



## IECRE PUBLICATION

**IEC System for Certification to Standards relating to Equipment for use in Renewable Energy applications (IECRE System)**

**Supplement for the Photovoltaic Sector to the IECRE Rules of Procedure (IECRE 02)**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**IEC System for Certification to Standards Relating to Equipment  
for Use in Renewable Energy Applications (IECRE System) –**

**Supplement for the Photovoltaic Sector to the IECRE Rules of Procedure  
(IECRE 02)**

FOREWORD

This publication has been prepared by the IECRE for approval by the IEC Conformity Assessment Board (CAB). This publication supersedes IECRE 04, Edition 3, published 2019-07-04.

The Photovoltaic Renewable Energy industry includes devices and systems that convert solar irradiation into electric current. There is a need for a single, internationally-recognized 3<sup>rd</sup> party Conformity Assessment (CA) system for the verification of compliance to consensus-based International Standards and Technical Specifications to reduce risk and improve stakeholder confidence. The Photovoltaic Energy Certification Scheme is aimed at increasing the quality of photovoltaic devices and systems manufactured and constructed by the industry, thus reducing risk and increasing confidence in the market.

This publication has been prepared by REMC WG 001 for approval by the REMC.

The annexes to this publication are normative.

The text of this publication is based on the following document(s):

Document	Report on Voting
REMC/574/DV	REMC/598/RV

## INTRODUCTION

This publication contains the Supplement to the IECRE Rules of Procedure (RoP) for the Photovoltaic (PV) Sector under the IECRE Conformity Assessment System. The term “Photovoltaic Energy Converter” is used to describe Renewable Energy Equipment in the PV Sector. This Supplement to the IECRE RoP complies with IEC CA 01, Basic Rules and IECRE 02, Rules of Procedure. IECRE rules and documents, and a list of standards approved for use in the PV Certification Scheme, can be found at [www.iecre.org](http://www.iecre.org).

This Supplement defines the PV specific revisions required to IECRE 02 and outlines the structure and governance of the IECRE PV Sector related activities (the “PV Sector”), the principles of the PV CA Schemes and procedures for acceptance of Renewable Energy Certification Bodies (RECB) and Renewable Energy Inspection Bodies (REIB) applying to work within the PV Certification Scheme. Additional operational documents (ODs) specify PV Certification Scheme deliverables, such as certificates, conformity statements and test reports, in order to operate the system. This Supplement, and the associated ODs, establishes a framework for the mutual recognition of PV Certification Scheme deliverables among and between inspection bodies and certification bodies. The PV SWG may suggest to the REMC to approve additional body categories to be established for participation in the IECRE scheme.

The PV Sector operates within the scope of the IEC TC82 standards and other relevant internationally accepted standards and best practices.

The procedures in this document refer to a certification scheme for components based on third party conformity assessment of a PV power plant at a specific location. Such certification scheme is considered equivalent to an ISO/IEC 17067 Type 5 Certification Scheme, and a RECB may then issue an IECRE Certificate of Conformity.

## **IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications (IECRE System) –**

### **PV-SWG Supplement to the IECRE 02 (Rules of Procedure)**

#### **1 Scope**

The scope of the PV-SWG is to operate an international PV Certification Scheme for Photovoltaic photon-to-electron conversion systems by way of photonic energy being converted to electric current. Participation in the PV-SWG shall include certification bodies, inspection bodies and other stakeholders that are members in good standing of a Member Body.

The PV-SWG mission is to define the certification schemes for the solar photovoltaic (PV) sector. The PV-SWG shall focus on issues that are specific to the PV sector – and related activities such as Hybrid/Microgrid systems in coordination with REMC WG 008 (e. g. involving battery systems) – and value that can be provided to investors and stakeholders within the sector.

This publication contains the Rules of Procedure specific to the PV-SWG under the IECRE Conformity Assessment System that are used in addition or in alteration of IECRE 02, hereinafter referred to as the “RoP”, intended for use in photovoltaic energy applications and which comply with IEC or other internationally accepted standards, best practices, or guidelines. A list of standards in use is published on the IECRE website: [www.IECRE.org](http://www.IECRE.org). This list reflects updates and transition periods not yet implemented in Operational Documents (OD's).

#### **2 Normative References**

In addition to IECRE 02, relevant normative references can be found in the following documents:

*ISO guide 73: Risk management — Vocabulary*

*ISO 31000: Risk management*

*ISO 14000 series: Environmental management*

*ISO 55000 series: Asset management*

*ISO 13374 series: Condition monitoring and diagnostic of machine systems standard*

*The Industrial Internet Consortium Reference Architecture (IICRA)*

*International Association of Classification Societies (IACS)*

*Quality Management System Certification Scheme (QSCS)*

*Any IECRE operational document (“OD”) with the identifier OD-4XX, where “X” is any digit between 0 and 9. Subsections to OD-4XX can be broken down to OD-4XX-X or OD-4XX-X-X, as the case may be.*

#### **3 Definitions and Abbreviations**

IECRE 02 Clause 3 applies. In addition, the following definitions are essential:

##### **3.1 Definition of terms**

###### **Component**

A part of a PV power plant, with specific design, materials and parts, fabricated according to a common manufacturing process and uniquely described by a specific range of parameters and design conditions.

###### **Engineering Procurement Construction (EPC)**

Company in charge of the engineering, procurement and construction of the PV power plant.

###### **Factory Auditor**

Person that performs services leading to conformity assessment of quality management system in the PV component suppliers and service providers to the relevant IEC standards.

### **Power conversion equipment (PCE)**

Equipment and components for electronic power conversion of electric power into another kind of electric power with respect to voltage, current and frequency.

### **Product type certificate**

Document issued upon successful completion of a product certification based on ISO/IEC 17067 certification types.

Certificates of conformity issued under the IECEE CB scheme are recognized for the purposes of the IECRE-PV scheme.

### **PV power plant (PV plant)**

Power plant for generating electrical power according the categories describe after, in which one or more PV inverters are connected to a PV array; including all elements of foundation, support structure, wiring and any other balance-of-system (BOS) equipment up to connection point with the utility (including medium voltage equipment as appropriate).

### **SCADA (Supervisory control and data acquisition)**

A system operating with coded signals over communication channels so as to provide control of remote equipment.

## **3.2 Definition of system size and assembly categories**

The system size category (S) and construction category (C) of the PV power plant, shall be recorded on the certificate and any associated test or inspection reports.

PV power plant categories by usage are as follows:

S1: “Utility scale” Operated by commercial organization on commercial property, >10.000 kWp AC or as local rules or codes may define differently (currently still referred to as “U1” in OD-40X).

S2: “Large Commercial and Industrial” Operated by commercial organization on commercial property,  $\leq 10.000$  kWp AC but  $> 1.000$  kWp AC or as local rules or codes may define differently (currently still referred to as “U3” in OD-40X).

S3: “Medium Commercial and Industrial” Operated by commercial organization on commercial property,  $\leq 1.000$  kWp AC but  $> 100$  kWp AC or as local rules or codes may define differently (currently still referred to as “U3” in OD-40X).

S4: “Small Commercial and Industrial / Residential” Operated by private individual or small commercial organization, disaggregated,  $\leq 100$  kWp AC or as local rules or codes may define differently (currently still referred to as “U2” in OD-40X).

S5: “Aggregate Power plants” Operated by private individual or professional or commercial organizations on private or public property, standardized procedures, standardized contract procurement, standardized design, standardized construction, standardized commissioning, standardized monitoring (currently still referred to as “U4” in OD-40X).

PV power plant categories by construction categories are as follows:

C1: Ground mounted, not part of a building (currently still referred to as “L1” in OD-40X)

C1-1: Ground mounted, fixed tilt (currently not referred to in OD-40X)

C1-2: Ground mounted, tracked (currently not referred to in OD-40X)



C2: Roof mounted, not part of the building envelope (e.g. rack or pan mount) (currently still referred to as “L2” in OD-40X)

C3: Roof mounted, integrated in the building envelope (e.g. BIPV) (currently still referred to as “L3” in OD-40X)

C4: Combined use (e.g. car-port) (currently still referred to as “L4” in OD-40X)

C5: Floating PV, that is a PV power plant floating on liquid surface, e. g. a lake or off-shore (currently not referred to in OD-40X)

### 3.3 Definition of system lifecycle phases

The System lifecycle phase of the PV power plant shall determine the relevant type of certificate for which assessment is performed.

