solarcombi+

D2.7: Examination of potential market share and definition of goals

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Identification of most promising markets and promotion of standardised system configurations for the market entry of small scale combined solar heating & cooling applications
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Introduction

Scope of this report is to describe the SC+ systems' market, as established and illustrated by means of the analyses that were carried out in the framework of SC+ project so far. According to main conclusions that were established, an extension of this study is conducted to develop strategies and define the goals for the SC+ systems to successfully penetrate the market.

In D2.6, a SWOT Analysis of the SC+ technology was conducted with the purpose of identifying and categorizing the different features related both to the technology as well as its relevant market. In specific, the research was focused on examining the advantages and drawbacks of the system itself and later the opportunities offered in the market and the threats that may be confronted.

The aforementioned listing and categorization of strengths, weaknesses, opportunities and threats does not provide by itself safe conclusions and means for strategic planning if it is not further analyzed. Various techniques have been proposed for extracting conclusions from the SWOT Analysis, such as the SWOT Matrix, which will be thoroughly described in the next section.

However, an important matter that cannot be neglected and needs to be individually addressed is the fact that all different issues (strengths, weaknesses, opportunities and threats) are weighted as equally important throughout the SWOT Analysis. This does not reflect the reality, though. One could not extract the assumption that a technology is more advantageous if the number of strengths is higher than the number of weaknesses. Neither could one decide that the examined technology has more market potentials if the number of opportunities is higher than the number of threats.

For that reason, the following technique is proposed: each issue (strength, weakness, opportunity and threat) is weighted according to the likelihood of happening/being true and the severity of its impact if it does happen [6]. Moreover, a further classification is carried out according to the time frame each issue (strength, weakness, opportunity and threat) refers to. In specific, two time frames are examined, i.e. present and future. The weighting factors - rated from 0 (: unlikely / no impact) to 100 (: certain / large impact) - for each issue as well as the time frame they refer to can be found in the Appendix I.

As outcome of this analysis the following graph arises. The importance of each strength, weakness, opportunity or threat is defined by multiplying the

likelihood with the severity of the impact (see Appendix I). The accumulative importance of all issues (e.g. strengths) is the sum of the "importances" of all the relevant issues. In the graph, X axis refers to strengths and weaknesses, whereas Y axis to opportunities and threats. The two points plotted on the graph refer to the present and the future respectively and are defined as the node of the accumulative importance of strengths minus accumulative importance of weaknesses and the accumulative importance of opportunities minus accumulative importance of threats:

X $\mathrm{Im}_{T,\,Strenghts} - \mathrm{Im}_{T,\,Weaknesses}$

Y $\mathrm{Im}_{T,\,Opportunities} - \mathrm{Im}_{T,\,Threats}$

Where $\mathrm{Im}_{T,\,Strenghts}$: Accumulative Importance of Strengths

$\mathrm{Im}_{T,\,Weaknesses}$: Accumulative Importance of Weaknesses

$\mathrm{Im}_{T,\,Opportunities}$: Accumulative Importance of Opportunities

$\mathrm{Im}_{T,\,Threats}$: Accumulative Importance of Threats

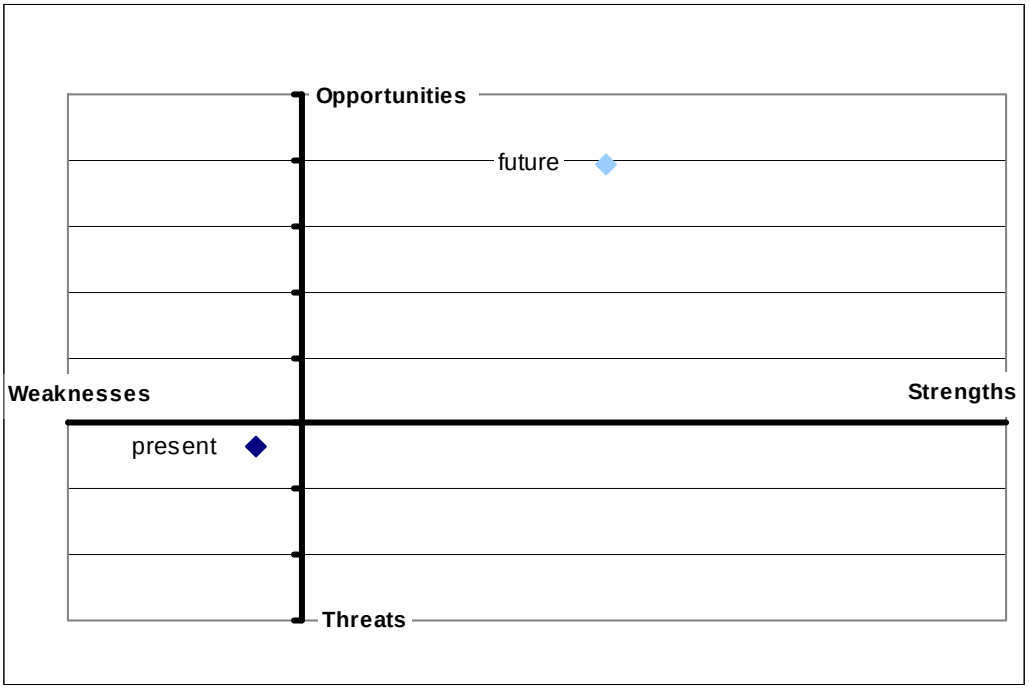

Figure 1: Present and future position of SC+ technology in terms of strengths-weaknesses-opportunities-threats

In Figure 1, it is clearly illustrated that at the moment the internal consideration of the technology is rather weak, being however not far away from the node representing the balancing between strengths and

weaknesses. In the same way, the examination of the external factors that affect SC+ leads to a point where the SC+ systems are more threatened by the market than invited through the opening of opportunities. This suggests that, for the time being, the chances are relatively rough for their successful market establishment.

However, taking into consideration the future developments or prospects for advancements the illustrated point moves to the first quarter of the graph, being located between strengths and opportunities. This means that if the current weaknesses are minimized and the threats avoided, the future structure of the market will be much more advantageous, both internally and externally. As seen in the graph, the illustrated point is characterized both by high strengths and high opportunities. Yet a prerequisite is that certain drawbacks of the technology and market barriers are eliminated or at least minimized. For instance, the capital cost has to be significantly reduced, since it was not considered as a future weakness in this analysis, rather a current setback.

SWOT Matrix: Definition of Strategies

As mentioned previously, the findings of the SWOT Analysis alone cannot be substantially helpful unless some further analysis is carried out. A significant tool for managing the SWOT Analysis is found in the SWOT Matrix.

Information revealed in a SWOT analysis can be used to generate new/better strategies for the examined technology. The SWOT Matrix is, therefore, a way to formally analyze and make strengths, weaknesses, opportunities and threats a key component of the strategic planning. In specific, the strategies that constitute the SWOT Matrix are defined as follows:

- S-O strategies pursue opportunities that are a good fit to the company's strengths
- W-O strategies overcome weaknesses to pursue opportunities.
- S-T strategies identify ways that the firm can use its strengths to reduce its vulnerability to external threats.
- W-T strategies establish a defensive plan to prevent the firm's weaknesses from making it highly susceptible to external threats.

A template for establishing the SWOT Matrix is presented in the following table:

	Strengths S1, S2, …	Weaknesses W1, W2, …
Opportunities O1, O2, …	**S-O Strategy**: Use Strength **S1** to take advantage of Opportunity **O1**	**W-O Strategy**: Overcome weakness **W1** by taking advantage of Opportunity **O2**
Threats T1, T2, …	**S-T Strategy**: Use Strength **S2** to avoid Threat **T1**	**W-T Strategy**: Minimize Weakness **W2** and avoid Threat **T2**

Based on the aforementioned methodology, the following section presents a number of strategies, derived from the SWOT Matrix and formulated for the SC+ systems. In specific, for each type of strategies (i.e. S-O, W-O, S-T and W-T strategies) an analysis is conducted on a technical, cost-related and marketing level, with different combinations of strengths, weaknesses, opportunities and threats, as presented in the SWOT Analysis Table (Appendix II).

1.1 Strengths – Opportunities (S-O Strategies)

Technology related strategies

As thoroughly discussed in the SWOT Analysis, the SC+ systems are distinguished by highly competitive technical advantages. These can be used as driving forces for the exploitation of a number of opportunities also cited in the relevant report.

