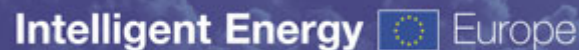




# How to overcome cultural barriers: Training Actions

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**SOLCO European Conference**  
**EACI - Madou Tower**

**10/2/2009**

# The role of Training within SOLCO

- A specific WP of SOLCO was dedicated to training actions of “key actors”:  
potential users and technical actors
- In order to remove cultural barriers and promote the utilization of Solar Cooling technologies



# Work Package 5: Training

- Each insular partner of the project, organized training courses on solar cooling technology targeted to different categories of “key actors”
- Each course was designed according to the needs and characteristics of the category of “key actors” it was addressed to



# The role of SOLCO partners for training

- In each insular region of SOLCO consortium, training courses were organized for:
  - Designers
  - Installers, maintenance staff, firms...
  - Private potential users
  - Public potential users



# Duration and Target of Training Courses

- 3-5 days “Designers”
- 2-3 days for “Installers”
- 3-5 days for “Public potential user”
- 1-2 days for “Private potential user”



# Contents of Training Courses

- The general structure of different courses was jointly defined by partners
- General contents of different courses (for the longest duration they could have) are available on [www.solcoproject.net](http://www.solcoproject.net) pages dedicated to training courses



# Contents of Training Courses on the website

**SOLCO** Contents of different training courses SOLCO Project (EIE 116/06) Intelligent Energy Europe

**INSTALLATION AND MAINTENANCE FIRMS**

**DAY 1**  
**CLIMATOLOGY**  
 • Solar Radiation (monthly and daily values, tilt and azimuth angles)  
 • Air temperature

**SOLAR COLLECTORS**  
 • Different Typologies of collectors: Vacuum heat pipe CPC collectors  
 • Performances of different collectors  
 • Maintenance of different collectors  
 • Characteristics of territorial market  
 • How to read technical/commercial brochures

**DAY 2**  
**CHILLERS SYSTEMS**  
 • Definitions, functioning principles  
 • Different Typologies of Chillers (single/double effect)  
 • Range of temperatures of work  
 • Performances of different chillers systems  
 • Characteristics of territorial market  
 • How to read technical/commercial brochures

**DAY 3**  
**CHOICE OF PLANT LAYOUT**  
 • Different layouts: solar thermal panels and chillers  
 • Different layouts: cooling plant-building  
 • Maintenance of different layouts

**NORMATIVE MATTERS**  
 • National and regional normative  
 • Local legal prescriptions  
 • Bureaucratic procedures

**ECONOMICAL MATTERS**  
 • Methodologies of cost evaluation  
 • Access to financial loans, possibility of ESCO involvement  
 • Supply contracts (TPF, result assurance...)

**SOLCO** Contents of different training courses SOLCO Project (EIE 116/06) Intelligent Energy Europe

**PUBLIC POTENTIAL USERS**

**DAY 1**  
**THE BUILDING**  
 • Thermal behaviour of buildings (walls, windows, energy demand for heating/cooling, heat and mass flow...)  
 • Basic data for design

**CHILLERS SYSTEMS**  
 • Definitions, functioning principles  
 • Different Typologies of Chillers (single/double effect)  
 • Range of temperatures of work  
 • Performances of different chillers systems  
 • Characteristics of territorial market  
 • How to read technical/commercial brochures  
 • Voices of cost (production, purchase, installation, maintenance, durability)

**DAY 2**  
**CLIMATOLOGY**  
 • Solar Radiation (monthly and daily values, tilt and azimuth angles)  
 • Air temperature

**SOLAR COLLECTORS & CHILLERS SYSTEMS**  
 • Different Typologies of collectors (Flat CPC/Vacuum collectors)  
 • Performances and Maintenance of different collectors  
 • Definitions, functioning principles  
 • Different Typologies of Chillers (single/double effect)  
 • Range of temperatures of work  
 • Performances of different chillers systems  
 • Characteristics of territorial market, local availability of the technologic equipments  
 • Voices of cost (production, purchase, installation, maintenance, durability)

**DAY 3**  
**CASE-STUDIES**  
**NORMATIVE MATTERS**  
 • National and regional normative  
 • Local legal prescriptions  
 • Bureaucratic procedures

**ECONOMICAL MATTERS**  
 • Methodologies of cost evaluation  
 • Access to financial loans, possibility of ESCO involvement  
 • Supply contracts (TPF, result assurance...)

