

Minutes

20th Solar Keymark Network Meeting

2016-03-08+09 Berlin, Germany

Item 1: Opening of the meeting

Jaime Fernández, Chairman of the Solar Keymark Network (SKN), opened the meeting and welcomed the members, observers and guests. Katharina Meyer, in the name of DinCertco, that hosted the meeting at the headquarters of DIN, welcomed the participants and gave some practical information regarding the meeting and the organization of the traditional dinner that participants hold after the first day of the meeting. Both Katharina Meyer and Jan Erik Nielsen, Manager of the SKN were thanked for the excellent preparation of the meeting.

Some practical information regarding the decision making process and output of the agreements (decisions and resolutions) at SKN meetings was given to the participants.

All decisions and resolutions are written at the meeting and voted by the members with voting rights. In order to facilitate the process, the negatives votes and abstentions are asked for first. In the minutes that follow, in all cases in which there are 0 negative votes and 0 abstentions, the wording 'unanimous decision' has been used as information on the voting.

Item 2: Introduction of participants

The participants introduced themselves, indicating their status as a member, observer or guest and also the type of organization they represented and country of origin. There were some members attending the meeting via web, although there were some technical difficulties that made impossible their active participation. Participants are listed in Annex A.

The number of participants are related in the table below:

Certifiers	Testing Laboratories	Industrial Representatives	Observers/Guest
12	17	8	6

The voting preconditions regarding the peer groups with voting rights (Certifiers, Testing Laboratories and Industrial Representatives) defined in section 4.2 of SKN_N102R.9 Solar Keymark Network Internal Regulations were met and therefore the meeting could take place.

Item 3: Approval of the agenda

Once the meeting was officially started, Jaime Fernandez expressed that his first words chairing a meeting should be in recognition for the excellent job carried out by Harald Drück, whom he respected profoundly and from whom he had learned a lot throughout the years.

The agenda was approved with the petition of Stephan Fischer to discuss a new absorber coating in *Item 38 Any other business*.

Item 4: Comments to the minutes of the 19th SKN meeting

The minutes of the last meeting had already been sent to the SKN members and no comments or allegations had been received. Therefore the minutes were approved in the final document SKN_N0270R1_19MeetingMinutes.

Item 5: Date and place of next meeting(s)

After some discussion regarding the best way to organize the next meetings, the following schedule was agreed upon:

- **21st meeting:** 2016-10-17+18 starting at 14:00 in Crete Greece) and hosted by the Greek Industrial association EHBE (Vassiliki Drosou).
- **22nd meeting:** 2017-03-07+08, starting at 13:00 in Madrid (Spain) and hosted by AENOR (Jaime Fernández)
- **23rd meeting:** 2017-10. There are three possibilities: Freiburg, Germany (Fraunhofer Institute / Korbinian Kramer), Nicosia, Cyprus (Applied Energy Laboratory / Georges Roditis) and Rome, Italy (ENEA / Vinod Shama)

The information for the next meeting in Crete will be sent out by the Jan Erik Nielsen in short a time.

Item 6: Review of Decision list

All of the decisions taken at the last meeting are found in the latest version of the document SKN_100R17 Decision.

Besides taking decisions and making resolutions at each meeting, it is also important to revise their level of implementation. Jaime Fernandez presented a table with the follow up of the actions taken at the last meeting, summarized in the tables below:

M19	Implemented	Comments (results, etc.)
Decision	- Inspection Report(JF), - WG for fees(JF), - WG for data base(PD)	
Resolution	1,2,3,4,5,6,7,8,9,10,11,12,13	

M19	Not implemented	Comments (follow-up, next steps, etc.)
Decision	- 1 WG for including hydraulic flow schemes in data sheets (AB). - WG for proposal 10 on families (AB). - CBs to work on proposal 11 of AB (CB WG)Annex of Scheme Rules for absorber coatings (JE)	Postponed for next meeting (SCF project and 1/3 of the WG is not with us anymore (Ralf Köbbeman has left). Proposal 10 to discussed in the CEN TC 312 WG1 for the revision of EN12975. Not done by CBs. Not finished yet, expected for next meeting
Resolution	14 Annex C updated (JE)	A phrase for 2016 not added

After reviewing the table and since there was one action that was not finished, the following decision was taken:

Decision M20.D1 – Proposal 11 of SKN_N0268R0 regarding the information of original tests on OBL Certificates to be studied by the CB WG in order to present a Resolution

A WG composed of Katharina Meyer (leader) and Jaime Fernandez will study Proposal 11 of Andreas Bohren and prepare a Resolution.

Information on vote: Unanimous decision

Item 7: New collector data sheet

Peter Kovacs made a presentation (see Annex B) of the new collector data sheet (ScenoCalc v5.01). There are in principle two major changes compared to the old version (v4.06),

1. Adoption of a new harmonized data sheet with a new reference standard (ISO 9806). The new data sheet is also adjusted to handle ErP calculations for CDR (EU) No 812/2013 (see bottom of page 2)

2. It is now possible to calculate CAO and power output for unglazed collectors tested according to the steady state method

The following Resolution was taken:

Resolution M20.R1 – New version of data sheet

The collector data sheet version 5.01 of date 2016-03-01 presented at this meeting shall be adopted as Annex B1 of Solar Keymark specific scheme rules.

Information on vote: Unanimous decision

After this decision a debate was started on the best way to proceed in the case of OBL Certificates and Renewal of certificates based on old data sheets. These newly granted Certificates would be based mostly on testing according to EN 12975 and it was a concern of the participants to show a lack of harmonization if certificates are granted using an old version of the data sheet. The best solution seemed to grant all new Certificates using the new data sheet (as a technical annex to the Certificate), making a clear reference in the area for comments that the test was done according to EN 12975. Therefore, and in order to maintain a good level of harmonization, the following decision was taken:

Decision M20.D2- Use of new data sheets for all new Certificates, even when the original products have been tested and certified according to EN 12975

All new certificates shall be issued using the actual version of the data sheet. This refers to all types of certificates, including OBL and renewals. Even if the originals are related to EN 12975. All calculations shall be done according to gross area and EN ISO 9806 parameters.

Information on vote: Unanimous decision

There was also some debate on the possible lack of consistency given by a situation in which an original certificate tested according to EN 12975 (and the technical information presented on an old data sheet) would be related to a new OBL Certificate for the same product using the new data sheet and EN ISO 9806 parameters. A question arose whether it should be

appropriate, in such cases, to also change the original Certificate and possibly any other OBL Certificates. However this would require the permission of the manufacturer and other OBL Certificate license holders. Furthermore, the Certification Body always holds the traceability of the certificates. Taking these points into account, it was considered that each case would require a specific decision. As a result, there was not the need to take any new decisions.

Item 8: Proposal for decision – WG for further maintenance/streamlining/improvements of collector data sheet

Andreas Bohren had asked for an item in the agenda with the following proposal:

Establish a working group to deal with further discussions concerning the collector data sheet, e.g.:

- *Separation of ScenoCalc from collector data sheet (annual output calculated by ScenoCalc no longer part of data sheet – but ScenoCalc still available from and recommended by the SKN)*
- *Indication of uncertainty on values*
- *Others*

In the debate that followed it was decided that no action should be taken for the time being, not even the creation of working group.

Item 9: A recent Complaint

Jaime Fernandez presented a complaint in a confidential manner, maintaining the confidentiality towards the names of the Certification Body, Testing Laboratory and Manufacturer under the complaint, as well as the complainants.

Calendar	Steps or actions
November 2015	<ul style="list-style-type: none"> • CB receives complaints from: 2 SKN laboratories and 3 Companies using form of Annex I • The complaints refer to 1 - 4 Certificates. Complainants state that values of heat loss coefficients C1 are too low and C2 is too high for this type of collector. Power output for 50°C is higher than expected
December 2015	<ul style="list-style-type: none"> • CB answers complainants indicating that after an internal and thorough review of the test data, it has concluded that there are uncertainties in the test data, and that a retest shall be performed • All 4 certificates are modified with a remark on each page, indicating that the performance values are being subject to an investigation due to a complaint and that the collector will be retested to verify its thermal performance
January 2016	<ul style="list-style-type: none"> • A new complaint to SKN Manager and Chairman from an industrial association regarding the CB's answer • One of the complainants is not satisfied with answer of CB. Complainant states that lawyers are consulted, that a special test should be used and that press may be contacted • CB presents an Action plan to the complainants including a re-test at own laboratory with a third party laboratory auditing the testing process and with video sampling
February 2016	<ul style="list-style-type: none"> • "Crisis cabinet" formed: SKN Chair, KMO* and SKN Manager • Search for a compromise on procedure for retesting • New procedure for complaints is developed • CB presents an updated action plan to the complainants
March 2016	<ul style="list-style-type: none"> • Samples are taken and test is starting • New procedure for complaints is presented at SKN meeting
April-May 2016	<ul style="list-style-type: none"> • Tests take place • Decision on possible actions

**KMO: Keymark Management Organisation*

Following this presentation, some general comments and clarifications were made about the process, and some complainants expressed their dissatisfaction with the action plan proposed by the Certification Body. Susanne Hansson explained that SP is the Certification Body under the complaint, and that they had studied the complaint, answered it in time and prepared an action plan for retesting with an external auditor which they considered to be adequate.

Item 10: Proposal for Resolution- A Resolution is presented to create a new and complete procedure for complaints, with its own section in the Specific Rules

There had been many exchanges referring to the complaint. In particular Harald Drück had sent two proposals regarding the creation of Working Groups to prepare procedures for complaints against Certification Bodies and how to deal with doubtful or wrong data sheets already being published on the SK website. Jaime Fernandez had prepared a complete procedure for dealing with complaints that had received previously input from some members of the SKN and also from the Working Group of Certification Bodies.

This procedure was presented to the SKN: SKN_N0279R4CompleteProcedureForcomplaint. This file is a PPT that summarizes the procedure in document SKN_N0282R1_Proposal for Resolution on Complaints. This procedure was written with the goal to improve the following areas:

- The process for complaints has to be found in one place of the Specific Rules
- The process for complaints has to apply to all types of companies or KM operators
- If the complainant is not satisfied by the answer of the CB, it must be able to appeal clearly to CEN
- There has to be a clear explanation on the procedure for changing the Keymark Certificates and KM database
- There can be help from an external auditor or referee working group in retest procedures and this can be further explained
- There may be a case when there is a retest from a lab and a special test at the same time, and there must be a clear procedure for decision making with so many tests at the same time

After the presentation there was a debate regarding the possibilities for improvement on the procedure for dealing with complaints. There was an exchange of ideas on the concept of having an auxiliary working group to make recommendations on complaints like a 'quality assurance committee' or a 'board of the wise', an idea that had been dealt with in the past. There was also a proposal to revise the 10% rule of section 6.3 of SKN_N 106R.28 Solark Keymark Scheme Rules and reduce this value since it was considered that today laboratories are able to work with a lower range of uncertainty.

Since document 'SKN_N0282R1_Proposal for Resolution on Complaints' is a long one, prepared in a short time, it was preferred to continue working on the documents and present a Resolution for the next meeting. Therefore the following Decision was taken:

Decision M20.D3 – Establish a WG to prepare a resolution for a complete procedure for complaints

A WG composed of Pedro Dias, Katharina Meyer (Chair), Ulrich Fritzsche, Stephan Fischer, Daniel Eggert, Christian Stadler, Alberto Garcia, Andreas Bohren, Klaus Mischensky, Harald Poscharnig and Jaime Fernandez is created to prepare a complete

procedure that can serve as basis for a Resolution to be presented at the next SKN Meeting .

Information on vote: Unanimous Decision

There was still a proposal for Resolution presented by Harald Drück that was discussed. There was a long debate in which different points of view were exchanged. Several industry representatives expressed their concern about the impact that such situation had in the market, in particular considering the long period elapsed since the beginning of the process. In their view, this was a threat to fair competition but also to the reliability and image of the Solar Keymark in the market. Certification Bodies expressed their serious concerns about the applicability of the proposed decision, as they feared it would go against the rules Certification Bodies must abide to. After an intense discussion, the following proposal for Resolution was voted:

Proposal for Resolution. Dealing with doubtful or wrong data sheets already being published on the SK website /HD

If official complains related to a specific Solar Keymark data sheets are sent by at least three different and independent test laboratories and at least three different and independent manufacturers or solar thermal industry associations to a certification body the certification body it is requested to blacken the doubtful data as well as all data resulting from this doubtful data and to make a remark indicating that the data sheet is under investigation.

Note: This means e.g. that if the collector reference area is doubted also the collector efficiency parameters as well as the values for the annual collector output have to be blackened as they are directly influenced by the collector reference area.

The results of the votes were: Votes against: 12, Abstentions: 6, Votes in favor: 11

The Resolution was not accepted because the 2/3 majority that is needed for any change in the Scheme Rules was not reached (*see Solar Keymark Network – Internal Regulation Section 4.3 Rules for final decisions*). Since it was a rather controversial vote, the members were asked to stand up and the votes were counted more than once and it was checked that all of the voters had their voting rights.

Item 11: Presentation: Update on “Fundamental new database that can also be used for the generation of data sheets”

Jan Erik Nielsen presented the work done so far in the development of a new database. This work is related to SCF 4C07 and 5C6.1. The database may be controversial as it offers the possibility to make filters according to e.g. η_0 , thermal power per m^2 , energy output per m^2 , “Energy Labelling collector efficiency” etc., and thus makes it possible to compare collectors very easy and directly for specific parameters.

The intention is that the data is inputted to this database shall be given by the certification bodies. At the next meeting an updated presentation including such input “module” will be presented by Jan Erik Nielsen.

Pedro Dias commented that the possibility to filter or order products based on the power output raises some concerns among some industry players. Therefore it was proposed to discuss this topic, also taking into account other discussion on energy labelling and collector labelling, in order to come out with inputs for the development of the database. In the meantime, the work on the database is put on hold.

Item 12: ESTIF LabelPack A+ project and its proposed cooperation with SKN.

At the last SKN meeting there was a debate regarding the use of the SKN database by LabelPack A+ which led to the establishment of a Working Group led by Pedro Dias. He presented the outcome of the meeting held by the Working Group on this purpose. The presentation is attached on Annex C of this document. The tool for calculation of the energy label offered by LabelPack A++ targets mainly installers and retailers. It will be possible for the user to create a list of favorite products.

A next step will be to include a calculation tool for solar devices, based on the Solcal method. This tool shall provide some of the values needed for the generation of package labels using solar thermal.

A future step will use product data, including of products in the SK database. A WG composed of Pedro Dias, Sören Scholz, Jaime Fernandez and Jan Erik Nielsen discussed the interaction between the SK database and this online tool. The tool shall highlight the use of SK products, when searching for data but also on the package fiche (including the SK certificate number).

After some questions and answers on this subject, the following decision was taken:

Decision M20.D4 – The use of the Keymark database by LabelPack A+

“The Solar Keymark Network welcomes the cooperation with the project Labelpack A+ and the work on developing tools that can facilitate the calculation of the package label for water and space heating systems within the framework of the ERP regulation. The package label and the facilitation of its calculation are extremely relevant for the solar thermal industry and as such, the Solar Keymark Network wants to continue to pursue this cooperation with the Labelpack A+ project. Taking into account that the project has already developed a calculation tool for the package label, available online, the SKN is glad to support the interconnection of the data in its database and the tool provided by the Labelpack A+ project. This interconnection will allow the calculation tool to be more appealing to installers, by providing easy access to a large number of solar thermal products and will increase the value proposition of SKN certificates, by providing an additional benefit for SK certificate holders.

As such, the Labelpack A+ shall assist the efforts in the development of the SKN certificate database in what concerns the interconnection capabilities.”

Information on vote: 0 negative votes - 4 abstentions

Item 13: Use of Keymark logo on Solergy Label

The following text had been sent by Pedro Dias as a proposal for a decision regarding the use of the Keymark by the Solergy label for the energy labelling of collectors:

The Solergy label includes the logo of the SK next to the logo of the certification body in charge of issuing the label. Furthermore, it includes on the bottom the link to the SK website. Such use of the references (logo and webpage link) to the Solar Keymark is misleading for manufacturers, public authorities, installers or costumers who might be lead to believe that this label is related to the Solar Keymark Network, which is clearly not the case.

This text had received the following comments from Sören Scholz:

Please notice that we cannot agree to the content of this proposal for the following reasons:

- *The SOLERGY is a new collector label, which tries on a voluntary basis to support the solar thermal industry to compete with other existing energy labels and to survive in a very difficult market. In contrast to another new label on the market, the SOLERGY is not directly linked to the Solar KEYMARK database but only uses the data*

mentioned in the collector data sheet 2 to calculate the energy output per year. This information is publically available and cannot be prohibited. Also other subsidy schemes use this information to grant national subsidies.

