

Recommendations for small renewable energy and hybrid systems for rural electrification —

Part 12-1: Selection of self-ballasted lamps (CFL) for rural electrification systems and recommendations for household lighting equipment

ICS 27.160; 27.180

National foreword

This Draft for Development is the UK implementation of IEC/TS 62257-12-1:2007.

This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of *Update Standards*.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted to Technical Committee GEL/82, Solar 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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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 a.c. voltage below 500 V, d.c. voltage below 750 V and 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 must 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 compile specifications and recommendations for lighting materials, involved in decentralized rural electrification.

This document is also linked to other parts of IEC 62257 series namely IEC 62257-1, IEC 62257-2 to IEC 62257-6 and IEC 62257-7 to IEC 62257-13.

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

Part 12-1: Selection of self-ballasted lamps (CFL) for rural electrification systems and recommendations for household lighting equipment

1 Scope

Decentralized Rural Electrification Systems (DRES) are designed to supply electric power to sites which are not connected to a large interconnected system, or a national grid.

As described in the IEC 62257-1, these systems include:

- an electrical power production subsystem;
- a secondary grid for sharing/distributing this power, when the system is a collective electrification system (microgrid);
- a subsystem for utilizing this electrical power as a demand subsystem including the in-house wiring and user's electrical appliances.

In many situations, lighting is the most expected application of the rural electrification process and the first application that the users may afford.

For a given lighting performance, the electrical characteristics of the lamps may vary, particularly the power factor and the harmonic content.

On large grids, the impact of these characteristics is generally not a major issue. In the context of the electrification systems considered in the IEC 62257 series, the main applications are lighting and TV. In these small systems, the power factor and the harmonic content of the supplied appliances have a high impact on the design and the sizing of the production and distribution subsystems as well as on the quality of the service provided.

Project implementers cannot afford an over-sizing of any part of the system. For this reason, they have to make sure that the selected appliances have characteristics which do not adversely affect the cost of the equipment necessary to provide the quality of service required by the General Specification of the project.

Some relevant products are available on the market (high power factor and low harmonic content). The purpose of this technical specification is to help project implementers to discriminate, in a potential sourcing panel, the models of lamps which could have the lowest impact on the whole system (generation and distribution subsystems).

This specification deals with integral compact fluorescent technology lamps:

- power less than 60 W;
- with an Edison screw E27 or bayonet B22 cap;
- with nominal voltage from 100 V to 250 V a.c.

IEC 60969 specifies the performance requirements together with the test methods and conditions required to show compliance of tubular fluorescent and other gas-discharge lamps with integrated means for controlling starting and stable operation (self-ballasted lamps) intended for domestic and similar general lighting purpose. This specification must be considered as the reference for the manufacturers.