IEC TS 63224

Edition 1.0 2025-05

TECHNICAL SPECIFICATION

Management of network assets in power systems – Management aspects

ICS 29.020

ISBN 978-2-8327-0404-2

IEC TS 63224:2025-05(en)

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MANAGEMENT OF NETWORK ASSETS IN POWER SYSTEMS – MANAGEMENT ASPECTS

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IEC TS 63224 has been prepared by IEC technical committee 123: Management of network assets in power systems. It is a Technical Specification.

This Technical Specification is to be used in conjunction with ISO 55001:2024.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
123/112/DTS	123/116/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

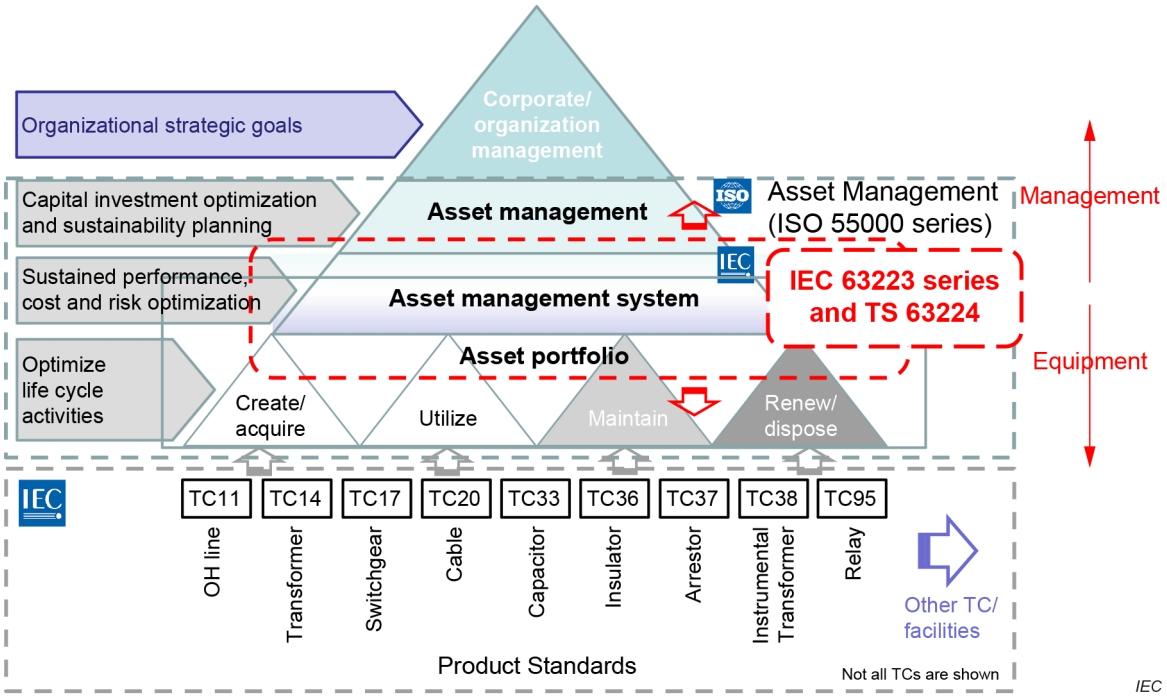
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- withdrawn, or
- revised.

INTRODUCTION

The scope of the IEC 63223 series (under development)[1], related terminology IEC 60050-693 (under development)[2], and IEC TS 63224 (this document) is to formulate standards to deliver, in co-operation with other technical committees or sub-committees and international organizations, common methods and guidelines for coordinated lifetime management of network assets in power systems to support good asset management.

Figure 1 shows an overview of the entire asset management process, and within this the scope of IEC 63223 series. Overall asset management is handled by ISO, published as the ISO 55000 series: ISO 55000, ISO 55001, and related documents [1][3] [2] [3] [4], and each asset type is handled by the appropriate product standards. IEC 63223 series and this document cover the section in the middle, handling management of cross-asset matters. Other cross-asset standard series handle matters other than asset management, such as power system aspects, information and systems, and safety and insulation coordination.

