

**Evaluation of a.c. corrosion likelihood of buried  
pipelines applicable to cathodically protected pipelines**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                     |                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| See Eesti standard EVS-EN 15280:2013 sisaldab Euroopa standardi EN 15280:2013 ingliskeelset teksti.                 | This Estonian standard EVS-EN 15280:2013 consists of the English text of the European standard EN 15280:2013.                      |
| Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.                                                  | This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation. |
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English Version

Evaluation of a.c. corrosion likelihood of buried pipelines  
applicable to cathodically protected pipelines

Évaluation du risque de corrosion occasionnée par les  
courants alternatifs des canalisations enterrées protégées  
cathodiquement

Beurteilung der Korrosionswahrscheinlichkeit durch  
Wechselstrom an erdverlegten Rohrleitungen anwendbar  
für kathodisch geschützte Rohrleitungen

This European Standard was approved by CEN on 5 July 2013.

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.

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## Foreword

This document (EN 15280:2013) has been prepared by Technical Committee CEN/TC 219 "Cathodic protection", the secretariat of which is held by BSI.

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 February 2014 and conflicting national standards shall be withdrawn at the latest by February 2014.

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 CEN/TS 15280:2006.

With this document, CEN/TS 15280:2006 is converted into a European Standard.

The main modification concerns the criteria assumed in the presence of a.c. interference on a pipeline. While CEN/TS 15280:2006 represented a collection of various experiences in the field of a.c. corrosion, this European Standard has incorporated these criteria and thresholds together with experience gained from the most recent data. Various European countries have a different approach to the prevention of a.c. corrosion depending primarily on the d.c. interference situation. These different approaches are taken into account in two different ways:

- either in the presence of "low" ON-potentials (less negative than -1,2 V CSE), which allows a certain level of a.c. voltage (up to 15 V),
- or in the presence of "high" ON-potentials (more negative than -1,2 V CSE ; with d.c. stray current interference on the pipeline for instance) which requires the reduction of the a.c. voltage towards the lowest possible levels.

This European Standard gives also some parameters to consider when evaluating the a.c. corrosion likelihood, as well as detailed measurement techniques, mitigation measures and measurements to carry out for commissioning of any a.c corrosion mitigation system. Note that Annex E proposes other parameters and thresholds that require further validation based on practical experiences.

According to the CEN/CENELEC Internal Regulations, the national standards organisations 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 is applicable to buried cathodically protected metallic structures that are influenced by a.c. traction systems and/or a.c. power lines.

In this document, a buried pipeline (or structure) is a buried or immersed pipeline (or structure), as defined in EN 12954.

In the presence of a.c. interference, the protection criteria given in EN 12954:2001, Table 1, are not sufficient to demonstrate that the steel is being protected against corrosion.

This European Standard provides limits, measurement procedures, mitigation measures and information to deal with long term a.c. interference for a.c. voltages at frequencies between 16,7 Hz and 60 Hz and the evaluation of a.c. corrosion likelihood.

This European Standard deals with the possibility of a.c. corrosion of metallic pipelines due to a.c. interferences caused by inductive, conductive or capacitive coupling with a.c. power systems and the maximum tolerable limits of these interference effects. It takes into account the fact that this is a long-term effect, which occurs during normal operating conditions of the a.c. power system.

This European Standard does not cover the safety issues associated with a.c. voltages on pipelines. These are covered in national standards and regulations (see EN 50443).

## 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 12954:2001, *Cathodic protection of buried or immersed metallic structures — General principles and application for pipelines*

EN 13509:2003, *Cathodic protection measurement techniques*

EN 50443, *Effects of electromagnetic interference on pipelines caused by high voltage a.c. electric traction systems and/or high voltage a.c. power supply systems*

EN 61010-1, *Safety requirements for electrical equipment for measurement, control and laboratory use — Part 1: General requirements (IEC 61010-1)*

## 3 Terms and definitions

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

### 3.1

#### **a.c. electric traction system**

a.c. railway electrical distribution network used to provide energy for rolling stock

Note 1 to entry: The system can comprise:

- contact line systems;
- return circuit of electric railway systems;
- running rails of non-electric railway systems, which are in the vicinity of, or conductively connected to, the running rails of an electric railway system.