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UHV AC transmission systems -
Part 401: Substation maintenance

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IEC TS 63042-401 has been prepared by IEC technical committee 122: UHV AC transmission systems. It is a Technical Specification.

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

Draft	Report on voting
122/201/DTS	122/210/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.

A list of all parts in the IEC 63042 series, published under the general title *UHV AC transmission systems*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

A UHV AC transmission system features large capacity and high voltage, which necessitates high level requirements for reliability and safety of its equipment, transmission lines, protection and control system. In order to obtain the operation condition and maintain the transmission system soundness during its service life, necessary maintenance is required. Until now, several UHV AC test bases and transmission projects have been constructed in several countries. Maintenance for UHV AC equipment, transmission lines, and the control and protection system is needed.

This document provides guidance for UHV AC substation maintenance considering system-oriented maintenance issues of UHV AC transmission systems.

1 Scope

This part of IEC 63042, which is a Technical Specification, gives guidance on UHV AC substation maintenance considering system-oriented maintenance issues of UHV AC transmission systems.

It is based on the development and on-site practice of maintenance technology involved in UHV AC transmission systems. It applies to power system planners, equipment suppliers, engineering contractors, maintenance staff and power grid operators.

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 60076-18, *Power transformers – Part 18: Measurement of frequency response*

IEC 60422:2024, *Mineral insulating oils in electrical equipment - Supervision and maintenance guidance*

IEC 60599, *Mineral oil-filled electrical equipment in service – Guidance on the interpretation of dissolved and free gases analysis*

IEC TS 63042-301, *UHV AC transmission systems – Part 301: On-site acceptance tests*

Bibliography

IEC 60076-1:2011, *Power transformers - Part 1: General*

IEC 60076-3:2013, *Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air*
IEC 60076-3:2013/AMD1:2018

IEC 60099-4:2014, *Surge arresters - Part 4: Metal-oxide surge arresters without gaps for a.c. systems*

IEC 60137:2017, *Insulated bushings for alternating voltages above 1 000 V*

IEC 62271-1:2017, *High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear*
IEC 62271-1:2017/AMD1:2021

IEC 62271-100:2021, *High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*
IEC 62271-100:2021/AMD1:2024

IEC 62271-101, *High-voltage switchgear and controlgear - Part 101: Synthetic testing*

IEC 62271-102:2018, *High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches*

IEC 62271-203:2022, *High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

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