



solarcombi+

D5.8 - Evaluation report of Training courses campaign

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Work Package:	WP5
WP5 Responsible Partner:	TECSOL
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Edited by Romain Siré



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1. Introduction

1.1 Objective of WP5

The training on the “package solutions” developed in work package 4 was performed through each chiller partner together with its thermal partner in the respective region. The training courses’ first target group was (solar thermal) installers, because the goal of the packaged solutions is to avoid the need of engineering. Therefore the training material was oriented on that sense. However, the courses were of course also open to architects and engineers, so that they know the technical features of the systems and can plan them in their projects.

The coordination of this WP was committed to TECSOL, which has major experience with training courses in the field of solar thermal applications in general, and solar cooling in particular, and which was also responsible for the training in the IEE project SOLAIR, so that synergies were used.

1.2 Plan of actions

- ✓ Preparation of training material: TECSOL gave assistance to the Industry partners in preparing their training material and planning the courses
- ✓ Implementation pilot trainings: Three pilot training courses per industry partner were carried out in different countries. The training course were announced online, on project and partner website, on fairs and through the usual dissemination channels of the industry partners.
- ✓ Evaluation of the trainings and optimization of materials for further trainings (to be implemented outside the project frame)

2. Training courses carried out

2.1 Summary

Table 1 is a summary of the training actions carried out.

Reports of each training action were prepared by the involved partner and constitute deliverables D5.7.

Table 1: Summary of training actions

Partner	Date	location	n° of attendees
Fagor	05/02/2009	Bilbao - Spain	11
Fagor	16/10/2009	Bilbao - Spain	40
Fagor	09/11/2009	Portugalete - Spain	15
Climatewell	17/03/2009	Madrid - Spain	10
Climatewell	03/10/2009	Madrid - Spain	5
Climatewell	10/12/2009	Torre San Giorgio - Italy	4
Sortech	28/09/2009	Kape - Greece	17
Sortech	21/01/2010	Halle - Germany	22
Sortech	10/02/2010	Freiburg - Germany	8

2.2 General evaluation of the training campaign

Based on the reports delivered by each partners and the uniform treatment of information adopted it is possible to present a global evaluation results.

2.2.1. Overview

More precise data are available for each training course and constitute the deliverables D5.7. As it can be seen in the Summary paragraph 2.1, three training courses were organized by the industrial partners Fagor, Climatewell, and Sortech.

Fagor organized their training courses in Spain between February 2009 and November 2009.

Sortech organized their training courses between September 2009 and February 2010, and reached a German and Greek attendance.

The Climatewell policy from August 2009 is to provide frequent courses but to a small and specific audience. That's explaining the relatively small number of trainees in each course. However, other training presenting the package solution was also carried out but wasn't promoted as being in the solarcombi+ project because only 3 courses by partner was agreed in the initial contract. Climatewell reached a Spanish and Italian attendance.

Faced to the lack of time, SOLution decided not to organize training courses.

Likewise, Sonnenkilma wasn't able to organize training courses since they had to close up the shop.

2.2.2. Methodology / Materials used

The methodology and materials used in the pilot training courses was mainly based on the material prepared within the project (see the deliverables D5.1, D5.2, D5.3, and D5.4 – Training material in English and/or in the national languages of participants).

Since TECSOL was also responsible for the training in the IEE project SOLAIR, it was possible to use synergies between both projects to develop and improve the training materials offered to the attendees.

2.2.3. Attendees' profile

The attendees profile was determined in global bases (taking into consideration all training actions).