**DAY 4**  
**CHOICE OF PLANT LAYOUT**  
 • Different layouts: solar thermal panels and chillers  
 • Different layouts: cooling plant-building  
 • Maintenance of different layouts

**DAY 5**  
**PRACTICAL WORKSHOP**

**SOLCO** Contents of different training courses SOLCO Project (EIE 116/06) Intelligent Energy Europe

**PRIVATE POTENTIAL USERS**

**DAY 1**  
**THE BUILDING**  
 • Thermal behaviour of buildings (walls, windows, energy demand for heating/cooling, heat and mass flow...)  
 • Basic data for design

**CLIMATOLOGY**  
 • Solar Radiation (monthly and daily values, tilt and azimuth angles)  
 • Air temperature

**SOLAR COLLECTORS & CHILLERS SYSTEMS**  
 • Different Typologies of collectors (Flat CPC/Vacuum collectors)  
 • Performances and Maintenance of different collectors  
 • Definitions, functioning principles  
 • Different Typologies of Chillers (single/double effect)  
 • Range of temperatures of work  
 • Performances of different chillers systems  
 • Characteristics of territorial market, local availability of the technologic equipments  
 • Voices of cost (production, purchase, installation, maintenance, durability)

**DAY 2**  
**CASE-STUDIES**  
**NORMATIVE MATTERS**  
 • National and regional normative  
 • Local legal prescriptions  
 • Bureaucratic procedures

**ECONOMICAL MATTERS**  
 • Methodologies of cost evaluation  
 • Access to financial loans, possibility of ESCO involvement  
 • Supply contracts (TPF, result assurance...)

**DAY 3**  
**CHOICE OF PLANT LAYOUT**  
 • Different layouts: solar thermal panels and chillers  
 • Different layouts: cooling plant-building  
 • Maintenance of different layouts

**SOLCO** Contents of different training courses SOLCO Project (EIE 116/06) Intelligent Energy Europe

**DESIGNERS**

**DAY 1**  
**CLIMATOLOGY**  
 • Solar Radiation (monthly and daily values, tilt and azimuth angles)  
 • Air temperature

**SOLAR COLLECTORS**  
 • Different Typologies of collectors (Flat collectors, Flat CPC collectors, Vacuum direct flow collectors, Vacuum heat pipe collectors, Vacuum direct flow CPC collectors, Vacuum heat pipe CPC collectors)  
 • Performances of different collectors (effect of solar radiation, effect of difference between temperature of panel and air temperature)  
 • Characteristics of territorial market, local availability of the technologic equipments  
 • How to read technical/commercial brochures  
 • Voices of cost (production, purchase, installation, maintenance, durability)

**DAY 2**  
**CHILLERS SYSTEMS**  
 • Definitions, functioning principles  
 • Different Typologies of Chillers (single/double effect)  
 • Range of temperatures of work  
 • Performances of different chillers systems  
 • Characteristics of territorial market, local availability of the technologic equipments  
 • How to read technical/commercial brochures  
 • Voices of cost (production, purchase, installation, maintenance, durability)

**DAY 3**  
**THE BUILDING**  
 • Thermal behaviour of buildings (walls, windows, energy demand for heating/cooling, heat and mass flow...)  
 • Basic data for design

**NORMATIVE MATTERS**  
 • National and regional normative  
 • Local legal prescriptions  
 • Bureaucratic procedures

**PLANT DESIGN**  
 • Different layouts: solar thermal panels and chillers  
 • Different layouts: cooling plant-building

**DAY 4**  
**ECONOMICAL MATTERS**  
 • Methodologies of cost evaluation  
 • Access to financial loans, possibility of ESCO involvement  
 • Supply contracts (TPF, result assurance...)

