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77.060

EVALUATION OF A.C. CORROSION LIKELIHOOD OF BURIED PIPELINES - APPLICATION TO CATHODICALLY PROTECTED PIPELINES

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English Version

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

Evaluation du risque de corrosion des canalisations enterrées occasionné par les courants alternatifs - Application pour les canalisations protégées cathodiquement

Beurteilung der Korrosionswahrscheinlichkeit durch Wechselstrom an erdverlegten Rohrleitungen - Anwendung für kathodisch geschützte Rohrleitungen

This Technical Specification (CEN/TS) was approved by CEN on 8 November 2005 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

This Technical Specification (CEN/TS 15280:2006) has been prepared by Technical Committee CEN/TC 219 “Cathodic Protection”, the secretariat of which is held by BSI.

Long term a.c. interference on buried metallic pipelines may cause corrosion due to an exchange of alternating current between the soil and the bare metal at unavoidable coating faults in the structure.

a.c. corrosion is more likely on pipelines which are not cathodically protected. To reduce it, it is advisable to consider the application of cathodic protection and to follow the present Technical Specification.

Danger to people in contact with the pipeline or connected equipment, malfunction of connected equipment and other damages to the pipeline or connected equipment are dealt with in relevant CENELEC standards.

This Technical Specification refers to EN 12954 and may be used in place of its Annex A.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This Technical Specification is applicable to buried cathodically protected metallic structures and influenced by a.c. traction systems and/or a.c. power lines.

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

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

This Technical Specification provides limits, measurements procedures and information to deal with long term a.c. interference and the evaluation of a.c. corrosion likelihood.

Even though short term interference can cause damages to buried pipelines (e.g. arc fusion), this standard does not deal with short term interference.

2 Normative references

The following referenced documents are indispensable for the application 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 13509:2003, *Cathodic protection measurement techniques*

EN 12954:*2001, Cathodic protection of buried or immersed metallic structures – General principles and application for pipelines.*

3 Terms and definitions

For the purposes of this Technical Specification, the following terms and definitions apply

3.1
a.c. traction system
an a.c. electrical system of a railway, i.e. the electric train units and their feeding and return systems

NOTE The lines used to feed the railway substations (three-phase lines or, sometimes, two-phase lines in case of 16,7 Hz systems) are a.c. power supply systems, and it is suggested to take them into consideration together with the a.c. traction system.

3.2
cathodic protection system
the entire installation, including active and passive elements, that provides cathodic protection

(See EN 12954:2001 clause 3.2.9)

NOTE It includes for example the following: cathodic protection stations and relevant accessories as remote control systems, drainages, insulating joints, resistors, diodes, test points, groundings, a.c. discharge / d.c. decoupling devices etc.

3.3
incubation time
period of time before the leakage resistance of exposed metal, at coating faults or coupons, stabilizes due to electrochemical reactions