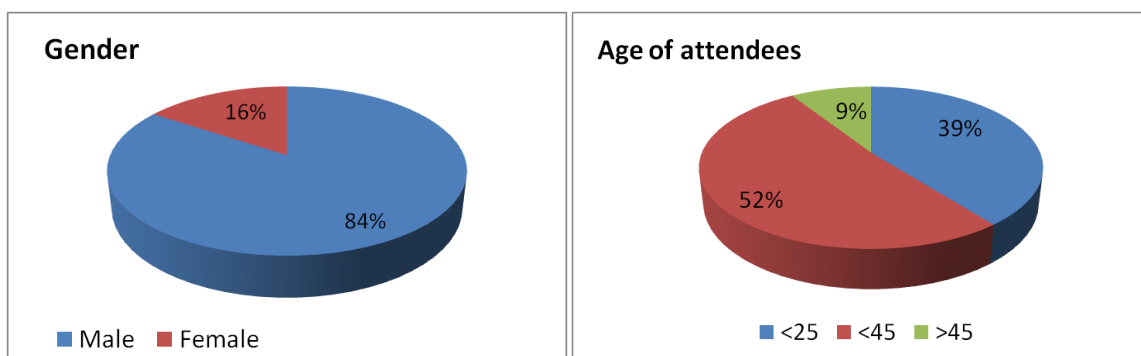


Figure 1 - Gender and age of participants.

Figure 1 shows there is a large predominance of men participation. The majority of participants have ages between 25 and 45 years. However there is also a large part (39%) of peoples younger than 25.

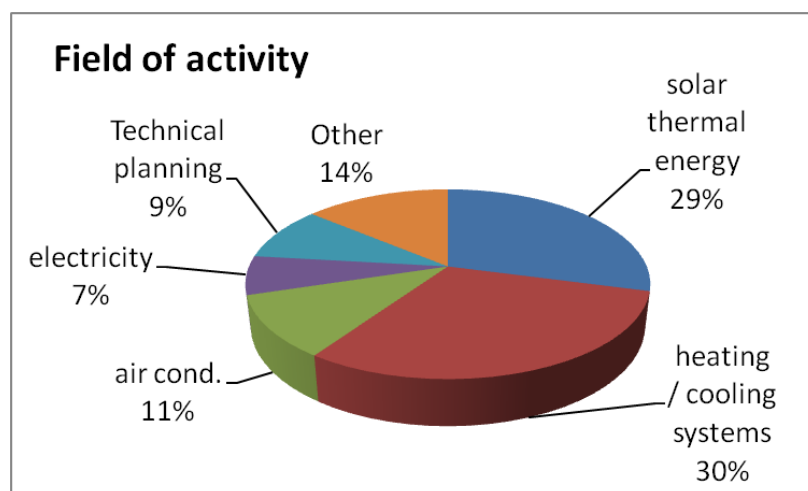


Figure 2 – Attendees field of activity

In Figure 2 the field of activity of the trainees is shown. It shows that a large part of the attendees (29%) already work in Solar Energy but it is interesting to see that the majority of the participants (30%) indicated to work with heating/cooling systems. This shows the interest of people working in this field to learn more about heating and cooling with solar energy.

The structure in which the trainees were working is much diversified, see the Figure 3. However, it can be seen that a majority are working in an enterprise or enterprise organization (31%). Then, the categories “Consultant”, “university/research institute”, “technology provider” and “utility energy agency” are following with respectively 15%, 10%, 9%, and 7% of the total number of trainees. And finally a few EU institutions, regional or local authority and medias, were represented in these training courses.

Then, the Figure 4 gives information on the jobs executed by the trainees. Most of the trainees were engineers (42%). It is interesting to notice that another large category of trainees were student (22%), so may be solar cooling/heating topics are interesting people who are still in universities. And then, academic/tutors, installers/technicians, consultants, and architects are following with respectively 11%, 10%, 7%, and 4% of the total number of trainees. Since the main training courses target groups were installers, engineers and architect, the objective can be considered as accomplished, even if the number of installers was a bit low in comparison to what was expected.

