



BSI Standards Publication

Corrosion control engineering life cycle of power transmission and transformation systems — General requirements

National foreword

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Foreword

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This document was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*, Subcommittee SC 1, *Corrosion control engineering life cycle*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Corrosion control engineering life cycle of power transmission and transformation systems — General requirements

1 Scope

This document specifies the general requirements for various factors in the corrosion control engineering throughout the life cycle of equipment and devices of power transmission and transformation systems.

This document is applicable to the corrosion control engineering of power transmission and transformation systems.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

power transmission and transformation systems

combination of all devices and equipment for transmission and transformation in power systems

3.2

corrosion control engineering life cycle of power transmission and transformation systems

entire process of corrosion control engineering for *power transmission and transformation systems* (3.1) from target setting to disposal and scrapping

3.3

life extension

measures taken to extend the service life of corrosion control engineering

3.4

corrosion database

collection dedicated to storing and managing data and information related to corrosion

3.5

map of corrosivity classification

maps that describe the corrosivity categories of specific environments towards metal materials in a certain region during a given period

EXAMPLE 1 Atmospheric corrosivity classification maps.

EXAMPLE 2 Soil corrosivity classification maps.

4 General principles

4.1 This document specifies all factors in the corrosion control engineering life cycle of power transmission and transformation systems. This includes the objectives, corrosion sources, materials, technology, design, development, manufacturing, transportation and storage, construction and installation, testing and inspection, operation, maintenance and repair, life extension and scrap, documents and records, resource management, comprehensive assessment.

4.2 The transmission and transformation systems specified in this document include devices and equipment that realize the functions of power transmission and transformation (as shown in [Annex A](#)). The transmission system mainly includes overhead transmission lines, towers, grounding devices and auxiliary equipment such as fittings. The transformation system mainly includes substations, converter stations, primarily comprising transformers, switchgear, grounding devices, support structures and other ancillary equipment.

4.3 The principles of integrity, systematicity, mutual coordination and optimization should be met among the requirements of all the factors specified in the corrosion control engineering life cycle of power transmission and transformation systems.

4.4 The corrosion control management system (as shown in [Annex B](#)) should be established to achieve comprehensive control and continuous improvement of corrosion in transmission and transformation system.

4.5 The corrosion control management organization should be established. This includes the owner, technical management team, operation team, maintenance team and the responsibilities and authorities of personnel should be clearly defined.

5 Objective

5.1 The overall objectives of this document are to effectively control corrosion in power transmission and transformation systems, eliminate or reduce corrosion damage, ensure these systems are safe, economical and long lasting and protect the environment.

5.2 These objectives should be broken down into all factors or components in the life cycle of a transmission and transformation system. Implementation should be dynamically evaluated and adjusted to ensure that the overall objective is implemented.

6 Corrosion source

6.1 The procedure for investigating, identifying and analysing corrosion sources of the life cycle of power transformation and transmission systems should be established. According to this procedure, the corresponding corrosion sources should be comprehensively, accurately and specifically determined.

6.2 The corrosion sources of power transformation and transmission systems are as follows:

- a) Internal corrosion sources in the atmospheric environment for above-ground equipment in power transmission lines, substations and converter stations include water, oxygen and atmospheric pollutants. External corrosion sources include temperature, rainfall, light exposure, wind speed, wind direction and other factors.
- b) Internal corrosion sources for grounding materials in power transmission lines, pole and tower foundations, underground cables and buried equipment of substations and converter stations include soil and groundwater. External corrosion sources include stray currents.