

Solar Keymark Network

Experience exchange circle of test labs and certifiers
working according to the Solar Keymark scheme rules



Minutes

8. Solar Keymark Network Meeting March 15th – 16th, 2010; Rapperswil, Switzerland

Item 1: Opening of the meeting

The chairman of the Solar Keymark Network (SNK), Harald Drück, opened the meeting and welcomed the participants. Matthias Rommel from SPF Institut für Solartechnik SPF, Hochschule für Technik Rapperswil HSR gave a short presentation about SPF and HSR. Harald Drück thanked Institut für Solartechnik SPF, Hochschule für Technik Rapperswil HSR and especially Matthias Rommel, Andreas Bohren and Sebastian Laipple for hosting the meeting. Furthermore he thanked Jan Erik Nielsen as the Secretary of the Solar Keymark Network for the excellent preparation of the meeting.

As introduction Harald Drück gave a short explanation about the Solar Keymark Network. The main task of the SK-Network is to agree on uniform procedures between the different institutions (accredited solar thermal test labs, certifiers, inspectors and manufacturers) working according to the Solar Keymark scheme rules as well as the further development of Solar Keymark certification.

The meeting took place from Monday, March 15th, 2010, 12:30 hrs till Tuesday March 15th, 2010, 13:00 hrs in the premises of HSR at Rapperswil, Switzerland.

The first invitation including the 3rd draft agenda of the meeting was sent out by email from Jan Erik Nielsen dated February 11th, 2010.

In the following weeks updated versions of draft agendas were send out and were also available via the Solar Keymark Internet site. The latest version of the agenda was named “Revised final draft (7th draft) agenda” (File SKN_N0119R8.doc dated 14/3 2010).

The draft agenda was discussed and the following changes were made:

- On request of Martin Meingassner (representing Austria Solar) the topic “collector reference area” was included as item 39.1

The agenda resulting from this change was agreed on by the participants. This final agenda is available via the Solar Keymark Internetsite as document number SKN_N0119R9 (File: SKN_N0119R9.doc)

Item 2: Introduction of participants

The participants introduced themselves and mentioned their nominating organisation or institution respectively. The list of participants that attended the meeting is attached as Annex A.

It was agreed that the voting preconditions according to clause 4.2 of the Solar Keymark Network internal regulations (Document SKN_N0102R3) are fulfilled.

Item 3: Approval of the minutes of the 7. meeting

Harald Drück mentioned that the minutes of the 7th Solar Keymark Network meeting (File: SKN_N0118R0.pdf 20/09/2009) were sent out by email dated September 18th, 2009 by Jan Erik Nielsen.

The only comment received within 30 days after sending out the minutes was the following one from Liauw Hoang from CEN/CMC (dated 28/09/09) related to the item 7 (CEN fees)

"Liauw Hoang from CEN/CMC refereed to his email send out on July 3rd, 2009 to Jan Erik Nielsen et. al. (included as Note 7 in document N0103R7) and mentioned that his organisation is considering a complete review of the licence fees, in response to the SKN proposal established [D1] an internal working group in order to elaborate an appropriate proposal how to deal with the licence fees in the future. He also mentioned the legal ownership of the Keymark by CEN and the fact, that he needs an agreement from CEN related to general fee issues. The earliest date a proposal for a new fee scheme is expected to be at the beginning of 2010.¶

It was agreed that this comment is not of such substantial nature that it requires the preparation of a new version of the minutes.

The minutes of the 7th Solar Keymark Network meeting (File: SKN_N0118R0.pdf 20/09/2009) as sent out by email dated September 18th, 2009 by Jan Erik Nielsen were unanimously approved by the participants present.

Item 4: Review of Solar Keymark Network decision list

Harald Drück mentioned that the current version of the Solar Keymark Network decision list is document N0100R2 (File SNK_N0100R2.PDF). This version is dated September 11, 2009 and contains all decisions made by the SKN until September 2009 (including the decisions from the meeting held in Brussels, Belgium in Sept. 2009).

With regard to the Solar Keymark Network decision list, Carsten Lampe mentioned that at decision D5.M7 the statement related to the voting result is missing. This statement is at present listed below decision D11.M7.

Harald Drück thanked Carsten Lampe for this hint and asked the secretary of the Solar Keymark Network to correct this fault.

Note: The Solar Keymark decision list is available via www.solarkeymark.org.

Item 5: Solar Keymark Network document list & Solar Keymark Network distribution list

Jan Erik Nielsen presented the **SKN document list** (SKN_N0000) and the **SKN distribution list** (document SKN_N0001; file SKN_N0001.xls) and mentioned that there are already a lot of documents in the list. Furthermore he excused for sending out a version of the document list where not all hyperlinks to the documents were working. In this context he thank for the hint related to this problem and mentioned that he corrected the hyperlinks immediately.

Item 6: Nomination of national industry representatives (what if more than one national association exists?)

In the” Solar Keymark Network Internal Regulations” (Document SKN_N0102R3.PDF) in section 2.1.2 it is mentioned “*Up to two national industrial representatives shall when possible be nominated by national solar thermal trade associations*”.

The question is now how to deal in cases where more that one trade national trade association exists? According to the participants this is at present the case in Germany and Italy.

After a short discussion the following decision was made:

Decision D1.M8 – Nomination of industry representatives by national solar thermal trade associations

In countries where more than one national solar thermal trade association exists each trade association can nominate up to two national industrial representatives for participation in the Solar Keymark Network.






This decision was taken unanimously.

Item 7: Revised scheme rules

Jan Erik Nielsen informed the participants about revisions in the Solar Keymark scheme rules related to the following topics:

- Flexible system certification is now accepted and first experience in applying the method is being gained at the test labs.
- The scheme rules have now new type definitions (new main type and sub type definitions). Main reason for the change in definitions was to lower the CEN fees.
- New Solar Keymark Network fees.
In this context he mentioned that due to the reduced fees and the only slightly reduced payments from industry, money for the Solar Keymark Network will be generated (see also item 38 related to Solar Keymark foundation)

With regard to the definition of system families in the Solar Keymark Scheme rules in Annex D Francois Xavier Ball mentioned the following points :

