Solar Keymark Network

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



Minutes 6. Solar Keymark Network Meeting March 23rd – 24th, 2009 – Pamplona

Item 1: Opening of the meeting

The chairman of the Solar Keymark Network (SNK), Harald Drück, opened the meeting and welcomed the participants. He thanked CENER and especially Enric Mateu Serrats for hosting the meeting. As introduction he 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.

Harald Drück welcomed especially the participants from the US attending the meeting as observers.

The meeting took place from Monday, March. 23rd, 2009, 10:15 hrs till Tuesday March. 24th, 2009, 12:40 hrs in the premises of CENER at Pamplona, Spain.

The first invitation and the draft agenda of the meeting was sent out by email dated January 18th, 2009. In the following weeks updated versions of the agenda were send out. The latest version of the agenda was send out by email on March 11th, 2009 and named "5. Draft Agenda" (File: SK_NW_AG6E 11/03/2009). Based on remarks from the participants minor modifications were performed. The final agenda that was agreed on is included as Annex B.

Item 2: Introduction of participants

The participants introduced themselves and mentioned their nominating organisation or institution respectively. All present participants not being nominated mentioned appropriate reasons for justifying their participation.

The list of participants, including their nominating organisation or justifying their participation in an other way, is attached as Annex A.

Item 3: Approval of the minutes of the 5. meeting

Harald Drück mentioned that the minutes of the 5th Solar Keymark Network meeting (File: SK_NW_MIN5A.PDF 07/10/2009) were sent out by email dated October 7th, 2009.

Since within 30 days after sending out the minutes no significant comments were send out to the Solar Keymark Network the minutes are considered as approved. Additionally the minutes were approved again unanimously by the participants present.

Item 4: Solar Keymark decision list

Based on the wish of the Solar Keymark Network meeting Harald Drück prepared a Solar Keymark decision list. This list (document SK_NW_DecList1.pdf dated Dec. 12th, 2009) is available via <u>www.solarkeymark.org.</u>

Note: Latest version including decisions made at this meeting is document SKN_N0100R1

Item 5: Competition and the ESTIF filter on access to SKN

Mr. Barry Johnston (representative of the company Solar Twin, UK) complained about the fact that innovations are, according to his opinion, blocked by solar trade associations (e.g. ESTF) and standardisation bodies such as e.g. British Standardisation Institute (BSI).

The persons attending the meting noted the presentation and agreed that no direct actions were needed.

Item 6: Terms and conditions for the Solar Keymark Network Meetings

Following a request of the 5th Solar Keymark Network meeting a group consisting of Sören Scholz (Chairman), Andreas Bohren and João Santos prepared a first draft of the Solar Keymark Network meeting working procedures. The corresponding document named "Solar Keymark Network – Internal Regulations" was send out to the Solar Keymark Network by Sören Scholz on March 19th, 2009. Harald Drück thanked Sören Scholz and his colleagues for his efforts.

The document was discussed and modified.

Decision D1.M6 – Voting on "Solar Keymark Network Internal Regulations; Version March 23rd, 2009"

The participants present decided to send out the modified version of the "Solar Keymark Network Internal Regulations" as discussed at the meeting for voting. For that purpose a "voting form" will be send out together with the document by the SKN secretariat. In case the document is not approved as send out this has to be declared to the Solar Keymark Network (including Secretariat) within 30 days after sending out the document.

Comments submitted in the context of the voting shall be presented and discussed at the next SKN meeting.

This decision was taken unanimously.

Item 7: Report of CCB meeting on March 12th, 2009

Hoang Liauw mentioned that the Keymark is operated jointly by CEN and CENELEC. Hoang Liauw mentioned that he presented to the CEN Certification Board (CCB) the report on Solar

Note: Due to technical reasons it was not possible to view the presentation of Barry Johnston. The presentation is attached as Annex C

Keymark activities by Jan Erik Nielsen. Approximately 90 % of all Keymark revenues for CEN are due to the Solar Keymark.

Furthermore he reported about the support of CEN related to the activity of the "data base" intended to be prepared by Jan Erik Nielsen and it's relevance for Keymark certification. The next meeting of CCB will be on Oct. 9th, 2009.

Item 8: Fees for the Solar Keymark Network and Secretariat

Jan Erik Nielsen presented the following charts related to the development of the Solar Keymark licences (status mid March 2009).



He proposed to change the procedure of the payment in the following way.

EXISTING TEXT - 2 ANNUAL PAYMENTS - A BIT COMPLICATED

Empowered Solar KEYMARK certification bodies shall collect a fee for each license issued. This fee shall cover the activities of the SKN and the SKN Secretariat.

The payments are to be transferred - based on invoices - to the Secretariat of the European Solar Thermal Industry Federation, ESTIF.

By the end of June, each year the fees has to be paid for certificates already existing at January 1st same year. As a basis for the invoices send out by ESTIF the certification bodies shall report to the SKN Secretariat the number of issued licences at January 1st each year,

The fees for new licenses issued during a given year will be transferred to ESTIF based on invoices send out at the beginning of the next year. As a basis for the invoices prepared by ESTIF, the certification bodies shall report to the SKN Secretariat the number of issued licenses during the given year.

Each year – before the end of October – the amount of the annual fee per licence for the following year will be determined by the SKN. The annual fee shall be based on the updated budget of the actual year and the expected income and expenses of the following year. In cases no decision is made, the fee remains the same. The fees will be announces at the Solar KEYMARK website www.solarkeymark.org before the end of November.

The work of the SKN Secretariat and Chairman shall be paid by ESTIF twice a year: In March and in September corresponding to the bi-annual fee income.

NEW PROPOSAL FOR TEXT – 1 ANNUAL PAYMENT – SIMPLE

Empowered Solar KEYMARK certification bodies shall collect a fee for each license issued. This fee shall cover the activities of the SKN and the SKN Secretariat.

The payments are to be transferred - based on invoices - to the Secretariat of the European Solar Thermal Industry Federation, ESTIF.

