PD IEC/TS 62786:2017

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Distributed energy resources connection with the grid

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National foreword

This British Standard is the UK implementation of IEC/TS 62786:2017.

The UK participation in its preparation was entrusted to Technical Committee GEL/8, Systems Aspects for Electrical Energy Supply.

A list of organizations represented on this committee can be obtained on request to its secretary.

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- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 62786 has been prepared by IEC Technical Committee 8: System aspects for electrical energy supply.

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The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
8/1439/DTS	8/1457/RVDTS

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

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DISTRIBUTED ENERGY RESOURCES CONNECTION WITH THE GRID

1 Scope and object

This technical specification provides principles and technical requirements for distributed energy resources (DERs) connected to the distribution network. It applies to the planning, design, operation and connection of DERs to distribution networks. It includes general requirements, connection scheme, choice of switchgear, normal operating range, immunity to disturbances, active power response to frequency deviation, reactive power response to voltage variations and voltage changes, EMC and power quality, interface protection, connection and start to generate electrical power, active power management, monitoring, control and communication, and conformance tests.

This document specifies interface requirements for connection of generating plants with the distribution network operating at a nominal frequency of 50 Hz or 60 Hz.

DERs include distributed generation and permanently connected electrical energy storage in the form of synchronous generators, asynchronous generators, converters, etc., connected to the medium voltage (MV) or low voltage (LV) distribution network.

NOTE Mobile electrical energy storage devices (e.g. electrical vehicles) are under consideration for future editions.

The requirements of this document can be superseded by laws and regulations where applicable.

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 61000 (all parts), *Electromagnetic compatibility (EMC)*

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
black start
start up of an electric power system from a blackout through internal energy resources

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3.2
converter-type generator
generator that produces electrical power and is connected to the distribution network via a converter, including doubly-fed induction machines

3.3
distributed energy resource
DER
generators, including loads having a generating mode (such as electrical energy storage systems) connected to the low or medium voltage distribution network, with their auxiliaries, protection and connection equipment

3.4
distribution network
electric power network for the distribution of electric power from and to network users for which a distribution system operator (DSO) is responsible

3.5
distribution system operator
DSO
party operating a distribution network

Note 1 to entry: In some countries, a DSO is also referred to as DNO (distribution network operator).

[SOURCE: IEC 60050-617:2009, 617-02-10, modified – Note 1 to entry has been added]

3.6
flicker
impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time

Note 1 to entry: Flicker can be calculated by short term indicator P_{st} and long term indicator P_{lt}.

[SOURCE: IEC 60050-161:1990, 161-08-13, modified – Note 1 to entry has been added]

3.7
fundamental frequency
frequency of the fundamental component of a periodic quantity

Note 1 to entry: For the purpose of this document, the fundamental frequency is the same as the power supply frequency, e.g. 50 Hz or 60 Hz.

[SOURCE: IEC 60050-103, 103-07-21, modified – Note 1 to entry has been added]

3.8
fundamental component
sinusoidal component of Fourier series of periodic quantity having the frequency of the quantity itself

[SOURCE: IEC 60050-103,103-07-19]

3.9
generating unit
indivisible set of equipment whose primary purpose is to generate electrical power

3.10
generating plant
group of generating units including auxiliaries connected to one POC

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