SLOVENSKI STANDARD
SIST EN 12170:2004

01-februar-2004

Grelni sistemi v stavbah – Postopki za pripravo dokumentov za delovanje, vzdrževanje in uporabo – Grelni sistemi, ki zahtevajo usposobljenega upravljavca

Heating systems in buildings - Procedure for the preparation of documents for operation, maintenance and use - Heating systems requiring a trained operator

Heizungsanlagen in Gebäuden - Betriebs-, Wartungs- und Bedienungsanleitungen - Heizungsanlagen, die qualifiziertes Bedienungspersonal erfordern

Systemes de chauffage dans les bâtiments - Instructions de conduite, maintenance et utilisation - Systemes de chauffage exigeant un opérateur professionnel

Ta slovenski standard je istoveten z: **EN 12170:2002**

ICS:

91.140.10	Sistemi centralnega ogrevanja	Central heating systems

SIST EN 12170:2004 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12170

July 2002

ICS 91.140.10

English version

Heating systems in buildings - Procedure for the preparation of documents for operation, maintenance and use - Heating systems requiring a trained operator

Systèmes de chauffage dans les bâtiments - Instructions de conduite, maintenance et utilisation - Systèmes de chauffage exigeant un opérateur professionnel

Heizungsanlagen in Gebäuden - Betriebs-, Wartungs- und Bedienungsanleitungen - Heizungsanlagen, die qualifiziertes Bedienungspersonal erfordern

This European Standard was approved by CEN on 11 April 2002.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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

Contents

page

Foreword

This document EN 12170:2002 has been prepared by Technical Committee CEN/TC 228 “Heating systems in buildings”, the secretariat of which is held by DS.

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 January 2003, and conflicting national standards shall be withdrawn at the latest by January 2003.

This document includes two informative annexes A and B, and no normative annexes.

The subjects covered by CEN/TC 228 are the following:

– design of heating systems (water based, electrical, etc.);

– installation of heating systems;

– commissioning of heating systems;

– instructions for operation, maintenance and use of heating systems;

– methods for calculation of the design heat loss and heat loads;

– methods for calculation of the energy performance of heating systems.

Heating systems also include the effect of attached systems such as hot water production systems.

All these standards are system standards, i.e. they are based on requirements addressed to the system as a whole and not dealing with requirements to the products within the system.

Where possible, reference is made to other CEN or ISO standards, a.o. product standards. However, use of products complying with relevant product standards is no guarantee of compliance with the system requirements.

The requirements are mainly expressed as functional requirements, i.e. requirements dealing with the function of the system and not specifying shape, material, dimensions or the like.

The guidelines describe ways to meet the requirements, but other ways to fulfil the functional requirements might be used if fulfilment can be proved.

Heating systems differ among the member countries due to climate, traditions and national regulations. In some cases requirements are given as classes so national or individual needs may be accommodated.

In cases where the standards contradict with national regulations, the latter should be followed.

(intended blank page)

Introduction

This European Standard is intended to be used in the preparation of documents for operation, maintenance and use of heating systems for new projects and renovation projects as well as in the updating of existing such documents. Documents for operation, maintenance and use are hereafter termed OM&U documents.

The objective of this standard is to ensure that the OM&U documents contain essential information to a minimum standardised level.

The intention of the OM&U documents is to provide a durable record of the system design and the set of instructions and requirements for operation, maintenance and use of the heating system. Relevant instructions and requirements for operation, maintenance and use are necessary in order to ensure safety, rational use of energy and environmental quality management.

Heating systems requiring a trained operator are those systems, designed for operation by persons having specific technical training, knowledge or skill in respect of these systems.

Users of this standard may be:

- technical authors of OM&U documents;
- system designers (as guidance when preparing their part of the OM&U documents);
- manufacturers (as guidance when establishing the OM&U instructions and requirements for the equipment);
- installers and commissioning personnel (as guidance when preparing their part of the OM&U documents and submitting the documents to those persons responsible for compiling the OM&U documents);
- commissioning engineers (as guidance when verifying conformity with OM&U instructions and requirements and examining the OM&U documents);
- owners (as guidance when specifying the requirements for the OM&U documents for their projects).