By the end of March*), each year the fees has to be paid for certificates valid as per January 1st same year. As a basis for the invoices to be send out by ESTIF, the certification bodies shall report - before end of January - to the SKN Secretariat the number of valid licences at January 1st.

Each year – before the end of October – the amount of the annual fee per licence for the following year will be determined by the SKN. The annual fee shall be based on the updated budget of the actual year and the expected income and expenses of the following year. In cases no decision is made, the fee remains the same. The fees will be announces at the Solar KEYMARK website <u>www.solarkeymark.org</u> before the end of November.

The SKN Secretariat and Chairman shall be paid by ESTIF before end of April**.

*) In 2009 (as a special case) the deadline is end of June.

 **) In 2009 (as a special case) the deadline is end of July. – But of course it would be nice to have it before \odot

The participants agreed to this change.

Furthermore Jan Erik presented the following information about the expected budget:

2009 - Status 21/3 2009	CERTIF	ICIM	ELOT	DINCERTCO	SP	Total	Comments
Licences as per 1st of January	42	23	15	557	3	640	CB reporting OK
CB Invoices sent to manufacturers						-	Info from CB ?
CB Invoices paid by manufacturers						-	Info from CB ?
ESTIF invoice sent	0	0	0	0	0	-	Coming soon !
ESTIF invoice paid	0	0 0 0 0 0			0	-	Deadline ?
SKN-SEC invoice sent			To ESTIF			0	
SKN-SEC invoice paid		By ESTIF				0	
SKN-Chair invoice sent	To ESTIF				0		
SKN-Chair invoice paid		By ESTIF				0	

Budget versus Result	Fee (€)		No. licences		Total (€)	
Solar Keymark Network budget	70	x	600	=	42 000	
Solar Keymark fee expected income	70	x	640	=	44 800	2 800 > budget
Solar Keymark fees finally transfered	70	x	0	=	0	
Result (21/3) - Budget					-42 000	

Item 9: Collector and system data sheets – experience, improvements

Jan Erik Nielsen reported about the actual status of the collector and systems data sheets.

For the system data sheets the translation into French and German are still missing. It was agreed that Jan Erik Nielsen will organise the translation with the help of Julien Heintz (French) and Sören Scholz (German). The completely translated system data sheets shall be send out by Jan Erik by the end of May 2009.

Item 10: "Deep" Solar Keymark Database

Jan Erik Nielsen presented the idea of the database by the following slides:



Demo of the database

🧐 Collector Certificates - Mozill	©Collector Certificates - Mozilla Firefox									
Eiler <u>R</u> ediger <u>Y</u> is Historik <u>B</u> og	Eller Bediger ⊻is Historik Bogmænker Fynktioner Hjælp									
< 🖂 🕻 📩 http://myartistbooker.com/qCollectorCertificates/ShowQCollectorCertificatesTable.aspx 🏠 🔹 💽 Google 🔎										
🔎 Mest besøgte 🌮 Igang med Firefox 🔊 Seneste ry/heder 📄 Gratis Hotmail 📄 Tilpas hyperlinks 📄 Tilpas links 📄 Windows Media 📄 Windows 📄 DIN CERTCO										
COLLECTOR CERTIFICATES										
Company All				+						
CountryCode All 💌										
DataSheetReady No 💌										
Certification body DINCERTCO	•			_						
2 2 3 3 3 3	6 0 4 4 1 \$ of 9 > >> 17	5 Items 20	🔷 /Page 🛛 GO							
Company Name As Link	CollecterNames	CountryCode	RegistrationDate	Registration No As Link	DataSheetReady	Certification body				
A Concept Leszkovich GmbH	Sol Victor 1000	AT	13/03/2009	<u>011-78427 F</u>	No	DINCERTCO				
A Concept Leszkovich GmbH	Sol Victor 2000	AT		<u>011-75428 F</u>	No	DINCERTCO				
A Concept Leszkovich GmbH	Sol Victor 3000	AT		011-7S429 F	No	DINCERTCO				
A.O. Smith Waterproducts Company BV	AOSP-240	NL		011-78242 F	No	DINCERTCO				
AkoTec Produktionsgesellschaft mbH	OEM Vario 500, 1000, 2000, 3000	DE		<u>011-75471 F</u>	No	DINCERTCO				
AKS Doma Solartechnik GmbH	Doma FLEX ALU 502 135-136,139-146, 294	AT		<u>011-7S388 F</u>	No	DINCERTCO				
Alpha-InnoTec Sun GmbH	GFK 47 , GFK 63 , GFK 78 , GFK 93 , GFK 109 , GFK 125 , GFK 59 , GFK 79 , GFK 98 , GFK 116	DE		<u>011-75617 F</u>	No	DINCERTCO				
ALTUS ENERGY	AS 215	FR		011-7S395 F	No	DINCERTCO				
ALTUS ENERGY AS 250 FR.					No	DINCERTCO				
AMK Collectra AG	DRC10	сн		011-78530 R	No	DINCERTCO				
andig										

The advantages and disadvantages of the database as well as the different ways for financing the work related to database were discussed. It was decided to postpone a decision related to the database.

Item 11: Certification of a range of collectors which can be produced to any size (with some limits)

Item 11.1: Number of subtype licenses to be paid

Jan Erik Nielsen mentioned the problem of the number of subtype licenses in case collectors can be produced in an nearly infinite number of subtypes and proposed a solution by using the following slide:

A problem arise – concerning payment of sub type fees (to CB and CEN) – when a collector type is available in any size (within some limits of course). What is then the number of sub types?

