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BSI Standards Publication

Recommendations for renewable energy and hybrid systems for rural electrification

Part 7-3: Generator set - Selection of generator sets for rural electrification systems

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National foreword

This Published Document is the UK implementation of IEC TS 62257-7-3:2018. It supersedes DD IEC/TS 62257-7-3:2008, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/82, Photovoltaic Energy Systems.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

IEC 62257-7-3, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This second edition cancels and replaces the first edition, issued in 2008. It constitutes a technical revision.

The main technical changes with regard to the previous edition are as follows:

- Increased the voltage and power levels to which this TS applies.
- Added descriptions of four different types of micropower systems and their relevant requirements.

This technical specification is to be used in conjunction with other parts of this series or future parts as and when they are published.

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

Enquiry draft	Report on voting
82/1329/DTS	82/1383A/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.

A list of all parts in the IEC 62257 series, published under the general title: *Recommendations for renewable energy and hybrid systems for rural electrification*, can be found on the IEC website.

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.

INTRODUCTION

The IEC 62257 series of documents intends to provide to different players involved in rural electrification projects (such as project implementers, project contractors, project supervisors, installers, etc.) documents for the setting up of renewable energy and hybrid systems with AC voltage below 1 000 V, and DC voltage below 1 500 V.

These documents are recommendations:

– to choose the right system for the right place;

– to design the system;

– to operate and maintain the system.

These documents are focused only on off-grid rural electrification concentrating on, but not specific to, developing countries. They are not considered as all-inclusive to rural electrification. The documents try to promote the use of renewable energies in rural electrification; they do not deal with clean development mechanisms at this time (CO_2 emission, carbon credit, etc.). Further developments in this field could be introduced in future steps.

This consistent set of documents is best considered as a whole with different parts corresponding to items for safety, sustainability of systems and at the lowest life-cycle cost possible. One of the main objectives is to provide the minimum sufficient requirements, relevant to the field of application, that is, renewable energy and hybrid off-grid systems.

RECOMMENDATIONS FOR RENEWABLE ENERGY AND HYBRID SYSTEMS FOR RURAL ELECTRIFICATION –

Part 7-3: Generator set – Selection of generator sets for rural electrification systems

1 Scope

This part of IEC 62257 specifies the general requirements for the selection, sizing, erection and operation of generator sets in decentralized rural electrification systems.

It applies to all low voltage combustion engine electricity generator sets energized by renewable energy such as biomass gasifier or biogas, or fossil fuel such as gasoline or diesel fuel, and designed for supplying electrical power to isolated sites used in systems as described in IEC TS 62257-2.

This document is not an exhaustive resource for the design, installation, operation or maintenance of generator sets, but is more focused on recommendations to provide strategies on selection and criteria which may affect the use of such generation systems in a rural electrification project.

Four cases of micropower plant will be considered as illustrated by Figure 1 to power a collective electrification system (microgrid) or an individual electrification system.

– the micropower plant is composed of one generator set;

– the micropower plant is composed of multiple generator sets, which may have a single energy source or multiple energy sources;

– the micropower plant which is a hybrid energy system between one generator set and a Power Conditioning Sub-system (PCS) which is powered by other energy source including renewable energy source or energy storage;

– the micropower plant which is a hybrid energy system between multiple generator sets and multiple Power Conditioning Sub-systems (PCSs) which are powered by other energy sources including renewable energy sources or energy storage systems.