- Furthermore, the SOLERGY strongly supports and strengthens the Solar KEYMARK! Only if the manufacturer can provide a valid Solar KEYMARK certificate with a new data sheet 2 for the respective collector, the collector label will be issued (also a check of the technical data is integrated!). Furthermore, the calculated annual thermal output will be registered and be published on a daily updated website (this will avoid misuse of the data).
- Thus, also the Solar KEYMARK logo itself is shown on the label in combination with the registration No and the link to the Solar KEYMARK database. The manufacturer has got the right to use the Solar KEYMARK for his certified products and also to show the link to the database (he will do by using the SOLERGY). This can from our point of view not be prohibited by SKN or any other organization.
- If the manufacturer wants to change his certified products, also the collector label has to be recalculated.
- Last but not least, the SOLERGY is developed in such way that also other European and empowered CBs can grant on the basis of the publically available guideline the respective collector output labels (it is a very transparent system).
- Let's try to be fair and see for which collector output label the manufacturer will decide instead of blocking some of the competing labels by such proposals.

Thus, we propose to disagree to this proposal

Since both sides were in disagreement, a meeting had been held a week before this SKN meeting. Both Pedro Dias and Katharina Meyer presented their arguments again. The main points of debate were focused on: the size and placement of the Keymark logo on the top left of the Energy label and the link to the Keymark website. The members felt that it was not up to the SKN to tell other companies how to print their labels, but at the same time it is important that the Keymark logo is used properly. During the previous meeting it had been agreed that there could be simply a direct contact with the company Solergy explaining the problem with the use of the Keymark logo, so taking the previous debate into account, the following decision was taken:

Decision M20.D5- Contacting Solergy for use of Keymark logo

It is decided that the SK manager contacts the entities responsible for this label and asks them to revise the reference to the Solar Keymark in this commercial label.

Similar procedures shall be taken with regard to other similar labels that are not officially endorsed by the SKN.

Information on vote: 0 negative votes - 1 abstentions

Note: Regarding the minutes of this item, the following comment was sent by SF : This does not really reflect the discussion. I remember quite a few people including myself which were in favor of having the Keymark logo on the Label. Also the decision should be rewritten. From my understanding the voting was only related to remove the solarkeymark website adress from the label

Item 14: Proposal for decision / SCF steering group for SCF project applications (7th call)

Due to the absence of Harald Drück, Jan Erik presented the proposals of the Solar Certification Fund Steering Group for funding of the 7th SCF call described in document SKN_N0273R1-SCF-Recommendations. The following decision was then taken:

Decision M20.D6 – Approval of projects that will receive Solar Certification Fund

The proposals recommend by the Solar Certification Fund Steering Group for funding as described in document 'SKN_N0273R1-SCF-Recommendations' are accepted and the corresponding activities will be funded.

Information on vote: 0 negative votes - 4 abstentions

Item 15: Proposal for resolutions concerning SCF working rules and appointment of SCF Steering Group:

In the absence of Harald Drück, Jan Erik presented the proposal for a resolution in the working rules regarding the composition of the Steering Group in the document SCF_N0001R11.

There is a vacant seat for the industry and there is a proposal for Klaus Mischensky (Austria Solar) to take it. Since there are no other candidates and after reviewing the list of members of the SCF, the following Resolution is taken:

Resolution M20.R2- A new revision of SCF working rules SCF_N0001R11

The new version of the working rules SCF_N0001R11 including Klaus Mischensky (Austria Solar) is approved.

Information on vote: Unanimous decision

Item 16: Presentation of management table

Jaime Fernandez presented an analysis of Solar Keymark and the SKN, as if it were a company, elaborating a strategy that is in line with the strategy of ESTIF, the evolution of the solar thermal industry and the strategy of CEN. (See Annex D) The internal strength and weakness, the key activities, the economic and legal environment, the evolution of the market are taken into account to propose a general strategy and six actions plans.

After some discussion regarding concepts and ideas in the presentation, the action plans were studied one by one. The main idea behind each action plan is that the corresponding working group shall analyze each proposal, elaborate a working plan and if necessary ask for funding.

With respect to the action plan related to Marketing and Communication activities, the proposal is to:

Review Web page, create a map of Europe with support schemes and legal requirements, improve KM Brochure, develop a Newsletter, SKN stand at big trade Fair... Connect with key players in support schemes in different countries through KM Operators. Workshops for Support Schemes? Share information throughout Europe to copy the best practices.

There was some debate about the proposal. There were different opinions regarding what would be most relevant but it was agreed that such a group would be very relevant. The group shall have a strategic approach to the needs for promotion of the SK.

The action plan related to achieving recognition for the Keymark outside of Europe is analysed in item 33 (see below), and it is proposed to also include this proposal in the working group:

Study support schemes and legal requirements outside Europe. Take action in strategic markets to facilitate acceptance of Keymark. Study the role in the GSCN. Prepare campaign

After some exchange of ideas, the following Decision was taken:

Decision M20.D7 – Establishment of a WG for AP2: Improve Marketing and Communication activities

Establish a WG with the following members: Oscar Mogro, Pedro Dias (Chair), Christian Stadler, Jaime Fernandez, Jan Erik Nielsen, Henry Rosik.

Information on vote: Unanimous decision.

See item 33 regarding the recognition of the Keymark outside Europe, it was agreed that this working group would also take on this task.

The next action plan under consideration was the development of a certification scheme for installers and installations. Some members exchanged their experiences of already existing certification schemes for installations. Some industry representatives expressed their concerns for additional requirements on installers, in particular in a period when the market is facing a difficult period. The following Decision was taken:

Decision M20.D8 – Establishment of a WG for AP3: Analyze the development of a certification scheme for installers and installations

Establishment of a WG with the following members: Gerard Van Amerongen, Peter Kovacs, Jan Erik Nielsen, Jaime Fernandez, Katharina Meyer (Chair), Vinod Sharma, Malte Kottwitz, Luis González, Alberto Garcia, Pedro Dias, Oscar Mogro and Henry Rosik.

Information on vote: Unanimous decision.

The next action plan under consideration was for boosting the Certification of the new products in the SKN Certification Scheme. After some exchange of opinions, the following Decision was taken:

Decision M20.D9 – Establishment of a WG for AP4: Effort to boost the Certification of new Products in Scheme Rules

Establishment of a WG with the following members Gerard Van Amerongen, Katharina Meyer (Chair), Jaime Fernandez, Ulrich Fritzsche, Stephan Fischer, Korbinian Kramer.

Information on vote: Unanimous decision

The next action plan was the one regarding the analysis of all of the new Legal Requirements and future changes in the Market under the proposal:

ErP Directive (LabelPack A+), CPR, Energy labelling of collectors, revision of 3 Directives, (Renewables, EPBD and Energy Efficiency). How will Building Information Modelling (BIM) or the Industry 4.0 revolution affect the Industry and Certification? Prepare a specific plan and be prepared for all changes in the next years.

After some debate and exchange of ideas, the following Decision was taken:

Decision M20.D10 – Establishment of a WG for AP6: Prepare a thorough plan for all the new Legal Requirements and future changes in the Market

Establish a WG with the following members Gerard Van Amerongen (Chair), Ulrich Fritzsche, Pedro Dias, Jaime Fernandez, Oscar Mogro, Christian Stadler, and Korbinian Kramer.

Information on vote: Unanimous decision

Item 17: Proposal for resolution conc. SKN_N0106_AnnexA1b :

Jaime Fernandez presents the revised version of the document SKN_N0106_AnnexA1b_R0. This document is the alternative inspection report and it coincides with the inspection report presented at the Global Solar Certification Network. It has been adapted to the last version of Annex E and it has received some editorial improvements from Susanne Hanson. During the meeting the document is presented and a small editorial improvement is made in the last page, and then the following Resolution is adopted:

Resolution M20.R3- A new revision of SKN_N0106_AnnexA1R3 (alternative inspection report)

To approve a new version of the alternative Inspection Report SKN_N0106_AnnexA1R3 with the change made in the meeting

Information on vote: 1 negative vote - 0 abstentions

There are still two unresolved issues. The first one is that Jaime Fernandez has led the Inspector Group until now, but at the next meeting a decision should be made on a new leader. The other issue is whether there should be a resolution in using only one inspection report, but since this decision needs some further discussing and it is not urgent, it is left for the next meeting.

Item 18: Proposal for decision

Jan Erik presented a gift in appreciation for the excellent job done during 10 years by Harald Drück as Chairman of the Solar Keymark Network and the following Decision was taken:

Decision M20.D11 – Appointment of Harald Drück as Honorary SKN Chairman

Appreciating Harald's superb SKN chairmanship over the years, he is appointed as "Honorary SKN Chairman". Honorary SKN Chairmen can attend any future SKN meetings as observers.

Note: Experience and network of Honorary Chairmen could be useful for the continuity of the SKN and in connection with promoting the Solar Keymark.

Information on vote: Unanimous decision

Item 19: Proposal for Resolution on Annex C – Regarding non-payment of fees

A Working group was established during the October 2015 SKN meeting at Paris to propose a solution for the problem of invoices that are not paid by CBs. (see item 18 of minutes SKN_N270). Jaime Fernandez presented the outcome of the meeting held by the Working Group. The document presents two parts. In the first one there is a procedure regarding the steps taken against any Certification Bodies that are late in paying the fees. The petition of Ioannis Alexiou is taken into consideration and some changes are made in the document. The second part of the document presents a procedure for non-payment of license holders to the Certification Bodies. This part of the document represents some challenges in the actual routine and after some debate Jaime Fernandez proposes to delete it from the proposal, and the following Resolution is adopted:

Resolution M20.R4- New version of Annex C involving procedures regarding non-payment describe in document SKN_N0227R1

To approve a new version of Annex C incorporating the changes described in SKN_N0227R1

Information on vote: Unanimous decision

Item 20: Proposal for decision on funding for Working Group leaders

Ulrich Fritzsche was the leader of the Working Group that presented the Resolution for the approval of the Annex J of SKN_N106R.28 Solark Keymark Scheme Rules regarding the certification of PVT collectors at the SKN meeting held in October 2015. After presenting this, the following decision taken:

Decision M20.D12 – Funding to TÜV Rheinland Energie und Umwelt GmbH for the work done by Ulrich Fritzsche as leader of the Working Group for Resolution regarding new Annex J for PVT products

To provide the funding of 500 € to TÜV Rheinland Energie und Umwelt GmbH for the work done by Ulrich Fritzsche in application of section 7 of the Internal Regulations of the SKN for his work as Working Group leader.

Information on vote: Unanimous decision

Item 21: Proposal for resolution:

Pedro Dias presented a proposal to change the requirement in section 2.1.2 of the internal regulations (SKN_N0102)

Reasoning behind proposal:

In order to improve the functioning of the SKN and the attendance at SKN meetings, the above changes to the Solar Keymark Internal Regulations are proposed, trying to increase consistency between the different deadlines proposed.

Therefore, taking into account that, in what concerns:

- *Meetings (chapter 3) it is written on page 5: “Deadlines for circulation of the main documents (invitation to the meeting and the first draft agenda) for SKN meetings shall be made available 1 month before the meeting by SKN manager”;*
- *voting and voting rights (Chapter 4) it is written in paragraph 4.2 on page 7: „...only SKN members may vote...”, and;*
- *members it is written in paragraph 2.1.2 (national industry representatives), on page 4: “Names and contact details of nominated delegates shall be sent to the SKN manager at least two months before the meeting.”*

Considering that the draft agenda of the meeting is only known one month before the meeting, it is proposed that the nomination of the representatives is subsequent to the distribution of the agenda.

After discussing shortly this proposal, the following Resolution was adopted:

Resolution M20.R5- New version of SKN_N0102 Internal Regulations with change in section 2.1.2 regarding the nomination of representatives

The phrase “Names and contact details of nominated delegates shall be sent to the SKN manager at least two months before the meeting.”

Is changed to

“Names and contact details of nominated delegates shall be sent to the SKN manager at least two weeks before the meeting”.

Information on vote: Unanimous Decision

Item 22: New procedure for solar thermal system long term prediction according to EN 12977-2

Ulrich Fritzsche made the presentation “Long Term Prediction for Solar Systems” (see Annex E) which raised the question, if the existing and simplified tapping profiles are applicable and adequate for the wide range of systems. So far, there’s only one tapping per day in the evening to harmonize all procedures with the CSTG test method according to ISO 9459-2.

As now a first certification for a solar thermal system according to EN 12977 including a long term prediction according to EN 12977-2 had raised the question, whether this procedure is really applicable for complex solar systems. Due to the fact, that CSTG test method is not applicable for ErP testing, CSTG might have no relevance anymore and it doesn’t make sense to stick to the unrealistic 100 % tapping in the evening. If we plan to modify the tapping sequences, it really made sense to harmonize these tapping sequence with the four tapping sequences out of ErP, which are now included into the new final draft of EN 12976-2.

If the harmonization with ErP will be successful, the system test data sheets might include all ErP-related figures as we are now doing with the collector data sheet. This would be the best preparation for a later third party testing, if this will be required in an updated version of ErP in the future.

In order to resolve these issues, and after an exchange of ideas, the following decision was taken:

Decision M20.D13 – Creation of a Working Group to develop a new procedure for solar thermal system long term prediction according to EN 12977-2

Establishing a WG with the following members: Katharina Meyer, Maria Joao Carvalho, Oscar Mogro, Gerard Van Amerongen, Emmanuel Leger, Korbinian Kramer, Ulrich Fritzsche (Chair), Alberto Garcia and Stephan Fischer.

Information on vote: Unanimous decision

Item 23: Inter-laboratory Comparison - ILC on Data Analysis (SCF7 Project) – Call for more participants,

Andreas Bohren made a presentation (Seen Annex F on a new SCF7 Project for an inter-laboratory comparison.) The participating test labs will provide measured data sets of real collector test at their laboratory. The unprocessed data will then be made available (anonymously) to all the participating test. The test labs then use their own tools to analyse these data sets according to the new ISO9806 that is currently in public enquiry phase. The results of all these analyses will then be compared to analyse the differences between the test labs and their measured data files and to understand whether there are unclear definitions in the standard. The results will be presented during the next SKN Meeting in Chania.

The following decision is taken and the participants are given a code for their participation. Any other laboratories may contact Andreas Bohren to participate:

Decision M20.D14 – Participants in new Inter laboratory Comparison for SCF7 Project

The following laboratories will participate in the Inter-Laboratory Comparison led by Andreas Bohren: INTA, SP, ITW, LNEG, TUV, CSTB, CENER, ISFH, BELENOS, CESP, AIT, AELAB, TUV SHANGHAI, FRAUNHOFER and ENEA. It is open for other test labs to participate; the codes and links needed for participation are obtainable from the SKN Manager.

Information on vote: Unanimous Decision

Item 24: Proposal for update in Solar Keymark Brochure

Henry Rosik had made a proposal for some general updates on the SKN brochure. Pedro Dias presented these proposals and some general comments were made. The following Decision was taken:

Decision M20.D15 – Update of Solar Keymark Brochure

A draft of the Keymark Brochure will be circulated to the SKN by ESTIF and ask for comments with the aim to present a new version of the brochure for the next SKN meeting

Information on vote: Unanimous Decision

Item 25: Update on CE marking of collectors

Andreas Bohren, leader of Project SCF 5C5.1, made a presentation (see Annex G) regarding the CE Marking of Collectors. The new European standard will not have any parts and will simply become EN 12975 which is basically replacing EN12975-1. EN12975-2 is already replaced by ISO9806, which is currently revised and will be the new ISO9086:2016. An important part of the new standard will be the inclusion of the family rules as well as regulations about replacing materials and components in certified collectors to prevent from excessive retesting. The harmonized ZA Annexes will cover the Construction product directive CPR, Eco-design and Energy Labelling Directives and the Pressure Directive. The CEN/TC 312/WG1 is currently drafting the EN12975. It is expected that with the help of the new approach consultant the formal voting is possible begin of 2017.

Item 26: Update on Energy labelling

Gerard van Amerongen made a presentation on Eco-design and Energy labelling (see Annex H). In brief, the harmonization of the solar thermal standards are well underway:

- CEN EN12975-1: all preparations are done with exception of the product families method.
- prEN12976: the standards are now fit to perform the SOLICS method and the formal vote will be this month.
- prEN12977: all preparations are done and the standard is now ready for further processing.
- prEN15316-4-3: the standard is ready for the SOLCAL method. Formal vote will be before the summer of this year.”

Item 27: Updates from Liaison officers

The liaison officers made the presentations on the state of the work in their respective CEN Technical Committees.