<p style="text-align: center;">Solar Keymark System Families : proposal for changes in the requirements for grouping different configurations into one system family (Annex D – D.2)</p> <p style="text-align: center;"> SKN Meeting March 15th and 16th, 2010</p>	<p style="text-align: center;">Heat transfer fluid</p> <ul style="list-style-type: none"> • Current specification : “Same type of liquid (<i>same brand and same water mixing percent</i>)” • Modified specification proposed : “ Same type of liquid (<i>same reference corresponding to specified density, heat capacity and viscosity</i>)” <p><i>Rationale : A given product can be supplied using different commercial names, which the fluid supplier may change at any time.</i></p> <p style="text-align: center;"> SKN Meeting March 15th and 16th, 2010</p>
<p style="text-align: center;">Tank(s)</p> <ul style="list-style-type: none"> • Identification - modified text proposed : “Same brand or reference corresponding to the same range of products (which can be marketed using different names)” • Insulation and heat loss - it is proposed to replace the current specifications by : “restricted variation of heat loss coefficient (Wh//K/day): maximum 40% relative variation allowed within a family” <p><i>Rationale :</i> The means used to control the relative variation in insulation should not be specified; the focus should be put on the results, not on the selection of the insulating material.</p> <p style="text-align: center;"> SKN Meeting March 15th and 16th, 2010</p>	<p style="text-align: center;">Pipes / piping</p> <p>It is proposed to remove the requirements, because the piping and its insulation depend on the final installation and the end-use conditions. For testing purposes, the annex B of EN 12976-2 provides the information needed.</p> <p style="text-align: center;"> SKN Meeting March 15th and 16th, 2010</p>
<p style="text-align: center;">Pump(s)</p> <ul style="list-style-type: none"> • Identification : it is proposed to replace “same brand” by “ same specifications” • Power : it is proposed to have no restriction on the relative variation of nominal power. <p><i>Rationale :</i> as long as the flowrate of the pump is appropriate for the considered model, it seems not necessary to have a requirement on the nominal power.</p> <p style="text-align: center;"> SKN Meeting March 15th and 16th, 2010</p>	

As a result of the discussion several changes were performed in Annex D. The New version is available as document N106R6AnnexDR3 .

Decision D2.M8 – Revised version Solar Keymark Scheme Rules, Annex D
The participants present decided to accept the document N106R6AnnexDR3.

This decision was taken unanimously.

Item 8: Complaint on Solar Keymark Network secretary

Sören Scholz from DIN CERTCO complained about the Solar Keymark secretary Jan Erik Nielsen, because he did not follow the internal regulations in connection with the decisions related to the new fees made at the 7th Solar Keymark Network meeting. Jan Erik Nielsen argued that he had a mandate from the latest Solar Keymark Network meeting for solving the issue related to the fees and further more there was a high time pressure since the subject had to be solved before the end of 2009. However it might have been the case that he acted in the “grey zone”.

There was a consensus that in the future such actions in the “grey zone” should be avoided. Furthermore it was agreed that this singular event does not imply the need for changing the internal regulations.

Item 9: Complaint on certification bodies

Jan Erik Nielsen complained about the fact that he, as the secretary, does still not receive all data sheets in the correct format. According to the Decision D4.M7(Solar Keymark Database: Update procedure and brand) the certification body shall send by e-mail the data sheet in a harmonised Excel format and PDF format to the Solar Keymark Network Secretary (Email: jen@solarkey.dk)

In this context it was also mentioned by Costas Travasaros that it is necessary to have a list of documents required by the certification bodies. In order to provide a basis for future discussions related to this topic Costas Travasaros will prepare a draft proposal for such a list.

Item 10: Procedure for complaints on SKN test institutes

Jan Erik Nielsen raised the question: what to do if a manufacturer doubts the results of a test lab, e.g. due to the fact that he has different results for the same product from two test labs.

It was agreed that as a first step the manufacturer should discuss the subject with the corresponding test institutes. If this does not lead to a consensus the manufacturer should address a complain to the certifier.

In serious cases the manufacturer or complainer respectively should contact the accreditation body responsible for the test lab.

Item 11: Pressure drop equation parameters to be included in SK collector data sheet

Peter Kovacs proposed to re-include the information on pressure drop again in the Solar Keymark data sheet for collectors. One reason is that in EN 12975-1 the pressure drop is as compulsory information required to be stated in installers manual.

A discussion of about 15 min did not lead towards a consensus. Questioning the manufacturers present lead to the result that the majority of the manufacturers prefers to have the pressure drop test on a voluntary basis (as it is already the case now).

Item 12: Extension of Solar Keymark Certification to New Subtypes of Solar Collectors

João Santos from CERTIF raised the question if it is possible to certify a new member of a vacuum tube collector family with 30 tubes without any new tests on the basis of test performed on collectors with 12 and 20 tubes.

The topic was disused and a working group was created. The working group elaborated the proposal listed in the following decision:

Decision D3.M8 – Extension of Solar Keymark Certification to New Subtypes of Solar Collectors

The definition of the biggest collector and the smallest collector is done at the initial test. If later a bigger size or smaller size is added to the collector family this is resulting in a new definition for the existing family. If there is a new biggest collector added this will require performance testing and reliability testing of this collector. If there is a new smallest collector added this will require performance testing on the smallest collector.

This decision was taken unanimously.

Item 13: Including collector annual output in data sheets

Peter Kovacs from SP prepared an Excel based tool for the calculation of the annual collector output. The tool is available via www.solarkeymark.org.

The effort was appreciated and it was agreed to include the tool in the Solar Keymark scheme rules. The level of the inclusion (e.g. shall, should, could) will be decided at a later stage.

The need was seen for a further validation of the tool before it can be included in the Solar Keymark scheme rules. This activity will be performed by a working group consisting of the following persons:

Peter Kovacs (chairman), Andreas Bohren, Stephan Fischer, Korbinian Kramer, Maria João Carvalho, Giorgos Panaras

The group should present a document describing the validation prior to the next Solar Keymark Network meeting.

Item 14: Flexible system certification/testing, experience/problems with new “flexible testing”

In addition to the topics discussed under item 7 the following question was raised by Sören Scholz:

How to deal with cases where the collector certification is already performed by an other certification body than the one approached now by the manufacturer for the certification of the system?

With regard to this question the main problem to be solved is to ensure that the corresponding information about the certified product (collector) will always be forwarded to the second certification body (in this case DIN CERTCO), who would issue the certificate for the solar thermal system.

The topic was discussed and the following decision was made:

Decision D4.M8 – Certification of systems by using collector Solar Keymark certificates from a different certification body

The participants present decided that in general a certifier has to perform Solar Keymark system certification based on collector Solar Keymark certificates issued by other certification body.

In order to ensure that no system certificates are based on withdrawn collector certificates, Jan Erik Nielsen will elaborate an appropriate procedure.

This decision was taken with one negative vote.

