SLOVENSKI STANDARD
oSIST prEN 17692:2021

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Kotli za centralno ogrevanje - Glavna specifikacija za posredno ogrevane, neprezračevane (zaprte) kovinske rezervoarje pod tlakom - Zahteve, preskušanje in označevanje

Central heating boilers - Main specification for indirectly heated unvented (closed) metallic pressurized buffer tanks - Requirements, testing and marking

Zentralheizungskessel - Beschreibungen für indirekt beheizte, unbelüftete (geschlossene), metallene unter Druck stehende Pufferspeicher - Anforderungen, Prüfung und Kennzeichnung

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

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European foreword

This document (prEN 17692:2021) has been prepared by Technical Committee CEN/TC 57 “Central heating boilers”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

1 Scope

This document specifies the essential terms, constructional requirements, tests, energy assessment and marking of indirectly heated water storage tanks for primary water (buffer tanks), with a capacity not exceeding 2,000 l, an operating temperature not exceeding 95 °C, and an operating pressure not exceeding 1,0 MPa.

This document covers metallic and plastic made buffer tanks.

Although this document does not consider any buffer tanks mainly intended for direct firing, it allows for the provision of electric heating elements for auxiliary purposes.

NOTE The energy assessment is performed by EN 15332.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1490, *Building valves — Combined temperature and pressure relief valves — Tests and requirements*

EN 12897:2016+A1:2020, *Water supply — Specification for indirectly heated unvented (closed) storage water heaters*

EN 15332:2019, *Heating boilers — Energy assessment of hot water storage tanks*

EN 60730-2-9, *Automatic electrical controls for household and similar use — Part 2-9: Particular requirements for temperature sensing controls*

EN 60335-2-102, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
primary water
water intended to use in central heating systems produced by any space heating appliance

3.2
buffer tank
heat store filled with primary water, in which the contents do not come into contact with the atmosphere

Note 1 to entry: It can collect energy from various sources, store it, and deliver it at a later point in time.

3.3
combined storage tank
specific type of buffer tank used for both heating water energy storage and provisions for drinking water heating to be achieved within a single appliance

Combined storage tanks have 3 main types of drinking water heating:

3.3.1
tank-in-tank storage
a tank-in-tank-store has a second tank for drinking water located inside the buffer tank containing the heating water

3.3.2
storage tank with internal drinking water heat exchanger
buffer tank with an integrated heat exchanger (for example a stainless-steel, corrugated-pipe heat exchanger) for instantaneous heating drinking water

3.3.3
storage tank with external plate heat exchanger
in this system, the drinking water is heated by an external heat exchanger working on the through-flow principle

3.3.4
primary system
part of the system that only contains the heating medium

Note 1 to entry: See also Annex A (types of tanks) for more details.

3.3.5
secondary system
part of the system that only contains the drinking water

Note 1 to entry: See also Annex A (types of tanks) for more details.

3.4
actual storage volume V
storage volume V of the buffer tank is the total in litres of the actual volumes of the heating medium V_p, the secondary system V_d and the internal heat exchanger(s) V_e

3.5
actual volume of the primary water V_p
volume of the heating water circuit in litres

3.6
actual volume of the drinking water circuit V_d
volume of the drinking water circuit in litres

3.7
actual volume of each heat exchanger V_e
volume of each internal heat exchanger in litres

3.8
rated volume V_r
volume of the water storage shell in litres as specified on the data plate

3.9
drinking water side
parts of the buffer tank that are in direct contact with the drinking water

3.10
maximum design pressure P_n (rated pressure)
highest pressure to which the hot water side of the buffer tank is subjected to in pascal (Pa)

3.11
maximum operating temperature T_n
highest temperature for which the buffer tank is designed to operate in ° C

3.12
stand-by heat loss
energy loss from the buffer tank, when no hot water is drawn off in kWh/24 h

3.13
shell
outer vessel of the buffer tank (made, for example, of metal or plastic) on which the isolation is mounted

4 Requirements

4.1 General

4.1.1 Pressure resistance general

The following tests are performed for initial type test only.

These tests shall be performed after the manufacture of the buffer tank has been completed, but before the insulation is applied.

4.1.2 Pressure resistance of the shell

In the test according to 5.3.2, the shell shall withstand, for at least 10 minutes, a pressure that is twice the maximum design pressure (specified by the manufacturer) without suffering any leaks or material damage (for example cracks).