Gerard van Amerongen, liaison officer to TC164 (related to SCF 5C4.2) , TC228 (related to SCF 5C4.2) and TC 371 (related to SCF 4C12c / SCF 5C4.4) made a presentation (See Annex I) covering the main developments regarding the referred TCs. The CEN TC 164 is active in the preparation of the standards series EN 806. Jean-Marc Sutter (CH) is the new liaison officer on behalf of TC312.

CEN TC371 and CEN TC 228 were involved in the revision of standards in the framework of CEN mandate 480 on EPBD. The complete set of revised standards is now ready and will be open for vote in the coming months. For solar thermal the prEN15316-4-3 is relevant. This standard includes, amongst other relevant things, the base method for SOLCAL. Moreover the prEN15316-4-3 gives, in combination with the prEN15316-5, an hourly calculation method for solar thermal systems in buildings.

The CEN TC164 is active in the preparation of the standards series EN 806. Jean-Marc Sutter (CH) is the new liaison officer on behalf of TC312.

Regarding other *liaisons*, Stephan Fischer reported on the work as liaison officer to IEC/TC117, related to SCF 5C4.1 (see Annex J). The main outcome of the liason work was that IEC/TC117 will refer in the standard related to parabolic trough collectors to the test procedure and collector model layed down in the new ISO 9806.

Korbinian Kramer reported on the work as liaison officer to IEC/TC128, related to SCF 5C4.3 (see Annex K).

Item 28: Reporting from SKN WGs

Katharina Meyer informed that there had been some meetings of the Certification Bodies working group, covering general issues related to SKN. Some meetings were held to present some proposals for changes within the GSCN working rules.

Jaime Fernández informed that the Inspector Bodies Working Group has not held any meetings since the last one in Rome in March 2015, and that there should be a decision taken at the next SKN meeting to choose a new leader for this working group.

Item 29: Information from CEN TC 312

Since Vassiliki Drosou was not present so this point on the agenda was postponed until the next meeting.

Item 30: Information from CEN/CCB

Katharina Meyer gave a short explanation on the situation of DinCertco as Keymark Management Organisation (KMO). There were no relevant differences to report since last SKN meeting.

Item 31: Solar Certification Fund Projects – General Status Reports

Pedro Dias made a presentation on the state of the SCF Projects, see Annex L. Due to time constraints the presentation was short though the details regarding the implementation of different projects are available in the Annex.

Item 32: Global certification update

Jan Erik Nielsen informed on the state of the Global Solar Certification Network and the new IEA SHC Task 57 “International Standards and Certification”, He did not get into too many

details since there were meetings scheduled for both groups on Thursday and Friday 10th and 11th.

Item 33: Recognition and use of the Solar Keymark outside of Europe

Luis Gonzalez of TERMICOL made a presentation (seen Annex M) regarding the recent experience of his company when selling their products in the United Arab Emirates. In this country the Keymark Certification is necessary but not enough to be officially approved. A new inspection and retesting according to EN ISO 9806 was needed.

This presentation is directly linked to the *Action Plan 5 Achieve Recognition of the Keymark outside Europe*. After some discussion it was agreed that the Working Group for Marketing could incorporate this objective within the programme of its working group. (See Item 16, Decision M20.D7)

Item 34: Presentation of PTB's Technical Cooperation and the project "Strengthening Quality Infrastructure for Solar Water Heaters in Northern Africa"

Lea Zeppenfeld made a presentation (see annex N) on the activities of PTB and in particular with their activities in Northern Africa. PTB, Germany's National Metrology Institute, is active in Technical Cooperation projects world-wide, more and more in the field of Renewable Energies. In Northern Africa, a project focusses on the strengthening of capacities for conformity assessment of solar water heaters. Therefore, testing laboratories, standardisation institutes and metrology laboratories are being supported to assure reliable, safe products in the region.

Item 36: Long term performance prediction of solar electric heating systems for domestic hot water preparation

Daniel Eggert made the presentation "Performance test of solar electric water heaters" (see Annex O). DIN, with the support of ISFH, as subcontractor, will develop a test procedure for solar electric water heaters based on the dynamic system test according to ISO 9459-5. Aim of the project is to present to the standardization boards a proposal for consideration of solar electric water heaters in the standards ISO 9459-5 and EN 12976."

After the presentation Ken Guthrie mentioned that solar electric heaters will be considered in the next revision of the Australian standard for solar thermal systems.

Item 37: Experience with misuse of Solar Keymark - exchange of information

The group was asked if there was any information on the misuse of the Solar Keymark and there was nothing to report from the members of the SKN.

Item 38: Any other business

Stephan Fischer made a presentation (see annex P) with a proposal for the incorporation of a new absorber coating. The coating in question does not fit into the existing class due to a higher performance. To take such a case into account within the scheme rules, the following Decision was taken:

Decision M20.D16 – Establishment of a Working Group for a new absorber coating

A new Working Group is established to study the proposal of Stephan Fischer for a new absorber coating with the following members: Jan Erik Nielsen, Stephan Fischer (chair), Daniel Eggert and Andreas Bohren

Information on vote: Unanimous Decision

Item 39: Important/interesting national news/developments

As was explained in item 22, the first certificate according to EN 12977 has been issued. Two decisions for the creation of working groups were taken during the meeting that will hopefully help to develop further this certification.

Item 40: End of meeting

Jaime Fernández thanks all of the participants, the host DinCertco and Jan Erik Nielsen for an excellent meeting. Information for the next meeting to be held at Crete, Greece, in the month of October will be sent out shortly.

The minutes were prepared by Jaime Fernández with assistance from Jan Erik Nielsen and Pedro Dias for proofreading. Helpful comments were sent by Stephan Fischer that improved editorial issues and raised a question that should lead to clarify the situation of Item 13 at the next SKN meeting.

8/24

Solar Keymark Network, Global SOLAR Certification Network, Task 57 - Meeting March 2016

First name	Last Name	Signature	Company/organisation	Country	e-mail	Type of organisation	Name of nominating organisation	Solar Keymark Network meeting March 8, 13:00 - 19:00	Solar Keymark Network meeting March 9, 08:30 - 13:00	Lunch March 9, 13:00 - 14:00	Global Solar Certification Network Board meeting, March 9	Global Solar Certification Network meeting, March 10, 09:00 - 12:30	Global Solar Certification Network meeting, March 10, 15:00 - 18:00	IEA-SHC Task 57 Expert meeting, March 10, 15:00 - 18:00	IEA-SHC Task 57 Expert meeting, March 11, 09:00 - 14:00
1 Abdelkrim	Chenak		IANOR/CDER	Algeria	a.chenak@cder.dz	Certification body		1	1			1	1	1	1
2 Ken	Guthrie		Sustainable Energy Transformation	Australia	ken.guthrie@setransformation.com.au	IEA SHC Chair, ISO TC180 Chair			1	1		1	1	1	1
3 Paul	Lampersberger		AIT Austrian Institute of Technology	Austria	paul.lampersberger@ait.ac.at	Test lab		1	1						
4 Klaus	MISCHENSKY		AUSTRIA SOLAR	AUSTRIA	klaus.mischensky@austriasolar.at	Association AUSTRIA SOLAR		1	1	1					
5 Harald	Poschamig		GREENoneTEC Solarindustrie GmbH	Austria	harald.poschamig@greenonetec.com	Industry/manufacture	Austria Solar	1	1	1					
6 Robert	Buchinger		Sunlumo	Austria	robert.buchinger@sunlumo.at	Inspector / Inspection body		1	1						
7 Markus	Barek		Sunlumo Technology GmbH	Austria	markus.barek@sunlumo.at	Inspector / Inspection body		1	1						
8 Stefan	Manglberger		TISUN GmbH	Austria	stefan.manglberger@tisun.com	Industry/manufacture		1	1	1					
9 Pedro	Dias		ESTIF	Belgium	pedro.dias@estif.org	ESTIF	ESTIF	1	1	1		1	1		
10 BOJIA	LI		China Academy of Building Research	CHINA	libojia@139.com	Test lab						1	1	1	1
11 Malte	Kottwitz		TUV Rheinland (Shanghai)	China	malte.kottwitz@tuv.com	Test lab		1	1	1	1	1	1	1	1
12 Zinian	He		BSERI	China	hezinian_bj@163.com	R&D				1	1	1	1	1	1
13 George	Roditis		Applied Energy Laboratory	Cyprus	gro.cie@cytanet.com.cy	Test lab		1	1	1					
14 Jan Erik	Nielsen		Solarkey Int.	Denmark	jen@solarkey.dk	Manager		1	1	1	1	1	1	1	1
15 Arnulf	Knorr		GIZ	Egypt	Arnulf.Knorr@giz.de	Guest/observer		1	1	1	1	1	1	1	1
16 Ashraf	Kraidy		LAS	Egypt	ashraf.kraidy@las.int	Intergovernmental Org.	RCREEE							1	1
17 Emmanuel	LEGER		BELENOS	FRANCE	emmanuel.leger@lne.fr	Test lab		1	1	1	1				
18 Jean-baptiste	Beyssac		CESP-UNIVERSITY OF PERPIGNAN	France	jean-baptiste.beyssac@univ-perp.fr	Test lab		1	1		1				
19 Franck	cheutin		CSTB	FRANCE	franck.cheutin@cstb.fr	Test lab		1	1						
20 Sophie	BOCQUILLON		EUROVENT CERTITA CERTIFICATION	FRANCE	s.bocquillon@certita.fr	Certification body		1	1	1					
21 Christian	Stadler		Arcon-Sunmark GmbH	Germany	chs@arconsolar.com	Industry/manufacture	ESTESC	1	1	1					
22 Katharina	Meyer		DIN CERTCO	Germany	katharina.meyer@dincertco.de	Certification body		1	1	1	1	1	1	1	1
23 Korbinian	Kramer		Systems	Germany	korbinian.kramer@ise.fraunhofer.de	Test lab		1	1	1	1	1	1	1	1
24 Stefan	Mehnert		Fraunhofer ISE	Germany	stefan.mehnert@ise.fraunhofer.de	Test lab	Fraunhofer ISE	1	1	1	1	1	1	1	1
25 Daniel	Eggert		ISFH	Germany	d.eggert@isfh.de	Test lab		1	1						
26 Harald	Drück		ITW/TZS	Germany	drucek@itw.uni-stuttgart.de	Test lab		1	1	1	1	1	1	1	1
27 Stephan	Fischer		ITW/TZS	Germany	fischer@itw.uni-stuttgart.de	Test lab		1	1	1		1	1		
28 Stephan	Fintelmann		KBB Kollektorbau GmbH	Germany	fintelmann@kbb-solar.com	Industry/manufacture	BSW	1	1	1	1	1	1		
29 Lea	Zeppenfeld		PTB	Germany	lea.zeppenfeld@ptb.de	Guest/observer		1	1	1	1	1	1		

First name	Last Name	Signature	Company/organisation	Country	e-mail	Type of organisation	Name of nominating organisation	Solar Keymark Network meeting March 8, 13:00 - 19:00	Solar Keymark Network meeting March 9, 08:30 - 13:00	Lunch March 9, 13:00 - 14:00	Global Solar Certification Network Board meeting, March 9	Global Solar Certification Network meeting, March 10, 09:00 - 12:30	Global Solar Certification Network meeting cont., March 10, 12:30 - 15:00	IEA-SHC Task 57 Expert meeting, March 10, 15:00 - 18:00	IEA-SHC Task 57 Expert meeting, March 11, 09:00 - 14:00
30 Ulrich	Fritzsche		TUV Rheinland Energie und Umwelt GmbH	Germany	ulrich.fritzsche@de.tuv.com	Test lab		1	1	1		1	1		
31 GIUSEPPE	TERZAGHI		ALBARUBENS SRL	ITALY	info@albarubens.it	Test lab		1	1	1					
32 VINOD KUMAR	SHARMA		ENEA	ITALY	sharma@enea.it	Test lab		1	1	1		1	1		
33 Daniele	Bernacchioni		ICIM S.p.A.	Italy	daniele.bernacchioni@icim.it	Certification body		1	1	1					
34 Massimiliano	Florio		ICIM S.p.A.	Italy	massimiliano.florio@icim.it	Certification body		1	1	1	1	1	1		
35 Marco	Pirozzo		KIWA CERMET SPA	ITALY	marco.pirozzo@kiwacermet.it	Certification body		1	1						
36 Karim	BAKARI		IMANOR	Morocco	bakari@imanor.ma	Certification body		1	1	1	1	1	1	1	1
37 João	Santos		CERTIF - Associação para a Certificação	Portugal	jsantos@certif.pt	Certification body		1	1	1		1	1		
38 Jana	Levicka		TSU Piestany s.p.	Slovakia	jana.levicka@tsu.sk	Certification body		1	1	1					
39 Jaime	Fernandez		AENOR	Spain	jafernandez@aenor.es	Certification body		1	1	1	1	1	1		
40 Alberto	García de Jalon		CENER	Spain	agarciajalon@cener.com	Test lab		1	1						
41 LAURA	VARGAS		INTA	SPAIN	solar2@inta.es	Test lab		1	1	1					
42 JOSE	HERNANDEZ		PRYSMA/AENOR	SPAIN	jrhernandez@prysma.es	Inspector / Inspection body		1	1						
43 Luis	Gonzalez-Monroy		Termicol Energia Solar	Spain	luis.gonzalez@termicol.es	Industry/manufacture	ASIT	1	1	1		1	1		
44 Peter	Kovacs		SP	Sverige	peter.kovacs@sp.se	Test lab	SP	1	1	1					
45 Susanne	Hansson		SP Certification	Sweden	susanne.hansson@sp.se	Certification body		1	1	1					
46 Lena-Marie	Neeugebauer		SP Sveriges Tekniska Forskningsinstitut	Sweden	lena-marie.neugebauer@sp.se	Certification body		1	1	1					
47 Andreas	Bohren		SPF	switzerland	Andreas.bohren@spf.ch	Test lab		1	1						
48 Oscar	Mogro		BDR Thermea	The Netherlands	oscar.mogro@bdrthermea.com	Industry/manufacture		1	1						
49 Gerard	van Amerongen		Holland Solar	The Netherlands	vaconsult@vaconsult.net	Industry/manufacture	Holland Solar	1	1	1					
50 Mohamed Anouar	Ben Chaabene		LATEB/CTMCCV	Tunisia	mohamed.lateb@yahoo.com	Test lab		1	1	1	1	1	1	1	1
51 Les	Nelson		IAPMO	USA	les.nelson@iapmo.org	Certification body			1	1	1	1	1	1	1
52 Eileen	Prado		SRCC	USA	Eprado@solar-rating.org	Certification body			1	1	1	1	1		
								46	49	38	18	25	25	15	13

Rolf-Gerrit Kertel DIN CERTCO Germany rolf-gerrit.kertel@DIN CERTCO.de cert body

Annex B (Item 7) New Collector Data Sheet



ScenoCalc – additions & new features in v5.01

- Main updates
 - SCF project 5C1.5 – SS-unglazed collectors
 - Enables calculations of SS-unglazed collectors
 - Harmonized data sheet – Annex B.1 (collectors)
 - Data required for CDR (EU) No 812/2013 (page 2)
 - Including QDT – SS parameter conversion
 - ISO 9806 reference only
 - Aperture area → Gross area

SS calculations for unglazed collectors in ScenoCalc v5.01

- SCF funded (Call No. 5)
- Participants
 - SP Technical Research Institute of Sweden (SP)
 - ITW-Universität Stuttgart
 - TÜV Rheinland
- Main objectives
 - a) Enabling steady-state energy output calculations for unglazed solar collectors in the ScenoCalc calculation tool
 - b) Updating the integrated Solar Keymark Datasheet to enable proper presentation of output data

New harmonized collector data sheet (Annex B.1)

Page 1

Page 2

SS calculations for unglazed collectors in ScenoCalc v5.01

- New table for power output presentation (page 1, SS-unglazed)
 - ISO 9806:2013 reference - Table A.8 — Collector power output record

$\theta_m - \theta_a = 2 \text{ K}$	$u < 1 \text{ m/s}$	$u = 1.5 \pm 0.5 \text{ m/s}$	$u = 3.0 \pm 0.5 \text{ m/s}$
400 W/m ² ($G_a = 200 \text{ W/m}^2$, $G_g = 200 \text{ W/m}^2$)			
700 W/m ² ($G_a = 440 \text{ W/m}^2$, $G_g = 260 \text{ W/m}^2$)			
1000 W/m ² ($G_a = 850 \text{ W/m}^2$, $G_g = 150 \text{ W/m}^2$)			

SS calculations for unglazed collectors in ScenoCalc v5.01

- New table for power output presentation (page 1, SS-unglazed)
 - ISO 9806:2013 reference - Table A.8 — Collector power output record

$\theta_m - \theta_a = 2 \text{ K}$	$u < 1 \text{ m/s}$	$u = 1.5 \pm 0.5 \text{ m/s}$	$u = 3.0 \pm 0.5 \text{ m/s}$
400 W/m ² ($G_a = 200 \text{ W/m}^2$, $G_g = 200 \text{ W/m}^2$)			
700 W/m ² ($G_a = 440 \text{ W/m}^2$, $G_g = 260 \text{ W/m}^2$)			
1000 W/m ² ($G_a = 850 \text{ W/m}^2$, $G_g = 150 \text{ W/m}^2$)	X	X	X

Annex B (Item 7) New Collector Data Sheet

New harmonized collector data sheet (Annex B.1)

- Features
 - New collector standard reference – ISO 9806:2013
 - Gross reference area, A_0
 - Energy labelling calculation/information – “Data required for CDR (EU) No 812/2013”
 - Including parameter conversion from QDT – SS

$$\eta_{0,beam} = \eta_{0,beam}(0.85 + 0.15 \cdot R_d)$$

$$a_1 = c_1 + 3 \cdot c_2$$

$$a_2 = c_2$$

SP Technical Research Institute of Sweden

New harmonized collector data sheet (Annex B.1)

- Energy labelling calculation/information – “Data required for CDR (EU) No 812/2013”

Data required for CDR (EU) No 812/2013 - Reference Area A_0		
Collector efficiency $\eta_{0,beam}$	a_1	a_2
0.75	0.05	0.05
0.70	0.10	0.10
0.65	0.15	0.15
0.60	0.20	0.20
0.55	0.25	0.25
0.50	0.30	0.30
0.45	0.35	0.35
0.40	0.40	0.40
0.35	0.45	0.45
0.30	0.50	0.50
0.25	0.55	0.55
0.20	0.60	0.60
0.15	0.65	0.65
0.10	0.70	0.70
0.05	0.75	0.75
0.00	0.80	0.80

SP Technical Research Institute of Sweden

Acknowledgements

- Entire Solar Keymark Network for all valuable inputs and comments
- Special thanks to,
 - Stephan Fischer
 - Andreas Bohren
 - Ulrich Fritzsche
 - Jan Erik Nielsen

SP Technical Research Institute of Sweden

Thank you for your attention!