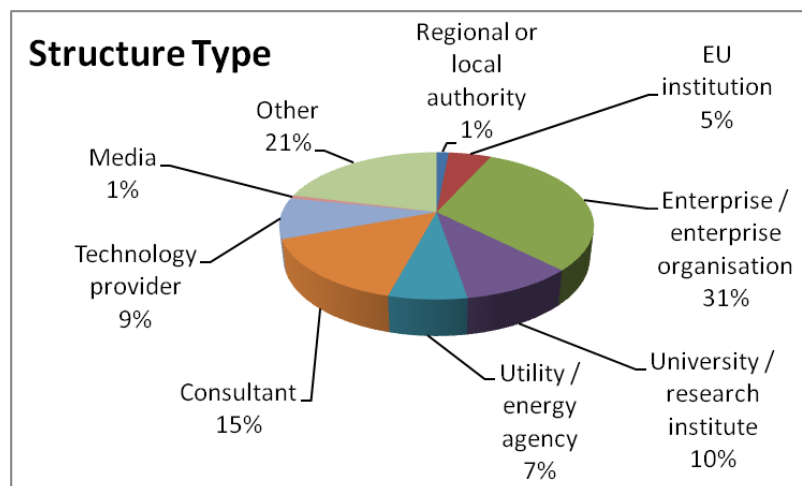


Figure 3 - Structure type

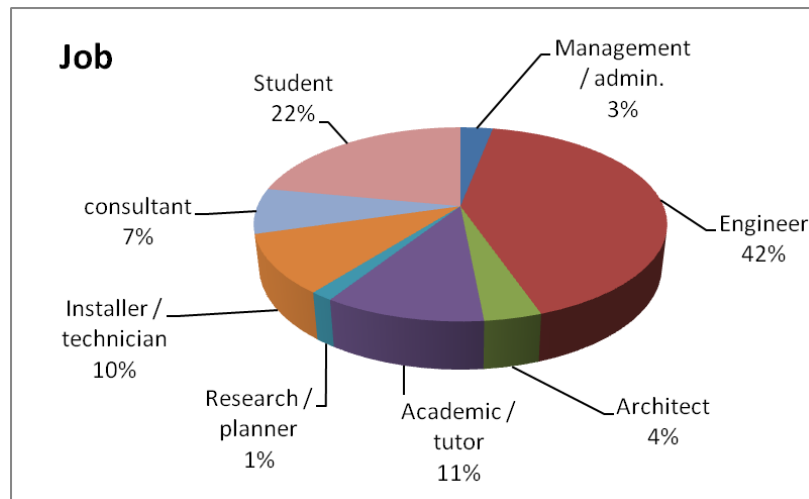


Figure 4 - Attendees job

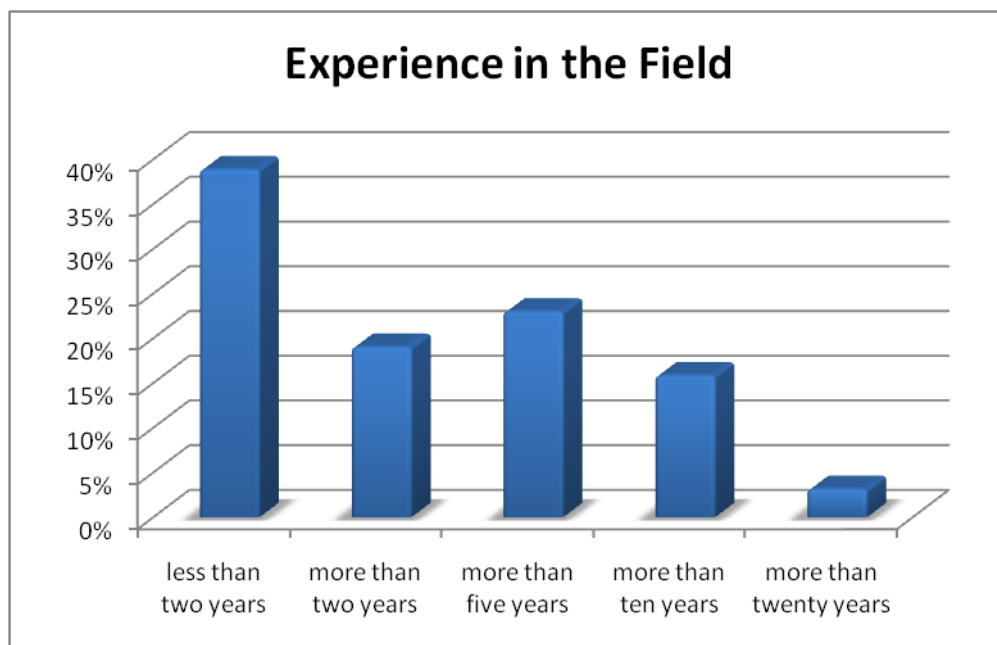


Figure 5 - Experience in the field

Figure 5 shows that most of the people attending these training courses are recently involved in these subjects (experience of less than two years), close to 40%. Then, each categories “more than two years”, “more than five years”, and “more than ten years” are more or less at the same level around 20%. Then it is noticeable that quite a few peoples attending the courses (3%) have more than twenty years in the field.