The major advantage in terms of solar fraction and COP (S1: High electrical COP and high potential for further increase of SC+ system's efficiency) should be effectively used to promote the SC+ systems against the deadlock of fossil-fuelled technologies (O2: No significant future improvement of fossil-fuel technologies foreseen). In specific, both the higher efficiency of the examined technology and the assumption that further potentials exist for improvement can be combined with the fact that the well-established fossil-fuelled technologies will not be in focus of the development effort and will therefore retain their efficiency at today's levels. This differentiation is a powerful driving force for the market penetration of SC+ systems and should be effectively employed to promote them over competition.

Moreover, the systems' undemanding installation in terms of compatibility (S2: Compatibility with conventional heating/cooling & existing distribution systems), their ability of covering the base cooling demand (S5: Stand alone systems for covering base cooling loads),the potential for storage improvement (S7: Improvement of storage capabilities of SC+ systems) and their suitability for isolated regions/areas could all play a significant role in enhancing their suitability for areas with good solar irradiation and higher cooling demand (O1: Locations with good solar irradiation – high cooling loads – high fuel prices) as well as isolated areas (O2: Isolated buildings/regions).

A sufficient number of locations with the aforementioned characteristics exist in the European countries, which can be set as targets for the dissemination of the SC+ technology. The high solar irradiation, which is often accompanied by higher temperatures and subsequently higher demand in cooling, concentrates the major characteristics and strengths of SC+. The ability of the technology for covering at least the base cooling load directs the promotion effort towards such locations. Besides, the simplicity of the technology, when considering compatibility, is advantageous for such locations. The replacement of existing distribution systems would not have to take place, a fact that saves a lot of effort (especially when considering an isolated area), while an existing heating system could remain as the auxiliary system required by the SC+.

Furthermore, through the conducted virtual case studies and the definition of standard system configurations it was confirmed that the best configurations show exceptional performance characteristics. **This will encourage even more the development of standard design systems and should be used as a driving force for the development and approval of standards by a European/international standardization organization.**

Cost related strategy

As already mentioned, one of the most prominent benefits of the examined technology is the low operating cost (accounting for fuel cost), at least when considering operation in cooling mode. The low fuel consumption makes, moreover, the SC+ systems operating independently of the fluctuation in the energy markets. For that reason an increase in fuel prices should be exploited for the promotion of this advantage of SC+ systems, by demonstrating the minimization of operating cost in comparison with other fuel-based technologies.

Marketing related strategies

When considering marketing strategies for the market penetration of SC+ systems, two different aspects may be examined: the market trends,

influenced by the European politics and legislation as well as the powerful characteristics of the technology itself.

It is known that the SC+ systems have a positive environmental profile, achieving significant mitigation of CO_2 emissions. This characteristic can be effectively used, as the current trends in the European Union, in terms of politics, decision making and legislation are focused in sustainability, with the protection of environment and the energy security being a top priority nation- and European-wide. Legislative measures in certain countries have recently come into force, what should be taken advantage of in terms of an effective promotional campaign in the respective countries. In specific, the legislative measures in force are the following:

	Legilslative measure	**Application**
Germany	Erneuerbare-Energien-Waermegesetz	Space heating by renewable energies
Italy	Legislative Decree no.192 (19th August 2005) Legislative Decree no.311 (29th December 2006)	DHW by renewable energies
France	Thermal regulation 2005	Space heating
Spain	CTE Code	DHW by solar installations

Moreover, the SC+ systems are recognized as a state of the art technology, a characteristic that in combination with the environmental benefits that are achieved can be targeted to “pioneers” and “front runners” in green technology. Additionally, the wider recognition of the existing and operating installations in and outside Europe should be used as an awareness medium both for the aforementioned target groups as well as for exploiting the potential of moving to new geographic markets outside the EU.