SP Technical Research Institute of Sweden

peter.kovacs@sp.se - +46(0)10 - 516 56 62

RISE



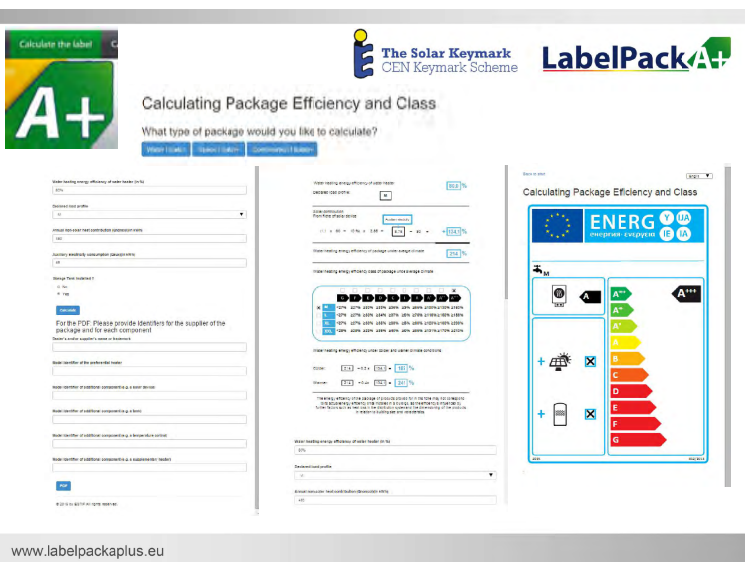
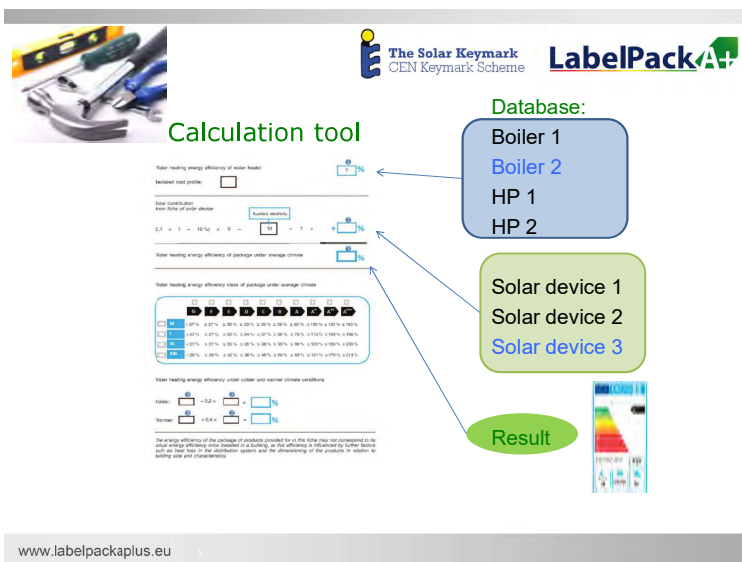
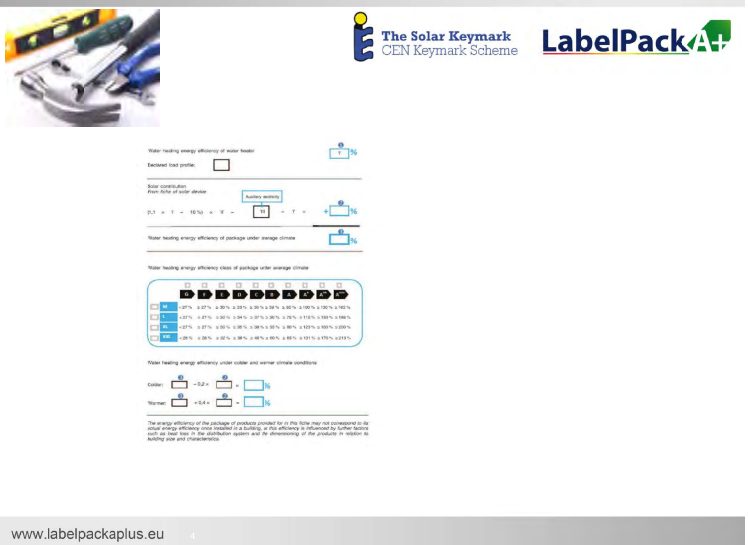
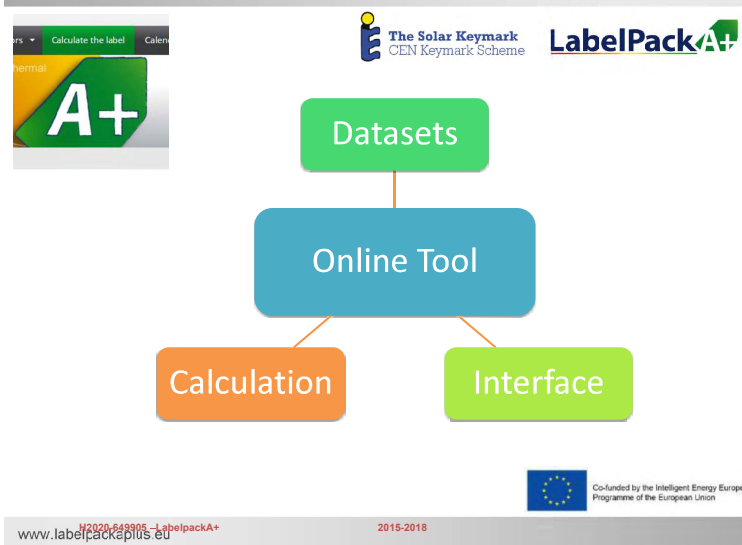
Cooperation between
Labelpack A+ and SKN

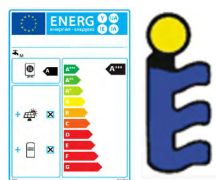
20th SKN Meeting
Berlin, 8-9 March 2016

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STATUS OF LPA+ TOOL DEVELOPMENT

www.labelpackplus.eu





The Solar Keymark
CEN Keymark Scheme

LabelPack A+

Highlighting the use of SK data

- Provide assurance to user
 - Data accuracy & reliability
 - Product quality
- Promote Solar Keymark amongst stakeholders
 - Visibility
 - Use / value
- Provide added value to manufacturers
 - Facilitate use of their products in electronic tool
 - Ensure that products are well represented in calculations

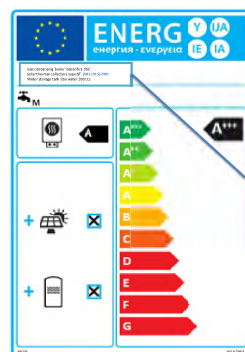
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The Solar Keymark
CEN Keymark Scheme

LabelPack A+

Proposal



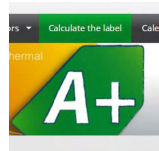
- Certificate number appearing next to product description
 - SK123456789
- Certificate number highlighted
 - **SK123456789**
 - Distinguish from manual input

Gas condensing boiler 'Gasonfire 35C'
Solar thermal collectors superST (**SK123456789**)
Water storage tank Storwater 300 Lts

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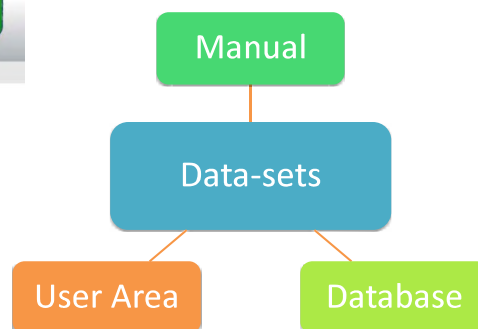
LabelPack A+

OBJECTIVES FOR CONNECTION REGARDING DATASETS



The Solar Keymark
CEN Keymark Scheme

LabelPack A+



Co-funded by the Intelligent Energy Europe
Programme of the European Union

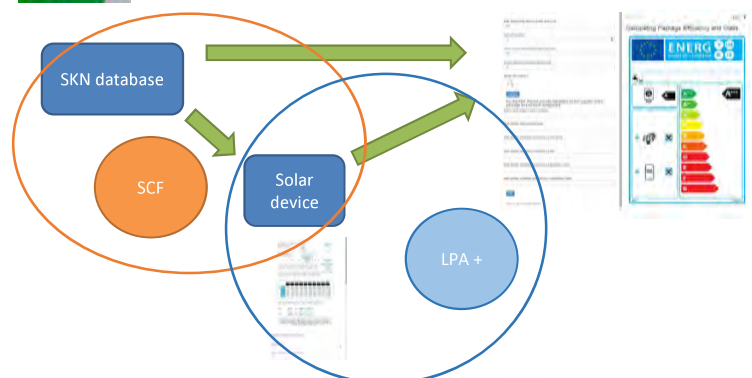
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The Solar Keymark
CEN Keymark Scheme

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European Union's Horizon 2020 research
and innovation programme under grant
agreement No 649805

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Annex D (Item 16) Management Table

Formulating a strategy for the Solar Keymark and creating a Management Table

Jaime Fernández

Special thanks to:

- Pedro Dias, Soeren Scholz, Jan Erik Nielsen, Christian Stadler, CB Working Group, BDR Thermea for dedicating their time with me

Purpose and methodology of analysis

To treat the Solar Keymark as if it were a company in order to elaborate a strategy that is line with the strategy of CEN, the strategy of ESTIF and the evolution of the solar thermal industry.

To create a tool (management table) that summarizes the work of the SKN in short, medium and long term.

Some considerations on strategic formulation and planning

Planning is not just predicting the future and adapting to it, planning involves anticipating and building your own future.

Act today, thinking about tomorrow

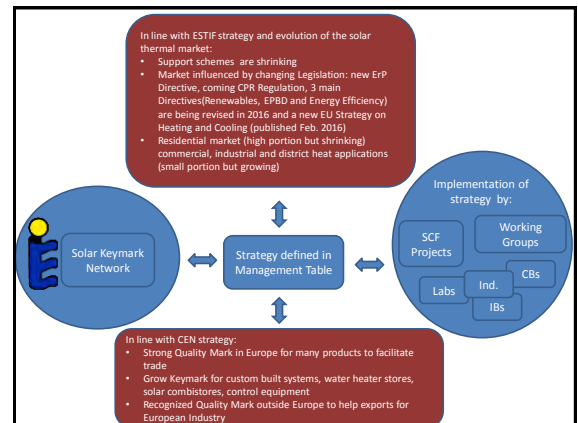
It requires to analyse internal factors and external factors

The strategy is prepared by management, but it can be developed with ideas from everyone, and as part of the culture of a Company, it must be implemented by everyone

The strategy must be alive, everchanging, like the Market

It requires to determine your **Key Activities**. These are activities that:

- If you do them wrong, you close your business
- They differentiate you from the rest
- They are hard to copy because they require certain ability and knowhow



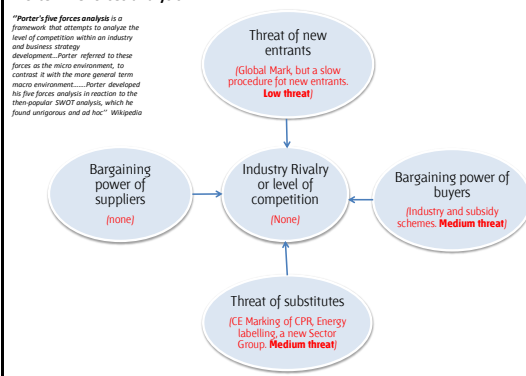
SWOT (Strenth-Weakness-Opportunity-Risk) Analysis

(A more academic analysis)

	Helpful	Harmful
Internal Origin (attributes of the Organization)	STRENGTHS <ul style="list-style-type: none"> High level of excellence of the professionals developing activities: Labs, inspectors and CBs Networking system works well: Continuous harmonization creating fair rules and fair competition, close contact of Bodies with Industry A Quality Mark with not expensive follow-up testing SCF giving back revenue to the Industry Helps exports inside and outside Europe 	WEAKNESSES <ul style="list-style-type: none"> Harmonization can always be improved Confidence within the Network could be better Industry participation is low Many operators involved that may have different approaches and goals
External Origin (attributes of the Environment)	OPPORTUNITIES <ul style="list-style-type: none"> A Quality Mark with a good image and a strong support in subsidy schemes A Quality Mark that reduces cost for Industry in Europe: tested once, accepted everywhere The Commission likes the Keymark vs other Quality Marks Could Erp Directive bring the Mark closer to end users? Could Energy Labelling of collectors use the mark as a useful tool and bring it closer to consumers? 	RISKS <ul style="list-style-type: none"> Market has been decreasing for some years now Could Erp Directive and CPR become substitutes in subsidy schemes and in Markets? Adapting to the new GSCN?

Porter five forces analysis

(A more academic analysis)



Annex D (Item 16) Management Table

Asking the right questions....is less academic but also useful

In this Company....Solar Keymark-SKN. Who is the client?

The Industry – pays for Quality Mark and comes to meetings

The Keymark Operator – Laboratory, Certification Body (Inspection Body) believes in the KM, comes to the meetings and follows the rules and 'sells' the Mark of CEN

Who is the user? Who is the client of the client?

The subsidy schemes all over Europe

The end consumer

The Construction company, the engineering or architecture firm, the Insurance company....

Subsidy schemes outside Europe? Regulatory certification schemes outside Europe?

It seems like:

The more often and in the most places that one certificate is used

The more often and more legislation where the Keymark is mentioned

The more often that the technical data is used for calculations



The more valuable the Keymark becomes!

Asking the right questions....is less academic but also useful

What are the key elements for success of the Solar Keymark?

An excellent image of the Mark.... the most important and intangible asset – **CONFIDENCE**

The technical excellence of the Keymark Operators

Having **harmonized and fair rules** that facilitate trade in Europe

The **recognition by support schemes** across Europe creating a large pool of users of the Mark

Savings for the Industry: Tested once and recognized everywhere

Asking the right questions....is less academic but also useful

What are the Key Activities for success of the Solar Keymark Network?

