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Läckageövervakningssystem – Del 4: Krav samt provnings- och utvärderingsmetoder för sensorbaserade läckageövervakningssystem

Leak detection systems – Part 4: Requirements and test/assessment methods for sensor based leak detection systems

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Europastandarden EN 13160-4:2016 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 13160-4:2016.

Denna standard ersätter SS-EN 13160-4, utgåva 1.

The European Standard EN 13160-4:2016 has the status of a Swedish Standard. This document contains the official English version of EN 13160-4:2016.

This standard supersedes the Swedish Standard SS-EN 13160-4, edition 1.

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EUROPEAN STANDARD

EN 13160-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2016

ICS 23.020.01; 23.040.99; 29.260.20

Supersedes EN 13160-4:2003

English Version

Leak detection systems - Part 4: Requirements and test/assessment methods for sensor based leak detection systems

Systèmes de détection de fuites - Partie 4: Exigences et méthodes d'essai/d'évaluation des systèmes de détection de fuites par capteur

Leckanzeigesysteme - Teil 4: Anforderungen und Prüf-/Bewertungsverfahren für sensorbasierte Leckanzeigesysteme

This European Standard was approved by CEN on 8 April 2016.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 13160-4:2016) has been prepared by Technical Committee CEN/TC 393 “Equipment for tanks and filling stations”, 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 January 2017, and conflicting national standards shall be withdrawn at the latest by April 2018.

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 13160-4:2003.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

According to edition 2003 the following fundamental changes are given:

- requirements from EN 13160-1:2003 included, which are no longer contained in EN 13160-1:2016;
- new structure — requirements, testing, marking divided;
- new test procedure for vapour sensors and reusability of vapour sensors;
- test liquids revised.

This European Standard *Leak detection systems* consists of 7 parts:

- *Part 1: General principles*
- *Part 2: Requirements and test/assessment methods for pressure and vacuum systems*
- *Part 3: Requirements and test/assessment methods for liquid systems for tanks*
- *Part 4: Requirements and test/assessment methods for sensor based leak detection systems*
- *Part 5: Requirements and test/assessment methods for in-tank gauge systems and pressurized pipe work systems*
- *Part 6: Sensors in monitoring wells*
- *Part 7: Requirements and test/assessment methods for leak detection linings*

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, Former Yugoslav Republic of Macedonia, 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.

1 Scope

This European Standard gives requirements and the corresponding test/assessment methods applicable to sensor based leak detection systems (leak detection kits). The leak detection kits are intended to be used in interstitial spaces, leakage containments or monitoring wells. The leak detection kits are usually composed by:

- sensing device(s);
- evaluation device;
- alarm device.

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 228, *Automotive fuels — Unleaded petrol — Requirements and test methods*

EN 12285-1, *Workshop fabricated steel tanks — Part 1: Horizontal cylindrical single skin and double skin tanks for the underground storage of flammable and non-flammable water polluting liquids*

EN 13160-1:2016, *Leak detection systems — Part 1: General principles*

EN 13160-3:2016, *Leak detection systems — Part 3: Requirements and test/assessment methods for liquid systems for tanks*

EN 14879-4:2007, *Organic coating systems and linings for protection of industrial apparatus and plants against corrosion caused by aggressive media — Part 4: Linings on metallic components*

EN 60079-29-1, *Explosive atmospheres — Part 29-1: Gas detectors — Performance requirements of detectors for flammable gases (IEC 60079-29-1)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13160-1:2016 and the following apply.

3.1

re-usability of the sensor

capability of a sensor to be used again after already detected liquid or vapour

4 Requirements

4.1 Effectiveness

4.1.1 General

This type of leak detection kit is classified according to EN 13160-1:2016 as class III.

The general requirements on leak detection systems according to Clause 5 of EN 13160-1:2016 shall be met.

Liquid or vapour sensors shall be installed in such a way that they can detect specific liquids or their vapours present in or entering the leakage containment, interstitial space or monitoring wells. The sensor shall react within a time specified by the manufacturer.

The leakage containment can take the form of a

- sump or riser designed to contain spills from leaks originating from pipework or pumps/dispensers;
- bund, designed to contain leakage from an above ground storage tank or from any other above ground facility containing liquids;
- other facilities in which sensors can be installed to detect the presence of liquids or vapours.

An alarm device according to EN 13160-3:2016, 4.1.3.5, shall be provided.

In the event of a sensor disconnection of the power supply an alarm condition shall result.

In case of a short circuit between two conductors in the connection between sensor and evaluation device an alarm shall be triggered.

4.1.2 Presence of liquids

Liquid sensors shall detect specific liquids they may come into contact with (e.g. stored/conveyed product, water), according to the following requirements:

Category 1: Non-discriminating sensor.

The sensor shall detect the presence of any liquid (stored/conveyed product and water).

Category 2: Discriminating sensor.

Category 2A: The sensor shall detect the presence of liquid stored/conveyed product or water and discriminates between the two aforementioned.

Category 2B: The sensor shall detect the presence of a film of liquid (stored/conveyed product) with a vapour pressure ≥ 30 kPa at 20 °C floating on water.

4.1.3 Presence of vapours

The sensor shall detect specific vapours from flammable liquids with a vapour pressure ≥ 30 kPa at 20 °C when their concentration is a volume fraction less than or equal to 1000×10^{-6} .

4.1.4 Re-usability of the sensor

Any re-useable sensor shall be able to detect a new leak condition after removal of liquid or vapour. The recovery time shall be:

- not higher than 24 h from after the removal of the vapour leak conditions for any vapour sensors;
- not higher than 7 days from after the removal of the liquid leak conditions for any liquid sensor (or after the removal of the water for the vapour sensors) that doesn't need any manual reset procedure.

4.1.5 Requirements for software, (only if provided)

The software, where provided, shall have a facility for self-checking by fulfilling the following requirements: