



SLOVENSKI STANDARD
SIST EN 14419:2004

01-oktober-2004

Cevi za daljinsko ogrevanje - Izolirani vezani cevni sistemi za podzemeljska toplovodna omrežja – Kontrolni sistemi

District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Surveillance systems

Fernwärmerohre - Werkmäßig gedämmte Verbundmantelrohre für erdverlegte Fernwärmenetze - Überwachungssysteme

Tuyaux de chauffage urbain - Systemes bloqués de tuyaux préisolés pour les réseaux d'eau chaude enterrés directement - Systemes de surveillance

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Ta slovenski standard je istoveten z: EN 14419:2003

ICS:

23.040.01	Deli cevovodov in cevovodi na splošno	Pipeline components and pipelines in general
91.140.65	Oprema za ogrevanje vode	Water heating equipment

SIST EN 14419:2004

en

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EUROPEAN STANDARD
 NORME EUROPÉENNE
 EUROPÄISCHE NORM

EN 14419

December 2003

ICS 23.040.01

English version

**District heating pipes - Preinsulated bonded pipe systems for
 directly buried hot water networks - Surveillance systems**

Tuyaux de chauffage urbain - Systèmes bloqués de tuyaux
 préisolés pour les réseaux d'eau chaude enterrés
 directement - Systèmes de surveillance

Fernwärmerohre - Werkmäßig gedämmte
 Verbundmantelrohre für erdverlegte Fernwärmenetze -
 Überwachungssysteme

This European Standard was approved by CEN on 3 November 2003.

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.

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

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EN 14419 :2003 (E)

Foreword

This document (EN 14419:2003) has been prepared by Technical Committee CEN /TC 107 "Prefabricated District Heating Pipe Systems", 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 June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

Annexes A, B and F are informative. Annexes C, D, E, G and H are normative.

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

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Introduction

This standard is a supplement to:

- EN 253 - *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Pipe assembly of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 448 – *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Fitting assemblies of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 488 – *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Steel valve assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 489 – *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 13941 – *Design and installation of preinsulated bonded pipe systems for district heating*

These are all standards for preinsulated bonded pipe systems for directly buried hot water networks.

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EN 14419 :2003 (E)

1 Scope

This European Standard specifies basic functional requirements for surveillance systems for district heating pipe systems, specific requirements for measuring elements and their installation within preinsulated bonded pipes, valves and fittings, and the field assembly of these measuring elements in pipe joints.

This standard specifies requirements for the manufacture of measuring elements, for the manufacture of preinsulated bonded pipe elements with measuring elements and for the assembly of the measuring elements in the field.

All requirements and recommendations described in this standard are based on the experience gained with existing surveillance systems and their principal function cf. annex A.

The specific requirements given are only valid for electrical wire based surveillance systems forming an integral part of the pipes, valves, fittings and joints.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

- EN 253 *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Pipe assembly of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
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- EN 448 *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Fitting assemblies of steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 488 *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Steel valve assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 489 *District heating pipes - Preinsulated bonded pipe systems for directly buried hot water networks - Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*
- EN 61557-2 *Electrical safety in low voltage distribution systems up to 1 kV a.c. and 1,5 kV d.c. - Equipment for testing, measuring or monitoring of protective measures -- Part 2: Insulation resistance (IEC 61557-2:1997).*

3 Terms and definitions

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

3.1

pipe element

preinsulated pipes, valves and fittings manufactured according to EN 253, EN 448 and EN 488

3.2

pipe system

complete pipe installation, including joints, branches, accessories, etc. and adjacent pipes based on pipe element cf. 3.1 and joints manufactured and assembled in accordance with EN 489

3.3

surveillance system

system that consists of measuring sections and measuring instruments for surveillance of pipe systems. The principal parts of a measuring section of a surveillance system are given in annex B

3.4

system characteristics

electrical parameters used by the individual surveillance system for surveillance purpose or for test of functionality

3.5

measuring instrument

electrical instrument used for indicating of deviations and disorders, which are sensed by the measuring elements in a measuring section

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3.6

measuring section

pipe section with continuously connected measuring elements terminating at the connection points.

NOTE Main pipes and branches can be part of the same measuring section

3.7

measuring element

all elements built-in to the pipe systems that enable the detection of moisture

NOTE This can be measuring wires or various measuring sensors.