The problem can be solved by choosing e.g. the principle shown below for type / subtype fee payment:

Main type fee for the first collector of a type

Subtype fee if more than one size available of the collector type

A proposal to solve the problem of presenting an infinite number of results in the data sheet is given below

Product name / Size	Aperture area Aperturfläche uperficie d'entrée	Gross length änge(Außenmaß) -ongueuhors tout	Gross width reite (Außenmaß) largeur hors tout	Gross height Iöhe (Außenmaß) paisseur hors tout	Gross area Bruttofläche Iperficie hors-tout	Power output per collector unit Leistung je Kollektormodul Puissance fournie par le capteur (note 1) G = 1000 W/m ² Tm-Ta :				
Produktbezeichnung/?	0				o	0 K	10 K	30 K	50 K	70 K
Modèle / ?	[m²]	[mm]	[mm]	[mm]	[m²]	[\V]	[1/1]	[W]	[W]	[W]
Subtype 1 / min	99.99	9 999	9 999	9 999	99.99	9 999	9 999	9 999	9 999	9 999
Subtype N / max	99.99	9 999	9 999	9 999	99.99	9 999	9 999	9 999	9 999	9 999
Other subtypes available (name/aperture area): Name2/a2; name3/a3;; nameN-1/aN-1 / all sizes between mi			veen min a	ind max ar	e available					

The aspect of limiting the maximum number of sub types was discussed and a consensus resulting in a decision was not reached.

With respect to collectors which can be produced in any size, it was recommended to make use of the option of having one size tested as "custom built collector".

Item 11.2: Durability and reliability testing

Decision D2.M6 – Durability and reliability testing of custom build collectors

The participants present decided that durability and reliability tests shall be carried out on collectors representing the major features of the collector family. E.g. collector families with collectors having more than one glass covers that are separated by bars.

In case the largest size of the collector the test laboratory can test is smaller than the smallest size of the family representing the weakest point an other testing laboratory shall carry out the respective tests.

This decision was taken unanimously.

Item 12: Revised scheme rules

Jan Erik Nielsen mentioned that CCB accepted the revised version of the scheme rules (Version 10.07, dated Feb. 2009) but AFNOR requested that the following two aspects mentioned in the following as items 12.1 and 12.2 and presented in the following slide are improved.

Conc. *"6. Surveillance"*: The biannual surveillance test (*"... a physical inspection of the product and a comparison with the specifications of the original type tested sample"*).

AFNOR request: Physical inspection need to be specified and described – what is actually done in this "test" Seems fair – who can do that?

Conc. "6.1 Special test": "A special test can be ordered through the certification body by anyone, if the fulfilment of the requirements of the certification program or the registered values of a certified product are doubted"

AFNOR request: "...it ... (shall be) be up to the certification body to handle the complaint and take all appropriate actions to settle the point"

AFNOR detailed comments: <u>This clause is not consistent with state of the art practice of product certification</u>. Once a product is certified, "anyone" can send a complaint to the licencee regarding the fullfilment of the Keymark requirements. The licencee must then handle the complaint and give an answer to the plaintiff and the certification body will check that the complaint has been duly treated. The mere fact of carrying out a new test cannot by itself change the initial certification decision. If the initial certification is challenged by "anyone", then it is up to the certification body to handle the complaint and take all appropriate actions to settle the point. These actions may include new tests but not necessarily.

Change to "state of the art of practice of product certification"?

Item 12.1: Specify harmonised procedure for the physical inspection (clause 6 in scheme rules)

The discussion showed that the aspect of the surveillance test is not completely clear. It was agreed to clarify this aspect by including a few sentences in the scheme rules and to give reference to a detailed harmonised procedure.

The text of the scheme rules will be precised by Jan Erik Nielsen.

It was agreed that Stephan Fischer will, with the assistance of Korbinian Kramer and Sören Scholz, prepare a draft version of a procedure for the physical inspection and send it to Jan Erik Nielsen at latest by the end of August 2009.

Item 12.2: Change "special test" to normal handling of complains (clause 6.1 in scheme rules)

Decision D3.M6 – Handling of complains

The participants present decided that the procedure for handling of complains is as described in the general Keymark scheme rules (Internal Regulations, Part 4, Certification, 2006-8) in section 5.4 (complains) and 5.5. (appeal procedures).

If a special test is performed according to the procedures mentioned above and if the result is not fulfilling the requirements mentioned in chapter 6.1 of the Solar Keymark scheme rules the manufacturer has to carry the costs of the special test.

If the specially tested product fulfils the requirements and complies with the registered values, the costs have to be carried by the party which questioned the fulfilment of the requirements or registered values and ordered the test through the certification body.

Chapter 6.1 of the Solar Keymark scheme rules will be revised accordingly by Jan Erik Nielsen.

This decision was taken unanimously.

Item 13: How to handle type testing in early stages of production and how to define "series production and stock"

Decision D4.M6 – Definition of "series production" and "stock"

The participants present decided that a series production is existing when a least 10 collectors are produced with the same materials and the same manufacturing technologies in the same way and all major production processes are performed in presence of the inspector.

The participants present decided that at least 10 collectors of the same type more than the number of test samples picked must be available in the stock for picking the sample(s) to be tested.

This decision was taken unanimously.

Note: In case the way of series production is changed (e.g. from hand made to robot made) this is a change of the production that has to be declared to the certifier.

Item 14: Treatment of IAM effect for systems with vacuum tube collectors

Related to this Korbinian Kramer presented the following slides:



The importance of this aspect when performing tests of systems with vacuum tubular collectors was mentioned. It was emphasised that the procedure has to be applied in the relevant cases. However, it is important to apply the procedure in the correct way.

In case the procedure is not applied this shall be mentioned in the test report.

Item 15: Changing the collector of a Solar Keymark tested system

Sebastian Laipple presented the aspect with the following slides:



The subject related to changing the collector of a Solar Keymark tested system was discussed but it was not possible to agree on a procedure.