1 Scope

This European Standard specifies requirements for providing documents for the operation, maintenance and use of heating systems in buildings requiring a trained operator.

Parts of heating systems covered by this standard are:

- boilers or heat supply equipment, including control;
- safety arrangements, including air supply;
- district heating heat exchangers, heat meters and primary domestic hot water production facilities;
- energy sources, storage and supply;
- flue gas systems, including condensate treatment and disposal;
- heat distribution network, including associated components;

– heat emitters, including accessories;

– systems for control and supervision;

– water treatments and procedures (e.g. chemical and physical, including antifreeze).

2 Terms, definitions and abbreviations

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

2.1
operation
those actions necessary to make available the services, which the system has been designed to provide

2.2
maintenance
combination of all technical, administrative and managing actions necessary to retain an item in, or restore it to, a state in which it can perform an intended function

2.3
use
action of receiving the services, which the system has been designed to provide

2.4
item
any part, component, device, sub-system, functional unit, equipment or system that can be individually considered

NOTE 1 Any item may consist of hardware, software or both, and may also in particular cases include people.

NOTE 2 A number of items (e.g. a population of items or a sample) may itself be considered as an item.

2.5
maintenance plan
description of the methods, procedures and resources required for the sustaining support of an item throughout its life cycle

2.6
preventive maintenance
maintenance carried out at predetermined intervals or according to prescribed criteria, which is intended to reduce the probability of failure or degradation of the functioning of an item

2.7
corrective maintenance
maintenance carried out after fault recognition, which is intended to restore an item into a state in which it can perform an intended function

NOTE In French, the term “dépannage” sometimes implies a provisional restoration.

2.8
inspection
procedure or action to check whether or not maintenance is required

2.9
repair
part of corrective maintenance which is comprised of actions performed on an item

2.10
design parameters
system operating requirements as specified by the system designer

2.11
OM&U
operation, maintenance and use

3 General requirements for the OM&U documents

3.1 Extent

OM&U documents shall be compiled and provided with any installed heating system of the type covered by this standard.

3.2 OM&U instructions

A set of OM&U instructions shall be prepared and form part of the OM&U documents. The OM&U instructions shall be prepared in the official language of the country where the system is installed.

The OM&U instructions shall include a record of the design operating and maintenance requirements for the system, as specified by the system designer[1].

3.3 Manufacturers' instructions

The OM&U documents shall incorporate the manufacturers' instructions for the appliances and components of the heating system. The system designer's specification for the heating system shall be paramount to the manufacturers' instructions. Whenever the system designer utilises any component in a manner not specified in the manufacturer's instructions for that component, this shall be explained and highlighted in the OM&U documents.

3.4 Form and format

The OM&U documents shall be produced in a clearly legible and lasting form. The printing shall be indelible and the material shall be appropriate for normal expected usage.

The format, style and number of copies of the OM&U documents shall be agreed with the system designer and the owner of the heating system. A list of contents[2] for the OM&U documents shall be provided in front.

A copy of the OM&U documents shall be prepared in a form appropriate for the use by those persons concerned in the operation, maintenance and use of the heating system.

The International System of Units (SI) shall be applied in the OM&U documents. The definitions given in this standard shall be applied when preparing the OM&U documents[3].

---

[1] These instructions may form part of a set of comprehensive instructions for the entire building.

[2] Alphanumeric sequence should be adopted.

[3] Alternative terms should be avoided.

3.5 Availability

The OM&U documents shall be prepared and compiled prior to the conclusion of contractual obligations. The OM&U documents shall be available at hand-over of the heating system.

3.6 Revision

The OM&U documents shall include provision for updating the documents following any alteration in the specification for the heating system (i.e. the design) and the specifications for appliances, components, operation, maintenance and use of the heating system.