Note:

According to the existing rules the manufacturer is already today required to inform, in addition to the certifier of the collector, also the certifier of the system about any changes related to the collector. In order to be sure that the manufacturer informs the certifier of the system about a withdrawal of the certificate for the collector, it is recommended to state the obligation clearly in the contract between the certifier of the system and the manufacturer.

Item 15: System data sheet – new version

Since no new version of the system data sheet prepared by Jan Erik was available this topic was not discussed.

Item 16: Influence of tapping time on system performance

Related to this aspect Sebastian Laiple presented document N0124R0. The key result is that there is a not neglectable influence of the tapping time on the system performance.

Decision D5.M8 – Hot water tapping times

It was decided that the following tapping times should be used for the performance prediction:

Table 1: Data of reference locations and adjusted tapping time.

Reference locations	Longitude ¹	Time zone	Adjustment of standard time	Tapping time (CET ²)
Stockholm	18.07°	1	-0.20	17.80
Würzburg	9.90°	1	0.34	18.34
Davos	9.82°	1	0.35	18.35
Athens	23.70°	2	0.42	18.42

(table extracted from N0124R0) **Note:** Time given in Table 1 are decimal figures

Furthermore it was agreed that there is no need to re-calculate the results presented in already existing test reports.

The explicit tapping times should be included in a future version of EN 12976-2 and CEN/TS 12977-2.

This decision was taken unanimously.

Item 17: Simulation of low solar radiation testing days using solar radiation shield during thermal performance tests of factory-made systems according to the CSTG-method

Fabienne Sallaberry presented the issue described in document N0125R0 with the power point presentation attached as Annex B. The effort was appreciated and discussed. It was agreed that the proposed procedure is in principle promising but needs to be further validated.

Stamatios Babalis and Giorgos Panaras from the test lab “Demokritos” in Athens and Maria João Carvalho from “INETI” in Lisbon mentioned that they are interested in applying the procedure.

Item 18: Systems to be included in database

Jan Erik Nielsen mentioned that he intends to transform the data base for systems to the same software basis used for the collector data base. This work will be finished in approx. 3 weeks.

Item 19: Updating database – send new data sheets when ready

Jan Erik Nielsen encouraged the test labs to send him newly prepared collector and system data sheets as soon as they are finalised; see also item 9.

Item 20: Harmonised detailed technical input format to be used when applying for Solar Keymark certification

Jan Erik Nielsen mentioned that in context with flexible system certification there is the need for a huge amount of information to be collected related to the system and its sub components (e.g. piping, valves, controllers).

In order to collect this information in a structured way it was agreed to elaborate and excel file. As a first step Jan Erik Nielsen will send around a draft version of the excel file for collecting this information and asks for comments.

Item 21: Flexible collector certification**New absorber coatings**

Franz Helminger presented documents N0128R0, N0129R0, N0130R0 and N0131R0 related to a “Proof of equivalence of different coatings based on the Decision D1.M5 of the Solar Keymark Network” for the TiNOX energy Al coating (in relation to the Alanod MIROTHERM coating)

After a short discussion the following decision was made based on the above mentioned document.

Decision D6.M8 – Validity of Solar Keymark certificates in case of Alanod MIROTHERM and TiNOX energy Al coating

The participants present decided that in context with decision D1.M5, coatings on aluminium absorbers with the following brand names are considered as equivalent:

Alanod MIROTHERM and TiNOX energy Al and Bluetec eta plus_al

Note: This decision extends decision D1.M5: decision D5.M6 (Validity of Solar Keymark certificates in case of absorbers selective coated by different manufacturers check) and decision D9.M7 (Validity of Solar Keymark certificates in case of Tinox energy CU coating)

This decision was taken unanimously.

The discussion related to this topic showed that a revision of decision D1.M5 (Validity of Solar Keymark certificates in case of absorbers selective coated by different manufacturers are used) is needed. This is especially relevant with regard to the criteria specified in decision D1.M5.

For that propose the following **working group** was created:

Andreas Bohren (WG-leader), Korbinian Kramer, Stephan Fischer, Carsten Lampe, Christian Stadler, Franz Helminger, Costas Travasaros and Hannes Zannantoni.

The task of the working group is to elaborate a proposal as basis for a decision at next meeting.

Thermal insulation material

Criteria for considering different types of thermal insulation material for solar collectors as equivalent will be elaborated by Stephan Fischer and Andreas Bohren.

Item 22: Show always licence number together with Keymark

Jan Erik Nielsen and Sören Scholz mentioned that if the Solar Keymark licence number is always shown on the collector identification plate it would help to avoid misuse. The topic was discussed and as a result the following decision was made:

Decision D7.M8 – Display of Solar Keymark licence number on collector

The participants present decided that for new Solar Keymark certificates issued from 01. May 2010 onwards it is only allowed to display the Solar Keymark logo on the collector together with the Solar Keymark licence number.

For Solar Keymark certificates issued before 01. May 2010 it is required to display the Solar Keymark licence number together with the Solar Keymark logo (in case the logo is displayed) from 01.May 2011 onwards on the collectors.

This decision was taken with one negative vote.

The discussion related to this topic showed that there is need of a similar requirement related to systems. However, since systems can be composed of different collector types and store types practical problems occur related to the question of the location of the

licence number together with the logo. Since at present there are not that many systems, it was agreed to postpone a more deep discussion of this point.

There was a consensus related to requirement to avoid the use of the Solar Keymark logo in such a way that the customer is misled (e.g. displaying the logo on a page of a brochure with several products not Solar Keymark certified).

Item 23: Keymark for uncovered collectors

Jan Erik Nielsen mentioned that there are Solar Keymark certified uncovered collector (absorbers) on the market that are used in combination with a heat pump. This fact led to the request to exclude uncovered collectors from Solar Keymark certification.

After a short discussion the following was decided:

Decision D8.M8 – No Solar Keymark for uncovered collectors

Uncovered solar collectors shall not be excluded from Solar Keymark certification.

This decision was taken with one negative vote.

The request for excluding uncovered solar collectors from Solar Keymark certification is mainly based on the fact that in some countries Solar Keymarked products (including uncovered absorbers operated in combination with a heat pump) can benefit from subsidies.

There was a consensus that subsidy schemes should also take into account the electrical energy consumption of a solar thermal systems.

A working group was established in order to elaborate mechanisms for avoiding the misuse of Solar Keymark certification for non solar products.

Members of the **working** group are:

Costas Travasaros, Jean Marc Suter, Rob Meesters, Carsten Lampe, Christian Stadler, Fabienne Salaberry

Note: It was not possible to identify a leader of the working group

The working group shall prepare a proposal as a basis for a decision at the next meeting.