**CASE-STUDIES**

**DAY 5**  
**PRACTICAL WORKSHOP**  
**FINAL TEST OF KNOWLEDGE**



# Contents of course for designers (5 days)

1. Climatology, Solar Collectors
2. Chillers
3. Building, Normative, Plant design
4. Costs, Case Studies
5. Practical Workshop, Final Test



# Local Involvement

- Training courses were organized with collaboration of LAC members and other local stakeholders



ΤΕΧΝΙΚΟ ΕΠΙΜΕΛΗΤΗΡΙΟ ΕΛΛΑΔΟΣ  
ΤΜΗΜΑ ΔΥΤΙΚΗΣ ΚΡΗΤΗΣ  
ΝΟΜΑΡΧΙΑΚΗ ΕΠΙΤΡΟΠΗ ΡΕΘΥΜΝΟΥ

TEE

ENEA

Ordine  
degli Ingegneri  
della Provincia  
di Agrigento

ΣΥΛΛΟΓΟΣ ΞΕΝΟΔΟΧΩΝ  
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# Training & Local needs

- LAC members cooperated with SOLCO partners to adapt contents of courses to specific local needs
- Contribution from LAC also for calendars, diffusion, and participants search.



# Calendar of Training Courses

	May 2008	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.09
Canary Islands	<i>D</i> <i>I</i> <i>PrU</i> <i>PU</i>					<i>D</i> <i>I</i> <i>PrU</i> <i>PU</i>	<i>PrU</i> <i>PU</i>		
Crete						<i>D</i>	<i>D</i> <i>PrU</i> <i>PU</i>	<i>D</i>	<i>I</i>
Cyprus									<i>D</i> <i>I</i> <i>PrU</i> <i>PU</i>
Sicily		<i>D-I</i> <i>PrU</i>	<i>PrU</i>		<i>D</i>			<i>PU</i>	

*D* designers  
*I* installers  
*PrU* private potential users  
*PU* public potential users



# Some Results

- 545 people trained
- Programs of all performed courses with utilized presentations in Greek, Italian and Spanish are available on SOLCO website
- Training material in English



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# Some feedbacks

- It is necessary a larger diffusion of SC technology in order to reduce installation costs
- It is absolutely necessary include solar cooling technology into financial aid schemes
- More applications are needed in order to have direct contacts with plants and their management



