



Organization/Unit:

إدارة مختبر دبي المركزي
Dubai Central Laboratory Department

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Document Title:

Certification of Thermal Solar Systems
and Components as per BS 12976-1:
2006

عنوان الوثيقة:



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Issue Date	Rev. No.	Summary Of Amendments
09-03-2017	0	First draft
01-05-2017	0	Second draft for comments
12-06-2017	0	Final draft (incorporating client's feedback)
19-06-2017	0	Final draft (further review as per client's feedback)
24-08-2017	1	Issue for use
17-03-2019	2	Updated format as per new DM template and new DM logo
11-05-2020	3	Revised with some editorial changes as per the new numbering Scheme and terminologies
09-08-2020	4	Add the options for initial audit by the approved CAB and remotely by PCAS. Adding definition for authorized auditor. Update for the new numbering system and followed terminologies.
26-09-2021	5	Removal of the documents in clause 2.1.2, in addition to further amendment in the provision for accepting valid test reports (clause 2.4.1.2 b), in line with DM 30% reduction of requirements (both service and specialized). Modifications in the auditing part for the factories already certified against ISO 9001 to opt for auditing only the areas of production and monitoring stages of product realization, quality control and final product testing and evaluation.
07-10-2022	6	Changing section name as per the new organizational structure, and replace HOU by CQPSM (Section's Manager), also addition of surveillance in the clause 2.4.1.2.b
27-03-2023	7	Full re-structuring and transfer of common provisions to the general rule. Clauses are re-numbered and document title has been revised accordingly. Use of New DM Logo
18-09-2026	8	Restructured to align with the new internal formatting and numbering of all documents

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1. INTRODUCTION

- 1.1 This document prescribes the specific rule for certification of the product(s) as identified herein, in accordance with the requirements of DM Third Party Product Certification Scheme Through Factory Assessment, taking into consideration the applicable normative references and standard specification, in addition to the requirements for conformity evaluation, as stated below.
- 1.2 The applicant/client shall comply with this specific rule, and to all provisions under the **“General Rule for DM Third Party Product Certification Scheme Through Factory Assessment “DM-DCLD-RD-CQP-2001.**
- 1.3 This specific rule **is an integral part of the general rule**, and both shall always be read together.

2. SCOPE

- 2.1 This specific rule covers requirements on durability, reliability, and safety for Factory Made thermal solar heating systems. It also includes provisions for evaluation of conformity to these requirements.
- 2.2 These requirements apply to Factory Made solar system as product. The installation of this system itself is not considered, but requirements are given for the documentation for the installer and the user which is delivered with the system (refer to clause 4.6 of the standard specifications).
- 2.3 Factory Made Solar Heating Systems includes mainly the following systems:
- Integral collector-storage systems for domestic hot water preparation
 - Thermosiphon systems for domestic hot water preparation
 - Forced-circulation systems as batch product with fixed configuration for domestic hot water Preparation.
- 2.4 This specific rule does not -by itself- permit the use of the below product in the construction sites. However, it does provide the necessary general conformity assessment criteria, which are required for the evaluation and issuance of the certification and the authorization of the use of the DCLD Conformity Mark. Other relevant requirements issued by the regulatory bodies, if any; shall always be fulfilled.

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3 PRODUCT IDENTIFICATION AND APPLICABLE STANDARD/NORMATIVE REFERENCE

- 3.1 Product name: Factory Made solar heating system
- 3.2 Applicable standard/Normative reference: BS EN 12976-1:2006 (E) – Thermal solar systems and components – Factory Made systems – Part 1: General requirements.
BS EN 12976-2:2006 – Thermal solar systems and components – Factory Made systems – Part 2: Test.
DM-DCLD-RD-DP21-2006 (IC) Special rules for the certification of solar water heater collectors and registration of suppliers of solar water heating systems as per the requirements of DM Circular No. (183) 2011.
- 3.3 Additional reference:
ISO 9001 Quality Management System – Requirements
ISO 19011 Guidelines for Auditing Management Systems

4 DEFINITION OF TERMS

- 4.1 In addition to the definitions given in BS EN 12976-1, EN ISO 9488, and the General Rule of the scheme [DM-DCLD-RD-CQP-2001], the following shall apply: -
- 4.1.1 Standard Specification – BS EN 12976-1:2006 (E) – Thermal solar systems and components – Factory Made systems – Part 1: General requirements.
- 4.1.2 Product: refers here mainly to the solar collector and the tank as two main components in the SWHS, (Tanks used must be either manufactured by the OEM itself or outsourced/supplied by a solar key mark- or equivalent- tank manufacturer).
- 4.1.3 Applicant / Client – Any company with legal entity, which applies for certification of the product and is responsible for fulfillment of all certification requirements and got the right to use DCL Conformity Mark for the solar heating system. This applicant may be the manufacturer of the solar heating system (OEM) or own the brand labeling of the solar heating system (OBL).
- 4.1.4 OEM (main) – is the original equipment manufacturer (OEM) of the product that applies for certification and granted the right to use DCL Conformity Mark after satisfactory fulfillment of the certification requirements. This term is used when the certificate holder has a contract/agreement with another

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company acting as an OBL.

