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Cathodic protection — Competence levels of cathodic protection persons — Basis for a certification scheme

Protection cathodique — Niveaux de compétence des personnes en protection cathodique — Base pour un dispositif particulier de certification

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

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Introduction

This document enables the competence of cathodic protection (CP) persons carrying out cathodic protection survey, design, installation, testing and maintenance work to be defined and verified.

The relevant application sectors concern on-land metallic structures, marine metallic structures, reinforced concrete structures and the inner surfaces of metallic structures containing an electrolyte.

Demonstration of competence is possible by certification. This document offers a certification scheme in accordance with ISO/IEC 17024.

In preparation of Clauses 4, 5 and 6, a detailed job task analysis (JTA) was undertaken by consensus of the experts in ISO TC 156. This JTA was then subject to review by international experts during the ISO enquiry process. It is considered that Clauses 4, 5 and 6 constitute a rigorous JTA. The JTA is largely based on similar work performed by CEN/TC 219, which produced EN 15257, which has been in widespread use since 2007.

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Cathodic protection — Competence levels of cathodic protection persons — Basis for a certification scheme

1 Scope

This document defines five levels of competence (detailed in Clause 4) for persons working in the field of cathodic protection (CP), including survey, design, installation, testing, maintenance and advancing the science of cathodic protection. It specifies a framework for establishing these competence levels and their minimum requirements.

Competence levels apply to each of the following application sectors:

— on-land metallic structures;

— marine metallic structures;

— reinforced concrete structures;

— inner surfaces of metallic structures containing an electrolyte.

These application sectors are detailed in Clause 5.

This document specifies the requirements to be used for establishing a certification scheme as defined in ISO/IEC 17024. It is not mandatory to apply all of the levels and/or application sectors. This certification scheme is detailed in Annexes A, B and C.

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.

ISO/IEC 17024, *Conformity assessment — General requirements for bodies operating certification of persons*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8044 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
application sector
particular section of industry or technology where specialized cathodic protection survey, design, installation, testing and maintenance practices are used or the science of cathodic protection is advanced, requiring specific sector-related knowledge, skill, equipment or *training* (3.13)

3.2
assessment committee
group appointed by the certification body which reviews applications and examination results and determines compliance with the requirements for CP certifications offered by the certification body

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3.3
CP person
cathodic protection person
person who devotes a regular and significant percentage of professional activity to the practical application of cathodic protection within one or more of the *application sectors* (3.1)

3.4
competence
ability to apply knowledge and skill to achieve intended results

Note 1 to entry: Within the scope of this document, the ability of *CP persons* (3.3) means to apply defined knowledge and defined skills and undertake defined tasks at specific levels and specific *application sectors* (3.1).

3.5
complex structure
system comprising the structure to be protected connected to one or more foreign electrodes and/or crossing multiple connected electrodes or passing close or through steel-reinforced concrete

EXAMPLE Steel in concrete and earthing installations are examples of foreign electrodes.

3.6
examination centre
place for the examination of *competence* (3.4) in cathodic protection

Note 1 to entry: The centre includes testing facilities to simulate the conditions that normally exist in real cathodic protection of operating industrial structures for a given *application sector* (3.1).

3.7
examiner
person with relevant technical and personal qualifications, and competent to conduct and/or score an examination

3.8
industrial cathodic protection experience
practice in the applicable cathodic protection techniques and *application sector(s)* (3.1) concerned, which leads to the required skill and knowledge

3.9
significant interruption
period of time in which a *CP person* (3.3) has not practised the duties or undertaken *training* (3.13) corresponding to their level of *competence* (3.4) within an *application sector* (3.1)

Note 1 to entry: A significant interruption comprises a continuous period in excess of 1,5 years or two or more periods for a total time exceeding 3 years during the validity of the certificate.

3.10
simple CP system
simple cathodic protection system
cathodic protection system with no design constraints due to external electrical influences, foreign structure interaction or unpredictable electrolyte changes where the design follows identified and defined, auditable procedural steps as developed by a person certificated to Level 4

3.11
technical instruction
written description, method statement or work instruction stating the precise steps to be followed in a cathodic protection survey, design, installation, testing or maintenance activity to an established standard, code, specification or cathodic protection procedure

3.12
technical report
written report intended to transmit engineering information of a complex, analytical nature

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3.13
training
theoretical and practical instructions given in conformity to a pre-established programme in order to furnish or increase the knowledge and the ability of *CP persons* (3.3) in cathodic protection activities

3.14
training centre
centre where *training* (3.13) of *CP persons* (3.3) is carried out

Note 1 to entry: The training centre includes demonstration and testing facilities to simulate the electrical conditions that normally exist in real cathodic protection of operating industrial structures for a given *application sector* (3.1).

4 Levels of competence

4.1 General

The competence of CP persons shall be classified in one or more of the following levels, depending on their competence in particular application sectors.

A detailed description of the requirements of competence is given in Clause 6.

Each defined level of competence shall include also the competence of the corresponding lower levels.

4.2 Level 1, cathodic protection data collector (or tester)

Level 1 CP persons shall be competent to collect CP performance data of simple CP systems and perform other basic CP tasks in accordance with technical instructions and procedures produced by Level 3 or higher persons and record the data to a format produced by Level 3, or higher persons and under their responsibility. Level 1 persons shall not be responsible for analysing the data. Level 1 persons shall understand the fundamentals of the measurements that they are required to undertake, the common causes of errors in these measurements and the related safety issues. The measurements shall include routine system function measurements, as well as a limited number of specific measurements to determine the performance effectiveness of CP systems.

4.3 Level 2, cathodic protection technician

In addition to the competencies for Level 1 CP persons, Level 2 CP persons shall be competent to undertake a range of CP measurement, inspection and supervisory activities in accordance with technical instructions and procedures produced by Level 3 or higher persons, and collate and classify the data under their responsibility.

Level 2 persons shall have knowledge of the fundamentals of electricity, corrosion, coatings, CP and measurement techniques, safety issues and applicable standards related to CP.

Level 2 persons shall be competent to check the calibration validity of the CP measuring and testing equipment, supervise and perform inspection and testing during installation of CP systems and carry out routine maintenance work on CP systems.

Level 2 persons shall not be responsible for the choice of test method, the technique to be used, preparing the technical instructions or the interpretation of test results.

4.4 Level 3, cathodic protection senior technician

In addition to the competencies for Level 2 persons, Level 3 persons shall have knowledge of the general principles of corrosion and CP, the principles of electricity, the significance of coatings and their influence on CP and a detailed knowledge of CP test procedures and safety issues.

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