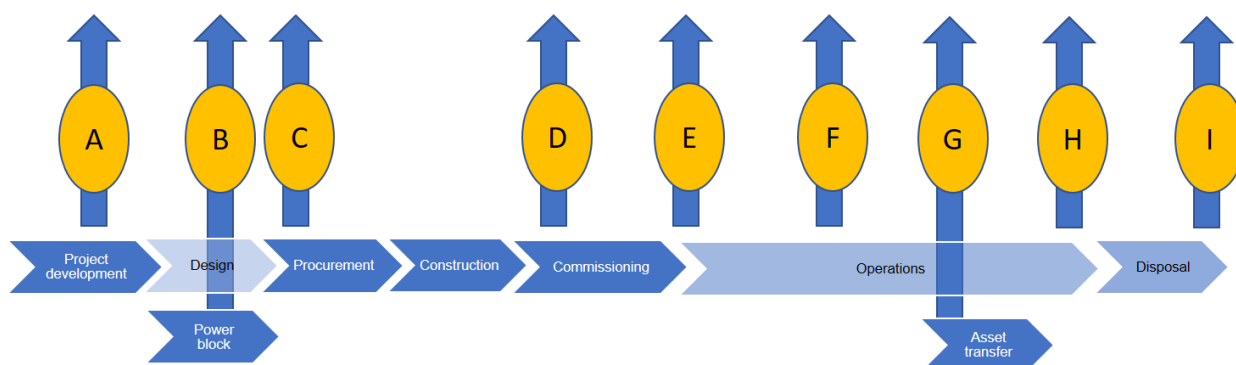


Figure 1: PV power plant lifecycle milestones indicated in capital letters A through H.

Generally PV power plant lifecycle stages are grouped in categories as follows:

- A - C: Project development and design phase
- D: Construction phase prior to initial operation
- E - G: Exploitation phase: from initial operation up to prior to decommissioning of the plant
- H – I: Decommissioning and disposal.

## 4 Organizational Structure

IECRE 02 Clause 4 applies.

## 5 Requirements for Participation in the IECRE System

IECRE 02 Clause 5 applies.

## 6 Deliverables of the IECRE System

IECRE 02 Clause 6 applies with the following additions:

### 6.1 IECRE Test Reports (RETRs)

Additional requirements for the issuance of a Test Report in the PV Sector against the technical standards may be covered by the IECEE scheme, and may be issued by test laboratories accepted within the IECEE system (CBTL). In addition, any test reports may be issued by the competent RECB according to the scheme as outlined in the applicable OD-4XX provided, however, the competent RECB has a suitable testing facility accepted by the IECRE system.

### 6.2 Product Certificates

Additional requirements for the issuance of a Product Certificate in the PV Sector against the technical standards covered by this scheme are detailed in the ODs under the OD-4XX series.

### 6.3 Conformity Statements see IECRE 02

## **6.4 Inspection Reports see IECRE 02**

## **6.5 Exchange of PV Certification Scheme Deliverables**

The Product Certification processes may depend upon other PV Certification Scheme deliverables issued by the REIBs or RECBs approved to operate within the PV Sector.

NOTE: A PV Project Certificate can include any certification according to the following level 0 scheme

- OD-40X-series
  - 408-series → Templates for certificates etc. – maybe subject to modification and addition
  - All others (401 – 410 except 408-TXX) will be transferred to new structure
- OD-41X-series: Rating system
- OD-42X-series: (Placeholder)
- OD-43X-series: Certification hardware components
- OD-44X-series: Certification hardware system
- OD-45X-series: Certification industry stakeholders

Consequently, RECBs and/or REIBs participating in the PV Certification Scheme shall accept PV Certification Scheme deliverables issued by other RECBs and/or REIBs participating in the PV Sector. Likewise, RECBs are encouraged to accept test laboratory certificates issued by an IECEE NCB or to integrate the result of test laboratory reports issued by an IECEE CBTL into its own certification.

This is enabled by ensuring that PV Certification Scheme deliverables are issued according to detailed descriptions and requirements given in the associated Operating Documents. The PV Certification Scheme deliverables shall be supplemented by a final evaluation report that will enable the receiver of the deliverable to understand the extent of the certification.

## **7 Description of IECRE Operational Procedures**

IECRE 02 Clause 7 applies.

## **8 Peer Assessment Program**

IECRE 02 Clause 8 applies with the following additions:

### **8.1 Acceptance of RETLs – not applicable**

Not applicable as RETLs are currently not foreseen within the PV Sector of the IECRE system. The acceptance of CBTLs are subject to the RoP of the IECRE system.

### **8.2 Acceptance of RECBs**

A certification body shall be accepted as an RECB under the conditions described in OD-471 (to be approved).

### **8.3 Acceptance of REIBs**

An inspection body shall be accepted as an REIB under the conditions described in OD-472 (to be developed).

### **8.4 Acceptance of RECTFs – not applicable –**

Not applicable as RECTFs are currently not foreseen within the PV Sector of the IECRE system.

### **8.5 Acceptance of Peer and Lead Assessors**

In addition to Clause 8 of IECRE 02, the Qualification Criteria for Peer and Lead Assessors for the PV Sector of IECRE are described in the OD-481 series.

## **9 Complaints**

Where an RECB or REIB identifies a problem or question related to a deliverable issued by another RECB or REIB or by an IECEE NCB/CBTL (for PV related component type certificates), the RECB or REIB shall raise the matter first with the Applicant, then the RECB or REIB shall raise the matter with the organization that initially issued the deliverable. If the RECBs or REIBs involved arrive at different conclusions, the case shall be referred to the IECRE Executive Secretary.

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