4.1.3 Pressure resistance of the secondary system of the buffer tank

In the test according to 5.3.2, the secondary system of the buffer tank shall withstand, for at least 10 minutes, a pressure that is twice the maximum design pressure (specified by the manufacturer on the secondary system) on secondary system without suffering any leaks or material damage (for example cracks).

4.1.4 Pressure resistance of the heat exchanger(s)

In the test according to 5.3.2, the internal heat exchanger shall withstand, for at least 10 minutes, a pressure that is twice the maximum design pressure of the heat exchanger(s) specified by the manufacturer without suffering any leaks or material damage (for example cracks).

4.2 Durability

4.2.1 Durability of the shell

When the buffer tank shell is tested according to 5.2.4, neither leaks nor material damage (for example cracks) shall occur.

4.2.2 Durability of the drinking water circuit

When the drinking water side is tested according to 5.2.4, neither leaks nor material damage (for example cracks) shall occur.

4.2.3 Leak tightness

For straight-tube heat exchanger the tightness of the system shall be assessed separately. This is done using a risk assessment according to 4.2.4 in combination with one of the tests in 5.2.6.

4.2.4 Risk assessment

Risk assessment on base of the design in accordance with the relevant guidelines and, if necessary, taking into account applicable laws (e.g. product safety law).

4.3 Technical design requirements

4.3.1 Hydraulic connections

The hydraulic connections to the heating circuit and the secondary system of the buffer tank shall be designed so that they can be disconnected whenever necessary.

4.3.2 Venting

The heating circuit and the secondary system of the buffer tank shall be designed so that they can be vented.

4.3.3 Draining

The buffer tank shall permit *in situ* draining. The method of draining shall be given in the manufacturer's instructions.

4.3.4 Temperature control

Temperature of the primary system shall be controlled by the temperature regulation system of the heating appliance.

4.3.5 Mounting of the insulation

The manufacturers shall give detailed instructions and/or references in the instruction manual:

a) for the insulation of the tank if it is not insulated; or

b) the insulation can be removed for installation reasons.

4.3.6 Thermal Insulation

The insulation shall withstand the normally expected thermal and mechanical stresses, without deformation and shall retain its insulating properties under the influences of heat and ageing.The insulation shall be of non-combustible material. However, inflammable materials are permitted provided that:

c) the insulation is applied to surfaces in contact with water;

d) or the temperature of the surface to which it is applied does not exceed 85 °C in normal operation;

e) or the insulation is protected by a non-combustible case having an appropriate wall thickness.

4.4 Safety devices

4.4.1 Pressure safety valves

4.4.1.1 The pressure safety valve for the primary water part

If the pressure safety valve for the heating water circuit is part of the buffer tank it shall be described in the manufacturer's instructions. The maximum response pressure of the safety valve shall be less than or equal to the maximum design pressure (rated pressure) of the heating part.

4.4.1.2 The pressure safety valve for the secondary system

If the pressure safety valve for the drinking water is part of the buffer tank it shall be described in the manufacturer's instructions. The maximum response pressure of the safety valve shall be less than or equal to the maximum design pressure (rated pressure) of the secondary system.

4.4.2 Energy shut-off device

In as far as required by national regulations, buffer tanks shall be equipped with one or more non-self-re-setting energy shut-off device(s) according to EN 60730-2-9, which is/are connected to the heating source in order to ensure that the heat input is interrupted in the event of failure of the regulating thermostat and before the stored water reaches a temperature of 95 °C.

NOTE The energy shut off device may be mounted on the heating source (e.g. boiler) rather than on the buffer tank.

4.4.3 Temperature safety valve

If a temperature or pressure-temperature safety valve is required, it shall comply with EN 1490, and be arranged in the buffer tank in such a way that it prevents the temperature of the drinking water exceeding 95 °C measured in the top ten percent (10 %) of the drinking water volume.

4.5 Operational control

4.5.1 The temperature control

The temperature control described in 5.2.8 shall ensure that the temperature of the primary water does not exceed 95 °C.

4.5.2 Measures to accommodate expansion

There shall be a pressure expansion vessel in the heating water circuit to hold the expansion water. The design shall take into account the volume V_p of the buffer tank.

4.6 Rated volume V_r

The actual volume shall be within the percentage of the rated volume (V_r) given in Table 1.