The procedure proposed is as follows:

A collector of a Solar Keymark tested system can be changed (and Solar Keymark certification is still valid) provided that the following requirements are fulfilled:

- the responsible test lab does not expect a significant change of the system performance and
- Collector is Solar Keymark certified and
- the test report is available to the certification body and
- the change of the collector may not cause a change of the system configuration (piping, controller, pump etc.) and
- the collector is "Technical identical"

In this context "Technical identical" is defined, with reference to the originally used collector, as follows:

- the collector components are compatible according to Solar Keymark rules
- the tolerance of gross area is within $\pm 10\%$
- the total power of the collector at 1000 W/m^2 :
 - is for the integral from 0 to $100^\circ C$ within 0-20 % and
- η_0 does not differ by more than $\pm 10\%$

No modification allowed at:

- Hydraulic flow type
- Maximal operating pressure
- Permitted heat transfer fluid

It was decided that based on the above mentioned procedure input shall be given to Sebastian Laipple (Email sebastian.laipple@solarenergy.ch) until April 30th, 2009. Based on the input he will prepare a modified procedure to be discussed at the next SKN meeting.

Item 16: Long Term Prediction (LTP) calculation procedure based on ISO 9459-2

Enric Mateu Serrats presented the subject with the following slides:





The aspect mentioned above is very relevant. It was proposed to elaborate a document describing the problem and a proposal for a solution. Furthermore this document should contain benchmark tests for applying the CSTG calculation procedure based on ISO 9459-2.

Enric Mateu Serrats volunteered to prepare such a document with the help of Maria João Carvalho until August 2009. It is intended to discuss the document at the next SKN meeting.

Item 17: Which tests are required for Solar Keymark testing of factory made systems if the collector can not be separated from the system

The aspect related to this was presented by Korbinian Kramer with the following slides



The topic was discussed and it was decided to establish a working group for elaborating a proposal for a decision related to the aspect of tests being required for Solar Keymark testing of factory made systems in cases the collector can not be separated from the system. This proposal should also include a definition of the term "separation" and should be send out to the SKN by the end of August 2009.

The working group will consist of the following persons:

Korbinian Kramer (lead), Sebastian Laipple, Ulrich Fritsche, Maria João Carvalho and Enric Mateu Serrats

Item 18: Flexible Solar Keymark certification of factory made systems

Jan Erik Nielsen presented the following approach for flexible certification of factory made systems:

Very promising preliminary results for reliable performance prediction based on the concept:
 □DST testing using collector test results → □ Long term prediction (LTP) to be done fixing A* and Uc* according to collector test results
Requires test (Solar Keymark) of collector – but this is actually no problem: More or less all collectors are Keymarked anyway – and for ICSs the family concept is not really an issue
Comparison with test results started (thanks to test labs for delivering test data) – but work now put on hold – out of budget (100 ESTIF hours used) – hopefully to be continued in QAiST.
Work is actually continued anyway at low level effort – as the issue should have high priority, and as the preliminary results look so promising that we are quite convinced that somebody will pay in the end!



Fig 5 Extrapolated results for system family including heat exchanger with collector having temperature dependent heat loss coefficient and incidence angle dependence

"Flexible system testing and extrapolation procedure" Jan Erik Nielsen, Miroslav Bosanac Planenergi, The Second Draft, March 8, 2009

The approach was discussed and generally appreciated. It was agreed that it is important to describe the method in a clear way in order to achieve similar results in case the method is applied by different persons.

Jan Erik Nielsen mentioned to continue the work provided financing is available by ESTIF or via the possible QAiST-project. Based on the results of this work a proposal for a decision related to flexible Solar Keymark certification of factory made systems will be made.

Item 18.1: French approach towards certification of solar domestic hot water system

François-Xavier Ball and Julian Heintz presented the following approach of France related to the certification of solar domestic hot water systems:



TTTA. French approach towards certification of SDHW systems French approach towards certification of SDHW systems (forced-circulation systems only) (2) (forced-circulation systems only) (1) Proposal of a method involving simulations and tests in order to : Certification process based on two successive steps : Is step (transitional) : use of a simulation tool according to EN 15316-4-3 with experimental inputs from EN 12975 tests (solar collectors) to calculate energy performance of SDHW systems \Rightarrow SOLEN Software developed by the CSTB Allow a certification of SDHW systems : · With a fast implementation Consistent with the testing facilities available With suitable costs for solar thermal manufacturers 2nd step : determination of thermal performances of one SDHW system by tests (according to EN 12976) and use of an extrapolation method (SOLEN) : • Tests on a single SDHW system within a system family - Be consistent with the SolarKeymark Extrapolation of the performances to determine the performances of the SDHW systems of a whole family using SOLEN ertita ITA Works of validation of the simulation tool SOLEN for forced circulation systems (1) French approach towards certification of SDHW systems (forced-circulation systems only) (3) Comparisons between SOLEN simulations and tests according to EN 12976 on 13 forced circulation SDHW systems (source CSTB) Scheduled timetable for the implementation of the certification process : T0 : publication of the certification text T0 + 3 months : availability of complete records by manufacturers for certification : simulations and tests T0 + 12 months : publication of simulation results (1st step) T0 + 24 months : publication of tests results (2nd step) Scheduled date for T0 : July 2009 ertita. ertita) Works of validation of the simulation tool SOLEN for forced Works of validation of the simulation tool SOLEN for forced circulation systems (3) circulation systems (2)

 Comparisons between SOLEN simulations and tests according to EN 12976 on 40 forced circulation SDHW systems with a low collector loop efficiency factor (default value) (source CSTB) y=0.0010x

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Works of validation of the simulation tool SOLEN for forced circulation systems (4)

SOLEN simulations for 2 SDHW systems of the same family:
 Ist case: the solar loop efficiency factor is chosen referring to the SDHW system n⁻¹ (3001, 4m²):

	Location	Qdtest (kWh/year)	Qitest (kWh/year)	Qdsimul (kWh/year)	Qfsimul (kWh/year)	QI difference (%)
SDHWS 300I, 4m ²	Nice	3898	2637	3801	2633	0.15
SDHWS 500L, 6m ² with extrapolation	Nice	3898	2899	3801	3188	9.07
SDHWS 300I, 4m ³	Stockholm	4652	1647	4638	1645	0.12
SDHWS 500L, 6m ^a with extrapolation	Stockholm	4652	1936	4638	1985	2,47
SDHWS 300I, 4m ²	Wurzburg	4205	1699	4451	1689	0.59
SDHWS 500L, 6m ² with extrapolation	Wurzburg	4205	1893	4451	2052	7.75
SDHWS 300I, 4m ³	Davos	5046	2707	5038	2688	0.70
SDHWS 500L, 6m ¹ with extrapolation	Davos	5046	3189	5038	3217	0.87
SDHWS 300I, 4m ²	Athens	3469	1962	3459	1961	0.05
SDHWS 500L, 6m ⁴ with extrapolation	Athens	3469	2138	3459	2504	14.62

Comparisons of test results according EN 12976 and SOLEN simulations by Fraunhofer ISE :

Location: Davos	Energy demand [kWh/a]	Solar Contribution [kWh/a]	Solar Fraction	Deviation [%]
DST-test-simulation, System A	5049	3024	0.60	
Simulation, Solen software	5038	3030	0.60	0.41
DST-test-simulation, System B	5053	3936	0.78	
Simulation, Solen software	5038	3913	0.78	-0.29
Location: Würzburg			1 199913	
DST-test-simulation, System A	4217	2016	0,48	
Simulation, Solen software	4451	2032	0.46	-4.49
DST-test-simulation, System B	4212	2489	0.59	
Simulation, Solen software	4451	2729	0.61	3.74
Location: Athens			Station 1	
DST-test-simulation, System A	3475	2332	0.67	
Simulation, Solen software	3459	2229	0.64	-3.99
DST-test-simulation, System B	3470	2700	0.78	
Simulation, Solen software	3459	2762	0.80	2.63
Location: Stockholm			1427.4	1.000
DST-fest-simulation, System A	4647	2008	0.43	
Simulation, Solen software	4638	2016	0.44	0.61
DST-test-simulation, System B	4654	2560	0.55	
Simulation, Solen software	4638	2541	0.55	-0.39

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Works of validation of the simulation tool SOLEN for forced circulation systems (5)

SOLEN simulations for 2 SDHW systems of the same family : 2nd case : the solar loop efficiency factor is chosen referring to the SDHW system n°2 (5001, 6m²) :

	Location	Qdtest (kWh/year)	Qitest (kWh/year)	Qdsimul (kWh/year)	Qisimul (kWh/year)	QI difference (%)
SDHWS 500I, 6m ¹	Nice	3898	2899	3801	2880	0.66
SDHWS 300L, 4m ¹ with extrapolation	Nice	3 898	2637	3801	2397	-10.01
SDHWS 500l, 6m ³	Stockholm	4652	1936	4638	1939	-0.15
SDHWS 300L, 4m ¹ with extrapolation	Stockholm	4652	1647	4638	1628	-1.17
SDHWS 5001, 6m ²	Wurzburg	4205	1893	4451	1877	0.85
SDHWS 300L, 4m ² with extrapolation	Wurzburg	4 205	1699	4451	1600	-6.19
SDHWS 5001, 6m ³	Davos	5046	3189	5038	3180	0.28
SDHWS 300L, 4m ¹ with extrapolation	Davos	5046	2707	5038	2661	-1.73
SDHWS5001, 6m ²	Athens	3469	2138	3459	2127	0.51
SDHWS 300L, 4m ² with extrapolation	Athens	3469	1962	3459	1727	-13.61



The presentation was discussed, especially with regard to the question how a system family is defined. Furthermore it was mentioned by some of the participants to take also the electricity consumption of the systems into account.

Item 19: Procedure for considering of thermal insulation and glass as the same

Rob Meesters mentioned the need for considering thermal insulation and glass produced by different manufacturers as the same. This means that the respective products can be replaced by an other one without requiring a re-testing of the collector.

The participants agreed to the importance of this aspect.

In order to prepare a fist proposal for a decision related to this aspect it was agreed to establish a working group consisting of the following persons.

Stephan Fischer (leader), Andreas Bohren, Roland Sterrer, Barry Johnston, Alberto Garcia de Jalon, Nele Rummler, Stefan Mehnert, Ralf Köbbeman-Rengers

It was agreed that this group should present a proposal of a decision related to this until the end of August 2009.

Item 20: Considering selective coating Alanod Mirotherm and Blutec eta plus_al as equal

Stephan Fischer mentioned that the German Ek-TSuB (Experience exchange circle related to solar thermal products and components) decided at it's meeting held on October, 21st, 2008 to consider the above mentioned coatings as equivalent.

Decision D5.M6 – Valdity of Solar Keymark certificates in case of absorbers selective coated by different manufacturers are used

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

Alanod Mirotherm and Blutec eta plus_al

Note: This decision extends decision D1.M5 (Valdity of Solar Keymark certificates in case of absorbers selective coated by different manufacturers are used was modified)

Additionally it was decided that in the future documentation for considering selective coatings and other materials as equivalent shall be provided in advance to the SKN.

This decision was taken unanimously.

Item 21: Certificate registration name

Rob Meesters expressed his wish to have certificates listet under the product brand name, even if the legal owner of the certificate is an other company.

It was agreed that in the future this problem can be solved by including an additional field with the brand name in the Solar Keymark certificate and in the data sheet.

The certifiers will provide modified versions of the Solar Keymark certificates until end of April 2009.

Jan Erik Nielsen will provide a modified version of the data sheets until end of April 2009.

Item 22: Presentation of the energy output calculation tool for collectors

Peter Kovacs presented the energy output calculation tool with the following slides:



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 on a later stage.

Furthermore Andreas Bohren expressed the wish to have the collector output also presented in kWh per collector module and not only in kWh/m². Peter Kovacs agreed to include this option.

It is intended to perform the future activities related to the energy output calculation tool for collectors within the QAiST project. In case this it was agreed that Peter Kovacs will send out the tool (including a manual) to the Solar Keymark Network for further evaluation and commenting.

This activity will be performed within the **working group for the further elaboration of the tool** established at the 5. SKN meeting held on October 1^{st} and 2^{nd} , 2009. (see Item 10 of this minutes for further information). The members of this working group are:

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

This group shall present a final draft tool for the next Solar Keymark Network meeting.