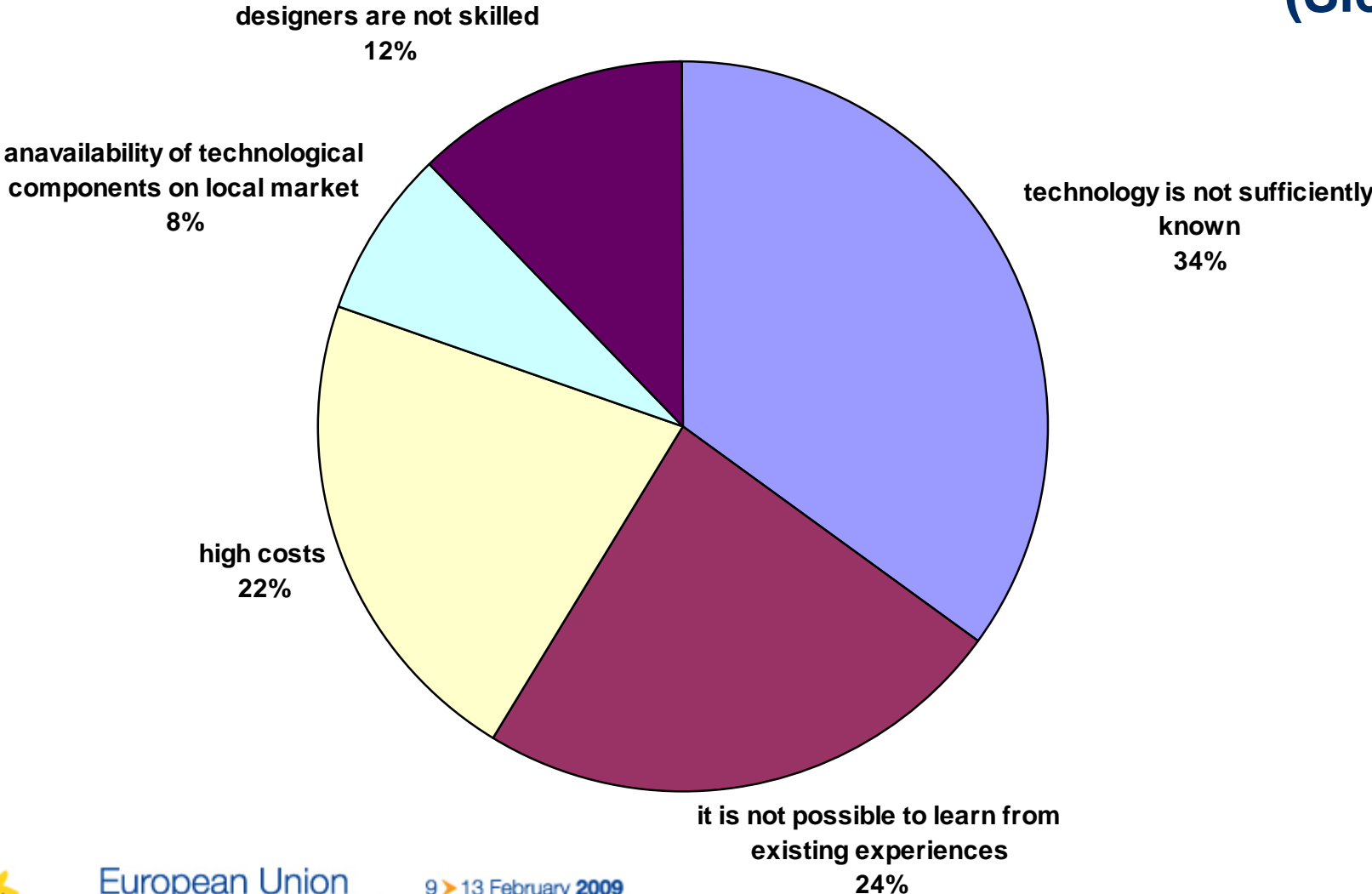
## ...other feedbacks

- It is necessary to look for one alternative to the cooling tower in order to avoid the risk of legionnaire diseases (ITC)
- Most engineers participating to courses in Crete declared that SC was not included into their programs at University
- High investment cost limits widespread application (ENV TUC)



# Feedbacks: why are applications so few?

(Sicily)



# Just one consideration about costs

- 204.500 € is the EU contribution for the whole SOLCO project
- 545 people trained
- 375 € per person trained contributed by EU funds
- Not taking into account all rest of project deliverables (reports, market studies, leaflet, website, brochure, infodays...)



# For further information: [www.solcoproject.net](http://www.solcoproject.net)



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## → TRAINING COURSES IN ITALIAN

TRAINING COURSES ON SOLAR COOLING IN SICILY BY APEA  
JUNE - JULY - DECEMBER 2008

Each course has been designed according to the needs and characteristics of the "technical actors" it addresses. The flyers corresponding to your interests can be downloaded here. The training material can be found in the section "Project Deliverables", Deliverable 18.

### TRAINING BY APEA IN AGRIGENTO, ITALY

- Training Course for Designers (5 days - starting date 18/06/2008)
- Training Course for Installers/Producers/Trade firms (3 days - starting date 19/06/2008)

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*Thank you for your attention !*

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**10/2/2009**