Item 24: Keymark for hot water stores according to EN 12977-3

Jan Erik Nielsen reported about the wish of different manufacturers to have a Solar Keymark for hot water stores. This approach was appreciated and a working group for the elaboration of Solar Keymark scheme rules for solar hot water stores was created consisting of the following persons:

Jan Erik Nielsen (lead, provided that funding is available), Peter Kovacs, Korbinian Kramer, Wolfgang Striewe, Carlo Vassella, Vinod Sharma, Harald Drück

The working group shall prepare a proposal as a basis for discussion at the next meeting.

Item 25: moved to Item 37

Item 26: Harmonised procedure for physical inspection / surveillance

Francois Xavier Ball mentioned that within the working group formed at the latest meeting related to this issue it was not possible to reach a consensus. The document N0106R6annexA reflects the current status of the discussion.

In this context Andreas Bohren introduced the documents N0121R0 (Proposal Periodic Surveillance Procedure). The discussion showed that especially with regard to the performance test required every two years in document N0121R0 no consensus could be reached. This impression was also validated by an indicative vote among the national industry member representatives.

In order to get an idea how other certification schemes of other products deal with this subject Susanne Hansson presented the following overview :

<p style="text-align: center;">Keymark requirements</p> <p>1. Surveillance inspection every year</p> <p>2. Tests at least every second year</p> <p style="text-align: center;">-----</p> <p style="text-align: center;"><i>SK – same req’s and performance not depending on which certification/ inspection body it is</i></p> <p>2010-03-15 Thoughts/possibilities</p>	<p style="text-align: center;">1 Surveillance inspection</p> <p>a) Annual SK inspection, standard report</p> <p>b) If ISO 9001 - SK surveillance every 2 years, standard report important, reports from ISO 9001 sent to Cert/Insp body between SK insp</p> <p>c) If ISO 9001 - ISO auditor performing also the SK surveillance every year, standard report important, reports from ISO 9001 sent to Cert/Insp body. Cert/Insp body can perform own inspection as a choice</p> <p>d) ?</p> <p>2010-03-15 Thoughts/possibilities</p>
<p style="text-align: center;">2.1 Tests every second year - lab tests/exams</p> <p>Selection of lab tests/examination</p> <p>a) on all certified products. What tests?</p> <p>b) for a selection of products? What tests, what products?</p> <p>c) year2 test x, year4 test y, year6 test z. What tests what year?</p> <p>d) as combined test, by the manufacturer chosen to year 4 or 6</p> <p>e) Examination from market?</p> <p>f) No lab tests or examinations?</p> <p>g) ??</p> <p>2010-03-15 Thoughts/possibilities</p> <p>a) Not practical to perform</p> <p>b) Still a lot of tests. Not fair to comp with only 1 or a few products</p> <p>c-d) Enough for covering the req.? Enough for granting the prod quality?</p> <p>e) Enough for covering the req.? Enough for granting the prod quality? Enough as tests?</p> <p>f) How to motivate?</p> <p>g) ??</p>	<p style="text-align: center;">2.2 Tests every second year - tests/exam at the manufacturer</p> <p>Selection of tests/examinations performed during the inspection at the manufacturer</p> <p>a) Tests possible as a choice?</p> <p>b) What tests, what products?</p> <p>c) year2 test x, year4 test y, year6 test z. What tests what year?</p> <p>d) as combined test, by the manufacturer chosen to year 4 or 6</p> <p>e) examination/physical product inspection only</p> <p>f) ??</p> <p>2010-03-15 Thoughts/possibilities</p> <p>a) Some tests might be possible to perform? Question re if equipment is available? Good for the manufacturer not having to send samples and pay for tests.</p> <p>b-d) Difficult to chose since it might be depending on the manufacturer</p> <p>e) Enough for covering the req.?. Enough for granting the prod quality? Normally for a lot of products this would be yes</p> <p>f) ??</p>
<p style="text-align: center;">Comparison to other product certification</p> <p>CPD Construction Buildings Directive</p> <p>- Stoves, fire appliances, septic tanks, Ind and garage doors - ITT by NB, no follow up visits</p> <p>- Tree, house constructions, windows, floor covering – ITT and follow up visits every year</p> <p>2010-03-15 Thoughts/possibilities</p>	<p style="text-align: center;">Comparison to other product certification</p> <p>MID Measuring Instruments Directive</p> <p>Products: Electricity meters, water meters, heat meters, fuel pumps for distr, taxi meter, length measures, weighing instruments (instruments for costs)</p> <p>Type Test required – module B, certificate 10 years</p> <p>Follow up alt: Module D – full quality assurance, visits every year</p> <p>Module F NB test the delivery batches, often all samples, not only selection. Not repeated.</p> <p>Module H/H1 NB full assessment of the manufacturer’s construction and quality control, initial and every year.</p> <p style="color: red;">Conclusion for CPD and MID (and for a lot of other certification schemes); not very often "after tests" are required.</p> <p>2010-03-15 Thoughts/possibilities</p>

As a result of the discussion the following decision was made:

Decision D9.M8 – Procedure for physical inspection / surveillance

The participants present decided to proceed with the physical inspection and surveillance test as it is already present common practice. This means a physical inspection as described in the Solar Keymark scheme rules every second year.

The latest version of documents N0122R0 (Checks and controls for solar collectors) and N0123R0 (Checks and controls made of the solar heating system) shall be used for the inspection reports.

This decision was taken with one negative vote.

Item 27: Input to Solar Keymark Factory Inspection Report

Susanne Hansson presented (instead of Thomas Ljung) a modified version of the Solar Keymark factory inspection report originally elaborated with the Solar Keymark II project.

Since there is in the Solar Keymark scheme rules in section 5 a reference to Annex A1 (factory inspection report) and since this Annex A1 is at present missing, action is required to provide a format for a factory inspection report.

Decision D10.M8 – Factory inspection report

The participants present decided that the document N0132R0 (factory inspection report) shall be used for reporting.

This decision was taken with one negative vote.

Item 28: Proposal for voting on harmonised requirements related to Solar Keymark for collectors

Stephan Fischer presented the Document N0120R0 on harmonised requirements related to documentation to be provided for factory inspection of Solar Keymark collectors. After a short discussion of the document to following decision was made:

Decision D11.M8 – Harmonised requirements for documentation provided by collector manufacturer for factory inspection

The participants present decided that the documentation required in Annex A of N0120R0 (extended by information related to method for connecting the absorber plate and the piping e.g. laser welding, soldering) has to be provided by the solar collector manufacturer in the context of a factory inspection.