Item 23: Double inspection costs of both ISO 9001 and Solar Keymark

Jan Erik Nielsen proposed the two options to avoid double inspection costs in case of already ISO 9001 certified production lines

- Solar Keymark certifier co-operates with existing ISO 9001 certifier ISO 9001 inspector does the Solar Keymark inspection (every year or every 2nd year).
- Solar Keymark certifier takes over the ISO 9001 certification (give the manufacturer an offer)

It was agreed that the only way to solve the problem is to perform the ISO 9001 audit by the Solar Keymark inspector. In this case the travel costs for one person can be saved.

Item 24: Round robin test of factory made systems

Sebastian Laipple mentioned the need for a round robin test of factory made systems. It was mentioned that it is intended to perform such a round robin test in the frame of the hopefully upcoming QAiST project.

In case the QAiST project will not be approved the following labs intend to participate in a round robin test of factory made systems:

Arsenal, SPF, ISE, TÜV, INETI, ISFH, Lumicum, CENER, ITW, ENEA and maybe Demokritos

It was agreed that a decision related to this aspect should be made at the next meeting when it is clear if the QAiST project will be approved or not.

Item 25: Eco-design and energy labelling

Jan Erik Nielsen presented the subject with the following slides:

Eco-design of Dedicated Water Heaters

Until summer 2008 2 methods for determination of energy efficiency and classification were included:

Direct method: Based on test of complete system – including back-up

Indirect method: Calculation based on test results for collector and back-up heater (EN 15316-4-3 method B procedure)

NOW: Only the direct method is in - indirect method is deleted

⇒Test of all combinations of collectors, tanks and back-up necessary

E.g. 2 types of collectors, 1 – 3 collectors, 3 store sizes, 4 back-up boilers:

2*3*3*4 = <u>72 tests !</u>



Duration: 2-3 days per configuration (Seems to give reasonable results – and do have some flexibility)

ANNEX IVv2 includes solar water heaters with an integrated electrical heating element (e.g. thermo siphon systems widely used in Southern Europe) →

C Energy labelling IS possible

ANNEX IVv2 does NOT include solar systems with an integrated heat exchanger for supplementary heating but without the heating device for supplying the heat via this heat exchanger →

🛞 Energy labelling NOT possible

"New EcoBoiler Model" - Observations and recommendations Jan Erik Nielsen, 20/3 2009

Г		Observations		Recommendations
1.	Space heating	The New EcoBoiler model deals for the time being with space heating	?	Follow development of the hot water part of LOT1
	only	only and separately		closely
2.	Labelling	It appears that the labelling scheme situation p.t. is as follows:	?	Make request to use the same method/models in
	schemes	?Products for space heating: LOT 1 (Ecoboiler 2009)		all three labelling schemes.
		?Products for hot water: LOT 2 (currently the 'direct method')	?	For solar use : EN 15316-4-3.
		?Products for both functions: nothing at this point	?	Allow optionally direct testing of complete system
				(including "testing" acc. to CEN/TC 12977).
3.	Hot Water	A "Hot Water Load Factor" of 50% is used in the model(s) (also in LOT2):	?	Priority 1: Make request to increase hot water
	Load Factor	?Systems are calculated with only half Size Class load.		load factor to 1
			?	Priority 9: Make request, that it is very clear to
				the user that the average daily hot water load is
				only half the load specified by the Size Class
4.	Solar model	The solar model used is rather close to the EN 15316-4-3 standard.	?	Accept solar model with some (minor) corrections
		?No principle problems with the solar model	?	Follow up on the solar radiation data used - must
		?Only one climate available/included		be changed - DONE (will be changed according to
		?Solar radiation to be corrected (significant error)		Kemna)
		Other minor things to be corrected/improved	?	One climate good enough

	Observations	Recommendations
5. Non solar	? Heaters, fired with solid fuels (like biomass), are not included in	? Request solid fuels included maybe in the future
models	the model.	? Follow development close
	? The algorithms used to describe the performance of non solar	
	heaters are new and are not based on existing standards and have	
	no track record. This will make the involved industries uncertain	
	on the performance ratings of their products compared to competing companies.	
	? Much extra testing is required to get the input parameters for the calculation method.	
	? The current model has faults in its description, specifications and	
	modelling, that will have to be corrected in near future. Improved	
	March version now available.	
	? There is much at stake for the non solar heater trade with this new	
	model. This will almost certainly lead to a lot of protests and	
	alterations on the model.	
6. Ranking	? Best available gas heater gets a B-rating. Extended with a solar	
	system of 14 m2 the rating goes to an A-rating. With correct solar	
	irradiance in the model, then the rating could go up to A1 or more?.	
	(Space heating part of LOT 2).	
7. Other	? Method(s) for water heating critical	? Focus on LOT 2 and hot water part of LOT 1

The presentation was discussed and specific questions were answered. It was not decided on any specific activity related to this.

Item 26: Development of solar air collector testing standards to be included in EN 12975

Matthias Rommel presented the subject with the following slides:



The initiative was, in general, appreciated by the participants. Jan Erik Nielsen expressed his happiness that the subject is processed by ISE even if it is not part of the QAiST proposal any more.

Item 27: QAiST-Proposal – latest news

Roland Sterrer mentioned that the QAiST – proposal (QAiST: Quality assurance in solar thermal heating and cooling technology – keeping track with recent and upcoming developments) was in general positively evaluated but anyway there was the request for the EC to perform some major changes.

Due to this a revised version off the proposal was submitted to the EC on March 20th, 2009. Besides substantial technical changes this revised version did also contain a change of the co-ordinater from arsenal to ESTIF since it was the wish of the EC to have a more industry-related co-ordinator.

Up to now no feedback to the modified proposal has been received from EC.

Item 28: Next meeting of TC 312

Harald Drück reported about the inactivity of the TC 312 secretariat hold by the Greek standardisation body ELOT. The next TC312 meeting originally scheduled for November 2008 did not take place. On request of Jan Erik Nielsen and Harald Drück, the TC 312 chairman Mr. Emmanouil Kastanakis agreed several times to organise the next TC312 meeting. Proposed dates at the end of 2008 and the beginning of 2009 passed without any action.

