



BSI Standards Publication

Recommendations for renewable energy and hybrid systems for rural electrification

Part 2: From requirements to a range of
electrification systems

National foreword

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TECHNICAL SPECIFICATION

**Recommendations for renewable energy and hybrid systems for rural
electrification –
Part 2: From requirements to a range of electrification systems**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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CONTENTS

| | |
|---|----|
| FOREWORD..... | 5 |
| INTRODUCTION..... | 7 |
| 1 Scope..... | 8 |
| 2 Normative references | 8 |
| 3 Terms and definitions | 8 |
| 4 Methodology for non-technical preliminary studies..... | 10 |
| 4.1 Place and role of preliminary studies in a decentralized rural electrification project | 10 |
| 4.2 Specifications of the preliminary study | 10 |
| 4.2.1 General | 10 |
| 4.2.2 Data for a better understanding of the project environment..... | 11 |
| 4.2.3 Necessary data for the techno-economic study..... | 12 |
| 4.2.4 Necessary data for the financial analysis | 14 |
| 4.2.5 Necessary data for the organizational study | 15 |
| 4.3 The stages of a socio-economic study | 16 |
| 5 Classification of electrification systems..... | 16 |
| 5.1 Introduction to a range of systems | 16 |
| 5.2 Users requirements..... | 16 |
| 5.3 Typology of qualitative requirements..... | 16 |
| 5.3.1 Type of desired use | 16 |
| 5.3.2 Availability | 16 |
| 5.3.3 Quality of the supply | 17 |
| 5.4 Typology of quantitative requirements | 17 |
| 5.5 Classification for electricity service provided | 18 |
| 5.6 Assisted selection of production subsystem | 18 |
| 5.7 Typology of decentralized electrification systems..... | 19 |
| 5.7.1 General | 19 |
| 5.7.2 Selection process | 19 |
| 5.7.3 From user need to electrification system – Summary for a range of electrification systems | 20 |
| 6 Electrification systems architecture..... | 21 |
| 6.1 General..... | 21 |
| 6.2 General presentation of isolated electrification systems | 22 |
| 6.2.1 General | 22 |
| 6.2.2 Production subsystem..... | 22 |
| 6.2.3 Distribution subsystem..... | 22 |
| 6.2.4 User or application subsystem or demand subsystem | 22 |
| 6.3 Combining subsystems | 23 |
| 6.4 Functional diagrams..... | 25 |
| 6.5 Related references..... | 25 |
| 6.6 Limits between production, distribution and demand/application subsystems | 26 |
| 6.7 Summary of the different electrification system types | 26 |
| Annex A (informative) Stages of a socio-economic study | 27 |
| A.1 General..... | 27 |
| A.2 Preparation phase..... | 27 |

| | | |
|---------|---|----|
| A.3 | Drawing up of the questionnaires – choice of surveyors and choice of sample | 28 |
| A.4 | Conducting the survey – Analysis of the results | 28 |
| A.5 | Extrapolation of the results | 28 |
| Annex B | (informative) Analysis of the type of receivers installed versus types of use and demonstrating seasonable variability (where applicable) | 29 |
| B.1 | Domestic use | 29 |
| B.1.1 | General | 29 |
| B.1.2 | Utilisation – Example 1 | 30 |
| B.1.3 | Utilisation – Example 2 | 31 |
| B.2 | Analysis of the type of receivers versus usage types | 32 |
| B.2.1 | General | 32 |
| B.2.2 | Health and care centre | 32 |
| B.2.3 | Worship places | 32 |
| B.2.4 | Community centre | 32 |
| B.2.5 | School | 33 |
| B.2.6 | Administrative premises | 33 |
| B.2.7 | Communication system | 33 |
| B.2.8 | Public lighting | 33 |
| B.2.9 | Pumping | 33 |
| B.2.10 | Battery charging station | 34 |
| Annex C | (informative) Supply quality indicators for isolated electrification systems | 35 |
| Annex D | (informative) Assisted selection of production subsystem | 36 |
| D.1 | Characteristics of possible production subsystems | 36 |
| D.2 | Assisted selection of a decentralized production system suited to the requirement | 36 |
| Annex E | (informative) Functional diagram | 38 |
| E.1 | Glossary of symbols | 38 |
| E.2 | Architectures of systems | 39 |
| E.2.1 | Type T ₁ I: REN Systems operating with no storage (in sync with solar, wind or water energy sources) – REN production | 39 |
| E.2.2 | Type T ₂ I: Individual electrification systems – REN production with energy storage | 43 |
| E.2.3 | Type T ₃ I: Individual electrification systems: (REN + diesel) production without energy storage | 46 |
| E.2.4 | Type T ₄ I: Individual electrification systems: (RE + diesel) production with energy storage | 49 |
| E.2.5 | Type T ₅ I: Individual electrification systems: genset only without storage | 51 |
| E.2.6 | Type T ₆ I: Individual electrification systems: genset only with storage | 52 |
| E.2.7 | Type T ₁ C: Collective electrification systems: REN only without storage | 53 |
| E.2.8 | Type T ₂ C: Collective electrification systems: REN Micropower plant supplying a microgrid | 53 |
| E.2.9 | Type T ₃ C: Collective electrification systems: Multi sources micropower plant (RE + diesel) without energy storage, supplying a microgrid | 56 |
| E.2.10 | Type T ₄ C: Collective electrification systems: Multi sources micropower plant (RE + diesel) with energy storage supplying a microgrid | 59 |
| E.2.11 | Type T ₅ C: Collective electrification systems: Diesel micropower plant supplying a microgrid | 62 |
| E.2.12 | Type T ₆ C: Collective electrification systems: Diesel micropower plant with energy storage supplying a microgrid | 64 |