This document will be included as Annex A3 in a revised version of the Solar Keymark scheme rules.

This decision was taken unanimously.

Note: The requirements resulting from Annex B of N0120R0 (Collector label) are already required by EN 12975-1:2006, section 7.2 (labelling)

With regard to N0120R0 Annex C (installer instruction manual) there was a consensus that the installer instruction manual has to be checked with regard to the aspects listed in the standard EN 12975-1:2006; section 7.3 and N0120R0 respectively.

Item 29: ISO 9001 and annual inspection requirements

After a short discussion the following decision was taken:

Decision D12.M8 – Annual inspection requirements in case of ISO 9001 certification

In case the manufacturer is ISO 9001 certified by a certifier accredited by a national accreditation body being a member of IAF (International Accreditation Forum) (www.iaf.nu) a Solar Keymark factory inspection is only required every second year provided the ISO 9001 report is made available to the certifier.

Based on conclusions of previous audits, interim inspections can be requested by the certifier.

This decision was taken with two negative votes.

Item 30a: Solar Keymark Remote Random Sampling Procedures

The documents N0126R0 (Remote Random Sampling of Collectors and Systems for Solar Keymark Certification) and N0127R0 (Instructions for Completing Random Selection via Photographs) were discussed and the document N0126R0 was slightly revised. After the end of the discussion the following decision was made:

Decision D13.M8 – Remote Random Sampling procedure.

The participants present decided that a remote sampling procedure as described in N0126R1 and N0127R0 can be performed for picking samples for Solar Keymark type testing.

This decision was taken unanimously.

Item 30b: Double inspection - recognition of Solar Keymark inspection reports

Some certification bodies do not accept inspections done by other Solar Keymark certification bodies / inspectors. This statement was discussed and it was agreed that the subject is in principle already dealt with in item 14 and decision D2.M8.

Item 31: Proposal concerning Participation in the SKN – change of internal regulations

Andreas Bohren mentioned that some test labs and a huge number of inspectors do not attend the SKN meetings. This leads to a lack related to “Solar-Keymark-knowledge”. In order to solve this problem, action has to be taken.

The subject was discussed and the discussion showed that leaks in knowledge and performing procedures in a uniform way are mostly related to the inspectors. During the discussion it was mentioned several times by representatives from certification bodies that the inspectors are fully in their responsibility.

In order to ensure appropriate Solar Keymark specific know-how transfer to their inspectors and an uniform inspection metrology, it was agreed that the certifiers present a common proposal for an approach achieving this goals at the next meeting.

Representatives from all Solar Keymark certifier shall participate in this working group. The working group will be led by Sören Scholz.

Item 32: Concentrating collectors

Joakim Bynström presented the subject by using the presentation attached as Annex C.

The topic was discussed and there was a consensus that in the future a Solar Keymark for tracking concentrating collectors will be valuable. A working group was established: The working group will elaborate, together with TC 312 WG1 a proposal for elaborating appropriate procedures (e.g. extending the standard and modification of the Solar Keymark scheme rules respectively). A proposal will be presented at the next meeting for discussion / decision.

Members of this group, that is a subgroup of TC 312 WG 1, are:
Peter Kovac (lead), Enric Mateu Serrats, Ana Neves, Korbinian Kramer, Andreas Bohren, Stephan Fischer, Stefan Mehnert, Pilar Navarro Rivero.

Item 33: Information from TC 312

Jan Erik Nielsen mentioned that the next TC 312 will take place on March 17 & 18, 2010 at Rapperswil. The most remarkable aspect concerning this meeting is that Mr. Emmanuel Kastanakis as present chairman, announced last Friday that he will not attend the meeting. Jan Erik Nielsen will convene the meeting as interim chairman.

Item 34: Information from QAIST-Project

The Project QAIST (Quality assurance in solar thermal heating and cooling technology – keeping track with recent and upcoming developments) started officially on June 1st, 2009 and has a duration of 3 years. Project co-ordinator is Pedro Dias from ESTIF.

He presented the project by using the presentation attached as Annex D. After the presentation no questions were asked.

Item 35: Eco-design and energy labelling

Gerard van Amerongen mentioned that eco-design methods are being developed. ESTIF is actively involved in this development. Since time was quite short he limited his presentation on the required inputs of test results. With regard to the specific standards these are

EN 12975-2:

An agreement on the principle in the current implementation should be accepted. A few changes to the text of the eco-design method have been proposed and it has now to be seen if these changes will be implemented in the final documents

EN 12976 or ISO 9459 respectively.

Since it is required for the eco-design methods that the annual solar output should be according to eco design climate and load profiles this excludes ISO 9459-2 (CSTG-method) but includes ISO 9459-5 (DST-method)

EN 12977-3:Store losses and heat exchanger efficiency

It could be the case that for the eco-design methods also a store energy label could be required. Such an energy label is now under development. First indications are that EN12977-3 is seen as the best option. Parameters related to heat exchangers will not be included.

Pump power:

The development of an energy label for pumps is in progress. Such a label offers an opportunity to the solar thermal branch to promote well performing pumps

Item 36: IEA SH&C Task 43 on “Rating and Certification Procedures”

With the Solar Heating and Cooling Programme (SH&C) of the International Energy Agency (IEA) new Task named “Solar Rating and Certification Procedures - Advanced Solar Thermal Testing and Characterisation for Certification of Collectors and Systems” was officially launched on June 1, 2009.

The operating agents of the Task are Les Nelson for the US and Jan Erik Nielsen for Europe. Jan Erik Nielsen mentioned the relevance to the activities to be carried out within Task 43 for Solar Keymark Certification. Furthermore he emphasised that Task 43 provides an excellent basis to agree on a global approach for certification of solar thermal products.

The latest meeting was held at ITW, Stuttgart on Feb. 9 – 10, 2010 in combination with an industry workshop related to “ Solar thermal hot water and combisystems - Testing and Certification” on Feb. 8, 2010.

The next meeting will be on October 4 & 5, 2010 at Graz, Austria.

Item 37: Need for changing the structure

Harald Drück mentioned that due to the huge success of solar Keymark Certification and also due to the related activities of the Solar Keymark Network, the number of participants in the Solar Keymark Network meeting is increasing continuously. At present approx. 50 persons are attending the meeting. In order to ensure that Solar Keymark Network meetings can also in the future be performed in an effective way, the current structure of the meetings might have to be changed. Possible operations for this are to perform parallel meetings and /or the implementation of a kind of Solar Keymark board.