Inspecting, Testing and Certifying at highest professional level and in harmonized way

Holding SKN meetings as part of our Operations: harmonize and continuously improve the working system, Networking for more business and keep KM operators believing in the system

Leading changes in the Market regarding technical issues, legal requirements, standardisation and globalisation

Communication through the Web site, license holders and KM Operators

(Coming back to the more academic approach)

The strategy may be prepared taking into account 4 main perspectives

4 Main Perspectives	Subdivisions for each perspective
Financial: Strategic formulation for the growth, rentability and risk from the point of view of shareholder	Growth of new products and reaching into new markets Increase of Productivity
Client: The part of the strategy that is focused on creation of value and differentiation from the client's perspective. Client segmentation and value proposal for each objective group.	Low cost and high quality Innovation and leadership in service Complete solutions for the client Cost of change to another supplier of service
Internal procedure: Defines the objectives of procedures that create and offer proposal of value to the client.	Operational procedures Client management procedures Innovation procedures Social and regulatory procedures to help sales
Learning and growing (intangible resources): their objectives describe combination of persons, technology and organization necessary for development of strategic internal procedures.	Human capital and strategic competences Information capital Organization capital and ability to change

Conclusions: 6 Actions plans to improve the SKN

Keep up the excellent technical work and operations in Key Activities: testing, inspecting, certifying and holding meetings

AP.1 Improve the information system for the main indicators	<p>Internal: continue to share information from areas of expertise in didactic way</p> <p>External: Receive or find more information on areas that describe the state of our Key Activities and Objectives like: Recognition in Subsidy schemes, Construction codes, Regulatory certification schemes, number of Certified Manufacturers per products and License Holders, users of data base....</p>	★
AP.2 Improve Marketing and Communication activities	<p>Review Web page, create a map of Europe with support schemes and legal requirements, improve KM Brochure, develop a Newsletter, SKN stand at big trade fair...</p> <p>Connect with key players in support schemes in different countries through KM Operators. Workshops for Support Schemes? Share information throughout Europe to copy the best practices</p>	★
AP.3 Offer a completely integrated certification solution to client	Develop certification scheme for installers and installations	★
AP.4 Effort to boost certification of new Keymark products (Custom built systems, water heater stores, solar combisystems and control equipment)	Study potential clients. Prepare campaign. Reach out.	★
AP.5 Achieve recognition of the Keymark outside Europe	Study support schemes and legal requirements outside Europe. Take action in strategic markets to facilitate acceptance of Keymark. Study the role in the GSCN. Prepare campaign.	★
AP.6 Prepare a thorough plan with for all the new Legal requirements and future changes in the Market	<p>ErP Directive (LabelPack A+), CPR, Energy labelling of collectors, revision of 3 Directives, (Renewables, EPBD and Energy Efficiency). How will Building Information Modelling (BIM) or the industry 4.0 revolution affect the Industry and Certification?</p> <p>Prepare a specific plan and be prepared for all changes in the next years.</p>	★

These action plans would become the strategy of the SKN, that would be expressed in a Management table. Well two tables really:

Balanced scorecard

Perspectives	Strategic Map		Dashboard		Action plans						
	Objectives	Indicator	Goal	AP1	AP2	AP3	AP4	AP5	...	APN	
Financial Perspective	Objective F1	IF1	GF1	X	X	X	X	X		X	
	Objective F2	IF2	GF2		X	X	X	X			
Client Perspective	Objective C1	IC1	GC1			X				X	
	Objective C2	IC2	GC2			X					
Internal process perspective	Objective I1	II1	GI1		X			X		X	
	Objective I2	II2	GI2		X					X	
Learning and growing perspective	Objective L1	IL1	GL1	X					X		
	Objective L2	IL2	GL2		X	X	X				

Description of Action plan	Time frame (short term, medium term, long term)	Importance (Normal, High)	Resources (SC, WG)	Comments and follow up
AP1:				
AP2:				
AP3:				

PD: Thanks for your time reading this before our meeting. I will be fine-tuning the presentation and also be asking for input. Please feel free to contact me or send comments to jafernandez@aenor.es

[illegible]

Annex E (Item 22) Long Term Prediction for Solar Systems



Content

- Background
- Requirements and procedure for EN 12976
- Current Requirements and procedure for EN 12977
- Requirements according to ErP
- Proposal for harmonized requirements for EN 12977
- Strategie harmonisation EN 12976 and EN 12977

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Background

- First Solar thermal system was tested in 2015 according to EN 12976 and EN 12977
- Components and full system certification acc. EN 12977
- Simulation of long term prediction (LTP) had shown problems and inconsistencies
- Current requirements are neither useful nor constructive
- Unique chance for modifications and harmonisation within first EN 12977 certification
- Harmonization with ErP will open the door for the ErP revision and the implementation of EN 12977 there
- LTP results based on harmonized requirements will increase the valuability of the certification strongly
- Without this harmonization, it will be hard to implement this certification

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EN 12976



Requirements for long term prediction

- Unrealistic 100 % tapping 6h after solar noon (for harmonisation of ISO 9459-2 and -5!)
- Realistic seasonal cold water temperature for each location
- Fixed indoor store ambient temperature (15°C)
- Demand temperature: 45°C
- Different load volumes 50/ 80/ 110/ 140/ 170/ 200/ 250/ 300/ 400/ 600 l/d
- Reference locations
 - Stockholm
 - Würzburg
 - Davos
 - Athens

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EN 12977



Requirements for long term prediction

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- Reference locations
 - Stockholm
 - Würzburg
 - Davos
 - Athens

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ErP

Requirements for determination of Q_{nonsol}

- Four realistic tapping profiles M/ L/ XL/ XXL
- Fixed cold water temperatur for all location
- Fixed indoor store ambient temperature (20°C)
- Mean demand temperature: approx. 39°C (depending on profile)
- Max. demand temperature: 55°C
- Required V40 volume (hot water comfort)
- Only four load volumes
- Reference locations
 - Helsinki (instead of Stockholm)
 - Strassbourg (instead of Würzburg)
 - Daves (not listed!)
 - Athens (same)

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Annex E (Item 22) Long Term Prediction for Solar Systems

Long Term Prediction

Current situation and problems for EN 12977

- 100% tapping is not applicable for complex modern controller strategies
- Number of needed single simulations is too high
 - One single simulation for EN 12977-2 last as long as the full set of simulations for all EN 12976 tapping profiles and locations
 - The number of different system configurations is much higher than for EN 12976
- Certification scheme didn't show any benefit for manufacturer
 - Several countries still insist in EN 12976 certification
 - Standard is not prepared to be implemented into revised ErP
 - LTP will give under estimated results
 - Controller strategies will not considered
- Example of total number of simulations for a EN 12977 system family:
 - 4 locations x 3 load profiles x 3 store sizes x 2 operation modes (solar only; preheating/ solar + auxiliary) x 2 collector families = 144 single simulations (equal to 24 h total simulation time if serial simulation would be possible; currently it is not)

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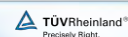
Proposal for a harmonised procedure

First Step: Harmonisation of SK based on EN 12977 with ErP

- Implementing of the ErP tapping profiles (out of new EN 12976 annex) into the scheme Rules for EN 12977-2 LTP
- Harmonisation of boundary conditions (cold water, „indoor“ ambient temperature)
- Change to ErP climate conditions (plus one additional location for Davos)
 - For Würzburg and Stockholm, there's no big change; Athens stays the same
- Reduction to one (EN 12976: three) relevant tapping profiles per configuration
 - Leads to max. four (12) simulations per configuration
- Simplification of cold water temperature and store ambient temperature will not influence the relative quality of the results
- Long Term Prediction will never replace project-specific simulations, so simplification of boundary conditions is acceptable
- Only a full harmonisation would allow a later use for ErP

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Strategie harmonisation EN 12976 and EN 12977

Strategie for fully harmonisation of EN 12976 & 12977 Ltp with ErP

- | | |
|---|--|
| <ul style="list-style-type: none"> ▪ Fully Harmonization of EN 12976 to ErP? <ul style="list-style-type: none"> - Load profiles - Cold water temperatures - Store surrounding temperatures ▪ Advantages: <ul style="list-style-type: none"> - Fully applicable for ErP - V40 Volume as hot water comfort - No additional simulations/ calculations ▪ Disadvantages: <ul style="list-style-type: none"> - ISO 9459-2 not applicable any more (but still relevant?) - Less realistic fixed cold water temperature (really a problem?) - New climate data sets (Davos?) | <ul style="list-style-type: none"> ▪ Fully harmonisation of EN 12977 to ErP? <ul style="list-style-type: none"> - Load profiles - Cold water temperatures - Store surrounding temperatures ▪ Advantages: <ul style="list-style-type: none"> - Fully applicable for ErP - V40 Volume as hot water comfort - No additional simulations/ calculations - Saving of simulation time ▪ Disadvantages: <ul style="list-style-type: none"> - Less realistic fixed cold water temperature (really a problem?) - New climate data sets (Davos?) |
|---|--|

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Conclusion

- Unique chance for harmonisation with ErP
- Harmonisation will enhance the status of solar keymark for systems
- 3rd party information for ErP for systems as for collectors available!
- Change of boundary conditions with minor influences on LTP-results
- Davos could be kept as an optional location
- Data sheet update for all systems tests according to ISO 9459-5 and EN 12976 possible and clear
- Only simulation, but no re-testing is necessary
- Data sheets based on ISO 9459-2 might stay as they are (see collectors)
- Perfect strategie to include EN 12977 and maybe a third party testing into ErP revision
- The required EN 12977-2 simulations will be reduced to its minimum

Let's raise relevance of the Solar Keymark for systems now!

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Annex F (Item 23) Inter-Laboratory Comparison

ILC Data 2016

THE IDEA

Interlaboratory Comparison ILC on Data Analysis
SCF7 Project


Dr. A. Bohren, SPF Testing

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Interlaboratory Comparison (Round Robin) ---- Data



Flatplate collectors, Evacuated tube collectors, WISC collectors, parabolic trough collectors, PVT,

Liquid, Air, ...

Steady State, Quasi Dynamic, Indoor, Outdoor, ...

Performance and IAM are always measured as

$$\dot{Q} = \dot{m}c\Delta T$$

Measured raw data

and then modelled using some mathematical models

$$\dot{Q} = f(T_{in}, T_{ex}, T_{amb}, G, u, \dots)$$

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Raw Data ----- become ----- Performance Parameters

Data Selection
Data Processing
Data Modelling
Data Analysis

Start of ILC2016

Measured raw data

$$\dot{Q} = A_c \left(\eta_{0,hem} - a_1 \frac{\dot{Q}}{G} - a_2 \left(\frac{\dot{Q}}{G} \right)^2 \right)$$

$\eta_{0,hem}$
 $\eta_{0,b}$
 K_d
 a_1
 a_2
 a_3
...
 a_8
IAML
IAMT

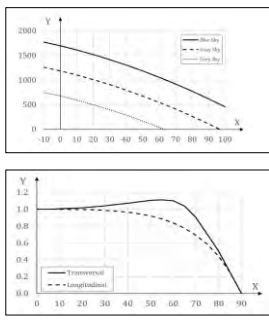

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Performance parameters ----- Presentation of results

$\eta_{0,hem}$
 $\eta_{0,b}$
 K_d
 a_1
 a_2
 a_3
...
 a_8
IAML
IAMT

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ILC Data 2016

THE CONCEPT

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Interlaboratory Comparison ILC 2016 Concept

- Test Labs provide examples of real measured data sets
- Test labs analyse these measured data sets using their tools
- Comparison of results.

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Annex F (Item 23) Inter-Laboratory Comparison

Benefits for the participants (Test Labs)

- Check/validate own tools against other test labs.
- See how raw data sets of other test labs look like.
How are the others measuring/determining IAM?
How are the others measuring thermal performance?
- Get familiar with the new ISO 9806:2016 concepts:
 - Modified collector models, WISC, a_1 to a_8 , etc.
 - Standard reporting conditions (SRC)
 - Presentation of the results
- Possibility to cross-check interpretations of the standard.
Learn from others.
- Possibility to participate in a low cost ILC.
Those who collaborate until the end will get some cash back. !

ILC Data 2016

STEP BY STEP

ILC2016 STEP BY STEP

Take a strip with the individual access code

Register with your email

Submit max. 3 raw data sets
→ Please interesting data sets

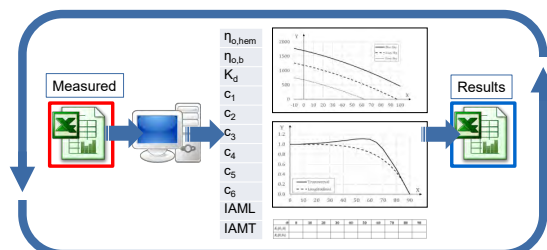


Keep the strip with the code !

ILC2016 STEP BY STEP

Download and analyse all the data sets

Submit the results



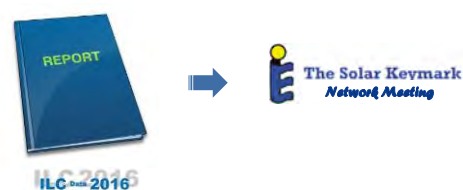
ILC2016 STEP BY STEP

Webmeeting



ILC2016 STEP BY STEP

Report to SKN



Annex F (Item 23) Inter-Laboratory Comparison

Dates summary

2016

January

February

March

April

May

June

July

August

September

October

November

December

1. Decision to participate

2. Submit Data File(s)

3. Submit Results

4. Draft Report

5. Webmeeting

6. Solar Keymark Network

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ILC Data 2016

Thank you for participating

andreas.bohren@spf.ch

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Annex G (Item 25) Convenor Report and CE Marking

ISO TC 180 / CEN TC312 WG1
Convenor Report
Berlin 08./09.03.2016

Dr. A. Bohren
 SPF Testing

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Revision ISO 9806

- Revision of ISO9806 (Solar thermal collectors - test methods)
 Convenor Andreas Bohren
- Revision under Vienna Agreement: CEN/TC 312/WG1 has the lead for the revision, 4 ISO members are part of the working group.
- Several webmeetings and physical meetings in 2015
 Rome – Paris – Istanbul – Web – Web – Web
- Istanbul (Dec. 2015) was the last physical meeting before the enquiry stage.
- Draft submitted to CEN Management Centre for parallel CEN/ISO enquiry 2016
- THANK YOU WORKING GROUP 1

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Revision of ISO9806 - Improvements

- Reduce Text Book, etc..
- Editorial, Orthographic, References
- Tidy up, rearrange, remove double/triple information, delete nonsense, ...
- Description of mechanical load test modified: What part is part of the test?
- Rating of Problems / Final inspection improved
- Description of incidence angle modifier tests and models modified
- Test sequence, more flexibility,
 Pressure test not at the beginning anymore.
- ...

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Revision of ISO9806 - NEW

- Introduced higher Climate Class A+ (Australia), Now B, A, A+
 -> Switzerland is "at least" A
- Exposure Test Methods (Australia), now 3 equivalent methods for faster testing. At least 30 days outdoor exposure, always !
- Heat pipe freeze resistance (US, Solar Keymark)
- Methods for self-protecting collectors, Methods for collectors using external power (trackers, motors, pumps, etc.)
- Specific aspects of façade collectors.
- Standard is harmonized with IEC TC 117 (mainly parabolic trough collectors). IEC TC117 will reduce their own standardisation project, but refer to ISO 9806 for performance testing.
- Material aspects (Informative annex)

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Revision of ISO9806 - NEW

- Collector type WISC introduced (Wind and/or Infrared Sensitive Collectors)
 unglazed C_u, uncovered C_u, non-covered C_u, Swimming-pool-C_u, etc.
- Standard reporting conditions (SRC)
 All test reports provide the same information in the same format independent of the collector type for
 - Thermal performance
 - Incidence angle modifier.
 Big advantage for marketing, software, subsidies, new technologies

Table 7 – Standard Reporting Conditions (SRC)

Climate Condition	Wisc Sky	Steady Sky	Steady Sky
G ₀	1000 W/m ²	1000 W/m ²	1000 W/m ²
G _a	1000 W/m ²	1000 W/m ²	1000 W/m ²
T _a	20°C	20°C	20°C
h _a	1	1	1
G ₀ (W/m ²)	1000 W/m ²	1000 W/m ²	1000 W/m ²
G _a (W/m ²)	1000 W/m ²	1000 W/m ²	1000 W/m ²
h _a (m)	1.2 m	1.2 m	1.2 m
h _a (m)	1.2 m	1.2 m	1.2 m

(1) For WISC collectors only
 (2) For steady-state collectors only

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Revision of ISO9806 Summary

- A lot of new content and modifications/deletions
 But number of pages reduced by approximately 20%.
- Much clearer, harmonised presentation of the results (SRC)
 Presentation independent of
Flat plate, Evacuated tube collectors, Steady-State, Quasi-Dynamic, Unglazed, Parabolic Trough, PVT, Switching collectors, Air Collectors, Liquid Heating, Different Areas, etc.
- More flexibility for faster testing
- Clearer regulations for pass/fail in durability tests
- Good basis for EN12975 (CE-Mark), Global certification schemes

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Annex G (Item 25) Convenor Report and CE Marking

Next Steps: EN12975

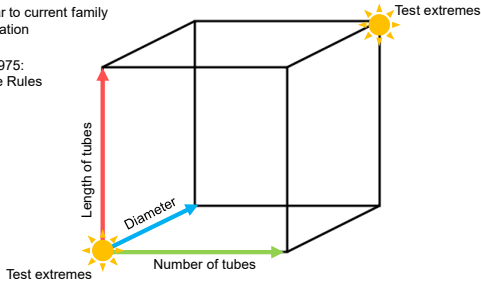
- Prepare draft for EN12975
- Harmonized standard under Construction Product regulation (CE Mark) Ecodesign / Energy Labelling / Pressure Equipment directive
- New Approach Consultants are available again.
- New self assessment procedure for CPR Standards available
- Challenge:
FAMILIES of COLLECTORS

Idea for Family concepts

- "Collector" is usually "a range of products" = Solar Keymark Family
- Three ways to define a family:
 - a) "Testing": Testing the outer corners of the family
 - b) "Acceptance": Small acceptable modifications (materials, suppliers, etc.)
 - c) "Tolerance": Real design changes that do not affect the test results.

