

 GOVERNMENT OF DUBAI	Organization/Unit: إدارة مختبر دبي المركزي Dubai Central Laboratory Department	الوحدة التنظيمية:	 بلدية دبي DUBAI MUNICIPALITY
	Document Title: Specific Rules for FA Certification of Thermal Solar Systems and Components as per BS 12976-1: 2006	عنوان الوثيقة:	
	Doc Ref. DM-DCLD-RD-DP21-2199 (IC)	رقم الوثيقة :	

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1. GENERAL

1.1 INTRODUCTION

- 1.1.1 This document prescribes the specific rules for the implementation of the DM Third Party Product Certification System Through Factory Assessment as applied to the specific product identified herein, taking into consideration the applicable normative references and standard specifications.
- 1.1.2 The applicant shall comply with these specific rules, and to those already mentioned in (1) DM-DCLD-RD-DP21-2001 (IC) "General Rules for DM Third Party Product Certification System Through Factory Assessment" and (2) DM-DCLD-RD-DP21-2006 (IC) "Special rules for the certification of solar water heater collectors and registration of solar water heating systems as per the provisions of DM Circular (183) 2011"

1.2 SCOPE

- 1.2.1 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.
- 1.2.2 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)

1.3 PRODUCT IDENTIFICATION AND APPLICABLE STANDARD/NORMATIVE REFERENCE

- 1.3.1 Product Name: Factory Made solar heating system
- 1.3.2 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 methods
- RD-DP21-2001 (IC) General rules for third party product certification system through factory assessment
- RD-DP21-2006 (IC) Special rules for the certification of solar water heater collectors and registration of solar water heating systems as per the provisions of DM Circular (183) 2011
- 1.3.3 Additional References:
- ISO 9001 - Quality Management System – Requirements
- ISO 19011 - Guidelines for Quality and Environmental Management System Auditing.

1.4 DEFINITION OF TERMS

In addition to the definitions given in BS EN 12976-1:2006(E), EN ISO 9488, RD-DP21-2001 (IC), the following shall also apply:

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- 1.4.1 Product : Factory Made Solar Heating Systems which 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
- 1.4.2 Independent Testing Laboratory - Dubai Central Laboratory (DCL) or any testing laboratory recognized / approved by the DM Certification Body.
- 1.4.3 Independent Test – test performed or conducted by an Independent Testing Laboratory
- 1.4.4 Standard Specification – BS EN 12976-1:2006 (E)– Thermal solar systems and components – Factory Made systems – Part 1: General requirements
- 1.4.5 Factory Production Control System (Product Quality Assurance Plan) - a quality plan as per DM-DCLD-RD-DP21-2084 (IC), used by the factory to ensure continuous compliance of the certified product.
- 1.4.6 QMS – Quality Management System aligned with the requirements of ISO 9001 Standard.
- 1.4.6 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 certified products. This applicant may or may not be the manufacturer of the certified products. In the case not being the manufacturer, the responsibilities as client are still the same as if is a manufacturer.
- 1.4.7 OEM (main – license) – 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 license holder has a contract/agreement with another company act as an OBL.
- 1.4.8 OBL (private label) – is an own brand labeling (OBL), is a company re- labeling the product with valid DCL certification, under its own company name and product name (brand) without making any changes to that product as originally certified by DCL to the OEM.

2. REQUIREMENTS FOR CERTIFICATION

2.1 APPLICATION

- 2.1.1 Applicant shall apply to Dubai Central Laboratory through Product Conformity Assessment Section-PCAS for the authorization to use the DCL Conformity Mark.
- 2.1.2 Application forms shall be filled-up by the applicant and submitted to PCAS together with the following documents
- a. Trade License
 - b. Complete product description and specifications including documentation required in clause 4.6 “Documentation and clause 4.7 “ Labelling” of the standard specifications.
 - c. Brief Description of Manufacturing Process (if the applicant is the manufacturer or the OEM)
 - d. Copy of the Quality Manual (Controlled Copy)
 - e. Vicinity Map and Factory Layout (if the applicant is the manufacturer or the OEM)
 - f. Valid Certification to ISO 9001 (If available)
 - g. List of personnel and their designation

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2.2 FACTORY OPERATION

2.2.1 Quality Management System

Applicant shall have a Quality Management System that is aligned to the requirements of ISO 9001 standard. NOTE: Certification to ISO 9001 is not a mandatory requirement.

2.2.2 Laboratory

If the applicant is the manufacturers/OEM of the product; then it shall have a quality assurance laboratory to carry out factory production control testing to ensure that the products comply with the requirements of the standard specification.

As a minimum requirement, the laboratory shall have the following testing equipment:

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

2.3 INITIAL AUDIT/ REVIEW

2.3.1 The applicant is the manufacturer/OEM of the product

Note: Product : refers here mainly to the solar collector and the tank as two main component 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)

2.3.1.1 DCL duly authorized representatives shall conduct an audit of the Applicant's quality Management system to verify its compliance with the requirements of ISO 9001.

NOTE: An independent certification to ISO 9001 issued by a QMS certification body recognized by DM may be considered as having satisfied this requirement; however, the DM Certification Body reserves the right to carry out verification audit to confirm that the factory is in compliance with the QMS requirements.

2.3.1.2 Verification audit shall be conducted by designated audit team based on ISO 19011 – Guidelines for Quality and Environment Management System Auditing.

2.3.1.3 The collector used in the system shall have a valid DCL Certificate of Conformity.

2.3.1.4 The manufacturer/OEM shall have an authorized supplier in Dubai with valid trade license issued by DED and registered with DCL.

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

2.3.2.1 DCL duly authorized representative shall conduct a full review of the submitted documents as per clause 2.1.2, in addition to ensure 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 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.

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

2.3.2.3 The OBL shall have an authorized supplier in Dubai with valid trade license issued by Dubai Economic Department (DED) and registered with DCL.

2.4 PRODUCT EVALUATION

2.4.1 **Products not covered by Solar Keymark Certification (or its equivalent):** (see also clause [2.4.2])

2.4.1.1 Sampling and Testing

- a. Test samples shall be taken for initial testing from the current production/warehouse (refer to clause 'e')
- b. Two sets of samples per each subtype (family) shall be taken randomly. The first set will be sent directly to DCL-PCAS approved independent testing laboratory and the second set will be kept by the manufacturer as reference for future use.
- c. Test sample(s) for independent test shall be identified and signed in the presence of DCL representatives and shall be submitted to DCL-PCAS approved independent testing laboratory. Likewise, 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.
- d. Requirements for grouping different system configurations into one system family (same subtype)
 1. Hydraulic : same principle layout of solar and load loops.
 2. Heat transfer fluid : same type of liquid(same brand and same water mixing percent – or declaration from manufacturer that the fluid is equivalent.
 3. 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.
 4. 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).
 5. Collectors: shall have DCL certification (same collectors subtypes for all systems)
 6. Pipes/piping : comply with annex B of EN12976-2 and tables B2 and B3 for pumped systems and thermosiphons respectively.
 7. 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:
 - $\pm 10\%$ 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 manufacturer 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:

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- 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.

2.4.1.2 Product Evaluation Criteria

- a. 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
 - Electrical safety; as required in clause 4.1.7
 - Materials; as required in clause 4.2
 - Components and pipework; as required in clause 4.3
 - Safety equipment; as required in clause 4.4
 - Resistance to external influences; as required in clause 4.5
 - Documentation; as required in clause 4.6
 - Labelling; as required in clause 4.7
 - System performance as required in clause 4.8

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

2.4.2.1 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:

- DCL Audit Team 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.
- 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. The Lead Auditor 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 sampling and testing can be waived during the

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initial assessment visit; However, in all cases, DCLD shall carry out testing on at least one model from the certified families, within the first three years cycle of DCLD-certification.

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

2.4.2.2 After granting the DCL Certification, during annual surveillance visits, DCL Audit Team shall review the continuing validity of the Solar Keymark Certificate and that there are no changes in the design configuration and specifications of the DCL certified product. If there are no modifications and changes to the Solar Keymark Certificate, no further testing will be conducted

2.4.2.3 At every 5th year of surveillance visit, DCL Audit Team 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.

3. GRANTING OF THE DCL CERTIFICATE OF CONFORMITY

3.1 CONDITIONS FOR GRANTING THE DCL CERTIFICATE OF CONFORMITY (Manufacturer/OEM)

3.1.1 When the results of the manufacturer/OEM audit (clause 2.3.1) and product evaluation (clause 2.4) show conformity to the requirements specified in the General Rule and Specific Rule, the authorization to use the DCL Conformity Mark shall be issued to the manufacturer/OEM for the types/configurations of product tested.

3.1.2 The manufacturer/OEM shall agree with the DM Certification Body for the preparation and implementation of a product quality assurance plan to ensure continuing compliance with the Standard Specifications and the requirements of this certification scheme. It shall consist of (1) an internal product quality assurance plan, and (2) an independent testing plan.

