

TECHNICAL SPECIFICATION

**Recommendations for small renewable energy and hybrid systems for rural
electrification –
Part 4: System selection and design**



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**Recommendations for small renewable energy and hybrid systems for rural
electrification –
Part 4: System selection and design**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	8
4 Functional requirements of production and distribution subsystems.....	9
4.1 Preliminaries	9
4.2 Overall needs to be satisfied	9
4.3 Introduction to subsystems.....	13
4.4 Functional description of a production subsystem.....	13
4.5 Functional description of a distribution subsystem.....	15
4.6 Functional description of a demand subsystem.....	17
4.7 Constraints to be complied with by production distribution and demand subsystems.....	17
5 Energy management rules.....	18
5.1 General.....	18
5.2 Functional description for an energy management of an isolated system.....	19
5.3 Demand side management.....	20
6 Expected results from the sizing process.....	20
6.1 Introduction.....	20
6.2 Participants in the sizing process.....	21
6.3 Elements for comparing various design proposals.....	21
6.4 Frameworks for proposal.....	21
6.5 Proposal for a sizing process.....	38
6.6 Impact of design assumptions on system sizing and cost.....	38
6.7 Guarantee of results.....	40
7 Data acquisition rules for system management.....	40
7.1 Introduction.....	40
7.2 General.....	41
7.3 Levels of data acquisition and data necessity.....	41
7.4 Data to be collected	46
7.5 Operating conditions, electrical and engineering requirements for data acquisition.....	47
Annex A (informative) Example for detailed performance criteria and levels for a production subsystem.....	48
Annex B (informative) Example for detailed performance criteria and levels for a distribution subsystem	49
Annex C (informative) Example framework for proposal specification.....	50
Annex D (informative) Equation for costs calculations.....	57
Annex E (informative) Proposal for a sizing process	61
Figure 1 – Factors involved in the design of a system.....	10
Figure 2 – Functional diagram of a radial structure for rural micro-grid.....	17
Figure 3 – Functional impact of energy management and safety	19
Figure E.1 – Sizing process flow chart.....	61

Table 1 – Participants in the sizing process	21
Table 2 – Perspectives to be considered (see symbols in IEC 62257-2, Table 4)	22
Table 3 – Commitments indicators	23
Table 4 – Knowledge of site	24
Table 5 – Knowledge of consumption data	25
Table 6 – Knowledge of resources: data accuracy levels	25
Table 7 – Knowledge of resources: data retained for considered site	27
Table 8 – Knowledge of resources: range of data history	27
Table 9 – Characteristics for photovoltaic modules	28
Table 10 – Characteristics for modules supporting structure	28
Table 11 – Characteristics for the wind turbine	29
Table 12 – Characteristics for wind turbine structure	29
Table 13 – Characteristics for the generator set	30
Table 14 – Characteristics for micro hydro turbines	31
Table 15 – Characteristics for biomass generators	32
Table 16 – Characteristics for power converters	33
Table 17 – Characteristics for load manager/meter	34
Table 18 – Characteristics for system controllers	35
Table 19 – Characteristics for batteries	35
Table 20 – Characteristics for links and wiring	36
Table 21 – Energy output from renewable energies	36
Table 22 – Energy output from fossil energies	36
Table 23 – Energy output from storage	36
Table 24 – Incidence of energy management assumptions on system sizing	39
Table 25 – Incidence of cost management assumptions on system dimensions	40
Table 26 – Information required by the energy manager and data to collect	42
Table 27 – Information required by the operator and data to collect	44
Table 28 – Information required by the user and data to collect	45
Table 29 – Summary of the needed information	45
Table 30 – Minimum set of data to be collected	46
Table 31 – Relationship between required information and system architecture	47
Table E.1 – Description of utilities to be power supplied	62
Table E.2 – Consumption characteristics	63
Table E.3 – Meteorological data used for sizing	64
Table E.4 – Proposals for types of cost to be accounted for	64
Table E.5 – Site constraints inventory	65
Table E.6 – Impact of energy management assumptions on plant sizing	66
Table E.7 – Impact of cost management assumptions on plant sizing	66

INTERNATIONAL ELECTROTECHNICAL COMMISSION

RECOMMENDATIONS FOR SMALL RENEWABLE ENERGY AND HYBRID SYSTEMS FOR RURAL ELECTRIFICATION –

Part 4: System selection and design

FOREWORD

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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 62257-4, which is a technical specification, has been prepared by IEC technical committee 82: Solar photovoltaic energy systems.

This document is based on IEC/PAS 62111(1999); it cancels and replaces the relevant parts of IEC/PAS 62111.

This technical specification is to be used in conjunction with IEC 62257 series.

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

Enquiry draft	Report on voting
82/369/DTS	82/389/RVC

Full information on the voting for the approval of this standard 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.

IEC 62257 consists of the following parts, under the general title *Recommendations for small renewable energy and hybrid systems for rural electrification*:

- Part 1: General introduction to rural electrification
- Part 2: From requirements to a range of electrification systems
- Part 3: Project development and management
- Part 4: System selection and design
- Part 5: Protection against electrical hazards
- Part 6: Acceptance, operation, maintenance and replacement
- Part 7: Technical specifications: generators ¹
- Part 8: Technical specifications: batteries and converters ¹
- Part 9: Technical specifications: integrated systems ¹
- Part 10: Technical specifications: energy manager ¹
- Part 11: Technical specifications: considerations for grid connection ¹
- Part 12: Appliances ¹
- Part 13: Other topics ¹

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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

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

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

¹ Under consideration.

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 a.c. nominal voltage below 500 V d.c. nominal voltage below 750 V and nominal power below 100 kVA.

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 rural electrification concentrating on but not specific to developing countries. They shall not be 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 mechanisms developments at this time (CO₂ 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 as possible. One of the main objectives is to provide the minimum sufficient requirements, relevant to the field of application that is: small renewable energy and hybrid off-grid systems.

The purpose of this part of IEC 62257 is to provide a method to assist project contractors and project developers to select and design the electrification system for isolated sites while matching the identified needs, such as those described in IEC 62257-2.