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Towards global certification of solar collectors

Jan Erik Nielsen ^a, Les Nelson ^b, Jaime Fernández González-Granda ^c

^a*PlanEnergi, Aggerupvej 1, Hvalsoe 4330, Denmark*

^b*International Association of Plumbing & Mechanical Officials (IAPMO), 5001 East Philadelphia Str., Ontario CA 91761, U.S.*

^c*AENOR, Dirección Técnica de Certificación, Génova 6, 28004 Madrid, Spain*

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Abstract

The EN/ISO 9806 standard for collector testing is expected to be published in 2013 - and could then form a basis for a global collector certification scheme. The objective is to propose and take the first steps on a path towards global certification of solar collectors.

Introducing a global certification scheme is an ambitious task. A pragmatic approach could be to proceed on a “step by step” basis, by first investigating possibilities for harmonizing the main existing certification schemes. Then, if this first activity is successful, work would begin to harmonize with additional existing certification schemes by introducing the harmonized scheme in countries with no existing certification scheme.

Two existing successful collector certification schemes are Solar Keymarkⁱ and SRCCⁱⁱ. Solar Keymark covers around 90% of the European solar collector market, and SRCC has similar coverage in the North American market, although IAPMOⁱⁱⁱ solar collector certification is a requirement in certain areas. Some cooperation is already taking place at the testing level between Europe and North America - giving a good basis (together with the up-coming EN/ISO standard for collector testing) for aiming at a common certification scheme.

Solar Keymark is also expanding its sphere of influence into neighboring regions. Similar solar product certification schemes are under development elsewhere, including in North Africa and South America. A reasonable next step would be to implement an agreed-upon common certification scheme in interested countries, adapting the scheme rules to new weather and mechanical load conditions if necessary.

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1. Introduction

The idea of establishing a global solar certification scheme has been discussed in the IEA-SHC^{iv} Task 43^v and amongst the participants in the European project IEE/QAiST^{vi}.

As a result of these discussions, a coordinated revision of the European collector standard EN 12975 and the international collector standard ISO 9806 is now underway, with the aim of establishing a common EN/ISO standard for collector test methods.

When such a common international standard is realised, it would be possible to establish a global collector certification scheme which could open up the world market for collectors, since this one certificate could be used worldwide to demonstrate compliance with the EN/ISO “world collector standard”.

2. Background

The Solar Keymark certification scheme has been very successful in Europe, and is also used for non-European products installed in the European marketplace. However, due to rules of the owner of the mark (CEN^{vii}, it is only possible for European certification bodies to participate in the certification scheme and issue licenses. Non-European manufacturers must utilize European certification bodies. In the US, both SRCC and IAPMO certify solar collectors according to SRCC standards. To illustrate the situation, at present, if a manufacturer wishes to sell their collector in both the EU and the US, they need the Solar Keymark, the SRCC, and the IAPMO certifications, and hence double testing and certifications are required (IAPMO certification is a substitute for SRCC in some areas, and the only requirement in others). In the future, ONE “Global Solar Q-Mark” could allow a company to sell its collector products in all countries on all continents.

3. Step by Step Approach

Introducing a global certification scheme is an ambitious task. A pragmatic approach could be to work “step by step,” first by investigating possibilities for harmonizing the main existing certification schemes. If this effort is successful the harmonized scheme could be used as a template for establishing certification programs in countries with no certification scheme, and for adapting other existing schemes into a global format.

The Solar Keymark Network has established a working group with the task of investigating different possibilities for establishing a global certification scheme for solar thermal collectors. This work group, consisting of representatives from both Europe and North America, will begin the task of gathering all necessary information required to reach a decision on the best path forward towards global certification.

This project (funded by the SCF^{viii}) will be divided into three main areas:

1. Analysis of existing global certification schemes or international agreements in other fields, for example electrical products (CCA, HAR, ENEC or IECCE), or food products (GLOBAL GAP), in order to learn about the mechanisms used in other successful models
2. Analysis of existing national/regional certification schemes for solar collectors throughout the world, in order to learn about the different mechanisms used and identify areas of growth
3. Comparison of Solar Keymark, SRCC, and IAPMO to focus on opportunities for flexibility and needed scheme changes

The project completion date is scheduled for March 2013, and should conclude with a proposed course of action. However, there will be a presentation of work accomplished to date in September 2012 in Madrid, Spain, with an open discussion and feedback to the working group.

