



SLOVENSKI STANDARD
SIST EN 15332:2008
01-januar-2008

Kotli za gretje - Energetsko ocenjevanje hranilnikov tople vode

Heating boilers - Energetic assessment of hot water storage tanks

Heizkessel - Energetische Bewertung von Warmwasserspeichern

Chaudières de chauffage - Evaluation de la performance énergétique des préparateurs d'eau chaude

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Ta slovenski standard je istoveten z: EN 15332:2007

[SIST EN 15332:2008](https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2f3-431d-ab31-37b231a34b4/sist-en-15332-2008)

<https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2f3-431d-ab31-37b231a34b4/sist-en-15332-2008>

ICS:

91.140.65 Oprema za ogrevanje vode Water heating equipment

SIST EN 15332:2008

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 15332:2008

<https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37B231a34b4/sist-en-15332-2008>

ICS 91.140.65

English Version

Heating boilers - Energy assessment of hot water storage systems

Chaudières de chauffage - Evaluation de la performance
énergétique des préparateurs d'eau chaude

Heizkessel - Energetische Bewertung von
Warmwasserspeichersystemen

This European Standard was approved by CEN on 22 March 2007.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 and United Kingdom.

[SIST EN 15332:2008](https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37b231a34b4/sist-en-15332-2008)

<https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37b231a34b4/sist-en-15332-2008>



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Requirements on the hot water storage tanks	6
4.1 Energy assessment	6
4.2 Estimating the hot water capacity from the actual storage capacity	9
4.3 Estimating the hot water capacity with known heat exchanger performance	9
4.4 Measuring the hot water capacity	10
5 Measurements.....	10
5.1 Connection of the storage tank.....	10
5.2 Measurement of the heat exchanger performance	10
5.3 Measurement of the hot water capacity	10
5.4 Measurement of the standby-loss.....	13
6 Requirements on the test rig	15
6.1 Environment.....	15
6.2 Measuring accuracy	15

ITeH STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 15332:2008

<https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37b231a34b4/sist-en-15332-2008>

Foreword

This document (EN 15332:2007) has been prepared by Technical Committee CEN/TC 57 “Central heating boilers”, the secretariat of which is held by DIN.

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 May 2008, and conflicting national standards shall be withdrawn at the latest by May 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, 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 and United Kingdom.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 15332:2008](#)

<https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37b231a34b4/sist-en-15332-2008>

1 Scope

This European Standard specifies a method for the energy assessment of a domestic hot water system comprising an external heating boiler of specified minimum output indirectly heating an unvented (closed) hot water tank of up to 1 500 l. Whilst tanks intended primarily for direct heating are not covered by this European Standard, it does allow the provision of electric heating elements for auxiliary use.

2 Normative references

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

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 indirectly heated un-vented (closed) hot water storage tanks
storage vessels used for heating up domestic hot water with an external heat source where the hot water side is not vented to atmosphere, including all devices delivered with it

3.2 hot water side
side of the storage tank which contains domestic hot water

NOTE If a mixing valve is delivered with the storage tank, it is considered as part of the hot water side.

3.3 heating side
side of the storage tank which contains the heating medium

3.4 temperature of the cold water
 ϑ_c
temperature at the entrance of the hot water side of the storage tank in °C

3.5 temperature of the warm water
 ϑ_w
temperature at the outlet of the hot water side in °C

3.6 usable hot water temperature
 ϑ_u
minimum temperature for the hot water to be usable

NOTE Minimum temperature for the hot water defined here as difference between the temperature of the warm water $\vartheta_w = 45$ °C minus the temperature of cold water $\vartheta_c = 10$ °C ($\vartheta_u = \vartheta_w - \vartheta_c = 35$ K).

3.7**heating medium supply temperature** ϑ_h

heating medium temperature at the entrance of the heating side of the water heater

3.8**heating medium return temperature** ϑ_r

heating medium temperature at the outlet of the heating side of the water heater

3.9**storage temperature** ϑ_s

temperature of the storage tank measured at the thermostat position, which is intended for this purpose

3.10**ambient temperature** ϑ_a

temperature in the environment of the hot water storage tank measured according to 5.4.1

3.11**storage excess temperature** $\Delta\vartheta_x$

temperature difference between the storage temperature and the ambient temperature:

$$\Delta\vartheta_x = \vartheta_s - \vartheta_a$$

iTeh STANDARD PREVIEW
(standards.iteh.ai)