| | |
|---|----|
| Figure 1 – Example of the content of a non-technical preliminary study | 11 |
| Figure 2 – Systems architecture and dispatchable energy..... | 20 |
| Figure 3 – General configuration of an electrification system | 24 |
| Figure A.1 – Flowchart of the stages of a socio economic study..... | 27 |
| Figure D.1 – Better adequacy of production subsystems solutions with supply availability and daily duration of service | 37 |
| Figure E.1 – Type T ₁ l-a system | 40 |
| Figure E.2 – Type T ₁ l-b system | 41 |
| Figure E.3 – Type T ₁ l-c system | 42 |
| Figure E.4 – Type T ₁ l-d system | 43 |
| Figure E.5 – Type T ₂ l system | 45 |
| Figure E.6 – Type T ₃ l-a system | 47 |
| Figure E.7 – Type T ₃ l-b system | 48 |
| Figure E.8 – Type T ₄ l system | 50 |
| Figure E.9 – Type T ₅ l system | 51 |
| Figure E.10 – Type T ₆ l system | 52 |
| Figure E.11 – General architecture of a micropower plant supplying a microgrid..... | 54 |
| Figure E.12 – Type T ₂ C system..... | 55 |
| Figure E.13 – Type T ₃ C-a system..... | 57 |
| Figure E.14 – Type T ₃ C-b system..... | 58 |
| Figure E.15 – Type T ₄ C-a system..... | 60 |
| Figure E.16 – Type T ₄ C-b system..... | 61 |
| Figure E.17 – Type T ₅ C system..... | 63 |
| Figure E.18 – Type T ₆ C system..... | 65 |
| | |
| Table 1 – Application types and types of uses..... | 16 |
| Table 2 – Expected quality of the supply..... | 17 |
| Table 3 – Synthesis of qualitative requirements/category – Examples of type of user and use..... | 18 |
| Table 4 – Typology of decentralized electrification systems | 19 |
| Table 5 – Preliminary range of relevant (as a minimum) decentralized electrification systems | 21 |
| Table 6 – Recapitulation of characteristics of different types of isolated electrification systems | 26 |
| Table C.1 – Combined categorization | 35 |
| Table C.2 – Service specification (example) | 35 |
| Table D.1 – Principles and characteristics of production subsystems | 36 |
| Table E.1 – Glossary of symbols..... | 38 |
| Table E.2 – List of cases, type T ₁ l..... | 39 |
| Table E.3 – List of cases, type T ₃ l..... | 46 |
| Table E.4 – List of cases, type T ₃ C | 56 |
| Table E.5 – List of cases, type T ₄ C | 59 |

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RECOMMENDATIONS FOR RENEWABLE ENERGY
AND HYBRID SYSTEMS FOR RURAL ELECTRIFICATION –****Part 2: From requirements to a range of electrification systems**

FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- 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 62257-2, 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 2004. It constitutes a technical revision.

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

- redefine the maximum AC voltage from 500 V to 1 000 V, the maximum DC voltage from 750 V to 1 500 V;
- removal of the limitation of 100 kVA system size. Hence the removal of the word “small” in the title and related references in this technical specification.

This technical specification is to be used in conjunction with the other documents of the IEC 62257 series.

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

| | |
|---------------|------------------|
| Enquiry draft | Report on voting |
| 82/947/DTS | 82/998A/RVC |

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 publication 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.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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 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:

- a) to choose the right system for the right place;
- b) to design the system;
- c) to operate and maintain the system.

These documents are focused only on rural electrification concentrating on but not specific to developing countries. They should 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 development 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 aiming 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: renewable energy and hybrid off-grid systems.

The purpose of this part of the IEC 62257 series is to propose a range of renewable energy based electrification systems able to meet the requirements of customers identified in the field of decentralized rural electrification projects.

This technical specification was developed in cooperation with other IEC technical committees and subcommittees dealing with renewable energies and related matters, namely technical committee 21 ("Secondary cells and batteries"), subcommittee 21A ("Secondary cells and batteries containing alkaline or other non-acid electrolytes"), technical committee 64 ("Electrical installations and protection against electric shock"), technical committee 88 ("Wind turbines"), and others.

RECOMMENDATIONS FOR RENEWABLE ENERGY AND HYBRID SYSTEMS FOR RURAL ELECTRIFICATION –

Part 2: From requirements to a range of electrification systems

1 Scope

This part of IEC 62257 proposes a methodological approach for the setting up and carrying out of socio-economic studies as part of the framework of decentralized rural electrification projects. It is addressed to project teams and in particular to experts in charge of socio-economic studies in international projects.

The amount of detail gathered and the requisite number of experts needed would depend on the scale of the proposed project. For large projects involving many households, a detailed study would be required, for a project which involves a single or few households, the study could be truncated.

The information coming from such preliminary studies could be used for several purposes, such as more complete economic and financial studies of the electrification project.

This technical specification also provides some structures as technical solutions that could be recommended, depending on the qualitative and quantitative energy demands, consistent with the needs and financial situation of the customers.

Then, in relation with each model of the proposed range of systems, electrical architectures are proposed to technical project managers to assist in designing the systems.

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.

IEC 60617 DB¹, *Graphical symbols for diagrams*

IEC 62257-9 (all parts), *Recommendations for renewable energy and hybrid systems for rural electrification*

IEC 62257-12 (all parts), *Recommendations for renewable energy and hybrid systems for rural electrification*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

¹ "DB" refers to the IEC on-line database, available at <<http://std.iec.ch/iec60617>>