

Description:	<i>Overview about current standards, certification schemes and regulations regarding solar thermal components and systems</i>
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Introduction

To ensure the quality of the products in the rapidly growing solar thermal market, national and international standards for solar collectors, hot water stores and complete thermal solar systems have been established. In these standards, basic requirements for products as well as testing methods for the verification of these requirements are specified. Furthermore, test methods for the determination of the thermal performance are standardized. The target groups for the standards are manufactures and planners as well as testing institutes for thermal solar systems and components.

Based on the standards, national and international certification schemes have been developed and put in place to assess the performance and quality of the solar thermal products and to facilitate ranking of the different products by the consumer.

This report gives an overview of the standards for testing solar thermal components and systems and the most important certification schemes and an outlook on the requirements for solar thermal collectors within the European Construction Product Regulation.

Standards

There are European Standards for three different solar thermal technologies: solar thermal collectors (EN 12975 series), factory made systems (EN 12976 series) and custom built systems (EN 12977 series), see Table 1. Part 1 of the standard always lists the general requirements for the product and the other parts refer to the test methods.

An enormous step in international harmonization of collector test standards was taken in 2013 when EN 12975-2 and ISO 9806-1, -2 and 3 were merged to create EN ISO 9806.

Table 1: *Standards for solar thermal collector and systems.*

Number	Title
EN 12975-1	<i>Thermal solar systems and components-collectors-Part 1: General Requirements</i>
EN ISO 9806	<i>Thermal solar systems and components-collectors-Part 2: Test Methods</i>
EN 12976-1	<i>Factory made systems – Part 1: General requirements</i>

EN 12976-2	<i>Factory made systems – Part 2: Test methods</i>
EN 12977-1	<i>Custom built systems – Part 1: General requirements for solar water heaters and combi-systems</i>
EN 12977-2	<i>Custom built systems – Part 2: Test methods for solar water heaters and combi-systems</i>
EN 12977-3	<i>Custom built systems – Part 3: Performance characterization of stores for solar heating systems</i>
EN 12977-4	<i>Custom built systems – Part 4: Performance test methods for solar combi-stores</i>
EN 12977-5	<i>Custom built systems – Part 5: Performance test methods for control equipment</i>

Certification Schemes

Solar thermal collectors and systems can be certified according to different certification schemes. A certification demonstrates the compliance of the product with the requirements of the certification scheme. Furthermore, a valid global certification system can reduce testing costs since one test and certification is accepted in different countries.

The most relevant certification schemes at present are Solar Keymark (European scheme but also accepted in various countries worldwide, <http://www.estif.org/solarkeymarknew/>), SRCC (North American scheme, <http://www.solar-rating.org/>), Golden Sun (Chinese scheme, <http://www.cgc.org.cn/eng/>).

At present the harmonization of the existing certification schemes aims at introducing a Global Solar Certification (<http://task43.iea-shc.org/>) to achieve one test and one certification accepted worldwide. This is expected to be in place within 2015.

Regulations and Directives

In the context of the European Union (EU) certain products have to fulfil certain requirements. These requirements are described in European regulations and directives. Relevant regulations and directives for solar thermal collectors and systems are:

Construction products regulation, solar thermal collectors only
 (http://ec.europa.eu/enterprise/sectors/construction/legislation/index_en.htm)

Ecodesign directive (<http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/>)

Energy labelling directive (http://ec.europa.eu/energy/efficiency/labelling/labelling_en.htm)

The EU formulates so called mandates to convert these regulations and directives into national law, which require the harmonization of European Standards with the European directives and regulations.

At present the relevant standards listed in Table 1 are under revision to be harmonized with the above mentioned EU directives and regulations.