1.2 Weaknesses – Opportunities (W-O Strategies)

Technology related strategies

A fairly restraining weakness of SC+ systems is the requirement for both storage and large unoccupied area for the solar panels Hot water has to be stored for the hours of the day with no irradiation and for low irradiation periods during the year. Moreover, as the main targets of SC+ are single-family houses or small office buildings the possibilities of the required surface area being available are rather low. However, as the renewable energy technologies are becoming increasingly popular, the construction techniques are being adapted to the new tendencies, making the prospects for future building integration of new technologies more probable. Effort should be, therefore, given in developing the market in a way that the

installation of a SC+ is already included in the building planning, smoothly integrating the SC+ system and avoiding all technical difficulties that might arise.

Cost related strategies

Probably the most severe weakness of the SC+ systems is their high capital cost. This can be avoided, by taking advantage of the different financial incentives that are currently in force in the relevant European countries, a fact that can reduce by far the initial investment.

Furthermore, the lack of local retailers and the inadequacy of sufficiently trained technical personnel raise a lot the total cost of the system, especially in regards with the installation, transportation and maintenance cost. A helpful approach to overcome this problem is to take advantage of the current market situation and mobilize the relevant stakeholders towards the opening of companies, the utilization of the currently available large labor pool for the establishment of local retailing businesses as well as the introduction of training for all respective market participants.

1.3 Strengths – Threats (S-T Strategies)

Technology related strategy

As previously discussed, SC+ systems are compatible with other space heating and cooling and already installed distribution systems, what makes them stronger for their market penetration. In that way, a significant threat could be overcome, namely that of not-worthy replacement of existing conventional systems. In contrary, under given circumstances in regards with the type and characteristics of the existing installation, the distribution system could be also used for the distribution of heating/cooling of the SC+ system, while the conventional heating system could be sustained as the back-up heating system required for the operation of SC+.

Marketing related strategy

A severe market barrier for the substantial penetration of the SC+ systems is found under the unawareness of the wide public on both the beneficial characteristics as well as the availability of the technology. Campaigns should be organized therefore to make the SC+ known to the wide public, by exposing, among others, the existing installations as best practices and citing all the benefits related to its operation. In specific, features such as its ability of covering the cooling load, the low operating cost and its independency of energy markets should be published. Presentation in conferences and fairs as well as organization of workshops should be used as

an integrated approach to provide information, describe and advertise the aforementioned benefits, together with the fact that SC+ stands as a state-of-art technology with large impact on the protection of the environment and the mitigation of CO_2 emissions.

1.4 Weaknesses – Threats (W-T Strategies)

Cost related strategy

To compensate one of the most severe restraining factors for the wide market penetration of SC+, namely the high capital cost, it should be considered to focus all the effort in installing SC+ in new buildings. By means of the previous analyses and, in particular, the economic analysis of scenarios [2] it was concluded that currently it seems not economically viable to invest in replacing existing installations with the SC+ technology. On the contrary, it seems much less costly to install SC+ in new buildings where utilities for space heating and cooling as well as DHW would anyway be required. Moreover, new buildings could profit significantly by installing a sustainable system using a state-of-art technology with low energy consumption and mitigation of environmental effects, especially under consideration of the upcoming recast of the EPBD.

Definition of goals

Derived both from the aforementioned analysis based on the SWOT Matrix as well as all reports conducted so far ([1], [2], [4] and [5]) this section concludes the market analysis with the most significant outcomes that will also serve for defining the future goals.

As often mentioned during the analysis, the SC+ systems are quite advantageous in terms of technical characteristics, combining state of the art technology with energy efficient and environmentally friendly profile, features that with the appropriate management could be converted into powerful driving mechanisms for a complete market establishment. Moreover, both now as well as in the coming years numerous opportunities are opening in the market to welcome such technologies with the emphasis laid on energy efficiency and climate protection.

This means that the SC+ has increasing chances of not only surviving but also becoming a fairly competing technology if the right steps are followed and an effective approach is chosen. It is, therefore, important to define certain goals both for the manufacturers/distributors of SC+ systems as well as the market stakeholders.

One of the most imperative issues to be handled and perhaps the most significant barrier for a more intensive market penetration is the high capital cost, which is directly connected to the absence of economies of scale. they are, actually, technical, managerial, financial and marketing factors those that could cause the decrease of average cost as the production rises. Apparently in the case of SC+ those factors are not sufficiently developed. Effort should be, therefore, laid, on a **better handling of such cost-related issues**.