Once a common certification scheme is achieved for two major regions of the world, it will be conducive for other countries and regions to join in order to secure easy access to the worldwide market; the more countries involved the more attractive it will be to join - a self-perpetuating circle is created.

It should be noted that a condition of joining the “common market” for solar collectors must be for the new country or region to assure ready access to its own market by removing technical trade barriers.

4. Program Function Example

With respect to test methods, the global certification scheme should refer directly to the upcoming EN/ISO 9806 series of test procedures for efficiency and reliability/durability of solar thermal collectors. Requirements should be based on EN 12975-1 and SRCC Standard 100.

The global certification should be based on independent, accredited “third-party” certification bodies, test labs and inspectors fulfilling certain accreditation requirements (see Figure 1).

The main components in the scheme are:

- Factory inspecting - inspection of the quality management system of the manufacturer, including initial inspection before certification, and then regular surveillance inspection (continuous compliance) as per applicable accreditation requirements
- Product testing - collectors for testing are selected from the production line by random sampling

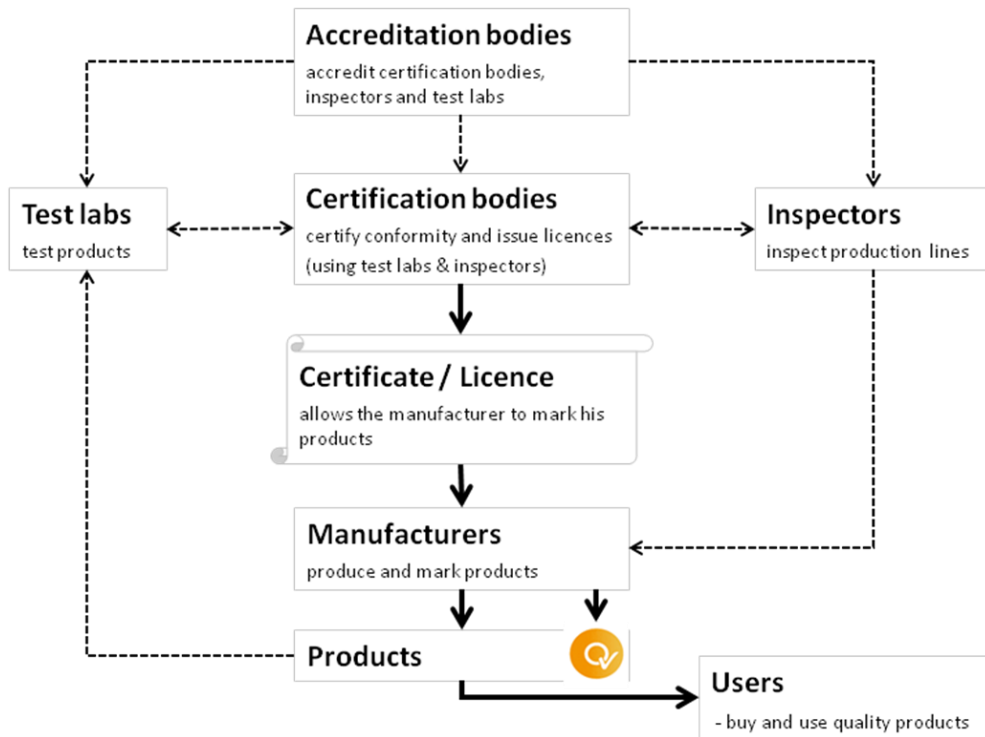


Fig. 1: Principles in a 3rd party certification scheme

- Certification bodies, test labs and inspectors are accredited by third parties (and they are checking each other as well)
- Certification bodies ensure that the requirements in the certification scheme are fulfilled based on test and inspection reports. The certification bodies issue the license to mark the product to the manufacturer (if requirements are fulfilled)
- Laboratories test products (collectors) according to the standards
- Production lines are inspected, and products are selected at random by inspectors for testing
- Manufacturers produce products - and mark them

5. Organizational Example

Inspired by the Solar Keymark Network, an organizational framework around the certification scheme is proposed: “Solar Q Network”. In this concept, both industry and other certification program participants are involved, and all are represented in a balanced way in the organization. See fig. 2.