2.2.4. Evaluation of training actions

For evaluation of the training action, it was asked to each trainee to fill in the following tables.

Give your appreciation of the training action:

	Low				High
Scoring	1	2	3	4	5
Organizational aspects:					
Time schedule					
Duration					
Organization					
Location					
Documentation:					
Quantity					
Quality of contents					
Presentation					
Contents					
Choice of topics					
Degree of exploitation of each topic					
General evaluation:					
Fulfillment of your expectations					
Update of your knowledge					
Practical application of the subject					

Which topics would you like to see:

Wishes for the topics' treatment	treated with more depth	treated with less depth
Introduction		
Basics		
Predesign		
Economics & environment		
Realized systems and success stories		

Presentation of the teacher:

	Not clear	Confusing	Average	Clear	Very clear
Scoring	1	2	3	4	5
Teacher's name:					

From the information collected in the first two tables it was possible to draw the following graphs (see Figure 6 and Figure 7)

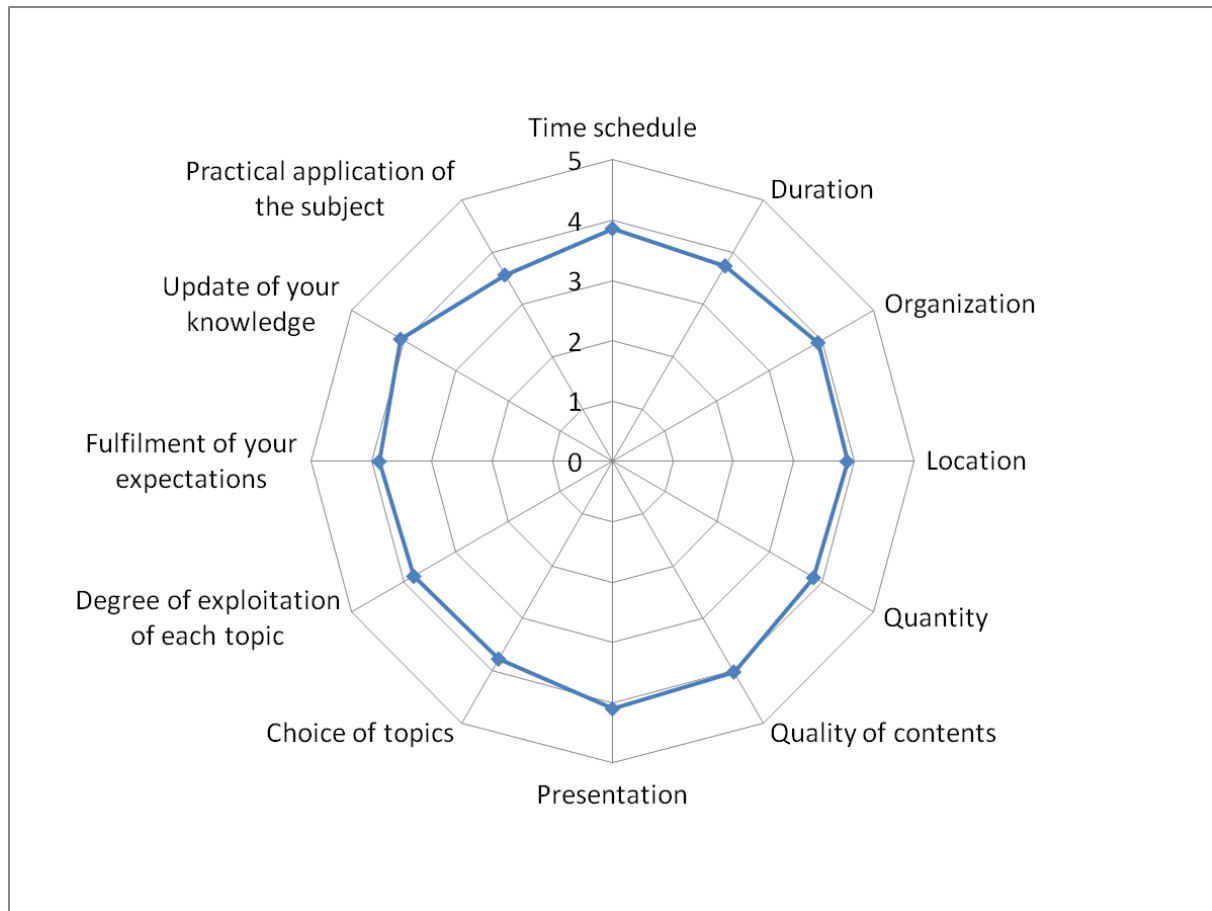


Figure 6 - Appreciation of the training action

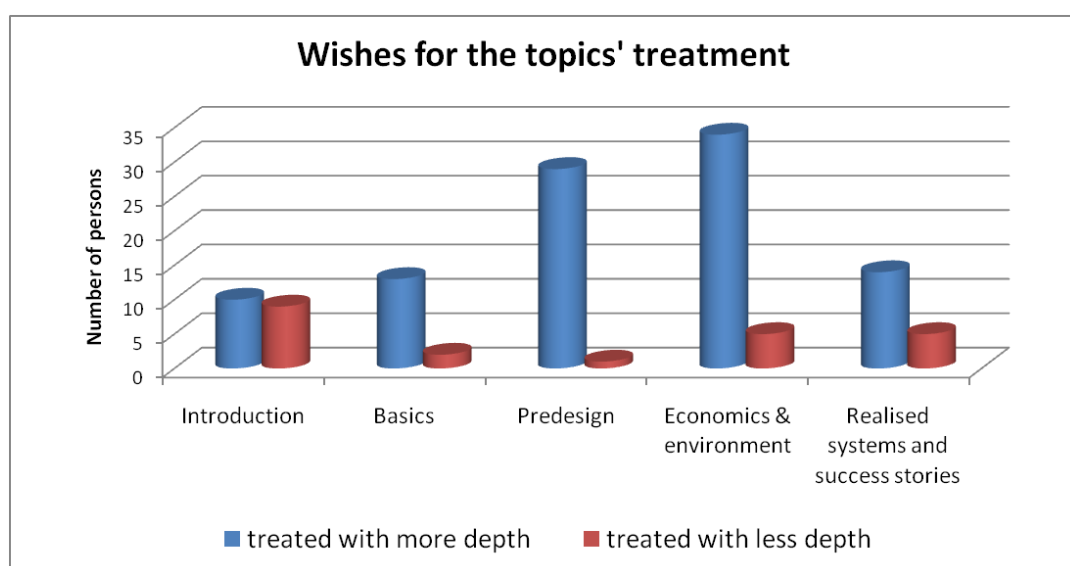


Figure 7 - Topics treated with more/less depth

From Figure 6 it is possible to conclude that almost all aspects had a classification very close to 4 (slightly higher or slightly lower), showing in general that most of the people considered them with a classification of 4, and some people with a classification of 3 or 5. However, the topic “Practical application of the subject” is rated with a lower grade: 3.6. That shows the trainees still see barriers to the application of solar cooling systems.

The answer to the question “Topics treated with more/less depth” (see Figure 7) is very dependent on the background of the trainees and this is the reason why “Basics” are still considered as needing more depth. Economics and environmental aspects is the topic where the need for more depth is more felt. The reason for this is related to the fact that it is still difficult to have a general evaluation of the economic aspects of systems since many of the existing systems are still demonstration systems. Other aspects like “Predesing” and “Realized Systems” are considered as needing more depth. It was difficult to fulfill this wish from participants due to the fact that the available time for the training action was too short to “say everything” as a consequence, choices had to be done.