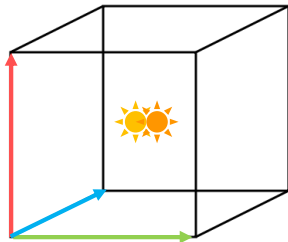
«Testing»

Similar to current family Regulation
EN12975:
Define Rules



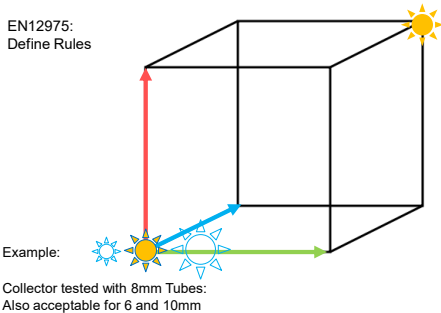
«Acceptance»

Glass
Coating
Insulation
Etc.
EN12975:
Define Rules



«Tolerance»

EN12975:
Define Rules



CEN/TC 312/WG1

Webmeeting to be scheduled


Aim: Finalise Draft in Crete



Industry: Join CEN TC 312 WG1

Annex H (Item 26) Update in Energy labelling

vA Consult
Consultancy for renewable energy in the built environment



Update in Energy labelling

SKN 09.03.2016, Berlin

Gerard van Amerongen
vAConsult
SCF project: 5C2_1 Ecolabel

1

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Harmonization

- CEN mandates M 534 and M 535 -

- Harmonization is:
 - Translation of standard in terms of the ErP regulations
 - Legal reference to the correct use of the ErP methods
- SCF project:
 - Preparation of 'harmonization' annexes, for:

CEN EN 12975	Collectors	TC312, WG1	S. Fischer, ITW
CEN EN 12976	Systems (SOLICS)	TC312, WG2	G. van Amerongen, vAConsult
CEN EN 12977	Heat storage tanks	TC312, WG3	S. Bachman, ITW
CEN EN 15316-4-3	Systems (SOLCAL)	TC228, WG4	G. van Amerongen, vAConsult

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Update on CEN EN 12975






- Collectors
 - 'harmonization' annexes prepared
 - Presented to TC 312 as drafts
 - 'product family' issue on hold
 - No major problems expected with implementation ErP
 - Product family issue is weak point!

3

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Update on CEN EN 12976






- System, SOLICS, SDHW
 - Considerably more work than anticipated:
 - Methods to determine the water heater efficiency
 - Reference conditions according the ErP (load profiles, climates)
 - Product families method (according to Solar Keymark)
 - Harmonization annexes
 - prEN 12976 part 1 and 2 are accepted by TC 312
 - It now is possible to calculate results according to SOLICS!**
 - Formal vote: this month
- Be aware!
 - There are small, but important, editorial errors
 - A list of comments is prepared and available (DE, ES, NL, IT).

4

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Update on CEN EN 12977






- Heat storage tanks (part 3)
 - 'harmonization' annexes prepared
 - Presented to TC 312 as final drafts
 - No major problems expected with implementation ErP
- Major issue:
 - Four different standards can be used
 - That give different results

5

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Update on CEN EN 15316-4-3

- Systems, SOLCAL, SDHW
 - Annexes prepared and accepted by TC 228
 - Annexes describe how to implement the base method (method 2, 'Fchart') in the ErP regulation
 - Methods to determine the water heater efficiency
 - Formal vote: coming months
- Issue expected:
 - Errors from SOLCAL in the regulation are corrected
 - Results may differ from current SOLCAL

6

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Final

- The project is finalized
- Further activities
 - Negotiations with the EU consultant
 - To get acceptance of the harmonization
 - Continued work in TC 312, WG1 and WG3
 - To finalize the process 12975 & 12977
 - Wait for the results formal votes
 - EN12976 and EN15316-4-3
- Opportunity: supply ErP documentation solar device
 - Based on systems EN12976-2 and combi of components
 - SCF project approved

7

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NEW

Remarkable performance in The Netherlands

ISDE SUBSIDY SCHEME NL

10

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ISDE - Summary

Type: Investment subsidy

Period: 01.01.2016 → 31.12.2020 (5 years)

Subsidy amount: ~20% -30% of total investment Product specific

Annual budget: 70 MEuro

Aim: Produce extra renewable heat to meet RE targets

Products:

- Heat pumps $P_{\text{rated}} \leq 70 \text{ kW}$
- Solar thermal $A_{\text{col}} \leq 200 \text{ m}^2$
- Solar device and package combi (>A space)
- Pellet stoves $\leq 5 - 500 \text{ kW}$
- Bio boilers $\leq 5 - 500 \text{ kW}$

11

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Thermal solar

- Requirements for registration -

12

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Solar thermal

- Tools applied -

- Current ~250 solar devices on products list
 - Impressive performance! All ErP documented (2 months)
- Tools applied:
 - SCF project: Ecodesign / E-label manual
 - vaConsult software

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Consultancy for renewable energy in the built environment



Update on TC 371, 228, 164

SKN 09.03.2016, Berlin

Gerard van Amerongen
vAConsult
SCF project: 6C13,1,2,3, Liai....
SCF project: SCF 6C14_1 Other model

1

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European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

CEN TC's concerned

- CEN TC 371
 - Project Committee - Energy Performance of Building project group
- CEN TC 228
 - Heating systems and water based cooling systems in buildings
- CEN TC164
 - Water supply (drinking water quality)

2

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Liaison on:

TC 228 AND TC 371

3

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TC 228 & TC 371 put together

- Main activities related to:
 - Energy performance of buildings directory
 - CEN Mandate 480
- Comprehensive revision of EPBD standards
 - Many standards and many CEN TC's

CEN Mandate 480 organisation

```

graph TD
    CEN_TC_371_WG1[CEN TC 371 WG1] -- Liaison --> CEN_TC_xxx1[CEN TC xxx]
    CEN_TC_371_WG1 -- Liaison --> CEN_TC_xxx2[CEN TC xxx]
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    CEN_TC_228_WG4 -- Liaison --> CEN_TC_xxx100[CEN TC xxx]
  
```


15 standards

prEN 15316-4-3 (Solar systems)

prEN 15316-4-5 (Heat storage)

4

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Standards revised under TC 228, WG4

prEN15459-1	Economic evaluation procedure for energy systems in buildings
prEN15378-1	Inspection of boilers, heating systems and DHW
prEN15378-3	Measured energy performance
prEN12831-1	Design heat load: space heating
prEN12831-3	Design heat load: water heating
prEN15316-1	General and Energy performance expression
prEN15316-2	Space emission systems (heating and cooling)
prEN15316-3	Space distribution systems (DHW, heating and cooling)
prEN15316-4-1	Space heating generation systems, combustion systems (boilers, biomass)
prEN15316-4-2	Space heating generation systems, heat pump systems
prEN15316-4-3	Thermal and PV solar systems
prEN15316-4-4	building-integrated cogeneration systems
prEN15316-4-5	district heating and cooling
prEN15316-4-8	Space heating generation systems, air heating and overhead radiant heating systems, including stoves (local)
prEN15316-5	Space heating and DHW storage systems (not cooling)

5

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Progress of the work

- 2013 - 2014
 - Revision of 15 standards under CEN mandate 480
- 2015
 - Public enquiry and final draft
- 2016
 - Formal vote and publication

6

Annex I (Item 27) Liaison Report TC 371, TC 228 and TC 164

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prEN15316-4-3

- thermal solar and photovoltaic systems -

- Performance of solar systems in buildings
 - Using 'product' standards of TC 312
 - Standard is revised on main issues
 - Covering:
 - 3 methods for solar thermal
 - 3 methods for solar PV
 - This item was added (formally EN 15316-4-6)

7

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prEN15316-4-3

- Method 1 -

- Method 1, based on system tests
 - Annual results or monthly results
 - EN 12976 or EN 12977
- Only editorial revisions

8

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prEN15316-4-3

- Method 2 -

- Method 2, calculation method based on components test
 - Monthly results, adding up to annual
 - EN 12975, EN 12977-3/4, ...
 - Base method for SOLCAL (ErP!)
- Major improvements:
 - Storage heat losses and effect of the temperature of space heat emitters added
 - Full support for Solar-plus-supplementary systems
 - Many small technical improvements
 - Errors in previous version and SOLCAL (ErP) corrected

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prEN15316-4-3

- Method 3 -

- Method 3, calculation method based on components tests
 - Hourly results, adding up to monthly and annual results
 - EN 12975, EN 12977 3/4/5
 - Limited to collector loop only!
- New method introduced
 - Simplified hourly calculation method
 - Applicable in combination with prEN 15316-5

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prEN15316-5

- Space heating and DHW storage systems (not cooling) -

- Three methods
 - Hourly, monthly and annual
- New standard
- Combined with prEN 15316-4-3, method 3 (hourly):
 - Simple hourly method for main solar thermal applications
 - 'Inputs' the same as for EN15316-4-3, 2 (Fchart)
 - Option for EN 12977-2 and EN 12976 (DST)

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Open source tool

- SCF 6C14_1 Other model -

- Software tool combining two EPBD standards
 - Open for evaluation coming months
 - Hot water and combi systems

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TC 371 and TC 228

- Further work -

- Opportunity: Hourly method as preferred model for EN12977-2
 - Improved acceptance of method => SK certificates*
- Currently TC 228 / TC 371 is evaluating new work items
 - Form CEN to ISO
 - Extension of list of EPBD standards
 - ...
- Focus for solar thermal?
 - Overall energy performance methods
 - On the road to energy neutral
 - Follow the process of new EPBD standards

13

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Liaison on TC164

DRINKING WATER QUALITY

14

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Progress



- New Liaison officer: Jean-Marc Sutter (CH)
 - Previously my backup liaison for TC614
 - Very well informed, expert on drinking water and solar
 - Accepted by TC 312 and TC 164
- Current (relevant) activities:
 - Revision of EN 806 series
 - Many standards (like solar) refer to this series of standards
 - Work is done in Ad Hoc workgroup

15

**ISO/TC 180 Liaison Report
from IEC/TC 117
Solar thermal electric plants**

Stephan Fischer
Institute for Thermodynamics and Thermal Engineering (ITW)
Research and Testing Centre for Thermal Solar Systems (TZS)
University of Stuttgart
Pfaffenwaldring 6, 70550 Stuttgart, Germany
Email: fischer@itw.uni-stuttgart.de
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Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

SCOPE

To prepare international standards for systems of Solar Thermal Electric (STE) plants for the conversion of solar thermal energy into electrical energy and for all the elements (including all sub-systems and components) in the entire STE energy system.

The standards would cover all of the current different types of systems in the STE field, as follows:

- Parabolic trough
- Solar tower
- Linear Fresnel
- Dish
- Thermal storage

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

Problem

The standardization work within IEC/TC 117 interferes with the standardization work being done in ISO/TC180 and CEN/TC312 respectively.

This leads to different test standards for same products e.g. parabolic trough collectors.

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

TC 117 officers

Position	Name	Institution
Chairman	Mr Werner Platzer (GER)	Fraunhofer ISE
Secretary	Mr Eduardo Garcia Iglesias (ES)	PROTERMO SOLAR
Assistant Secretary	Mrs Carmen Martín Marino (ES)	AENOR
Technical Officer	Mr Charles Jacquemart	IEC Central Office

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

MEMBERSHIP STATUS

Participating countries: 12
Observing countries: 12

Participating countries:

- China
- France
- Germany
- Israel
- Italy
- Japan
- Portugal
- Russian Federation
- Spain
- Sweden
- Switzerland
- USA

Observing countries:

- Australia
- Austria
- Brazil
- Canada
- Czech Republic
- Denmark
- Iran
- Republic of Korea
- Mexico
- Poland
- South Africa
- United Kingdom

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

LIASIONS

Liaison ISO:

TC 180 Solar energy
TC 192 Gas turbines

Liaison A:
IEA Solar PACES

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

Work items

117/27/NP
IEC/TS 62862-1-1 Ed.1.0: Solar thermal electric plants - Part 1-1: Terminology
(next step: CD 2016-04)
Project leader: L. Gonzalez

117/28/NP
IEC/TS 62862-1-2 Ed.1.0: Solar thermal electric plants - Part 1-2: Procedure for generating a representative solar year
(next step: CD 2016-03)
Project leader: I. Sablidgegoitia

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

Work items

117/31/NP
IEC 62862-3-2 Ed.1.0: Solar thermal electric plants - Part 3-2: Systems and components - General requirements and test methods for parabolic-trough collectors
(next step: CD 2016-12)
Project leader: F. Sallaberry

117/32/NP
IEC 62862-3-3 Ed. 1.0: Solar thermal electric plants - Part 3-3: Systems and components - General requirements and test methods for solar receivers
(next step: CD 2016-12)
Project leader: E. Pahl

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

Work items

117/34/NP
IEC/TS 62862-2-1 Ed.1.0: Solar thermal electric plants - Part 2-1: Thermal energy storage systems - General characterization
(next step: CD 2016-12)
Project leader: M. Gommel

117/41/NP
IEC 62862-5-2 Ed.1.0: Solar thermal electric plants - Part 5-2: Linear Fresnel systems - General requirements and test methods for linear Fresnel collectors
(next step: CD 2016-09)
Project leader: P. Pili

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

MEETINGS

Meetings:

Madrid, Spain, 7th – 8th March 2012
Tel Aviv, Israel, 30th October – 1st November 2012
Northbrook, USA, 19th -20th November 2013
Tokyo, Japan, 14th – 15th November 2014
Madrid, December 9th – 10th, 2015

Next meeting:

Frankfurt, October 14th, 2016

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

Actions taken since October 2014

- ISO/TC 180 wrote a letter to IEC/TC 117
 - with the request to leave the standardization in solar thermal products to ISO/TC 180
 - with the request to withdraw their WI
 - and invited the IEC/TC 117 expert to work within the frame work of ISO/TC 180
- March – September 2015 several emails/talks between W. Platzer, Ken Guthrie and Stephan Fischer
 - + Bilateral discussions between Maria João Carvalho, Korbinian Kramer, Stephan Fischer (ISO/TC180) and Fabienne Sallaberry, Werner Platzer, Eckhard Lüpfer (IEC/TC117)

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016

Current developments

- Eckard Lüpfer (DLR) joined CEN/TC 312 WG1 (5th, Oct. 2015) meeting to discuss joined work
- Elaboration if developed "Receiver" Standard (IEC 62862-3-3) can go into the ISO 22975 series
- Joint web meeting CEN TC312 WG1 and representatives from IEC TC 117 26th January 2016
- Collector Model in ISO 9806 will be extended by the $a_8(\vartheta_m - \vartheta_a)^2$ to match requirements of IEC TC 117
- "Parabolic trough" Standard (IEC 62862-3-2) will refer to ISO 9806 for thermal performance testing

Stephan Fischer Liaison Report from IEC TC 117, 20th Solar Keymark network meeting, Berlin, 8-9.03.2016



Liaison Report on TC 128 (incl. TC 254) for TC 312 and ESTESC and SKN



Dr. Korbinian Kramer
07.03.2016

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TR renewal energy systems for roofs structural connections:

CEN/TC 128/WG 3 CEN/TC 128/WG 3 - Renewable energy systems for roofs
Email of secretary: Secretariat: BSI (United Kingdom)

**CEN-TC128-WG3-N0068 TR renewal energy systems for roofs structural
connections Nov2013**

<http://cen.iso.org/livelink/livelink/open/centc128wg3>

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No news from this „front“.