4 Contents of the OM&U documents

4.1 General information

The OM&U documents shall contain the following general information about the heating system, as specified by the system designer:

- a general description of the system. The description shall give information about the purpose and the services for which the system has been designed and intended. It shall include advice on interfaces with all attached systems and associated sub-systems;
- the following statement: “These OM&U documents have been compiled according to EN 12170.”;
- plans showing layout of building, appliances and components, as guidance to those concerned with the operation, maintenance, servicing and repair of the system;
- schematic plant or system drawings;
- a full description or other information about concealed piping and appliances and components, which are considered free of maintenance;
- make, type, duty and data on appliances and components of the system;
- commissioning information and data;
- commissioning and balancing report;
- operation, servicing, maintenance and repair history of the system and sub-systems;
- an address list;
- references to applicable health and safety regulations, including risk assessment;
- documents from manufacturers of appliances and components of the system (e.g. manufacturers’ data sheets);
- cost control schedules for operation, maintenance and repair;
- the name of the author(s) [4] of the OM&U documents, the date of preparation and any date of revision [5]. Any change in authorship shall be clearly indicated;
- any warranty conditions;
- any specific literature on appliances and components of the system (e.g. from manufacturers) to which cross-

[4] Individual(s) or organisation(s) responsible for the preparation and compilation of the OM&U documents.

[5] A numerical sequence should be adopted.

references are given in the OM&U documents [6];

- updates (amendments);
- information on the location of available OM&U documents, including archive.

An example extracted from particular sets of OM&U documents is given in annex A (informative). An example of an address list is given in annex B (informative).

4.2 Instructions for operation

4.2.1 Operation schedule

The operation schedule shall include the design specifications for operation. A schedule of operating times and temperatures, together with other operating parameters, as applicable during different operational states and seasons and for individual zones and sub-systems, shall be provided.

4.2.2 Operation procedures

Procedure for start-up and shut-down of the heating system shall be included. Daily or routine start-up and shut-down procedures shall be separately described and detailed.

The recommended methods for isolation of components, zones or sub-systems, for operational purposes, shall be included.

4.2.3 Operation of individual zones or sub-systems

A separate operational description for the operation of facilities in individual zones or sub-systems shall be provided, unless there is no control option for the zone or sub-system. This part of the instructions shall be prepared according to the requirements of the system designer and shall include additional advice to the persons operating individual zones or sub-systems. The risks in connection with improper operation of individual zones or sub-systems shall be described.

This part of the instructions shall, as necessary, include information and advice such as:

- a general description of the sub-system installed in the individual zone;
- the exact location of control devices (e.g thermostats);
- an outline of the methods for bringing an individual zone or sub-system into operation and for taking it out of operation;
- operational relationships between the heating system, attached systems (e.g. air conditioning system, swimming pool) and other building systems (e.g. boiler room ventilation system, independent solar system).

4.2.4 Economical operation

The instructions shall include the system designer’s recommendations for meeting the design comfort parameters through an ecological, economical and energy conscious operation of the heating system.

---

[6] This can be done by including only relevant parts or sections of such literature.

4.2.5 Controls and safety systems

Instructions for the operation of controls and safety systems of the heating system shall be included.

4.2.6 Operational record

Provision shall be made for recording operational events. The record shall contain fields for description of the event, identification of the person recording the event and the date of the event.

Record of fuel deliveries and consumption should be prescribed as specified.

A separate record shall be kept for individual zones and sub-systems, as specified by the system designer.

4.2.7 Routine inspections

Any requirements or instructions for routine inspections and actions, given by the system designer or by the manufacturers of appliances and components of the system, shall be included.

4.2.8 Malfunction

The instructions should include information on actions to be taken in the event of a system or equipment malfunction.

Where required and specified by the owner of the system, a check list for fault diagnosis shall be provided.

4.2.9 Safety

Safety procedures shall be included. Matters related to fuel, chimney, water treatment and electrical isolation shall be described.

Procedures for emergency shut-down shall be included (such procedures should include situations of fire, fuel or water leakage and other foreseeable emergency situations).

4.3 Instructions for maintenance

4.3.1 General

The instructions shall include a maintenance plan, as specified by the system designer. Particular reference shall be made to regular assessment of system safety, performance and fulfilment of statutory requirements.

The methods for isolation of the system or sub-systems, for maintenance and repair purposes, shall be included.

4.3.2 Product maintenance

Instructions for the inspection and maintenance of appliances and components of the system shall be in accordance with the manufacturers' requirements and the system designer's specifications. Any statutory requirements shall be included in the instructions.

4.3.3 Inspection

The instructions shall include provision for inspection schedules and records, as specified by the system designer.