PD IEC/TR 62511:2014

BSI Standards Publication

Guidelines for the design of interconnected power systems

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National foreword

This Published Document is the UK implementation of IEC/TR 62511:2014.

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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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IEC/TR 62511, which is a technical report, has been prepared by IEC technical committee 8: Systems aspects for electrical energy supply.

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

Enquiry draft	Report on voting
8/1346/DTR	8/1364/RVC

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

This publication 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 web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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- withdrawn,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

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

GUIDELINES FOR THE DESIGN OF INTERCONNECTED POWER SYSTEMS

1 Scope

The primary objective of this Technical Report is to provide guidelines in planning and design of the interconnected power system (IPS) and consequently achieve the delivery of reliable supply service. The guidelines for the design of interconnected power systems within this document will enhance system reliability, mitigate many of the adverse impacts associated with the loss of a major portion of the system or unintentional separation of a major portion of the system, and will not be consequential because of normal design contingencies.

In the context of this Technical Report, interconnected power system means an entity's (control area or a system operator) high-voltage transmission system that can adversely impact other connected systems due to faults and disturbances within its area. In the case of large areas, the system operator may define a subset of its area to keep the adverse impact contained within a smaller portion of its system.

This Technical Report specifies the recommended techniques for securing an IPS to ensure a high level of reliability. Generally, interconnected power systems are synchronously connected or asynchronously connected through DC interconnections. This document aims to ensure that the interconnections are designed and operated consistently on both ends. The recommendations include design and operation requirements to withstand the primary contingencies specified in this document.

It is recommended that each entity ensures that its portion of the high voltage IPS is designed and operated in unison with these guidelines. This precaution is recommended, otherwise additional system interconnections can cause significant adverse impacts on reliability of the connected entities. Each entity is also encouraged to make use of committees, task forces, working groups, interregional studies and other methods in order to ensure their IPS is constantly updated/enhanced and maintained, in such a way that it is in agreement with these guidelines.

NOTE The application of this guide is for high voltage transmission systems (generally over 50 kV). However, mitigation measures for certain system conditions, such as under frequency load shedding (UFLSh), are frequently required for low voltage distribution systems; hence, for the purpose of this transmission guide, interconnected control areas and/or system operators can establish the voltage level, as required. In addition, the design guidelines in this document are intended only for those elements of the IPS (not the entire high voltage transmission system) that can adversely impact other connected system(s) due to faults and disturbances within an area or a predefined subset of a large area. This document also provides guidance to determine such elements of the IPS.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

None.