Chairmen and his secretary is aware that I am awaiting any news on the process
of the file.

Last contact; Dezember 2015

Any wishes from SKN?

Korbinian Kramer
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Thank you for your attention!



Fraunhofer-Institut für Solare Energiesysteme ISE

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What do companies have to do?

Solar energy systems for roofs: Requirements for structural connections to solar
panels

SUMMARY

- Type of solar panel: Thermal or photovoltaic solar panels which comply with the mechanical resistance requirements of EN12975 (solar thermal collectors) or EN61215 (solar PV panels).
- Determine the loads and load combinations: self-weight of the solar panels and relevant imposed wind and snow actions.
- Determine the design loads for the solar panels: multiply each of the loads by their respective partial factor γ_G or γ_Q for the ultimate limit state, and separately for the serviceability limit state.
- Identify one or more combinations of most unfavourable design loads which act together at the same time, for the ultimate and serviceability limit states. Modify the loads by applying one or more load combination factor ψ for two or more variable loads which act at the same time.

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- Determine the structural resistance of the connections between the solar panels and the roof structure in accordance with calculation methods of one or more of the following standards:

EN1992 to EN1996, and EN1999

for the ultimate and serviceability limit states. For the serviceability limit state, specify the maximum deformation limiting the function of the connection;

Or

where the structural resistance cannot be determined by calculation methods, determine the resistance by serviceability and ultimate load tests.

- Verify the design by confirming that the factored structural resistance is not less than the critical combinations of factored actions for both limit states.

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Challenges for ST branch:

- Solutions to define to fulfill the technical standard, state-of-the-art
- National regulations will also ask for these information
- The collector standard is open to the stress level choosen by the manufacturer, so the manufacturer has to know what he wants
- The collecotr standrad asks manufacturers to give (service and) ultimate load levels for collectors (which is in close connection with the mounting equipments requirements)
- Calculation of all parts in the context with the requirements is almost impossible
- Testing of all components seems also quite a high effort
- Combining test are possible, but have to be optimized to be efficient



20th SKN meeting

8-9 March 2016
Berlin



Solar Certification Fund

- 80 projects approved so far:
 - Closed: 43
 - Reporting: 14
 - On-going: 18
 - Contracting: 1
 - Deferred: 2
 - Cancelled: 2
 - 1st call: 9
 - 2nd call: 7
 - 3rd call: 18
 - 4th call: 16
 - 5th call: 18
 - 6th call: 12



Solar Certification Fund

- 883 745 EUR (approx.) allocated to projects
 - 1st call: 145 950 EUR
 - 2nd call: 79 910 EUR
 - 3rd call: 170 565 EUR
 - 4th call: 183 420 EUR
 - 5th call: 179 900 EUR
 - 6th call: 124 000 EUR



Solar Certification Fund

- Closed projects
 - Report and deliverables approved by the SCF Steering Group
 - Balance payment done or being prepared
 - invoice requested or payment on pipeline
- Deferred projects
 - Projects that are on-hold
 - Waiting for one of the conditions for the project to occur (external)
- Cancelled projects
 - One case insofar - request from contractor
 - Possible also by SG decision in extreme cases



Solar Certification Fund

- On-going projects
 - Projects that are being executed
 - Periodic reports available (for the majority) at the Disc. Board
 - Deliverables (or drafts) may be also available at the Disc. Board
- Reporting projects
 - Projects that have concluded their work
 - Pending approval, because:
 - Reports (or deliverables) are to be provided (uploaded at DB)
 - Secretariat is preparing evaluation files
 - Evaluators are assessing report and deliverables
 - Evaluators requested additional clarification or work



Closed projects (since October 2015)

Reference	Project Name	Responsible	Start date	End date	Budget
4C06	SK-12976	Danjana Theis	01-04-13	22-12-15	€15310.00

Quality assurance procedures to assure harmonised of boundary conditions for the long performance prediction for factory made systems and automatic implementation of the performance results in the Solar Keymark data sheets



Deferred

Ref.	Project Name	Responsible	Budget
3C14	CE-Bro-ESTIF	Pedro Dias	€8.250,00
Information about CE-marking of solar collectors - target group manufacturers			
Project shall not start before there is approval (or at least final version sent for enquiry) of part 1 - EN12975.			
5C74	STANDARD_JMSuter	Jean-Marc Suter	€10.000,00
Revision of EN ISO 9488 Solar energy - Vocabulary - German and French terminology: Translation and cross-border harmonization			
Project delayed 12 months: the project "Revision of EN ISO 9488" will be formerly canceled due to non availability of the English draft per September 2014. A new start for this revision should be formerly decided at the next ISO/TC180 meeting which will be held in Beijing at the beginning of October. Being voted if revision to be done under CEN lead.			
4C19b	Industry_Interaction	Pedro Dias	€10.000,00
Ensure a better involvement of industry resources in standardisation work			
Project on-hold for clarification on actions addressing that shall be covered within the project.			

Reporting

Reference	Project Name	Responsible	Start	End	Budget
4C16a	EcoDes-12	Gerard van Amerongen	01-04-13	31-12-14	€15,000.00
Preparing to meet the requirements of Ecodesign Energy Labelling with respect to testing.					
Evaluation on-going					
5C1.5	SOLARKEYMARK_SP	Peter Kovacs	30-05-14	01-03-15	€7,100.00
This project will develop the ScenoCalc tool further by including a calculation model that is still missing: Unglazed solar collectors under steady-state conditions.					
Reporting: being approved by SKN					
5C11.1	ANNIVERSARY_ESTIF	Theresa Doetsch	30-05-14	31-07-14	€5,000.00
Anniversary - ESTIF					
Reporting: to be sent to EV					
5C4.1	LiasTC117_ITW	Stephan Fischer	30-05-14	31-08-15	€5,000.00
support the work of the liaison officer who will follow the work going on in the IEC/TC117 and the reporting to CEN/TC 312, ISO/TC180, the Solar Keymark network and the European Solar Thermal Energy Standardisation & Certification Working Group (ESTES).					
Evaluation on-going					
5C4.2	LiasTC164_vAConsult	Gerard van Amerongen	30-05-14	31-03-15	€5,000.00
The main issue during the contractual period will be the proposed revisions of the EN 806-11 and EN 806-22. Requirements of these standards are referred to in the solar thermal standards.					
Evaluation on-going					

Reporting

Reference	Project Name	Responsible	Start	End (foreseen)	Budget
5C4.3	LiasTC228_vAConsult	Gerard van Amerongen	30-05-14	31-03-15	€5,000.00
The main focus during the contractual period will be the revisions of the EPBD standards and more specifically the handling of the comments from the enquiry process.					
Evaluation on-going					
5C4.4	LiasTC371_vAConsult	Gerard van Amerongen	30-05-14	31-03-15	€5,000.00
The main focus of in this contractual period is the development of the revised EPBD standards (CEN mandate 480) that should be finalized before 1/2 2015.					
Evaluation on-going					
5C8.1	EPBD_vAConsult	Gerard van Amerongen	01-01-15	31-01-15	€10,000.00
Development of Excel tools that describe the solar thermal calculation methods in prEN15316-4-3:2013 for evaluation purposes during the CEN enquiry period					
Evaluation on-going					
6C09	GLOBCERT_SKI	Jan Erik Nielsen	07-07-14	31-12-14	€15,000.00
"New IEA-SHC Task on International Solar Standardisation and Certification"					
Evaluation on-going					
5C5.1	TC312WG_SPF	Andreas Bohren	30-05-14	28-02-15	€6,000.00
Part financing of CEN secretariat for solar collector working group (CEN/TC312 WG1)					
Evaluation on-going					

Reporting

Reference	Project Name	Responsible	Start	End (foreseen)	Budget
5C2.1	ECOLab_vAConsult	Gerard van Amerongen	30-05-14	31-03-15	€24,000.00
As a consequence of the publication of the regulations on Ecodesign and the energy labelling in September 2013, the involved standards need to be harmonized (EN 12975, 12976 and 12977) according to the CEN mandate 495.					
Final report received, sent to evaluators					
5C3.1	CE-CPR_ESTIF	Pedro Dias	30-05-14	31-10-14	€9,000.00
An adequate overview of the CE marking requirements in the different markets will facilitate the work of the solar thermal industry in preparing for the implementation after the expected publication (Sept/Oct. 2014).					
Deliverables to receive					
5C5.1	TC312WG_SPF	Andreas Bohren	30-05-14	28-02-15	€6,000.00
Part financing of CEN secretariat for solar collector working group (CEN/TC312 WG1)					
Evaluation on-going					
5C7.1	STANDARD_ISE	Korbinian Kramer	01-Jan-15	31-01-15	€10,000.00
The goal of the project is to close a gap in standardisation, testing and reporting for certification regarding the Incident Angle Modifier (IAM) of Linear Fresnel Collectors (LFC).					
Clarify evaluation					
6C13.1.2.3.	LiasTC164_TC228_TC371	Gerard van Amerongen	20-03-15	31-03-16	€10,000.00
Liaison officer on behalf of CEN-TC312 to CEN-TC164, Liaison officer on behalf of CEN-TC312 to CEN-TC228, Liaison officer on behalf of TC312 to TC371					
Final report received, sent to evaluators					

On-going (contracting)

Reference	Project Name	Responsible	Start	End (est.)	Budget
6C03	Air-Coll-RR_ISE	Stefan Mehner	20-03-15	01-03-16	€11,000.00
EN ISO 9806 Air collector Intercomparison Test					
Project scope to be decided at SKN meeting					

On-going

Ref.	Project Name	Responsible	Start Date	End (est.)	Budget
1C04a	EN13203-3 solar-SWT	Dominik Bestenlehner	20-07-11	31-08-14	€14,950.00
"Solar friendly" alternative to "EN 13203-3"					
Waiting for report					
5C1.2	SOLARKEYMARK_SKI	Jan Erik Nielsen	30-05-14	31-12-14	€10,000.00
The Solar Keymark brochure will be updated - taking also into account the increasing interest in Solar Keymark in overseas countries. Standard presentations for use of Solar Keymark Network members to promote Solar Keymark will be updated and developed.					
Interim report received					
5C1.4	SOLARKEYMARK_ISE(GuideUp)	Stephan Mehner	12-03-15	12-12-15	€24,800.00
With the publication of the new substantially revised hEN 12975 and EN ISO 9806 the guide and the brochure will be obsolete and need to be updated.					
Interim report received					
5C13.1	GOODIDEA_vAConsult(Legio)	Gerard van Amerongen	30-05-14	31-03-15	€24,800.00
Drafting a CEN Technical Report on Legionella prevention in amongst others solar water heaters.					
Interim report received, discuss with SCF conditions					

On-going

Ref.	Project Name	Responsible	Start Date	End (est.)	Budget
SC6.1	DATABASE_SKI	Jan Erik Nielsen	30-05-14	30-06-14	€15,100.00
All data from the Solar Keymark data sheets will be included in the searchable/sortable database. Option for showing/printing only selected data. <i>Interim report received</i>					
SC7.2	STANDARD_SWT	Harald Drück	30-05-14	28-02-15	€13,000.00
In order to perform the annual system simulation for solar combisystems, among others, space heating load profiles are required. <i>Waiting for report</i>					
SC7.3	STANDARD_ITW	Stephan Fischer	30-05-14	31-03-15	€5,000.00
Within the project test procedures and classifications for thermal insulation used in solar thermal collectors and thermal energy stores will be developed and pre normative documents drafted (ISO EN 22975). <i>Interim report received</i>					



THE Quality Label for Solar Thermal Products in Europe

13

On-going

Ref.	Project Name	Responsible	Start Date	End (est.)	Budget
6C01	12977-RR_IFEP	Christian Weißmüller	19-03-15	28-02-16	€18,000.00
Round Robin system testing according to EN 12977-5 and EN 12977-2 <i>Interim report received</i>					
6C04	HighT-Coll-RR_IFEP	Christian Weißmüller	20-03-15	28-02-16	€11,000.00
Round Robin test of medium temperature collectors related to Thermal performance based on ISO 9806:2013 <i>Interim report received</i>					
6C04X	12976 RR	Maria João Carvalho	20-03-15	28-02-16	€9,000.00
Robin Robin for Factory Made Systems yield calculation and data sheet generation <i>Interim report received</i>					
6C05.2	22975-3-SK-SR	Jan Erik Nielsen	30-03-15	31-10-15	€8,000.00
Solar Keymark scheme rules for EN ISO 22975-3 <i>Interim report received</i>					
6C06	CE_SPF	Andreas Bohren	20-03-15	08-03-16	€11,000.00
CE Mark for Collectors <i>Waiting for report</i>					



THE Quality Label for Solar Thermal Products in Europe

14

On-going

Ref.	Project Name	Responsible	Start Date	End (est.)	Budget
6C10.2	LCA_SWT	Dominik Bestenlehner	20-03-15	30-04-16	€9,000.00
Elaboration of standardised methods for life cycle assessment of solar thermal products focusing on environmental and financial aspects <i>Waiting for report</i>					
6C13.4	LiasOn TC117_SWT	Stephan Fischer	01-10-15	31-10-16	€7,500.00
Support of liaison officer of ISO TC 180 to IEC TC 117 <i>Interim report received</i>					
6C14.1	OTHER_MODEL_VAConsult	Gerard van Amerongen	20-03-15	31-03-16	€12,000.00
Open source hourly software tool <i>Interim report received, SKN discuss 2nd phase of the project</i>					
6C14.5	Other_Lai	Sebastian Laipple	07-11-15	17-09-31	€3,500.00
Support of CEN/TC 312 WG3 convener <i>Interim report received</i>					



THE Quality Label for Solar Thermal Products in Europe

15



20th SKN meeting

8-9 March 2016

Berlin



THE Quality Label for Solar Thermal Products in Europe

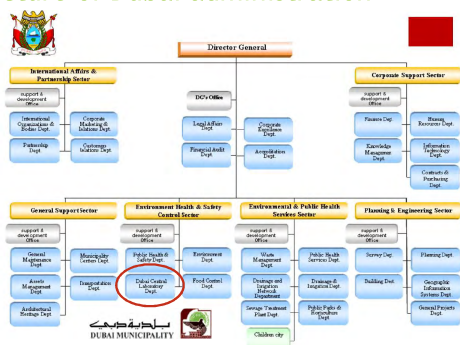
CERTIFICATION OF DUBAI MUNICIPALITY



Geographic location



Structure of Dubai administration



Dubai Central Laboratory (DCL)



Services

- Product conformity assessment
- Perform tests and studies
- Develop standards
- Control measurements

DCL GUIDELINES OF SOLAR CERTIFICATION



CERTIFICATION RULES AND PROCEDURES

- ▶ RD-OP21-100G (IC) "Special rules for the certification of solar water heating system in accordance with the requirements of DM Circular (183) 2011"
- ▶ RD-DP21-2001 (IC) "General rules for third party product certification through factory assessment"
- ▶ RD-DP21-2177 (IC) "Specific rules for certification of solar collectors" as per EN12975
- ▶ RD-DP21-2178 (IC) "Specific rules for certification of factory made thermal solar systems" as per EN 12976
- ▶ Additional Specific Rules shall be established for other applicable standard specifications when required.

DCL GUIDELINES OF SOLAR CERTIFICATION



APPLICABLE STANDARD SPECIFICATIONS

- ▶ EN 12975 Thermal solar systems and components - Solar collector
- ▶ EN 12976 Thermal solar systems and components - Factory made systems
- ▶ Other internationally recognized standards(if available) such as ISO, ASTM, GSO



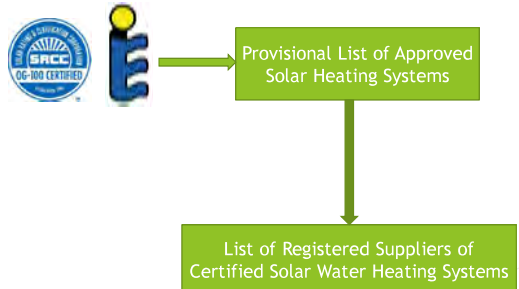
DCL GUIDELINES OF SOLAR CERTIFICATION

Requeriments for registration of suppliers

- ▶ The product has a valid certification by a recognized independent certification body such as "Solar Keymark", SRCC, or equivalent.
- ▶ The supplier submits an undertaking that the supplier will be responsible for the installation and maintenance of the solar water heating system.
- ▶ The suppliers submits an undertaking that they will provide a warranty for the product supplied according to the requirements of Circular (183) 20 11.



