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INTERNATIONAL STANDARD

Solar thermal electric plants – Part 3-1: Systems and components – General requirements for the design of parabolic-trough solar thermal power plants

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SOLAR THERMAL ELECTRIC PLANTS –

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FOREWORD

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IEC 62862-3-1 has been prepared by IEC technical committee 117: Solar thermal electric plants. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
117/153/FDIS	117/158/RVD

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 International Standard 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/standardsdev/publications.

A list of all parts in the IEC 62862 series, published under the general title *Solar thermal electric plants*, can be found on the IEC website.

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- withdrawn,
- replaced by a revised edition, or
- amended.

SOLAR THERMAL ELECTRIC PLANTS –

Part 3-1: Systems and components – General requirements for the design of parabolic-trough solar thermal power plants

1 Scope

This part of IEC 62862 specifies the general requirements for the design of parabolic-trough solar thermal power plants. It includes requirements for the electric power system, solar resource assessment, site selection, overall planning, collector system, heat transfer system, thermal energy storage system, steam generation system, steam turbine system, layout of solar field, layout of power block, electrical equipment and system, water treatment system, instrumentation and control, auxiliary system and ancillary facilities, as well as considerations concerning health and safety.

This document is applicable to the design of new, expanded or rebuilt parabolic-trough solar thermal power plants using a steam turbine.

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 60076-2, *Power transformers – Part 2: Temperature rise for liquid-immersed transformers*

IEC 60870-5 (all parts), *Telecontrol equipment and systems – Part 5: Transmission protocols*

IEC 61850 (all parts), *Communication networks and systems for power utility automation*

IEC TS 62749, A*ssessment of power quality – Characteristics of electricity supplied by public networks*

IEC TS 62862-1-1, *Solar thermal electric plants – Part 1-1: Terminology*

IEC TS 62862-2-1, *Solar thermal electric plants – Part 2-1: Thermal energy storage systems – Characterization of active, sensible systems for direct and indirect configurations*

IEC 62862-3-2, *Solar thermal electric plants – Part 3-2: Systems and components – General requirements and test methods for large-size parabolic-trough collectors*

IEC TS 62862-3-3, *Solar thermal electric plants – Part 3-3: Systems and components – General requirements and test methods for solar receivers*

ISO 9806, *Solar energy – Solar thermal collectors – Test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TS 62862-1-1 and the following apply.