3.1.3 Factory Production Quality Control System (Internal Product Quality Assurance Plan)

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).

The plan shall take into consideration the production process, the volume of production, the criticality of the test to be specified, and other relevant factors.

3.1.4 Independent Testing Plan

The manufacturer/OEM shall agree to an independent testing plan to be carried out on samples which are collected in accordance with DM-DCLD-RD-DP21-2096 (IC) – Surveillance of Licensed Establishments under the Factory Assessment Scheme, and implemented by the DM Certification Body. The cost of testing under the independent testing plan shall be borne by the factory.

3.2 CONDITIONS FOR GRANTING THE DCL CERTIFICATE OF CONFORMITY (ISSUED TO THE OBL)

3.2.1 When the results of the document review (clause 2.3.2) and product testing (whenever applicable) show conformity to the requirements specified in the General Rule and this Specific Rule, the authorization to use the DCL Conformity Mark shall be issued to the OBL for the types/configurations of product tested.

3.2.2 OBL certificates have to be issued always on the basis of OEM certificates. It is not possible to issue an OBL certificate on the basis of another OBL certificate.

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3.2.1 OBL certificate shall only be valid whenever the original OEM DCL certificate is still valid. It is also directly linked to the positive surveillance assessment on the factory/OEM and that there are no changes in the design, configuration and specifications of the product for which DCL conformity mark was granted, in addition to any other related certification requirements.

3.3 ISSUANCE OF DCL CERTIFICATE OF CONFORMITY

If the conditions mentioned above in clause 3.1 and in clause 3.2 have been complied, the manufacturer/OEM/OBL shall be issued a DCL Certificate of Conformity and a Scope of Certification that covers types/configurations of products that are certified.

3.4 RESPONSIBILITIES OF THE CLIENT

3.4.1 Every client shall ensure that his product, for which a DCL Conformity Certificate has been issued, conforms at all times to the requirements of the General Rule and Specific Rules and shall maintain to the satisfaction of DCL, a system of quality control including inspection and testing.

3.4.2 The client shall give the duly authorized representative(s) of DCL, access during working hours, without prior notification, to the premises/factory where certified product is manufactured/stored, for the purpose of evaluating the materials, production processes, finished products, quality assurance facilities, records and others in accordance with the requirements of the scheme.

3.4.3 The client shall inform the DM Certification Body in writing of any change of management, transfer of plant site, modification in the product, manufacturing process or factory quality management system.

3.4.4 Upon transfer of plant site, the DCL Conformity Certificate shall be deemed valid only after factory and product audit at the new site has been satisfactorily completed.

3.4.5 Any infraction stated in the Terms and Conditions for the use of DCL Conformity Mark shall constitute sufficient grounds for suspension, withdrawal and cancellation of the license against a client.

3.4.6 Any dispute that may arise in connection with the Terms and Conditions of the DCL Mark shall be settled in accordance with DM-DCLD-IMS-RD-08 Appeals, Disputes, and Complaints Procedure.

3.4.7 The client shall pay all applicable fees related to the certification process.

3.5 USE OF THE DCL CONFORMITY MARK

3.5.1 The design and use of the DCL Conformity Mark shall be in accordance with the Terms and Conditions for the Use of the DCL Conformity Mark, DM-DCLD-IMS-RD13

3.5.2 The client shall submit samples of tag showing the DCL Conformity Mark, for approval by the DM Certification Body.

3.5.3 The authorization to use the DCL Certification Mark is non-transferable.

4. SURVEILLANCE

4.1 DM Certification Body shall carry out periodic factory surveillance to ensure consistent compliance with the requirements of this certification scheme. Surveillance shall be carried out according to the provisions of DM-DCLD-RD-DP21-2096 (IC).

4.2 Market surveillance shall be in accordance with the provisions of clause [7] of RD-DP21-2006 (IC) "Special rules for the certification of solar water heater collectors and registration of solar water heating

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systems as per the provisions of DM Circular (183) 2011”.

- 4.3 Surveillance of manufacturers/OEM/OBL that are covered by Solar Keymark Certification shall take into consideration the provisions mentioned in Clause [2.4.2]

5. FEE SCHEDULE

- 5.1 The client shall pay the applicable fees and charges related to the granting of the certification and use of the DCL Conformity Mark in accordance with DM-DCLD-RD-DP21-2083 (IC) “Fee structure for certification of solar collectors and solar water heating systems”.

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