

Thermal solar systems and components - Custom built systems - Part 3: Performance test methods for solar water heater stores

EESTI STANDARDI EESSÕNA

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English Version

**Thermal solar systems and components - Custom built systems
- Part 3: Performance test methods for solar water heater stores**

Installations solaires thermiques et leurs composants -
Installations assemblées à façon - Partie 3: Méthodes
d'essai des performances des dispositifs de stockage des
installations de chauffage solaire de l'eau

Thermische Solaranlagen und ihre Bauteile -
Kundenspezifisch gefertigte Anlagen - Teil 3:
Leistungsprüfung von Warmwasserspeichern für
Solaranlagen

This European Standard was approved by CEN on 19 February 2012.

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Foreword

This document (EN 12977-3:2012) has been prepared by Technical Committee CEN/TC 312 "Thermal solar systems and components", the secretariat of which is held by ELOT.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2012, and conflicting national standards shall be withdrawn at the latest by October 2012.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12977-3:2008.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The test methods for stores of solar heating systems as described in this European Standard are required for the determination of the thermal performance of small custom built systems as specified in EN 12977-1.

The test method described in this European Standard delivers a complete set of parameters, which are needed for the simulation of the thermal behaviour of a store being part of a small custom built thermal solar system.

For the determination of store parameters such as the thermal capacity and the heat loss rate, the method standardised in EN 12897 can be used as an alternative.

NOTE 1 The already existing test methods for stores of conventional heating systems are not sufficient with regard to thermal solar systems. This is due to the fact that the performance of thermal solar systems depends much more on the thermal behaviour of the store (e.g. stratification, heat losses), than conventional systems do. Hence, this separate document for the performance characterisation of stores for solar heating systems is needed.

NOTE 2 For additional information about the test methods for the performance characterisation of stores, see [1] in Bibliography.

1 Scope

This European Standard specifies test methods for the performance characterization of stores which are intended for use in small custom built systems as specified in EN 12977-1.

Stores tested according to this document are commonly used in solar hot water systems. However, the thermal performance of all other thermal stores with water as a storage medium can also be assessed according to the test methods specified in this document.

The document applies to stores with a nominal volume between 50 l and 3 000 l.

This document does not apply to combistores. Performance test methods for solar combistores are specified in EN 12977-4.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12828, *Heating systems in buildings — Design for water-based heating systems*

EN 12897, *Water supply — Specification for indirectly heated unvented (closed) storage water heaters*

EN ISO 9488:1999, *Solar energy — Vocabulary (ISO 9488:1999)*

ISO 9459-5, *Solar heating — Domestic water heating systems — Part 5: System performance characterization by means of whole-system tests and computer simulation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 9488:1999 and the following apply.

3.1

ambient temperature

mean value of the temperature of the air surrounding the store

3.2

charge

process of transferring energy into the store by means of a heat source

3.3

charge connection

pipe connection used for charging the storage device

3.4

combistore

one store used for both domestic hot water preparation and space heating