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Solar heating systems for domestic hot water – Code of practice for design and installation

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 66, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 January 2015. It was prepared by Technical Committee RHE/25, *Solar heating*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 5918:1989, which is withdrawn.

Information about this document

This is a full revision of the standard.

This standard is intended to help with the design and installation of solar heating equipment for domestic hot water (DHW). It is especially intended to help fill the gap for fitted systems that have not been tested to BS EN 12976 or BS EN 12977. Note that the use of the term “custom systems” in these standards tends to refer to a functional system provided by a single final supplier or manufacturer. An assembly comprising solar energy collection and storage components, and supplied or assembled by multiple providers, can be considered an “ad-hoc” system which is considered in this standard.

The documents available as downloads from the sites referenced in the Bibliography were last accessed on 19 January 2015.

WARNING. This British Standard calls for the use of substances and/or procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

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As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this British Standard is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is “should”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The word “should” is used to express recommendations of this standard. The word “may” is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word “can” is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this standard. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

This code of practice applies to solar domestic water heating systems that incorporate a primary circuit that is indirect, such that the collected solar energy is transferred through a heat exchanger into storage that includes a volume dedicated to solar input. This applies to most systems that are available in the UK at present.

There are other system designs on the market that fall outside the scope, but the code of practice does not restrict or limit the installation of such designs. The methods and algorithms presented in this document that estimate the system performance do not apply to such designs. Nevertheless, several clauses are also relevant to system designs outside the scope. These include the clauses relating to the mounting of solar panels, safety issues and those relating to the provision of information to customers.

1 Scope

This British Standard gives recommendations and guidance for the installation of common indirect solar domestic hot water (SDHW) systems for all types of building in the UK. It includes recommendations and guidance for design, handling, installation, commissioning, handover, maintenance, decommissioning and fault-finding.

NOTE 1 SDHW is domestic hot water (DHW) that has intentionally received heat derived from solar radiation via a solar collector.

The standard covers systems:

- a) in which solar radiation is converted to heat that is primarily intended for domestic hot water preparation;
- b) that contain solar collector(s) intended to transfer heat using an aqueous-based liquid medium;
- c) whose solar collectors conform to BS EN 12975-1 and BS EN ISO 9806;
- d) which contain collectors that provide up to 20 kW instantaneous peak power output measured leaving the collector, when tested in accordance with BS EN ISO 9806 at 800 W/m² perpendicular to the collector aperture plane;

NOTE 2 Depending on the characteristics of the system, this typically equates to a gross collector area of up to approximately 30 m².

- e) in which heat is primarily stored in aqueous-based liquid media; and
- f) in which the primary circuit is indirect with a heat exchanger that is internal to the solar storage vessel and which separates the primary heat transfer fluid that passes through the collector from the DHW.

This British Standard does not cover:

- 1) applications that are primarily intended to provide heat for applications such as space heating, cooling or swimming pools and any other than DHW preparation;
- 2) solar primary system layouts that use solar storage vessels that are outside the building;
- 3) solar primary system layouts with multiple collector fields;
- 4) DHW systems that comprise multiple solar or multiple DHW storage vessels; or
- 5) solar primary system layouts that incorporate a heat pump or other device that utilizes the Carnot cycle.