3.12**tapping volume flow** V_w

flow of warm water through the hot water side in l/s

SIST EN 15332:2008

[https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-](https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-57b251a5404/sist-en-15332-2008)[57b251a5404/sist-en-15332-2008](https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-57b251a5404/sist-en-15332-2008)**3.13****tapping mass flow** m_w

flow of warm water through the hot water side in kg/h

3.14**loading mass flow** m_l

flow of heating medium through the heating side in kg/h

3.15**rated storage capacity** C_R

capacity of the storage tank assigned by the manufacturer in l

3.16**actual storage capacity** C_A

water content of the hot water and the heating side determined by volume measuring or balancing in l

3.17

hot water capacity

C_U

quantity of hot water in litre at usable hot water temperature ϑ_u which could be tapped at one 10 min tapping at a cold water temperature of $\vartheta_c = 10\text{ °C}$ and a maximum hot water temperature of $\vartheta_w = 65\text{ °C}$ ($\Delta\vartheta_w = \vartheta_w - \vartheta_c = 55\text{ K}$) with reheating

3.18

heat exchanger performance

P_e

continuous transferable heat power from the heating side to the hot water side in kW at standard conditions of $\vartheta_c = 10\text{ °C}$, $\vartheta_w = 60\text{ °C}$ and $\vartheta_h = 80\text{ °C}$

3.19

standby loss

Q_B

energy loss in kWh/d at nominal storage temperature against environment with an ambient temperature of $\vartheta_a = 20\text{ °C}$, but at least 45 K excess temperature

3.20

cold condition

condition at which the temperature in no side of the storage tank is more than 10 K over the cold water temperature ϑ_c

3.21

cycle time

$\Delta\tau$

time interval of the data acquisition in s

iTeh STANDARD PREVIEW

(standards.iteh.ai)

3.22

nominal operating conditions index n

operation conditions resulting from the measurement or given by the manufacturer

[SIST EN 15332:2008](https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37b231a34b4/sist-en-15332-2008)

<https://standards.iteh.ai/catalog/standards/sist/8a0ae136-2fc3-431d-ab31-37b231a34b4/sist-en-15332-2008>