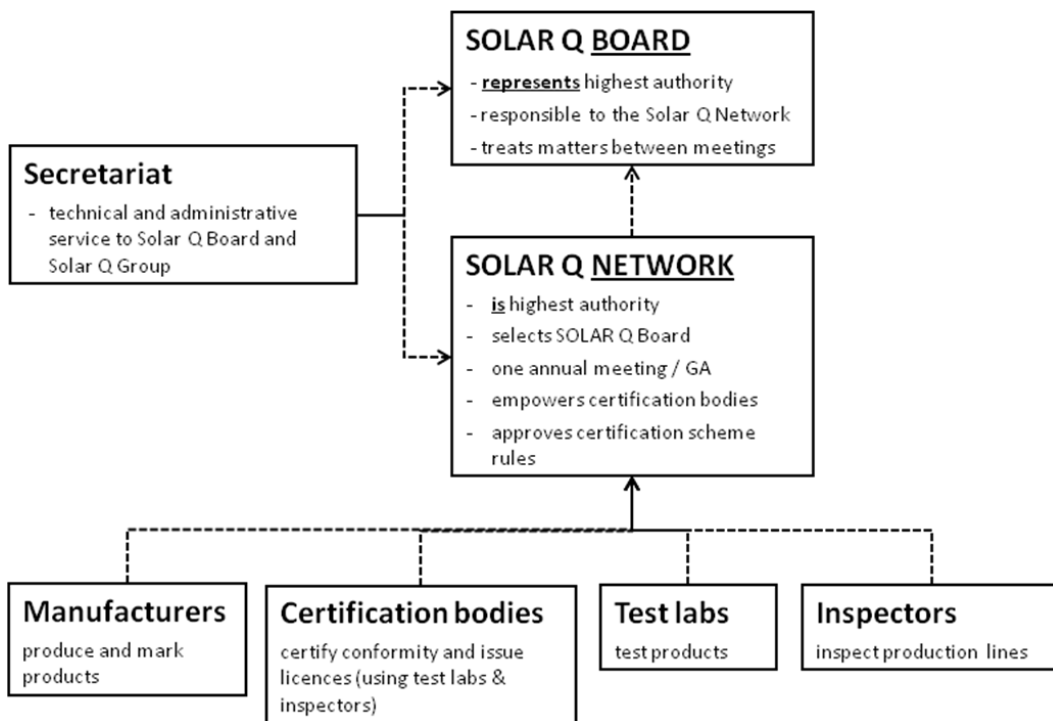


Fig. 2: How the global certification scheme could be organized

Acknowledgements

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Workshop on global certification of solar collectors

On September 5th (09:00- 12:00) there will be a “Workshop for Global Mark” at AENOR in Madrid, Spain; more information will be available at the Solar Keymark web site: www.solarkeymark.org.

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- ⁱ Solar Keymark: The CEN Keymark certification scheme for solar thermal products, www.solarkeymark.org
- ⁱⁱ SRCC: SolarRating and Certification Corporation, www.solar-rating.org
- ⁱⁱⁱ IAPMO: International Association of Plumbing & Mechanical Officials <http://www.iapmo.org>
- ^{iv} IEA-SHC: International Energy Agency - Solar Heating and Cooling, <http://www.iea-shc.org>
- ^v IEA-SHC Task 43: IEA-SHC Task on “Solar Rating and Certification”, <http://www.iea-shc.org/task43/>
- ^{vi} IEE/QAiST: Intelligent Energy Europe Programme / Quality Assurance in Solar Thermal, <http://www.qaist.org/>
- ^{vii} CEN: Comité Européen de Normalisation - umbrella organization for the national European standardization bodies. <http://www.cen.eu>
- ^{viii} SCF: Solar Certification Fund. Fund established by the Solar Keymark Network with aim of supporting work on international standardisation and certification for solar thermal products.
- ^{ix} IEE: Intelligent Energy Europe Programme, <http://ec.europa.eu/energy/intelligent/>