DCL GUIDELINES OF SOLAR CERTIFICATION



CONCLUSIONS

- ▶ RD-OP21-100G (IC)
- ▶ RD-DP21-2001 (IC)
- ▶ RD-DP21-2177 (IC)

Requeriments for registration
Solar Keymark
or SRCC
or equivalent.



Annex N (Item 34) PTB's technical cooperation in Northern Africa



TECHNICAL COOPERATION



PTB's Technical Cooperation & "Strengthening Quality Infrastructure for Solar Water Heaters in Northern Africa"

March 09 2016



TECHNICAL COOPERATION



First we take measurements, then we take measures.




TECHNICAL COOPERATION

The Physikalisch-Technische Bundesanstalt

The Physikalisch-Technische Bundesanstalt (PTB), the national metrology institute of Germany has existed for over 125 years.

With 2000 employees located at Braunschweig and Berlin, it is a global player in the world of metrology.





TECHNICAL COOPERATION

Tasks of PTB

FUNDAMENTALS OF METROLOGY Realization, maintenance and dissemination of the legal units of the SI	METROLOGY FOR THE ECONOMY Increase in the efficiency of the economy Safeguarding of employment
INTER-NATIONAL MATTERS Elimination of technical barriers to trade Standardization of metrology	METROLOGY FOR SOCIETY Promotion of consumer protection Safeguarding of living conditions

RESEARCHING | MEASURING | CONSULTANCY




TECHNICAL COOPERATION

Technical Cooperation

For 50 years, PTB has shared its core competence in international development cooperation. We support developing and emerging economies in the comprehensive field of quality infrastructure.







TECHNICAL COOPERATION


Our Profile. Integration and Recognition.

We support our partner countries in the development and utilization of an appropriate and internationally recognized quality infrastructure.

A central role is played by national, regional, and international networks in which our partners participate according to their priorities and skills.




Annex N (Item 34) PTB's technical cooperation in Northern Africa



TECHNICAL COOPERATION

Our Profile. Based on Partnership.

Our approach is based on partnership and is systemic and appropriate.
We are part of a global network and we are oriented towards international good practices.



QUALITY MADE BY PTB GERMANY.



TECHNICAL COOPERATION

Our Offering. Flexibility.

CAPACITY DEVELOPMENT

- Human Capacity Development**
 - Training and further education
 - Secondment
 - e-learning
- Technical Capacity Development**
 - Technology transfer
 - Intercomparisons
 - Round Robin tests
 - Accreditations

QUICK RESPONSE

- Partner consulting in the event of specific current issues
- Advice for BMZ, donor and implementation organizations

POLICY DIALOGUE


- Awareness raising
- Network building
- Regional integration

SCALING-UP

- Pilot projects, start-up financing
- Financial contributions
- Scientific-technological cooperation
- Alliances with global partners

QUALITY ASSURANCE


- Independent evaluations
- Project appraisals
- Studies and specialised publications
- Impact evaluation
- Development of new instruments




TECHNICAL COOPERATION

Our Profile. Multi-Level Approach.

We advise governments and ministries, promote institutions of quality infrastructure, and support smaller and medium-sized enterprises.



- International/Regional Organizations
- Policy/Decision Makers
- Regional Associations of Producers and Consumers
- QI Institutions
 - Business Service Providers
 - Business Membership Organizations
 - SME Promotion Agencies
 - Export Promotion Agencies
 - etc.
- Producers/Suppliers (local market and export)
- Consumers/Buyers

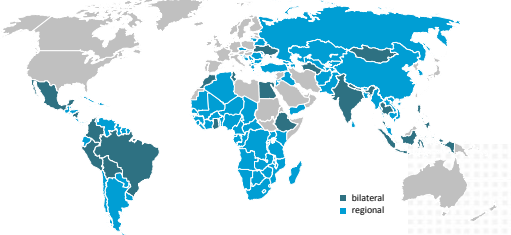



TECHNICAL COOPERATION

Our Project Partners. Worldwide.

43 projects in 81 countries
of which: 18 are bilateral projects
24 are regional projects
1 is a supra-regional project

Financial volume € 8 – 10 million annually
50 employees
Clients: BMZ, BMWi, EU, development banks, and direct orders





TECHNICAL COOPERATION

Our Cooperation Partners. Sustainable.

Brazil, Mexico, South Korea, South Africa, China, Turkey, India, Russia

BIPM, OIML, ISO, IEC, ILAC, IAF, WTO, ITC, World Bank, regional development banks, UNIDO, UNECE


2000 employees
100 laboratories
1000 committees

PTB

German facilities

BMW, BMZ, BMBF, BMU, BGR, GIZ, Engagement Global, DIN, BAM, DAKS, DGO, universities, associations ...

EU Commission, European QI (EURAMET, EA, CEN), Partner regions (SIM, APMP, COOMET, AFRIMETS, ...)



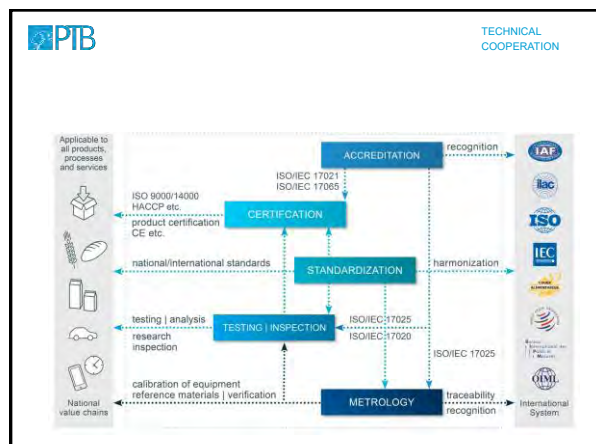


TECHNICAL COOPERATION



Quality Infrastructure. A Complex Network.

Annex N (Item 34) PTB's technical cooperation in Northern Africa



PTB TECHNICAL COOPERATION

Quality Infrastructure. A Contribution Towards Sustainability.

Sustainable economic development

- A contribution towards the promotion of employment and the reduction of poverty

Ecological sustainability

- Environmental and resource protection require long-term and reliable measurements

Sustainable social development

- A contribution towards the human right to health
- Fair competition is conditional on the adherence to the rules
- Good governance protects the citizens

PTB TECHNICAL COOPERATION

Energy projects worldwide

- India: Strengthening quality infrastructure in the solar industry
- Mexico: Quality infrastructure for renewable energies and energy efficiency
- Support to Mongolia's quality infrastructure with particular regard to the energy sector
- Latin America: Quality infrastructure for renewable energy sources and energy efficiency
- Brazil: Supporting conformity assessment procedures as well as measurement and testing techniques for the labelling of the energy efficiency of household appliances
- Tunisia: Quality infrastructure for photovoltaics
- Northern Africa: Strengthening quality infrastructure for solar energy



PTB TECHNICAL COOPERATION

Strengthening Quality Infrastructure for Solar Energy

Term

- 4 years (08/2012 – 07/2016)
- New project under preparation (09/2016 – 08/2020)

Budget

- 2.000.000 EUR

Partner

- 30 institutions of metrology, accreditation, standardisation, testing laboratories, universities and research centres in Tunisia, Algeria, Morocco and Mauritania


PTB TECHNICAL COOPERATION

Strengthening Quality Infrastructure for Solar Energy

Main activities

- Improvement of conformity assessment of SWH (testing, accreditation)
- Strengthening capacities of NSBs in the field of solar energy (e.g. harmonisation on regional level, participation in ISO TC meetings)
- Improvement of traceability of measuring techniques (wind speed, irradiation, flow rate)
- Development of a Blended Learning Course for university lecturers
- Awareness raising for policy makers (energy agencies) and target group (private sector)

Annex N (Item 34) PTB's technical cooperation in Northern Africa




TECHNICAL
COOPERATION

Strengthening Quality Infrastructure for Solar Energy

Results / open questions

- Testing laboratories in Tunisia and Algeria
- Calibration of wind speed measurement instruments, pyranometers
- 17 trained university staff, QI part of curriculum planned in Monastir, Tunis, Oran, Oujda, Marrakech
- 4 regional auditors for technical requirements (ISO 9806, ISO 9459, EN12975 & 6)
- Intercomparisons
- Calibration of instruments, customs
- Consumer protection, installation, inspection
- certification: labelling on national level, SHAMCI, Solar Keymark, Global Solar Certification



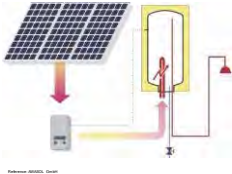
TECHNICAL
COOPERATION

Africa and the Middle East

Thank You Very Much For Your Attention.

Annex O (Item 36 Electric SWH)

Long term performance prediction of solar electric water heater
08-09.03.2016, 20th SKN-Meeting, Berlin



Long-term performance prediction of solar electric water heaters

Daniel Eggert,
ISFH – Calibration and Test Center
www.isfh.de

INS
INNOVATIONEN
STANDARDS

Supported by:
Federal Ministry
for Economic Affairs
and Energy
on the basis of a decision
by the German Bundestag

2

Project summary information

Title
Performance test of solar electric water heaters (INS 1469)

Project manager
DIN e.V. - German Institute for Standardization

Subcontractor
ISFH - Institute for Solar Energy Research Hameln

Duration
February 2016 - August 2016

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STANDARDS

Supported by:
Federal Ministry
for Economic Affairs
and Energy
on the basis of a decision
by the German Bundestag

2

Objectives

- Development of a test procedure for solar electric water heaters based on the dynamic system test according to ISO 9459-5
- Validation of the test procedure
- Preparation of proposals for consideration of solar electric water heaters in the standards ISO 9459-5 and EN 12975

INS
INNOVATIONEN
STANDARDS

3

Description

1. Simulation modeling and adaptation of ISO 9459-5 test sequences for the dynamic system test of solar electric water heaters
 - using TRNSYS and GenOpt for parameter fitting and simulation instead of the generally used software DF (InSitu) which is limited to solar thermal systems

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STANDARDS

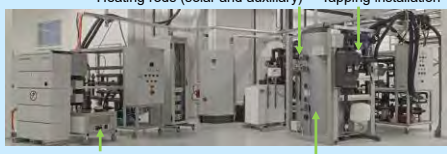
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Description

2. Dynamic system test of solar electric water heaters with day sequence measurements
 - outdoor and indoor

Indoor test facility:

Heating rods (solar and auxiliary) Tapping installation



PV-emulator Thermal store

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INNOVATIONEN
STANDARDS

6

Description

2. Dynamic system test of solar electric water heaters with day sequence measurements, parameter identification and long term performance prediction
 - considering solar-only systems and solar-plus-supplementary systems
 - varying the system dimension

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STANDARDS

6

Description




1. Simulation modeling and adaptation of ISO 9459-5 test sequences for the dynamic system test of solar electric water heater
2. Dynamic system test of solar electric water heaters with day sequence measurements, parameter identification and long term performance prediction
3. Preparation of proposals for consideration in the standards
4. Dissemination of results in standardization boards and expert networks

ITW Institute for Thermodynamics and Thermal Engineering
Research and Testing Centre for Thermal Solar Systems (TZS) 

New equivalent absorber coating
Sungain
Alanod-Xxentria

Stephan Fischer
Institute for Thermodynamics and Thermal Engineering (ITW)
Research and Testing Centre for Thermal Solar Systems (TZS)
University of Stuttgart
Pfaffenwaldring 6, 70550 Stuttgart, Germany
Email: fischer@itw.uni-stuttgart.de
Internet: www.itw.uni-stuttgart.de


Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

ITW Institute for Thermodynamics and Thermal Engineering
Research and Testing Centre for Thermal Solar Systems (TZS) 

SKN_N0137_R11 Requirement #1

1. Two identical collectors (apart from the absorber coating) are compared to verify the equality of the two coatings. The absorbers of the two collectors must be made of the same material and must have the same thickness. One of the collectors is coated with one of the reference coatings fulfilling the following requirements: alpha \geq mean value of alpha values in the group - 1 % point; epsilon \leq mean value of epsilon values in the group + 1 % point. The mean value shall be given and updated each time a new member is included. The other collector is coated with the new coating.

Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

ITW Institute for Thermodynamics and Thermal Engineering
Research and Testing Centre for Thermal Solar Systems (TZS) 


SKN_N0137_R11 Requirement #1

Coatings on aluminium

Aluminium - Equivalent Group 1	α	ϵ	Reference to decision
Alanod MIRO-THERM 0.5 mm, MT 1300	0.936	0.018	D5.M6, SKN_N0131R0
Bluetec eta plus_al	0.95	0.05	D5.M6, SKN_N0219R0
TiNOX energy Al	0.944	0.031	D6.M8, SKN_N0115R0, SKN_N0129R0
Solarceo on Al	0.95	0.05	D1 Correspondance, SKN_N0219R0
Mean values	0.945	0.03725	

alpha \geq mean value of alpha values in the group - 1 % point **Ok**
epsilon \leq mean value of epsilon values in the group + 1 % point. **Ok**

Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

ITW Institute for Thermodynamics and Thermal Engineering
Research and Testing Centre for Thermal Solar Systems (TZS) 


SKN_N0137_R11 Requirement #1

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Solarceo on Al	0.95	0.05	D1 Correspondance, SKN_N0219R0
Mean values	0.945	0.03725	

alpha \geq mean value of alpha values in the group - 1 % point **Ok**
epsilon \leq mean value of epsilon values in the group + 1 % point. **Ok**

Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016


ITW Institute for Thermodynamics and Thermal Engineering
Research and Testing Centre for Thermal Solar Systems (TZS) 

SKN_N0137_R11 Requirement #2

2. The durability and reliability tests according to EN 12975-2 (being relevant with regard to the absorber, thus 5.3 High Temperature Resistance, 5.4 Exposure and 5.6 Internal Shock) for the collector with the new coating performed by an EN12975 accredited test lab are successfully passed.

Ok,
see Solar Keymark Certificate 011-7S2401 F

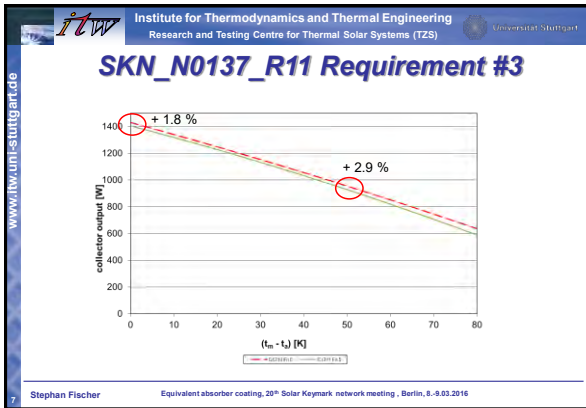
Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

ITW Institute for Thermodynamics and Thermal Engineering
Research and Testing Centre for Thermal Solar Systems (TZS) 

SKN_N0137_R11 Requirement #3

3. The power curves (for $G = 1000 \text{ W/m}^2$) determined by an accredited test lab for the two collectors with different coatings shall not differ by more than 2% of the peak power at a temperature difference of 0 K and not more than 2% of the peak power at a temperature difference of 50 K. Peak power is the module power at temperature difference at 0 K.

Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016



SKN_N0137_R11 Requirement #4

4. The absorptance and emittance of the different coatings under question shall have - according to the specifications of the manufacturer - equivalent optical properties ($\alpha_1 = \alpha_2 \pm 1\%$ point at most, $\epsilon_1 = \epsilon_2 \pm 1\%$ point at most) and the same range of the production variability, e.g. $0.95 \pm 2\%$ points.

Specification Sungain:
 $\alpha = 95.5 \pm 1$
 $\epsilon = 5 \pm 2$

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Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

SKN_N0137_R11 Requirement #5

5. The durability of the absorber coating is tested according to the requirements of the Solar Keymark Network.

Coating process:

ask X

Fraunhofer IZT Gebrauchsdaueranalyse und Umweltsimulation	
Test certificate	
Durability of solar absorber coatings - Part 1	
Durability of solar absorber coatings for permanent exposure to weathering conditions in the laboratory (according to the requirements of the Solar Keymark Network).	
Sample description:	
Material	Aluminum nitride (AlN)
Coating process	Physical vapor deposition (PVD)
Sample size	100 mm x 100 mm
Test conditions	1000 h, 1000 h, 1000 h
Test results	1000 h, 1000 h, 1000 h
Test date	10.03.2016
Test location	Berlin, Germany
Tested by	Stephan Fischer
Reviewed by	Stephan Fischer
The test results show that the durability of the absorber coating is in accordance with the requirements of the Solar Keymark Network.	

Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

SKN_N0137_R11 Requirement #6

6. The interchange ability is accepted by the Solar Keymark Network

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Stephan Fischer Equivalent absorber coating, 20th Solar Keymark network meeting, Berlin, 8.-9.03.2016