3.8

measuring wire

electrical wire used for detection of moisture and/or for transport of electrical signals relevant for the surveillance system

NOTE 1 Depending on the system several measuring wires for different purposes can be used.

NOTE 2 The measuring wires can be bare or insulated, straight or twisted two and two.

3.9

measuring sensor

component that changes system characteristics when exposed to moisture

NOTE A sensor is a component only operating at a specific point.

3.10

moisture

presence of water between service-pipe and casing-pipe due to defects or bad workmanship

EN 14419 :2003 (E)**3.11****detection of moisture**

detection of moisture-related parameters with a measuring instruments

NOTE The parameters could be electrical resistance and/or impedance.

3.12**deviation**

result of comparing the values for moisture-related parameters measured by the surveillance system with the values given in the technical documentation

3.13**multiple deviations**

two or more deviations that are present at the same time in a measuring section

3.14**disorder**

electrical interruption and/or short circuit in a measuring section

3.15**location of moisture**

procedure to find the position of moisture related parameters

3.16**location of disorder**

procedure to find the position of a disorder

3.17**installation of measuring elements**

process of installation of the measuring elements into the district heating pipes during pipe element production

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3.18**QM-programme**

list of activities to be performed in order to achieve that delivered products comply with the requirement of the standard

3.19**assembly of measuring elements**

process where a fitter during assembly of pipe elements connects measuring elements into a measuring section

3.20**connection point**

accessible place outside the pipe system where a measuring instrument can be connected to a measuring section

NOTE The place could be in a shaft, in a house connection, in a measuring post, in a cabinet etc.

3.21**longitudinal water tightness**

ability to prevent water spread in longitudinal direction of the pipe, valve, fitting or joint

3.22**maintenance free**

when no maintenance or service is required on a component in order to retain full functionality of the component during its service life

3.23

service life

span of time during which the component is expected to function, given normal maintenance and operation conditions

4 Basic functional requirements

4.1 Dependency of Manufacturer of pipe elements

The function of a surveillance system with similar measuring elements shall be independent of any Manufacturer of pipe elements and of any Manufacturer of joints for pipe systems.

4.2 Performance

The surveillance system shall be able to perform: -

- detection of moisture;
- detection of deviations;
- detection of multiple deviations;
- detection of disorders;
- location of moisture;
- location of disorders.

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NOTE The measuring system and type of technology used can vary provided the performance requirements listed can be achieved.

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5 Manufacture of measuring elements

5.1 General requirements

Measuring elements shall be part of a surveillance system that fulfils the basic functional requirements given in Clause 4.

5.2 Installation, assembly and operation

Measuring elements shall be suitable for installation, assembly and operating conditions with respect to thermal, mechanical and chemical conditions in pipe systems.

5.3 Characteristics

Measuring elements of a specific surveillance system shall have uniform system characteristics.

5.4 Reliability

Measuring elements shall have at least the same service life as a pipe system.

5.5 Maintenance

Measuring elements and other parts of the surveillance system for installation in the ground shall be maintenance free.

EN 14419 :2003 (E)**5.6 Longitudinal tightness**

Measuring elements shall not influence the longitudinal water tightness of the pipe insulation negatively.

5.7 Marking of measuring elements

If the measuring elements are marked to indicate different functions, the marking shall be durable under normal operating conditions for pipe systems during the service life of the system.

5.8 Technical documentation**5.8.1 General**

The following documents shall be available on request: -

5.8.2 For installation of measuring wires within pipe elements

— Documents given in annex C, Table C.1 positions No 1-6.

5.8.3 For assembly of measuring elements in the field

— Documents given in annex C, Table C.2 positions No 1-7.

5.8.4 For operation of a surveillance system

— Documents given in annex C, Table C.3 positions No 1-2.

6 Manufacture of pipe elements with measuring elements**6.1 General requirements**

Measuring elements to be installed within pipe elements shall fulfil all the requirements given in Clause 5.

6.2 Compatibility test**6.2.1 Before series production**

Before series production of pipe element with measuring elements a compatibility test shall be made in order to ensure that system characteristics made available by the Manufacturer of measuring elements cf. 5.8.2 are fulfilled during the production.

6.2.2 Test procedure

The Manufacturer of pipe elements shall develop and describe a test procedure that fulfils the requirements relevant for the specific surveillance system.

6.2.3 Replication of test

The compatibility test shall be replicated every time the production process is changed or the type of measuring element is changed.