3.23

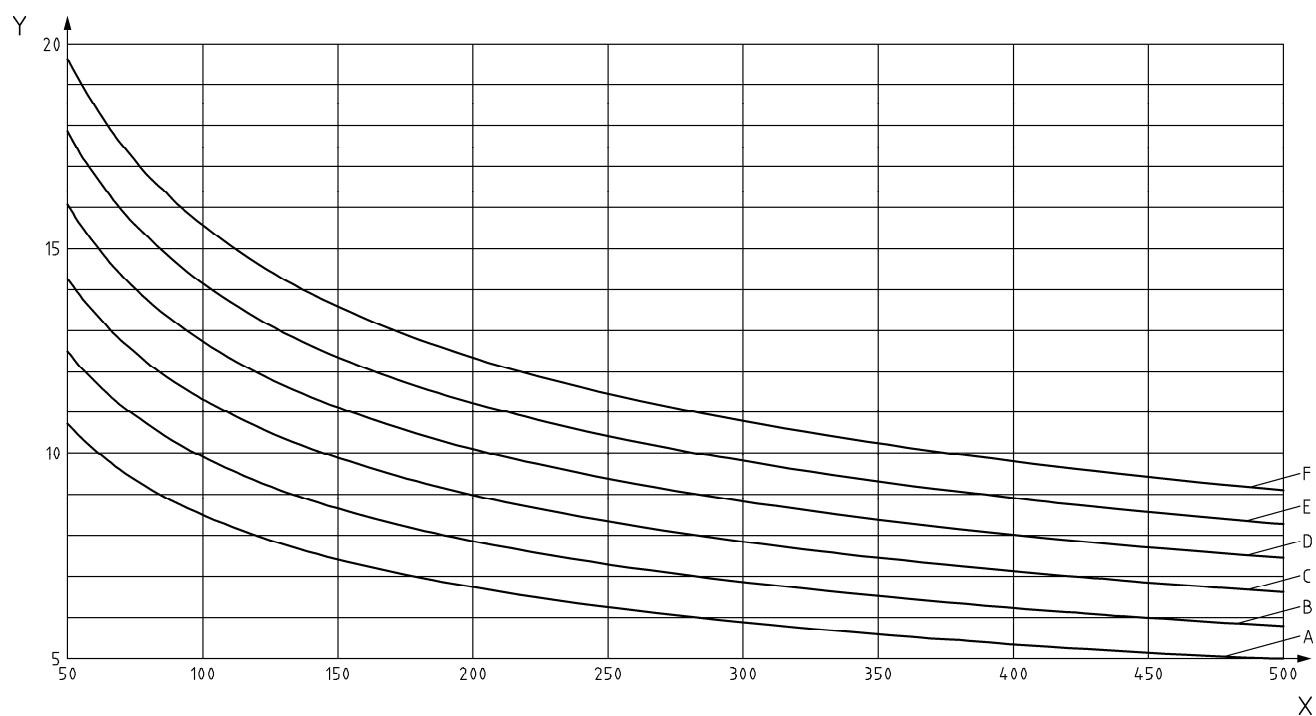
nominal storage temperature

temperature of the stored water in the tank as measured by the thermostat

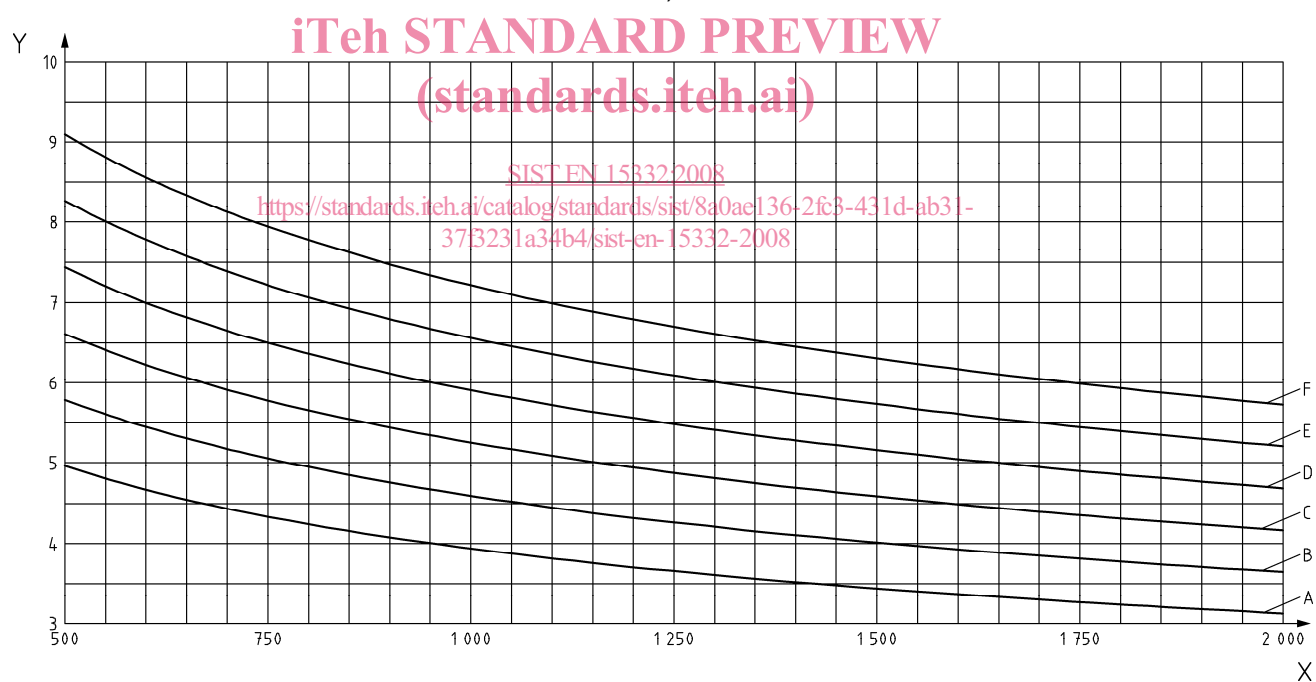
4 Requirements on the hot water storage tanks

4.1 Energy assessment

For the energy assessment of the hot water storage tank, the standby loss shall be rated against the hot water capacity according to Figure 1.



a)



b)

Key

Y standby loss related to the hot water capacity in (Wh/l)/d

X hot water capacity C_u in litres

A to F coefficient for the rational use of energy, see explanation to the Equations (1) to (3)

Figure 1 — Labelling of hot water storage tanks based on the hot water capacity