The different approaches were briefly discussed and it was agreed that a proposal for a new structure should be presented by the Solar Keymark Chairman and Secretary at the next meeting.

Item 38: Solar Keymark Foundation

Jan Erik Nielsen mentioned that due to the reduced fees and the only slightly reduced payments from industry, money for the Solar Keymark Network will be generated (see also item 7 related to revised Solar Keymark scheme rules). For this year an amount of approx. 100.000 EURO is expected. The intention is to use this money for the further development of Solar Keymark certification and activities closely related to this. This money should be managed by a “Solar Keymark Foundation”.

It was agreed to establish a working group to elaborate a first proposal for the implementation of the “Solar Keymark Foundation”.

This working group is consisting of the following persons:

Jan Erik Nielsen (lead), Harald Drück, Korbinian Kramer, Stephan Fischer, Costas Travasaros, Joakim Bynström, Xavier Noyon, Sebastian Laipple, Gerard van Amerongen or Teun Bokhoven, Christian Stadler, João Santos and Sören Scholz.

Item 39: Any other business**Item 39.1: Reference collector area**

Martin Meingassner proposed to change the collector reference area for aperture area to gross area. It was decided that this topic should be discussed within TC 312 WG1

Item 40: Date and place of next meetings

The autumn 2010 meeting is scheduled for

October 7th 9:00 hrs to October 8th 12:00 hrs

at Graz, Austria.

The spring 2011 meeting is scheduled for

March 22nd 12:00 hrs to March 23rd 14:00 hrs

in Brussels.

Item 41: End of meeting

Harald Drück thanked the participants for attending the meeting and for their constructive discussions. He closed the meeting at 13:00 hrs.

The minutes were prepared by Harald Drück (Chairman of the Solar Keymark Network) in assistance with Jan Erik Nielsen (SKN Secretariat) and Maria João Carvalho (proof reading)

Stuttgart March 25th, 2010

Contact address Solar Keymark Chairman:

Harald Drück
ITW, Stuttgart University
Pfaffenwaldring 6
70550 Stuttgart, Germany
Email: druECK@itw.uni-stuttgart.de

Contact address Solar Keymark Secretariat:

Jan Erik Nielsen
PlanEnergi
Aggerup 1
4330 Hvalsoe, DK
Email: jen@planenergi.dk

Annex A: List of participants

8th Meeting, RAPPERSWIL, MARCH 15TH & 16th, 2010

NAME	ORGANISATION
Gerard van Amerongen	vA Consult / Holland Solar
Francois Xavier Ball	CERTITA
Giovanni Bellenda	Modulo-Uno
Andreas Bohren	SPF
Joakim Byström	Absolicon Solar Concentrator AB / SIS
Pedro Dias	ESTIF
Harald Drück	ITW
Wolfgang Eisenmann	Wagner /Bsi
Jaime Fernandez Gonzalez-Granda	AENOR
Stepfan Fischer	ITW
Ulrich Fritzsche	TÜV Rheinland
Emanuel Godal	TSU Piestany
Walter Gubler	SPF
Andreas Haller	Swissolar
Susanne Hansson	SP CERT
Julien Heintz	CETIAT
Franz Helminger	AIT
Maria João Carvalho	INETI-LECS
Bouzid Khebchache	CSTB
Peter Kovacs	SP
Korbinian Kramer	ISE
Sebastian Laipple	SPF
Carsten Lampe	ISFH
Allan Liu	Intertek
Enric Mateu Serrats	CENER
Rob Meesters	Solahart
Kiro Mitevski	Solar Test Center in Skopje
Jan Erik Nielsen	ESTIF/PlanEnergi
Xavier Noyon	ESTIF
Giorgos Panaras	Demokritos
Pierluigi Premoli	ICIM
Alexandar Prodanov	Solar Test Center in Skopje
George Roditis	AEC
Thomas Rouweler	KIWA
Achim Sadenwater	DIN CERTCO
Fabienne Salaberry	CENER

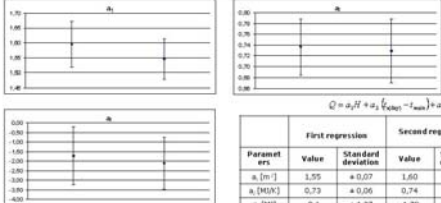
NAME	ORGANISATION
João Santos	CERTIF
Sören Scholz	DIN CERTCO
Vinod Sharma	ENEA
Allard Slomp	KIWA
Christian Stadler	Sonnenkraft /BSi
Jean-Marc Suter	Suter Consulting
Danjana Theis	IZES/TZSB
Costas Travararos	Prime Laser Tech / EBHE
Carlo Vassella	SPF
Stanislav Zamecnik	TSU Piestany
Hannes Zannantoni	AsiC

Annex B: Presentation related to Simulation of low solar radiation testing days using solar radiation shield during thermal performance tests of factory-made systems according to the CSTG-method

