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NSAI Standards

Irish Standard
I.S. EN 12954:2019

General principles of cathodic protection of buried or immersed onshore metallic structures

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I.S. EN 12954:2019

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National Foreword

I.S. EN 12954:2019 is the adopted Irish version of the European Document EN 12954:2019, General principles of cathodic protection of buried or immersed onshore metallic structures

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12954

August 2019

ICS 23.040.99; 77.060

Supersedes EN 12954:2001

English Version

General principles of cathodic protection of buried or immersed onshore metallic structures

Principes généraux de la protection cathodique des structures métalliques à terre enterrées ou immergées

Grundlagen des kathodischen Korrosionsschutzes von metallenen Anlagen in Böden und Wässern

This European Standard was approved by CEN on 28 July 2019.

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European foreword

This document (EN 12954:2019) 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of an identical text or by endorsement, at the latest by February 2020, and conflicting national standards shall be withdrawn at the latest by February 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12954:2001.

This document describes general principles for applying external cathodic protection on onshore metallic structures in contact with soils, fresh surface waters or underground waters, except those which are embedded in concrete and those which are in sea-waters or brackish waters.

This edition of EN 12954 does not cover specific applications for on-land pipelines.

NOTE On-land pipeline applications is now completely covered by EN ISO 15589-1 [1].

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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Introduction

Cathodic protection is a technique based on the application of electrochemical principles. It is achieved by the supply of sufficient direct current to the external surface, such that the metallic structure-to-electrolyte potential is shifted to more negative values where external corrosion becomes insignificant. Cathodic protection covers a wide range of materials and equipment and requires a variety of measurement techniques.

This document is applicable to the protection of external surfaces of all types of buried or immersed metallic structures. However, in order to allow for structures having specific features with regards to shape, use, detailed configuration, construction, commissioning or operation, provision has been made for complementary standards to be used in conjunction with this one to deal with the peculiarities of such structures.

To achieve effective cathodic protection design installation, commissioning, inspection and maintenance it is essential that the works are performed by competent personnel.

This document specifies conditions necessary to consider cathodic protection as an efficient method which can be applied to mitigate corrosion. It is normally used in combination with a coating.

Alternative solutions to those provided in this standard may be applied if it is demonstrated that they give equivalent effectiveness and they are well documented.

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1 Scope

This document describes the general principles for the implementation and management of a system of cathodic protection against corrosive attacks on structures which are buried or in contact with soils, surface fresh waters or underground waters, with and without the interference of external electrical sources. It specifies the protection criteria to be achieved to demonstrate the cathodic protection effectiveness.

For structures that cannot be electrically isolated from neighbouring influencing structures, it may be impossible to use the criteria defined in the present document. In this case, EN 14505 will be applied (see 9.4 “Electrical continuity/discontinuity”).

NOTE To assist in forming a decision whether or not to apply cathodic protection the corrosion likelihood can be evaluated using informative Annex A which summarizes the requirements of EN 12501-1 [2] and EN 12501-2 [3].

Cathodic protection of structures immersed in seawater or brackish waters is covered by EN 12473 and a series of standards more specific for various applications.

Cathodic protection for reinforced concrete structures is covered by EN ISO 12696.

This document is applicable in conjunction with:

— EN ISO 15589-1 for application for buried or immersed cathodically protected pipelines,

— EN 50162 to manage d.c. stray currents,

— EN ISO 18086 to manage corrosion due to a.c. interference from high voltage power sources and a.c. traction systems,

— EN 13509 for cathodic protection measurement techniques

— EN 50443 to manage protection for touch and step voltage.

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 12496, *Galvanic anodes for cathodic protection in seawater and saline mud*

EN 13509, *Cathodic protection measurement techniques*

EN 14505, *Cathodic protection of complex structures*

EN 50162, *Protection against corrosion by stray current from direct current systems*

EN 60079-10-1, *Explosive atmospheres – Part 10-1: Classification of areas - Explosive gas atmospheres (IEC 60079-10-1)*

EN ISO 8044, *Corrosion of metals and alloys - Basic terms and definitions (ISO 8044)*

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