According to the learning curve analysis conducted in D2.4, there are two prerequisites for achieving a considerable decrease of the costs so that SC+ systems become competitive to other technologies. The first one is attaining a high learning rate, which refers to the experience gained by manufacturing a certain technology and can be affected by technical, organizational and managerial factors. The second and most substantial one is the **establishment of mass production** of SC+ systems, which requires enhancement in all stages of product development and commercialization.

For this mass production to take place and for SC+ systems to become cost-competitive to other technologies, one should **focus on the most distinguished strengths** of the technology that are not directly related to cost parameters and promote them over competing technologies. For instance, it would be important to highlight facts as the high level of efficiency, the environmental benefits that are achieved by their operation as well as the high quality characterizing such a state of art technology.

For that reason, **campaigns should be organized** which would, among others, include presentations in workshops, conferences and fairs, so that a larger number of market participants becomes aware of the technology and the market interest starts being directed to its development. Moreover, official surveys should be conducted to include the customer's satisfaction and the reliability a SC+ system can offer after having been tried, based on already existing installations. The latter should be presented as best cases, exposing the results and the gains achieved as well as the clients' testimonials.

As described in D2.4, according to the SC+ project's partners, the cost reduction is rated as the number 1 parameter for a more intensive market penetration. It is followed by the requirements for standardization, incentives and legislation, technical optimization and established networks of local retailers.

As concerns the standardization, it is a very important step for a mass market deployment. Defining standard design systems has, furthermore, been a key goal of the SC+ project, since, as indicated by various analyses the standardization greatly impacts the development and establishment of

many products (and services). It becomes a measure of reliability for the customer and simplifies all related processes, from manufacturing to purchasing. As mentioned previously, the **standardization of certain design systems** would not only be an added value for the technology, but would be the driving force for its wide approval.

Currently, the indisputably most important action to be held is the **mobilization of the market, politics and regulation towards the enforcing of incentives and regulatory measures** that favor SC+ systems. It is already discussed, that the current trends in the European scene are moving towards a sustainable future, setting energy efficiency, renewable energy technologies and climate protection as top priorities. It is therefore important for the SC+ manufacturers/distributors to take this opportunity and approach the relevant stakeholders and decision makers, in order to promote the establishment of financial or other incentives that could significantly reduce initial investments and at the same time intercede to the formulation of guidelines and regulations. Important would also be the approach of public authorities and possibly the initiation of pilot SC+ projects that would gain much attention and popularity.

In addition, the **extension of the network of local retailers** would, among numerous benefits, sufficiently reduce certain cost factors, such as transportation, installation and maintenance cost. As mentioned previously, all of the aforementioned processes currently require further expenses, since SC+ retailers and adequately trained personnel (engineers, installers, etc) are often absent even in nation-wide level. An important step would, therefore, be contacting and partnership with local retailers, or even opening of new companies to create a strong and reliable network of local retailers. Moreover, **training courses addressed to engineers and installers** should be organized at a local level, expanding the market in terms of expertise and services. These developments would not only make SC+ systems known to the wider public by exploiting the opportunity of applying a mature and professional strategy for dissemination and publicity, but also provide improved services and reliability.

It should be, however, considered that a possible opening of the market, in terms of retailers' network expansion, promotion and advertising has to be preceded by the establishment of certain market conditions. That is, the systems will have to be technologically mature, tested and reliable, services will have to be developed to provide the necessary support and maintenance and adequate financial or other incentives will have to be issued to support the initial investment of the end customers. Otherwise, a rapid expansion of the market, linked to the opening of new businesses and co operations will probably fail.

As a future tendency it should be considered that the promotion of SC+ systems should be **targeted to the most promising regions and applications** as resulted through the respective analyses conducted in the framework of the project. According to that, effort should be given to focus on **new buildings**. According to the conducted economic analysis, it was proved more cost effective to install SC+ systems to new buildings than replace equipment in existing buildings. Furthermore, the design and architectural prospects for building integration may help substantially the avoidance of possible barriers concerning surface/space availability or aesthetics. Besides, the current regulatory and subsequently technology and market trends concerning the energy efficiency of buildings move to a more sustainable consideration of the new buildings.

Finally, it should be considered that **areas with high solar irradiation, high cooling loads and isolated areas** are by definition the targets of SC+ having the highest potential for SC+ market penetration and it should be those to which most of the promotional effort should be given.

References

(1) SC+ project deliverables D2.1, D2.2, D2.3

(2) SC+ project deliverables D2.4, D2.5

(3) SC+ project deliverable D2.6

(4) SC+ project deliverables D3.2, D3.3

(5) SC+ project deliverable D4.1

(6) http://www.cymeon.com/swot/swot_man.asp

(7) http://www.amces.com/files/Strategy-SWOT%20Matrix%20Tool.doc

Appendix I

		What is the likelihood that this event will happen? (0-100)	How severe is the impact if this event does happen? (0-100)	In what time frame is this issue relevant? (current, future)	Importance
S1.	High electrical COP and high potential for further increase of SC+ system's efficiency	100	85	current/future	85
S2.	Compatibility with conventional heating/cooling & existing distribution systems	100	75	current	75
S3.	Extension of the use of existing ST systems (DHW)	60	50	future	30
S4.	Best configurations result in high performance operation	95	85	future	80,75
S5.	Stand alone systems for covering cooling loads	70	70	current	49
S6.	Tailor-made systems achieving better performance	70	65	current	45,5
S7.	Improvement of storage capabilities of SC+ systems	45	85	future	38,25
S8.	Future development of standard design systems	85	95	future	80,75
S9.	Ideal for isolated buildings/regions	65	85	current	55,25
S10.	Less losses of transformation from PE to electricity	97	40	current	38,8
S11.	New applications emerging	70	80	future	56
S12.	Relatively low operating cost (in off-gas mode: eg, cooling)	90	85	current	76,5
S13.	Almost independent of energy markets	87	80	future	69,6
S14.	Relatively good cost of primary energy saved	50	50	current	25
S15.	3-in-1 features: One product covers 3 needs for the user	85	70	current	59,5
S16.	Positive environmental profile – Mitigation of CO2 emissions	90	65	current	58,5
S17.	State of art equipment / system	86	50	current	43
S18.	Production plants location	74	46	current/future	34,04
S19.	Existing installation as best practices	100	85	current	85
W1.	Storage required	100	74	current	74
W2.	Large unoccupied area required	100	85	current	85
W3.	An auxiliary system required	80	90	current	72
W4.	Not efficient for all different combinations of location/application	70	85	current	59,5
W5.	Not standardized and available off-the-shelf yet	90	90	current	81
W6.	High capital cost	80	90	current	72
W7.	Non-negligible operating cost	75	90	current	67,5
W8.	No economies of scale	75	80	current	60
W9.	Relatively high installation and transportation cost	90	70	current	63
W10.	Relatively high maintenance cost	80	80	current	64
W11.	Limited operating experience – No reviews and testimonials of existing installations yet	50	60	current	30
W12.	Lack of local retailers	85	90	current	76,5
W13.	Limited market applications	90	65	current/future	58,5
W14.	Aesthetics	70	40	current/future	28
W15.	Lack of user friendly interface and automated features	80	50	current	40

W16.	Non-adequately trained technical personnel	85	85	current	72,25
W17.	No trademarks currently in force	95	85	current	80,75
O1.	Ideal for locations with good solar irradiation – high cooling loads – high fuel prices	95	97	current/future	92,15
O2.	No significant future improvement of fossil-fuel technologies foreseen (efficiency)	80	80	future	64
O3.	Future building integration	85	75	future	63,75
O4.	Standardization	75	90	future	67,5
O5.	Improvement of manufacturing technologies	65	45	future	29,25
O6.	Increase in fuel prices	95	97	future	92,15
O7.	Cheaper than electric-driven compression chillers	95	85	current	80,75
O8.	Available financial incentives per country	84	96	current	80,64
O9.	Prospects for financial incentives (current preparation – discussion on upcoming legislation)	74	98	future	72,52
O10.	Proposal for green tax package	94	80	future	75,2
O11.	Large labor pool available due to recession	95	75	current	71,25
O12.	Opening of jobs, businesses, companies - New geographic markets emerging outside the EU	90	85	future	76,5
O13.	Promotion of sustainability (e.g. UN Climate Change Conference 2009)	95	65	current	61,75
O14.	"Pioneers" and "front runners" both in green technology and environment protection are looking to invest and buy new technology.	80	80	current/future	64
O15.	Target specific user's profile	75	70	future	52,5
O16.	EU (or national) -Legislation (particularly public sector) for the employment of RES	80	98	current/future	78,4
O17.	Recast of the EPBD	90	75	future	67,5
T1.	Competing technologies' capability of covering peak demand	98	95	current	93,1
T2.	Already installed conventional systems in existing buildings (non-worthy replacement)	95	95	current	90,25
T3.	PV driven compression chillers	80	65	current	52
T4.	Volatile input material costs (e.g. copper)	65	45	current	29,25
T5.	Lack of powerful incentives	80	85	current	68
T6.	Available financial incentives for competing technologies	90	95	current	85,5
T7.	Lack of awareness for the wider public	90	80	current	72
T8.	End user's behavior relates with system's performance	75	70	current/future	52,5
T9.	Legislation in favor of competing technologies	70	80	current/future	56