- 4.1.5 OBL (private label) – is an own brand labeling (OBL), is a company re- labeling the product with valid DCLD-CQPS certification, under its own company name and product name (brand) without making any changes to that product as originally certified by (DCLD-CQPS) to the OEM.

5 REQUIREMENTS FOR INITIAL CERTIFICATION

- 5.1 The process of application, initial assessment and product sampling shall be in line with the related provisions in the general rule and the standard specifications.

- 5.2 The collector used in the system shall have a valid (DCLD-CQPS) Certificate of Conformity.

5.3 Specific requirements (Manufacturer/OEM)

- 5.3.1 The manufacturer/OEM shall have a laboratory with the following testing equipment as a minimum:

- Pressure tester (for absorbers, collectors and storage tanks tightness)
- Dimensional test equipment

- 5.3.2 The manufacturer/OEM shall implement a factory production control system (internal product quality assurance plan) which shall conform to DM-DCLD-RD-DP21-2084 (IC).

5.4 INITIAL FACTORY AUDIT/REVIEW

5.4.1 The applicant is the manufacturer/OEM of the product

- 5.4.1.1 Initial factory audit will be carried out by DCLD-CQPS as per the relevant provisions in the general rules of the factory assessment scheme.

- 5.4.1.2 Once certified; the manufacturer/OEM must have an authorized supplier in Dubai with valid trade license issued by DED and registered with DCLD-CQPS.

5.4.2 The applicant is not the manufacturer (i.e OBL) of the product and wishes to be the certificate holder (certificate under his name).

- 5.4.2.1 DCLD-CQPS duly authorized auditors shall conduct a full review of the submitted documents along with the application, in addition ensuring the following:

- The manufacturer/OEM of the solar collector shall have a valid DCL certificate, tank manufacturer must be certified by Solar Key Mark (or its equivalent).
- Complete product description and specifications including documentation required in clause

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4.6 'Documentation and clause 4.7 'Labelling' of the standard specifications are submitted and are complying with the ones originally certified by DCL for the respective manufacturer/OEM.

5.4.2.2 DCLD-CQPS reserves the right to re- test whole product (factory made solar heating system) which are labeled by the OBL. This can be arranged through a third-party accredited inspection/certification body; or sampled by DCLD-CQPS.

5.4.2.3 The OBL shall have an authorized supplier in Dubai with valid trade license issued by Dubai Economic Department-DED and registered with DCLD-CQPS.

5.5 PRODUCT EVALUATION

5.5.1 **Products not covered by Solar Key mark Certification (or its equivalent): (see also clause [5.5.2])**

5.5.1.1 Sampling and Testing

- Test samples shall be taken for initial testing from the current production/warehouse (refer to clause 'e')
- Two sets of samples per each subtype (family) shall be taken randomly. The first set will be sent directly to (DCLD-CQPS) approved independent testing laboratory and the second set will be kept by the client as reference for future use.
- Samples to be submitted for independent test shall be accompanied by documentation requirements as per clause 4.6 'Documentation and clause 4.7 'Labelling' of the standard specifications. The set of drawings shall describe the whole system along with a list of materials used in the system.
- Requirements for grouping different system configurations into one system family (same subtype)
 - Hydraulic: same principle layout of solar and load loops.
 - Heat transfer fluid: same type of liquid (same brand and same water mixing percent – or declaration from manufacturer that the fluid is equivalent.
 - Heat exchanger(s) (if any): same type of heat exchanger (mental / spiral / external) and heat transfer coefficient of heat exchanger shall be declared for each system configuration.
 - Tanks: same brand- or declaration from the manufacturer that the brands of the tanks are equivalent/ same tank materials/same tank orientation /same inside coating/same insulation materials (same materials specifications).
 - Collectors: shall have DCL certification (same collectors subtypes for all systems)
 - Pipes/piping: comply with annex B of EN12976-2 and tables B2 and B3 for pumped systems and Thermosiphons respectively.
 - Controller(s) (if any): same brand, type and settings of controller(s)/ same brand, type and same location of sensors; restrictions on relative location(s) of sensor(s) in the tank:

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- $\pm 10\%$ variation (relative to average positions) allowed in positions relative to tank height.
- Overheating protection /temperature limiting functions: same principles/functions for all system configurations.

8. Pump(s) (if any): same specifications with respect to operating conditions (temperatures, pressure, fluid) Nominal power for all pumps used in the family shall be reported. P_{NOM} for a system with a given collector aperture area shall be smaller than or equal to P_{NOM} for a system with a bigger aperture collector area.

e. If the client produces the "same" system (product) in different sizes, the different sizes of the system is considered being the same subtype (within the same system "family"). The testing requirements for systems to be of the same subtype are:

- High temperature and safety tests according to EN12976-2 shall be performed on the sub system having the highest collector area to store volume ratio.
- All other tests (according to EN12976-2 and including performance test) shall be performed on the "medium system configuration" except for "Over temperature protection" (EN12976-2 section 5.2).

The "medium system configuration" is the configuration having the ratio of collector aperture area to total store volume closest to the average value of this ratio calculated for all configurations in the family. If several configurations are equally close to average, the configuration with the highest ratio shall be chosen.

Testing the over temperature protection and safety (EN12976-2 5.2) shall be carried out on the configuration having the highest ratio of collector aperture area to total store volume.

Note: - Two system configurations have to be sampled for (parallel) testing, but in some cases one configuration could at the same time, be both the "medium system configuration" and the configuration with the highest ratio of the collector aperture area to total store volume. In such case it is possible to sample only one configuration and perform all testing on this configuration.

Note: Collector aperture area is the area in which the solar radiation enters the collector, and total store volume is declared by manufacturer for all tank sizes in the system family.

5.5.1.2 Product Evaluation Criteria

5.5.1.2.1 The product shall conform to the requirements as specified in clause (4) of the standard specification, BS EN 12976-1:2006(E);

- The freezing resistance; as required in clause 4.1.3, (if declared)
- Over temperature protection; as required in clause 4.1.4
- Reverse flow protection; as required in clause 4.1.5
- Pressure resistance; as required in clause 4.1.6

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- v. Electrical safety; as required in clause 4.1.7
- vi. Materials; as required in clause 4.2
- vii. Components and pipework; as required in clause 4.3
- viii. Safety equipment; as required in clause 4.4
- ix. Resistance to external influences; as required in clause 4.5
- x. Documentation; as required in clause 4.6
- xi. Labelling; as required in clause 4.7
- xii. System performance as required in clause 4.8

5.5.2 **Special Provisions for products that are covered by Solar Keymark Certification (or its equivalent)**

5.5.2.1 For products that are already covered by Solar Keymark Certification (or scheme equivalent to Solar Keymark), the testing of the product shall be as follows:

- a. DCLD-CQPS shall review the current Solar Keymark Certificate and the product configuration and specifications to ensure that the Certificate is still valid and there are no changes in the design and configuration of the system.
- b. At least one product (from among the families of factory-made systems to be certified) should be selected and sent to an independent laboratory for full testing as required by the standard. DCLD-CQPS shall decide as to how many systems will be subjected to full testing.

Note: If the factory has conducted testing as per SK scheme and the test reports are still within the validity of the solar key mark certificate; then DCLD-CQPS sampling and testing can be waived during the initial assessment visit; However, in all cases, DCLD-CQPS shall carry out testing on at least one model from the certified families, within the first three years cycle of DCLD-CQPS certification.

- c. Other families of the factory-made systems will be included in the Scope of DCLD-CQPS Certification, provided they have current/valid Solar Keymark Certificate or equivalent and valid Test Report from accredited laboratory at the time of audit.

5.5.2.2 After granting the DCLD-CQPS Certification, during the periodic surveillance, DCLD-CQPS shall review the continuing validity of the Solar Keymark Certificate and that there are no changes in the design configuration and specifications of DCLD-CQPS certified product. If there are no modifications and changes to the Solar Keymark Certificate, no further testing will be conducted.

5.5.2.3 At every 5th year of surveillance, DCLD-CQPS will select a new sample (other than the one previously tested during initial audit) from among the factory-made systems within the scope of the DCL Certification and send it to independent laboratory for full testing.

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5.5.3 The results of testing must always meet the requirements as per the standard specification.

6 GRANTING OF THE DCLD CERTIFICATION

6.1 The DCLD product conformity certificate and the authorization to use the DCLD conformity mark shall be granted upon conformance with all related provisions in the general rule.

6.2 Use of the DCL Conformity Mark shall be as per DM-DCLD-RD-CQP-2069.

6.3 Fees shall be as per DM-DCLD-RD-CQP-2083 and other relevant provisions in the general rule.

6.4 DCLD-CQPS shall carry out surveillance of certified clients based on the approved periodic plans and related provisions in the general rule. Surveillance of manufacturers/OEM/OBL that are covered by Solar Keymark Certification shall take into consideration the provisions mentioned in Clause [5.5.2] above.

6.5 Appeals, disputes and complaints shall be in line with the relevant provisions in the General Rule.

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