D5.6 - Training material on SolarCombi+ to be included in trainings organized by related projects as e.g. SOLAIR

Project Acronym: SolarCombi+
Work Package: WP5
WP5 Responsible Partner: TECSOL
Deliverable: D5.6

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1. Introduction

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.

TECSOL is also taking part of several National, European, and International research and development projects dealing with solar cooling and heating topics. And in many of these projects a large scale training campaign is planned. Moreover, many partners of the SOLARCOMBI+ project are also taking part of these campaigns in the different projects. As a consequence, the training courses offered by the partners in the other projects can be improved and completed by the training courses developed within the framework of SOLARCOMBI+ project. It is especially the case for the European project called SOLAIR which is supported by IEE. Indeed this project has an entire work package devoted to training, and even more interesting, TECSOL was also the work package leader for the SOLAIR project. As a consequence synergies could be used.

Of course, the SOLAIR project is only an example because many topics reached by the SOLARCOMBI+ training can also be very valuable in any solar cooling training campaign part of other projects which will be carried out in the future. But also for training courses which are not part of any research and development project.
2. Main topics which will be valuable and reusable

Of course every part of the SOLARCOMBI+ training campaign is valuable and potentially reusable in the future, but some of them which are especially linked to the SOLARCOMBI+ project are even more interesting. As a consequence we can focus on the market report and the SWOT analysis, but also on the online tool, and finally of course the possibility to have a solar cooling installation as a packaged solution.

2.1 Market report and SWOT analysis

The market report and the SWOT analysis which were developed in the SOLARCOMBI+ work package 2, will be very useful to clarify, enlightens, and even more important update from the former analysis the data. Part of these data, there is for example the different points which should be improved to make the solar cooling and heating system have a better market penetration.

As a consequence, for the short term to medium term training courses to be carried out, the conclusions of these two reports will be extremely precious to get correct and updated data.

Of course, these results will also have to be updated in the different future projects to have a good and always recent training material. However, even for a long term training campaign, the SOLARCOMBI+ market results could be presented as a “historical background” which could present the state of the art at a certain given date (2009).

2.2 Online tool

Another very interesting point is the presentation and the explanation of the online tool which was developed within the framework of the SOLARCOMBI+ work package 4.

The online tool was intended to easily allow users chose specific climatic region, application (in-house building or office) and cooling technologies (heat rejection system, cold distribution system, solar collectors’ type and chiller) among the simulated ones, obtaining information on a few number of plausible configurations. Collectors’ field size and hot water storage size, together with technical and ecological characteristics of the plant are presented through tables (http://wis.eurac.edu/solarcombiplus/Default.aspx).
As a consequence, especially for the training courses focusing on installers, it is very useful and interesting for the trainees to present briefly the tool, how it works and how to use its results.

2.3 Packaged solutions

And finally, may be the most valuable point of the SOLARCOMBI+ project is the design of packaged solutions by different chiller manufacturer. This is of course extremely interesting for the potential consumer, because it leads to a strong reduction of the engineering costs.

These packaged solutions are quite similar to the different “kits” which are available for the domestic hot water production. It is also important to enlighten that for the small scale domestic hot water installation there is any engineering work, so it can be expected that in a few years, if the market is growing, the same phenomenon will occurs for the small scale solar cooling and heating systems.

As a consequence, it is very important to present these packaged systems in all the different future training courses which will be carried out; especially the ones targeting the potential consumers, and the installers.
3. Example of slides which can be used

3.1 Market presentation from Solution’s training material:
3.2 Basic configurations, online tool, and package solution from Rotartica’s training material:
Herramienta on-line
En la página web www.solarcombiplus.eu estará disponible una herramienta para el predimensionamiento y diseño de los sistemas solares combinados SolarCombi +.

Herramienta on-line
www.solarcombiplus.eu

La solución tipo Kit propuesta debe ser:
- Sencilla, rápida y que permita una puesta en marcha, funcionamiento y mantenimiento simple del sistema Solar Combi +.
- Fácil al mismo tiempo que estándar:

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- D5.6 – Synergies between the projects -
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10. SOLUCIÓN KIT PROPUESTA / (1/14)
La solución tipo Kit propuesta partir de la configuración C1 definida anteriormente.

VENTAJAS

- Como solución Kit, es muy versátil, permitiendo que algunos bloques o opciones sean conectados o desconectados según las necesidades del usuario. Así, por ejemplo:
  - No incluye el sistema de separación. Manteniendo en común los conductos 20, 21, 30, 31, 37, 38 y 50 en 41, 42, 35, 36 y 37, y no se necesitaría la bomba AE10 y PCA10.
  - No es de transferencia de agua fraseada. Conectar entre ellas las conexiones 30 y 31 para el agua caliente.
  - No es un sistema solar pasivo: Conectar sistemas 7 y 14, 13 y 12, 9, y 8.

- Tiene en el DNI 2023, tiene solución base convencional, con 9, 10, 11, 12 y 13, con el sistema del PWR y PWR pump en línea.

DESVANTAJAS

- El sistema es complejo, dando a la cantidad de conexiones y tubos que se podrían emplear no es aconsejable, más bien únicamente con la ideación y evolución del kit electoral.

Por ello, se decidió simplificar manteniendo en lo posible la flexibilidad pero permitiendo una mayor standardización y sencillez para el instalador.

10. SOLUCIÓN KIT PROPUESTA / (2/14)

Existen 7 modos básicos de operación, que son los siguientes:

- Modo 5. Inversa, Calentador Solar a través del termostato.
- Modo 6. Inversa, Calentador mediante sistema de acondicionamiento del agua.
- Modo 7. Calentador y Verano, servicio de agua caliente sanitaria (ACS).

(Pues generan sin penalizar a la calificación y aire-acoplado con un sistema solar invertido).
- D5.6 – Synergies between the projects -