<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Solar Thermal Energy</p> <div style="background-color: white; padding: 10px; margin: 10px auto; width: 80%; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Simulation of low solar radiation testing days using solar radiation shield during thermal performance tests of factory-made systems according to the CSTG method</p> <p style="text-align: center; margin: 0;">Fabienne Sallaberry, Enric Mateu</p> </div> </div>	<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Factory-made solar thermal systems tests with CSTG method</p> <ul style="list-style-type: none"> • Factory-made solar thermal systems tested according to European Standard UNE-EN 12978-2, on 4 outdoor test-benches • Specifically for the efficiency test with the CSTG method according to the International Standard ISO 9459-2 </div>
<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Factory-made solar thermal systems tests with CSTG method</p> <p style="font-size: small; margin: 5px 0;">According to Standard ISO 9459-2, part 7.2 - Range of test conditions Results shall be obtained for at least four different days with approximately the same values of (t_{a(day)} - t_{rain}) and irradiation values evenly spread over the range 8 MJ/m² to 25 MJ/m². Results shall also be obtained for at least two additional days with values of (t_{a(day)} - t_{rain}) at least 9 K above or below the values of (t_{a(day)} - t_{rain}) obtained for the first four days. The value of (t_{a(day)} - t_{rain}) shall be in the range -5 K to +20 K for each test day.</p> </div>	<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Factory-made solar thermal systems tests</p> <p style="font-size: small; margin: 5px 0;">We base our methodology on the Standard ISO 9459-5, part 6.3.5 Store-loss test sequence c) Cooling period: takes 36 to 48 h starting from the last draw-off of the heating period. During the cooling period there shall be no draw-off and low solar irradiance. If a solar irradiance higher than 200 W/m² is expected, the solar energy input into the storage tank shall be avoided by one of the following measures: • A radiative shield at a temperature of at maximum 5 K above ambient shall be placed in front of the collectors. The pyranometer dome shall also be covered. Alternatively, its measured output can be set to zero.</p> <div style="border: 1px solid #ccc; padding: 5px; font-size: x-small; margin: 5px 0;"> <p>Die M&E kann nicht angepasst werden. Dieser Computer verfügt möglicherweise über zu wenig Arbeitsspeicher, um die M&E zu öffnen, oder die M&E ist beschädigt. Öffnen Sie den Computer neu und öffnen Sie dann erneut die Datei. Wenn weiterhin das rote eingetragene Feld für die M&E hochheben Sie sich und dann erneut aufrufen.</p> </div> </div>
<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Factory-made solar thermal systems tests with CSTG method</p> <ul style="list-style-type: none"> • For systems where the storage tank may have radiation losses to the sky, it is recommended to place the shield at some distance above the collector aperture, in order to shield direct radiation while leaving the collector open to most of the long-wave sky radiation effects. <div style="border: 1px solid #ccc; padding: 5px; font-size: x-small; margin: 5px 0;"> <p>Die M&E kann nicht angepasst werden. Dieser Computer verfügt möglicherweise über zu wenig Arbeitsspeicher, um die M&E zu öffnen, oder die M&E ist beschädigt. Öffnen Sie den Computer neu und öffnen Sie dann erneut die Datei. Wenn weiterhin das rote eingetragene Feld für die M&E hochheben Sie sich und dann erneut aufrufen.</p> </div> <div style="border: 1px solid #ccc; padding: 5px; font-size: x-small; margin: 5px 0;"> <p>Die M&E kann nicht angepasst werden. Dieser Computer verfügt möglicherweise über zu wenig Arbeitsspeicher, um die M&E zu öffnen, oder die M&E ist beschädigt. Öffnen Sie den Computer neu und öffnen Sie dann erneut die Datei. Wenn weiterhin das rote eingetragene Feld für die M&E hochheben Sie sich und dann erneut aufrufen.</p> </div> <p style="font-size: small; margin-top: 5px;">Requirement of the Standard ISO 9459-2 of wind speed.</p> </div>	<div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p style="text-align: center; margin: 0;">Comparison on a thermosiphon solar system tests with / without solar shield</p> <p style="font-size: small; margin: 5px 0;">We realized some comparisons on a thermosiphon solar system with two solar collectors. • This solar system was first tested during 11 days from which 3 used the shield method. • The test went on until obtaining 17 valid testing days.</p> </div>


Coefficients results for the two of both linear regressions

In both cases the coefficients are well correlated, ie that the values approach the standard error committed.



$$\hat{Q} = a_1 H + a_2 (\varphi_{\text{obj}} - \varphi_{\text{amb}}) + a_3$$

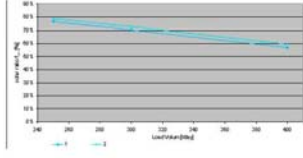
Paramet ers	First regression		Second regression		IC
	Value	Standard deviation	Value	Standard deviation	
a ₁ [m ⁻¹]	1,55	± 0,07	1,60	± 0,08	0,5
a ₂ [MK]	0,73	± 0,06	0,74	± 0,05	0,1
a ₃ [MJ]	-2,1	± 1,37	-1,70	± 1,53	0,2




Long-term prediction results for the two tests

Comparison of the two long-term prediction results obtained using each of the datasets for the first and second regression. The comparison is made for load volumes of 250, 300 and 400 l/day for the city of Lisbon.

Assuming an acceptable error of 2%, the coefficients are well correlated.




Load volume [l/day]	First regression	Second regression	Difference
250	76,51%	78,53%	2,02%
300	70,22%	72,63%	2,41%
400	58,99%	59,62%	0,63%



Conclusion

- In our understanding this method can be applied without affecting significantly the long term prediction of the system tested.
- According to other testing laboratories experience, is it advisable to use solar shield procedure with the CSTG method?







Thank you for your attention

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Annex C: Presentation related to Concentrating Collectors

<p style="text-align: center;">Solar Concentrators and Solar Keymark</p> <p style="text-align: center;">Make European companies and test labs competitive on a new market and stimulate innovation</p>	<p style="text-align: center;">Solar concentrator companies 1 (2)</p> <ul style="list-style-type: none"> • Terry Crump www.heliodynamics.com • Jim Maskrey www.sopogy.com • Robert Walters www.entechsolar.com • Clay Stevenson www.entechsolar.com • Andrew www.chromasun.com • Joakim Byström www.absolicon.com 
<p style="text-align: center;">Solar concentrator companies 2(2)</p> <ul style="list-style-type: none"> • Johan Dreyer www.nep-solar.com • Robin Schulemann www.solargenix.com • Ahmet Lokurlu www.solitem.de • Dave Howell www.practicalsolar.com 	<p style="text-align: center;">Solar Thermal Concentrator</p> <ul style="list-style-type: none"> • Increasing interest – solar cooling, industry, district heating • Many new companies and capital • Work conducted in WG1, QAISt and IEA Task 43. • SRCC Standard 600 now ready for US market – federal and state support (+30%) • European companies will use Standard 600 but need Solar Keymark to access home markets. <p>➤ temporary solution until revision of EN 12975-2?</p>
<p style="text-align: center;"> SOLAR RATING AND CERTIFICATION CORPORATION <small>Independent Certification of Solar Water and Swimming Pool Heating Collectors and Systems</small></p> <p style="text-align: center;">SRCC testing of a concentrating system</p> <ul style="list-style-type: none"> • SRCC Problem: <ul style="list-style-type: none"> – how to test a concentrating solar thermal system with control system? • SRCC solution: <ul style="list-style-type: none"> – to have a test cycle for different operational modes (power loss, fluid loop failure) – 30 day exposure and test in outdoor exposure (wind, rain) <p>(see the agenda item)</p>	<p style="text-align: center;">Fail-safe testing</p> <ul style="list-style-type: none"> • Demonstrate operational integrity • Test cycle • Over-temperature • Heat exchange fluid flow stop (pump or pipe) • Loss of grid electricity supply • Interlock functionality

Example on how we may handle stagnation temperature

- If the a concentrating system has a control system that fulfil fail-safe requirements
 - the mechanisms shall be operational during testing
 - the manufacturer may specify a maximum temperature that the system is tested at. (Parallel to specify flow rate)