It is critical to distinguish “asset management” and “managing assets”. “Asset management” in this document means “coordinated activity of an organization to realize value from assets” , according to ISO 55000:2024, 3.2.1. Managing assets focuses on lifecycle activities and asset care, that is, availability, reliability, dependability and safety.



Asset management: coordinated activity of an organization to realize value from assets.

Asset management system: Set of interrelated or interacting elements.

Asset portfolio: Assets that are within the scope of the asset management system.

Figure 1 – Scope of IEC 63223 series (under development) and this document (IEC TS 63224)

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1 Under preparation. Stage at the time of publication: IEC CD 63223-1:2024 and IEC CD 63223-2:2024.

2 Under preparation. Stage at the time of publication: IEC FDIS 60050-693:2024.

3 Numbers in square brackets refer to the Bibliography.

The scope of the IEC 63223 series and this document covers asset management, asset management system and asset portfolio activities where specific guidance for power systems is considered necessary, excluding asset type specific matters (such as management of transformers, switchgears, cables, etc.). This scope can be classified into two parts:

- management aspects;
- asset aspects.

This document deals with informative case studies for management aspects. The ISO 55000 series contains normative requirements for management aspects. The IEC 63223 series defines asset aspects, including terminology. See also IEC 60050-693 for terminology across IEC. This is shown in Table 1.

Table 1 – Scope of this document (IEC TS 63224)

	Asset aspects for power network AM	**Management aspects for power network AM**
Case studies	IEC 63223 series	IEC TS 63224 (this document)
Requirements	IEC 63223 series IEC 60050-693	ISO 55001

This document complements the guidance available for implementing an asset management system as described in ISO 55001 , with a focus on power network systems. Guides have been previously presented in several documents including:

– ISO 55002 [1].
– CIGRE Technical Brochure (TB) 787 “ISO series 55000 standards: Implementation and information guidelines for utilities” [5].
– Several documents published by asset management experts, such as GFMAM, IAM, AMC, JAAM, etc.
– “Asset management and its importance for electrical power utilities”, tutorial in CIGRE Canada [6].

The most popular management system standard adopted by power network organizations around the world is ISO 55001. This document therefore follows a structure similar to ISO’s management system standards.

ISO management system standards typically consist of at least three documents: in the case of asset management, ISO 55000 outlines why one needs a management system and its benefits, whereas ISO 55001 focuses on what processes and systems an organization should put in place to be recognized as competent in asset management. As ISO management standards are industry agnostic, they are generic, leading to the often-heard criticism that the standard falls short on practical implementation advice – i.e. how to deploy asset management in a specific environment. This has led ISO to issue a new version of ISO 55002 [1] in November 2018, offering better and more comprehensive guidance on how to interpret the requirements mentioned in ISO 55001. In 2024 ISO issued revised versions of ISO 55000 and ISO 55001, and published two new standards focusing on people (ISO 55012 [3]) and data (ISO 55013 [4]) in asset management.

a) Introduction to ISO 55001:2024

All ISO management system standards share a common core and are all built on the popular plan-do-check-act model. This means that all these standards cover the same topics, namely:

– context
– leadership
– planning
– support
– operation
– performance evaluation
– improvement

These topics form the main clauses of a management system standard. The main highlights of these clauses in the context of asset management (i.e. ISO 55001:2024) are described below.

Clause 4 – context: requires the organization to understand its internal and external context, to take into consideration the needs and expectations of its stakeholders and to therefore align its asset management objectives to its overall organizational strategic objectives. It also requires the organization to define the scope of its asset management system (AMS) – a power network might for instance decide to limit the scope to one asset class, or to one region only, before adopting the management system across its entire operations.

Clause 5 – leadership: requires the leadership team of the organization to show its commitment to asset management by putting in place the necessary resources, by developing an asset management policy that everybody in the organization must understand and follow, and by giving people in asset management roles the necessary authority and support to perform their functions efficiently.

Clause 6 – planning: requires that asset management objectives be clear and plans be put in place to achieve these objectives, including the development of a decision-making framework and a clear definition of “value”, and align with other functions in the organization such as finance, human resources, etc. Clause 6 requires the development and documentation of a strategic asset management plan (SAMP), which will serve as the reference guide for most asset management activities, will tie the asset management objectives back to the overall organization’s objectives and ensure the organization has considered the risks and opportunities related to this plan.

