorTech 2009



SorTech AG

Content

1. Construction of ACS-Module
2. Innovative coating of absorber heat exchangers
3. Assembly of the ACS 08
4. Function
5. Technical data
6. Technical data / performance curve
7. Integration within the SC-system
8. Re-cooling
9. Re-cooling – Technical data RCS 08
10. Electrical and signal connection
11. Controlling strategy
12. Operation of the RCS 08
13. Errors
14. Initiation
15. Support