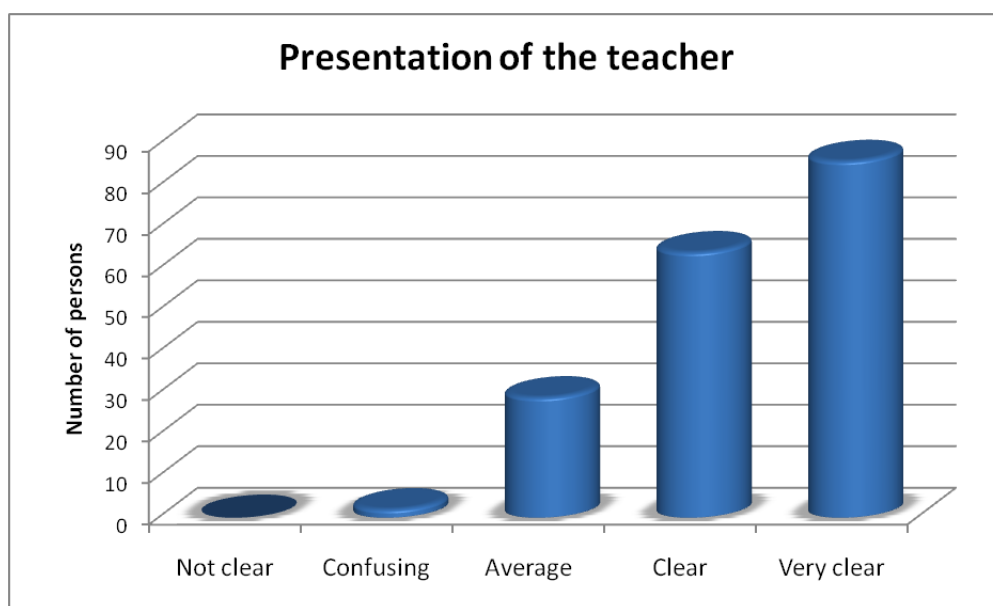


Figure 8 - Presentation of the teacher

Figure 8 shows that the trainees were globally satisfied with the different teachers. Indeed a large majority of the trainees thought the trainer was “clear” or “very clear”.

3. Major Conclusions

The first conclusion which has to be enlightened and explained is the number of participants attending to the training courses. Finally, 132 trainees were attending the training course; this number is a bit below what was agreed in the initial contract. However, it can be explained by all the reasons presented in the paragraph 2.2.1 in page 3: one industrial partner closed up the shop, another one decided not to organize the courses, etc.

The other very important indicator which have to be taken into consideration in priority, is the training courses feedback given by the participants.

From the analysis of the evaluation questionnaires it is possible to conclude that the participants of the Training Actions correspond mostly to the target group considered, even if the number of installers was a bit low in comparison to what was expected.

The most promising market areas were also reached, since training courses were carried out in Spain, Italy, Greece, and Germany.

The Participants considered that the Training Actions where good in the several aspects considered, namely: Organizational aspects, Documentation, Contents, General evaluation. The sub aspects considered with the higher grade was attributed to the presentation and the update of the knowledge with 4.1. The lower grade was for Practical application of the subject, with 3.6. It shows that the trainees still see barriers to the application of solar cooling systems.

Concerning the wishes for the topics' treatment, the Economical and Environmental aspects are the topics where the need for more depth is the more felt. The reason for this is related to the fact that it is still difficult to have a general evaluation of the economic aspects of systems since many of the existing systems are still demonstration systems. Following very closely, the topic "Predesign" is also considered as needing to be treated with more depth. To a lesser extent, the topics "Basics" and "Realized systems and success stories" are also considered as needing more depth. For the introductive part, the advices are more divided.

It was difficult to fulfill this wish from participants due to the fact that the foreseen time for the training actions was too short to get onto every subject very deeply.

4. Future training actions

Several training courses dealing with their package solution were carried out by the industrial partners but weren't taken into consideration by the report since we agreed on a number of three training courses for each industrial partner. And also, training courses presenting the different package solutions will be carried out after the end of the SolarCombi+ project.

For the next training courses it would be possible to consider a version with a higher duration which could give a special attention to economical and environmental aspects. Another solution would be to establish a higher degree of selection of the trainees' background and an adaptation of the training materials considering this background.