Clause 7 – support: requires that the necessary resources are put in place, that the people involved in asset management are competent, that the rest of the organization is aware of its AMS and plans, and that the appropriate communication mechanisms are available. These are basic prerequisites for the deployment of a successful asset management system.

It also highlights the need to identify the information requirements for assets, the asset management function and the AMS. This might trigger the need for specific information management systems (for instance, an asset register or a capital planning system). Information might need to be documented, not only for legal or regulatory purposes, but also to conform to the management system (e.g. the need for a SAMP and for a written asset management policy).

Clause 8 – operation: requires the necessary processes and control mechanisms be put in place to execute the asset management plans. It also addresses the importance of change management, which might be required to achieve the asset management objectives. Finally, it requires the organization to assess and control the risks of any externally provided processes, products, technologies and services.

Clause 9 – performance evaluation: requires an organization to monitor, measure, and analyse the performance of its assets, of its asset management function, and of the AMS itself – in line with the “plan-do-check-act” philosophy of ISO management systems. Performance information should be reviewed regularly by management which should also evaluate any risks and opportunities for improvement.

Clause 10 – improvement: specifies that in order to close the plan-do-check-act circle, the organization should engage in continuous improvement of its processes and AMS. Importantly, it should have processes in place to address nonconformities (which include asset failures and non-fulfilment of requirements) and predict the need for decisions to prevent nonconformities and ensure optimal intervention points where applicable.

Readers are expected to understand the terms and contents of the ISO 55000 series.

b) Structure of this document

The information presented for each subclause follows the structure shown below:

1) Explanation
   – A short explanation of ISO 55001:2024 requirements. Please refer to ISO 55001:2024 for the full text of each clause. IEC TS 63224 (this document) only highlights the key elements of each clause.
2) Typical examples, case studies
   – A summary of collected samples from various information sources. Typical power network related examples are shown. This list is not exhaustive.
3) Further reading
   – Reference names and descriptions of what is written in the references. The list here is not exhaustive.

MANAGEMENT OF NETWORK ASSETS IN POWER SYSTEMS – MANAGEMENT ASPECTS

1 Scope

This document specifies management aspects of management of network assets in power systems.

This document follows the same clause structure as ISO 55001:2024, and each clause has similar subclauses. However, the information presented in this document is related to the specific context of power network organizations. Where the ISO requirements are considered to be generic, no additional information is included in this document, as shown in Table 2.

Table 2 – Case studies in this document

	Clause/subclause of ISO 55001:2024	Included
4	Context of the organization	
4.1	Understanding the organization and its context	Y
4.2	Understanding the needs and expectations of stakeholders	Y
4.3	Determining the scope of the asset management system	Y
4.4	Asset management system	Y
4.5	Asset management decision-making	N
5	Leadership	
5.1	Leadership and commitment	Y
5.2	Asset management policy	Y
5.3	Roles, responsibilities and authorities	N
6	Planning	
6.1	Actions to address risks and opportunities	N
6.2	Asset management objectives and planning to achieve them	Y
6.3	Planning of changes	N
7	Support	
7.1	Resources	Y
7.2	Competence	Y
7.3	Awareness	N
7.4	Communication	N
7.5	Documented information	N
7.6	Data and information	Y
7.7	Knowledge	N
8	Operation	
8.1	Operation planning and control including life cycle management	Y
8.2	Control of change	N
8.3	Externally provided processes, products, technologies and services	N
9	Performance evaluation	
9.1	Monitoring, measurement, analysis and evaluation	Y
9.2	Internal audit	N

	Clause/subclause of ISO 55001:2024	Included
9.3	Management review	N
10	Improvement	
10.1	Continual improvement	N
10.2	Nonconformity and corrective action	N
10.3	Predictive action	N

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.

IEC 60050-693, *Management of network assets in power systems – Terminology*[4]

ISO 55000:2024, *Asset management – Vocabulary, overview and principles*

ISO 55001:2024, *Asset management – Asset management system – Requirements*

[4] Under preparation. Stage at the time of publication: IEC FDIS 60050-693:2024.