There is an urgent need to have a TC 312 meeting as soon as possible in order to proceed with important issues such as the CE-Marking of solar thermal collectors and the energy labelling of systems.

It was proposed that ESTIF shall make an official complain to CEN about this unsatisfying situation

Item 29: IEA SH&C Task on "Rating and Certification Procedures"

Robert Hasset presented the subject with the following slide:

Status of Task Development

- Meeting held in Lisbon to solicit input.
- Follow-up teleconference to discuss results, refine task.
- E-mail circulation of drafts for comment.
- Draft of Task Annex produced and review by IEA SHC ExCo.
- Support from ExCo:
 - Australia, Austria, Canada, Germany, Netherlands, Portugal, Spain, Sweden and the U.S.
 - Interest from Denmark and Switzerland
- Next Steps:
 - Finalize Task, Operating Agent(s), Resources, Assignments;
 - Develop Work Plan, Communication Plan;
 - Present to June ExCo Meeting for Approval.

He mentioned that the Task operating agents form the US will be Jim Huggins for technical and Les Nelson for administrative aspects. Furthermore he pointed out that he would be happy to have an European Co-Operating agent for technical aspects.

Kevin de Groat (Email: kdegroat@antares.org) is organising the Task for the Department of Energy (DOE)

It was mentioned that directly after the Solar Keymark Network meeting and on March 24th in the afternoon and on March 25th, 2009 a Task Definition meeting related to this new IEA Task on "Rating and Certification Procedures" will take place. Information for this meeting was be send out

Item 30: Any other business

Item 30.1: SKN Working methods

In order to optimise the effectiveness of the future SKN meetings it was agreed on the following procedures:

Numbering of documents

All documents will numbered in the following way: SKN_NXXXRY XXXX is a continuos number (starting with 100 --> SKN_01000RY Y is indicating the revision status. The first version of a document is characterised by "R0"

A list with all documents send out officially by the SKN secretariat or the SKN chairman is maintained by the SKN secretariat.

Emails

The subject of all emails related to the SKN shall follow the following syntax "SKN: xxxx" xxx has to be replaced by the relevant topic.

Emails related to general management issues (e.g. invitations to SKN meetings, SKN meeting minutes) will be send out via the SKN secretariat.

Meeting preparatory documents

Information to be presented at a SKN meeting and decision to be made should be send to the SKN secretariat or to the SKN chairman at least 20 days before the meeting preferably as a Microsoft Word document.

The SKN secretariat will compile this information and send it out to the SKN at least 15 days before the meeting.

The items mentioned on the meeting agenda should classified with regard to their intention according to the following categories:

IN: For Information DE: Decision

Item 31: Date and place of next meeting

It was decided that the next Solar Keymark Network Meeting will take place on

September 3rd, 2009; 12:00 hrs - September 4th, 2009; 13:00 hrs at the CEN/CENELEC Meeting Centre at Brussels Avenue Marnix 17, 1000 Brussels

The spring 2010 meeting is scheduled for March 15th 12:00 hrs to 16th 13:00 hrs at SPF Rapperswil, Switzerland

Item 32: End of meeting

Harald Drück thanked the participants for attending the meeting and for their constructive discussions. He closed the meeting at 12:40 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 28th, 2009

Contact address Solar Keymark Network Chairman:

Harald Drück ITW, Stuttgart University Pfaffenwaldring 6 70550 Stuttgart, Germany Email: <u>drueck@itw.uni-stuttgart.de</u>

Contact address Solar Keymark Secretariat:

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

Annex A: List of participants SOLAR KEYMARK NETWORK

6th MEETING, PAMPLONA, MARCH 23RD & 24ST, 2009

NAME	NOMINATING ORGANISATION	SIGNATURE
Premoli Pierluigi	ICIM (Italy)	
Jan Erik Nielsen	SolarKey (Denmark)	
Andreas Bohren	SPF (Switzerland)	
Maria Carvalho	INETI (Portugal)	
Sören Scholz	DINCERTCO (Germany)	
Vinod Sharma	ENEA (Italy)	
João Santos	CERTIF (Portugal)	
Sebastian Laipple	SPF (Switzerland)	
Peter Kovacs	SP (Sweden)	
Stephan Fischer	ITW (Germany)	
Harald Drück	ITW (Germany)	
Hoang Liauw	CEN (Belgium)	

Korbinian Kramer	ISE (Germany)
Stefan Mehnert	ISE (Germany)
Alberto Garcia de Jalon	Cener (Spain)
Fabienne Salaberry	Cener (Spain)
Enric Mateu Serrats	Cener (Spain)
Nele Rumler	ISFH (Germany)
Rob Meesters	Solahart (Netherlands)
Barry Johnston	Solar Twin (UK)
Kevin DeGroat	Antares Group, Inc. NEU (USA) (observer)
Julien Heintz	CETIAT (France)
Robert Hasset	U.S. Department of Energy (USA) (observer)
S.J. Babalis	NCSR "Demokritos (Greece)
Joakim Bystrom	Lumicum laboratory (Sweden)
Ralf Köbbemann-Rengers	BDH (Germany)
Richard Loyen	Enerplan (France)
Ioannis Alexion	ELOT (Greece)

Roland Sterrer	arsenal (Austria)
Ulrich Fritsche	TÜV Rheinland (Germany)
Matthias Rommel	ISE (Germany)
François-Xavier Ball	CERTIA (France)
Richard Pelan	Kingspan Renewables (UK)
Lourdes Ramirez	Cener (Spain)
Mark Thornbnom	SRCC Board (US) (observer)
Stephen Still	Chairman SRCC Board (US) (observer)
Les Nelson	SRCC Executive Director (US) (observer)
Jim Huggins	SRCC Technical Director (US) (observer)