Appendix II

	Strengths	Weaknesses
Technical	**S1.** High electrical COP and high potential for further increase of SC+ system's efficiency **S2.** Compatibility with conventional heating/cooling & existing distribution systems **S3.** Extension of the use of existing ST systems (DHW) **S4.** Best configurations result in high performance operation **S5.** Stand alone systems for covering cooling loads **S6.** Tailor-made systems achieving better performance **S7.** Improvement of storage capabilities of SC+ systems **S8.** Future development of standard design systems **S9.** Less losses of transformation from PE to electricity **S10.** New applications emerging	**W1.** Storage required **W2.** Large unoccupied area required **W3.** An auxiliary system required **W4.** Not efficient for all different combinations of location/application **W5.** Not standardized and available off-the-shelf yet
Cost-related parameters	**S11.** Relatively low operating cost (in off-gas mode: eg, cooling) **S12.** Almost independent of energy markets	**W6.** High capital cost **W7.** Non-negligible operating cost **W8.** No economies of scale **W9.** Relatively high installation and transportation cost **W10.** Relatively high maintenance cost
Marketing aspects	**S13.** Relatively good cost of primary energy saved **S14.** 3-in-1 features: One product covers 3 needs for the user **S15.** Positive environmental profile – Mitigation of CO_2 emissions **S16.** State of art equipment / system **S17.** Production plants location **S18.** Existing installation as best practices	**W11.** Limited operating experience – No reviews and testimonials of existing installations yet **W12.** Lack of local retailers **W13.** Limited market applications **W14.** Aesthetics **W15.** Lack of user friendly interface and automated features **W16.** Non-adequately trained technical personnel **W17.** No trademarks currently in force
	Opportunities	**Threats**
Technical	**O1.** Locations with good solar irradiation – high cooling loads – high fuel prices **O2.** Isolated buildings/regions **O3.** No significant future improvement of fossil-fuel technologies foreseen (efficiency) **O4.** Future building integration **O5.** Standardization **O6.** Improvement of manufacturing technologies	**T1.** Competing technologies' capability of covering peak demand **T2.** Already installed conventional systems in existing buildings (non-worthy replacement) **T3.** PV driven compression chillers
Cost-related parameters	**O7.** Increase in fuel prices **O8.** Cheaper than electric-driven compression chillers	**T4.** Volatile input material costs (e.g. copper)
Financial incentives	**O9.** Available financial incentives per country **O10.** Prospects for financial incentives (current preparation – discussion on upcoming legislation) **O11.** Proposal for green tax package	**T5.** Lack of powerful incentives **T6.** Available financial incentives for competing technologies
Market related parameters	**O12.** Large labor pool available due to recession **O13.** Opening of jobs, businesses, companies - New geographic markets emerging outside the EU **O14.** Promotion of sustainability (e.g. UN Climate Change Conference 2009) **O15.** "Pioneers" and "front runners" both in green technology and environment protection are looking to invest and buy new technology. **O16.** Target specific user's profile	**T7.** Lack of awareness for the wider public **T8.** End user's behavior relates with system's performance
Legislation	**O17.** EU (or national) -Legislation (particularly public sector) for the employment of RES **O18.** Recast of the EPBD	**T9.** Legislation in favor of competing technologies