Suggestion how to proceed

- Working group
- Possible annex to SK rules
- Annex put in use and then revised for standard revision

Solar Concentrators and Solar Keymark

Make European companies and test labs competitive on a new market and stimulate innovation

Annex D: Presentation related QAiST

 <p>QAiST Quality Assurance in Solar Heating and Cooling Technology</p> <p>Solar Keymark Network meeting Rapperswil, 15-16 March 2010</p>	<ul style="list-style-type: none"> • Benefits: <ul style="list-style-type: none"> – Removal of trade barriers, increase of the share of quality products in the solar thermal market – EN standards (and SK) covering more ST technologies, stimulation of new collector and system designs and materials – Worldwide harmonisation of standards and general acceptance of Solar Keymark certification 
<ul style="list-style-type: none"> • Duration: <ul style="list-style-type: none"> – 01/06/2009 - 31/05/2012 • Budget: <ul style="list-style-type: none"> – Overall: €1.892.002 – ESTIF: €139.044 – EU contribution: 75% 	<p>Partners</p> <ul style="list-style-type: none"> • ESTIF (coordinator) • CENER, Spain • CSTB, France • DEMOKRITOS, Greece • AIT, Austria • LNEG/INETI, Portugal • IPIEO, Poland • ISE, Germany • ISFH, Germany • ITC, Spain • IZES, Germany • PlanEnergi, Denmark • SP, Sweden • TÜV, Germany • USTUTT-ITW, Germany 
<p>Main Areas of Research</p> <ul style="list-style-type: none"> • Solar Thermal Collectors <ul style="list-style-type: none"> – WP leader: SP – Peter Kovacs <ul style="list-style-type: none"> • Test Method for Tracking and/or Concentrating Collectors (mid- temperature collectors) • Durability testing and assessment of collectors and collector components • A guideline to the standard EN 12975 • Performance calculation tool 	<p>Main Areas of Research</p> <ul style="list-style-type: none"> • Solar Thermal Systems <ul style="list-style-type: none"> – WP leader: INETI/LNEG – Maria João Carvalho – Factory made and custom built ST systems <ul style="list-style-type: none"> • Clarification of the methodologies adopted for reliability tests of different system types preparation of checklists for the vague criteria related to requirements of EN 12976 (Part I) • Development of a procedure for converting the test results of the existing test method, into results valid for the “EU reference tapping cycles”, necessary for Labelling of systems according to future European Directive • Definition of a procedure for the assessment of the hot water comfort provided by the store being part of the factory made system. 

<p>Main Areas of Research</p> <ul style="list-style-type: none"> • Quality Assurance of Testing <ul style="list-style-type: none"> – WP leader: ITW – Stefan Fischer <ul style="list-style-type: none"> • Support to Solar Keymark Network • Round robin performance testing solar thermal collectors • Round robin testing of factory made systems according to EN 12976 	<p>Main Areas of Research</p> <ul style="list-style-type: none"> • New Areas for Quality Assurance <ul style="list-style-type: none"> – WP leader: AIT – Michael Monsberger <ul style="list-style-type: none"> • Performance references and test methods for Heat Pump + ST combi-systems • Solar Cooling Systems • Function and yield controlling (F&YC) of large solar thermal systems (LSTS) • Quality requirements for solar cooling systems 																																										
<p>Development of Solar Keymark</p> <ul style="list-style-type: none"> • Dissemination of project results and promotion of SK <ul style="list-style-type: none"> – NSC, RHC-Platform, – Link to TC 312 / ISO / IEA-SHCP – Presentations at national and international level • Expansion of SKN <ul style="list-style-type: none"> – Involvement of test labs/institutes from Central and South-East European countries in the Solar Keymark Network – 2 National dissemination Workshops (Poland and SEE) 	<p>Implementation of SK in new countries</p> <ul style="list-style-type: none"> • Test labs/institutes contribution shall consist of: <ul style="list-style-type: none"> – participation in a minimum of 4 SKN meetings to gain knowledge of the SK procedure; – presentation of an initial country report on the current situation regarding quality assurance measures for ST products; – presentation of an action plan on how the SK certification (or other country specific quality assurance methods) will be set up 																																										
<p>Development of Solar Keymark</p> <ul style="list-style-type: none"> • Invitations so far: <table border="1" data-bbox="300 1301 831 1473"> <thead> <tr> <th>Category</th> <th>Organisation</th> <th>Country</th> <th>Status</th> <th>Surname</th> <th>Name</th> <th>e-mail</th> </tr> </thead> <tbody> <tr> <td>Test lab</td> <td>AEC</td> <td>CY</td> <td>Present</td> <td>Rodits</td> <td>George</td> <td>grodits@cytanet.com.cy</td> </tr> <tr> <td>Test lab</td> <td>SZU TEST</td> <td>CZ</td> <td>Pending</td> <td>Marhalter</td> <td>Michal</td> <td>m.marhalter@szutest.cz</td> </tr> <tr> <td>Certification body / Test lab</td> <td>TSU Piestany</td> <td>SK</td> <td>Present</td> <td>Godal</td> <td>Emanuel</td> <td>godal@tsu.sk</td> </tr> <tr> <td>Test lab</td> <td>Hydrometeorological Service</td> <td>MK</td> <td>Present</td> <td>Prodanov</td> <td>Alexander</td> <td>alexander@meteo.gov.mk</td> </tr> <tr> <td>Test lab</td> <td>Albania-EU EEC/ Harry Fultz Institute</td> <td>AL</td> <td>Pending</td> <td>Hido</td> <td>Edmond</td> <td>ehido@eec.org.al</td> </tr> </tbody> </table> 	Category	Organisation	Country	Status	Surname	Name	e-mail	Test lab	AEC	CY	Present	Rodits	George	grodits@cytanet.com.cy	Test lab	SZU TEST	CZ	Pending	Marhalter	Michal	m.marhalter@szutest.cz	Certification body / Test lab	TSU Piestany	SK	Present	Godal	Emanuel	godal@tsu.sk	Test lab	Hydrometeorological Service	MK	Present	Prodanov	Alexander	alexander@meteo.gov.mk	Test lab	Albania-EU EEC/ Harry Fultz Institute	AL	Pending	Hido	Edmond	ehido@eec.org.al	<p>QAiST Quality Assurance in Solar Heating and Cooling Technology</p> <p>Solar Keymark Network meeting Rapperswil, 15-16 March 2010</p> 
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