Annex B: Final agenda

Solar Keymark Network



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

6. Solar Keymark Network Meeting

Monday, March 23rd, 10:00 to Tuesday, March 24th 2009, 13:00 hrs

CENER Headquarter at Pamplona, Ciudad de la Innovación, 7 31621 Sarriguren (Navarra) – España; <u>www.cener.com</u>

Final Agenda (23/03/09)

ltem	Content
1	Opening of the meeting (HD)
2	Introduction (incl. nomination) of participants (HD)
3	Approval of the minutes of the 5. meeting (HD)
4	Solar Keymark Network decision list (HD)
5	Competition and the ESTIF filter on access to SKN (Barry Johnston)
6	Terms and conditions for the Solar Keymark Network Meetings (Sören Scholz)
7	Report of CCB meeting on March 12th, 2009 (Hoang Liauw)
8	Fees for the Solar Keymark Network and Secretariat (JEN)
9	Collector and system data sheets - experience, improvements? (JEN)
10	"Deep" Solar Keymark Database (JEN)
11	Certification of a range of collectors which can be produced to any size (within some limits)
11.1 11.2	Number of subtype licenses to be paid? (JEN) Durability and reliability testing (Stephan Fischer)
12	Revised scheme rules (JEN)
12.1	Specify harmonised procedure for the physical inspection (clause 6. in scheme rules); request by AFNOR
12.2	Change "special test" to normal handling of complaints (clause 6.1 in scheme rules); request by AFNOR
13	How to handle type testing in early stages of production and how to define "series production and stock" (Peter Kovács)
14	Treatment of IAM effect for systems with vacuum tube collectors (Korbinian Kramer)
15	Changing the collector of a Solar Keymark tested system (Sebastian Laipple)

Page 2	"Final Aq	enda for 6.	Solar Keymark	Network	Meeting"
	,,,				

16	Long Term Prediction (LTP) calculation procedure based on ISO 9459-2 (Enric Mateu Serrats)
17	Which tests are required for Solar Keymark testing of factory made systems if the collector can not be separated from the system (Korbinian Kramer)
18	Flexible Solar Keymark certification for factory made systems (JEN)
18.1	French approach towards certification of Solar domestic hot water system (François-Xavier Ball, Julien Heintz)
19	Procedure for considering of thermal insulation and glass as the same (Rob Meesters and maybe someone else?> please info to HD)
20	Considering selective coating Alanod Mirotherm and Bluetec eta plus_al as equal (Stephan Fischer)
21	Certificate registration name (Rob Meesters)
22	Presentation of the energy output calculation tool for collectors (Peter Kovacs)
23	Double inspection costs in case of both ISO 9001 and Solar Keymark (JEN)
24	Round robin test of factory made systems (Sebastian Laipple)
25	Eco-design and energy labelling (JEN)
26	Development of solar air collector testing standards to be included in EN 12975 (Matthias Rommel)
27	QaiST – Proposal – latest news (Roland Sterrer)
28	Next meeting of TC 312 (HD)
29	IEA SH&C Task on "Rating and Certification Procedures" (Kevin DeGroat)
30	Any other business (HD)
31	Date and place of next meeting(s) (HD)
32	End of meeting (HD)

Note: On March 24th directly after the Solar Keymark Network meeting and on March 25th a Task Definition meeting related to the new IEA Task on "Rating and Certification Procedures" will take place. Information for this meeting will be send out by Kevin DeGroat (kdegroat@antares.org)

JEN: Jan Erik Nielsen, PlanEnergi, ESTIF Technical Consultant

Note:

Further information related to the meeting 6th meeting is available at http://www.estif.org/solarkeymark/network-meeting6.php

Contact address:

Chairman Solar Keymark Network

Harald Drück (HD) ITW, Stuttgart University Pfaffenwaldring 6 70550 Stuttgart, Germany Email: drueck@itw.uni-stuttgart.de

Annex C: Presentation from Barry Johnston related to "Competition and the ESTIF filter on access to SKN"

"Whoever writes the regulations controls the market" HOW TO BLOCK INNOVATION IN SOLAR THERMAL as much regulatory responsibility AN ANARCHIST'S COOKBOOK and as much regulatory oversight Based on Solar Twin Ltd's experience of being on the receiving end of regulatory "fun and games" in solar water heating over 10 years by Barry Johnston. USING THE INDUSTRY VETO HOW TO BLOCK INNOVATION Encourage government and regulators to respond to industry consensus - instead of industry diversity. (Lazy regulators adore this idea: they have to do less critical thinking.) Use <u>majority votes</u>. Ignore or punish dissent. (Maybe even count abstentions whichever way a chairman wants.) 3. <u>Restrict direct representation</u> to regulatory bodies (Ideally permit only indirect representation.) Use informal and formal <u>procedural</u> means to your adantage Think ahead. Ideally, give industry an <u>explicit veto</u>. Use these wisely and you will increase to unacceptably high levels (but for innovations only) the <u>risk, timescale and costs</u> of their market entry. Use the industry veto whenever you can. (This is today's topic.)

USING THE INDUSTRY VETO

- CEN / BSI do not allow direct representation. Only indirect.
- STA Chief Executive commits to represent Solar Twin Ltd on the CEN TC 312 solar mirror committee in UK (where STA has experience and which is chaired by an ex-STA chair).

ACCIDENTAL INDUSTRY VETO

- Out of date regulations delay
 our installations for UK subsidy.
 The claimed problem is that
 repeated freeze-thaw cycles
- We evaluate and risk assess several evacuated tube types.
- Installers tell us stories of catastrophic winter failure.
- Snow or ice forms <u>between</u> adjacent tubes in winter.
- repeated freeze-thaw cycles make the tubes break.
- So we consider installing evacuated tubes to fill the gap.
 Will glass will fall off roofs and hurt people? We don't know.
 - we can develop a suitable pressure / freeze test together.





from Barry Johnston at Solar Twin Ltd

AN INNOVATOR'S REQUEST

"LET'S NOT EXPERIENCE ANOTHER LOST DECADE!"