

Relevance of IEC and CES-TK 82 activities for the PV module QA and System Reliability

Short overview prepared by Peter Toggweiler, 1. 12. 2017

Reference: www.iec.ch

IEC and IEC TC 82

- IEC (International Electrotechnical Commission): Standards and Conformity Assessment for all electrical, electronic and related technologies.
- The technical work is conducted in the technical committees (TC), sub-committees (SC), working groups, project groups, etc..
- TC 82: Solar photovoltaic energy systems, established in 1981
- Scope TC 82: To prepare international standards for systems of photovoltaic conversion of solar energy into electrical energy and for all the elements in the entire photovoltaic energy system. In this context, the concept "photovoltaic energy system" includes the entire field from light input to a solar cell to and including the interface with the electrical system(s) to which energy is supplied.

Other relevant IEC TCs

- TC 8: Systems aspects for electrical energy supply
- TC 8A: Grid Integration of Renewable Energy Generation
- TC 21: Secondary cells and batteries
- TC 22: Power electronic systems and equipment
- TC 32: Fuses
- TC 37: Surge arresters
- TC 57: Power systems management and associated information exchange
- TC 64: Electrical installations and protection against electric shock
- TC 77: Electromagnetic compatibility
- TC 81: Lightning protection
- TC 120: Electrical Energy Storage (EES) Systems
- PC 118: Smart grid user interface

- The CES TK 82 is the national mirror body of the IEC TC 82 and CENELEC TC 82.
- There are at present 21 experts participating in the national TC 82, representing the Swiss PV Industry and national organizations such as SUPSI, Swissolar, VSEI and Electrosuisse, BFH.
- The TK 82 prepares the national voting and commenting as part of the IEC standardization process.
- Some members of the TK 82 participate in international IEC and -WG meetings as national delegates.

IEC-TC 82: Solar photovoltaic energy systems

- TC 82 has a wide scope from products to systems
- TC 82 maintains some liaisons with IEA-PVPS activities
- At present TC 82 has published 103 documents and 70 documents under preparation, some examples:
 - IEC 61215 & 61730: Module safety, quality and performance
 - IEC 62109-x: Safety of power converters for use in photovoltaic power systems
 - IEC 62446-2: Grid connected systems - Maintenance of PV systems
 - IEC 63027 DC arc detection and interruption in photovoltaic power systems
 - IEC/TS 62257-7-1 Recommendations for renewable energy and hybrid systems for rural electrification - Part 7-1: Generators - Photovoltaic generators
 - IEC/TS 63049 Terrestrial photovoltaic (PV) systems - Guideline for increased confidence in PV system installation
 - IEC/TS 61724-4 Photovoltaic system performance - Part 4: Degradation rate evaluation method

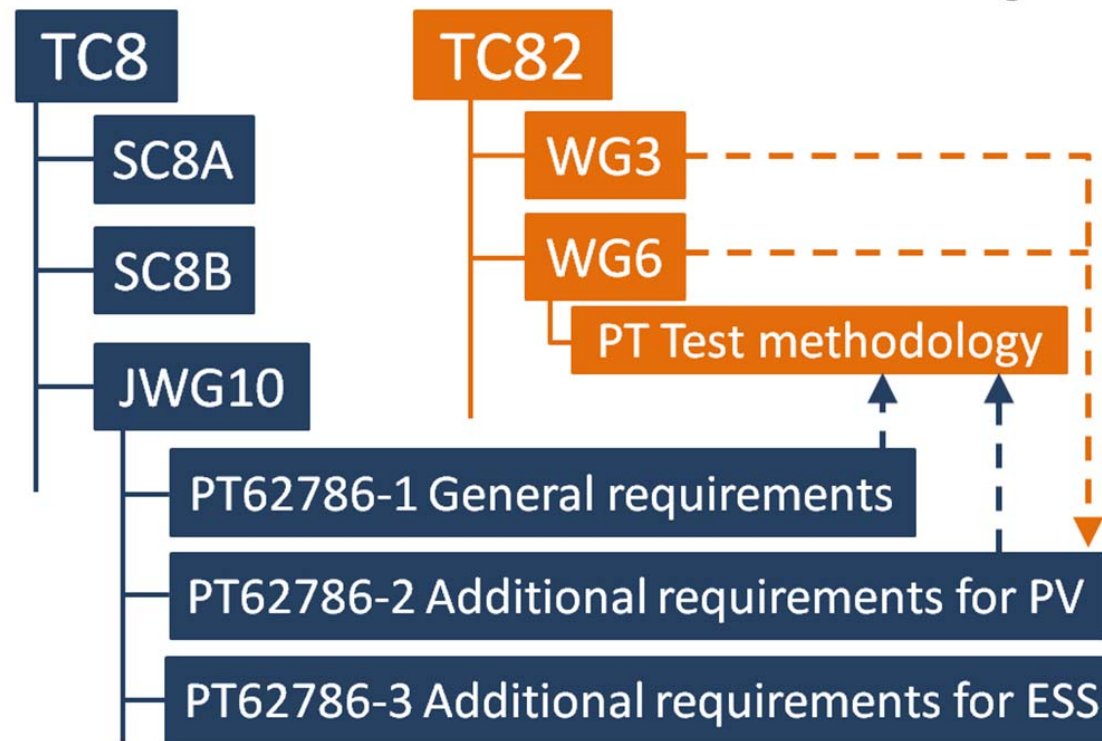
IEC: Definition of Conformity assessment

- CA (Conformity Assessment) is any activity which results in determining whether a product or other object corresponds to the requirements contained in a specification.
- A specification, typically but not exclusively a standard, is a technical description of the characteristics which are required to be fulfilled by some object. These objects may be products (which in this context include services), processes, bodies, people or systems (management systems, for example).
- Officially, CA is the “demonstration that specified requirements relating to a product, process, system, person or body are fulfilled”. Note that the phrase “conformity assessment” does not limit or classify the activity in any way.

JWG between IEC TC 6 & TC 82 for grid connection of PV systems

Future plan in TC8 and TC82:

Cooperation diagram
for the standardization of DERs connection with the grid



Draft NP of IEC/TS 62786-2



[Document reference]

NEW WORK ITEM PROPOSAL (NP)

PROPOSER: Japan	DATE OF PROPOSAL:
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:

IEC TC8	
SECRETARIAT: Italy	SECRETARY:
NEED FOR IEC COORDINATION: TC82	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this NP to the TC/SC secretary
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	

TITLE OF PROPOSAL:
IEC/TS 62786-2 - Distributed energy resources connection with the grid – Part 2 Additional requirements for PV generation

- **Supporting all forms of CA**

The IEC not only supports all types of CA, it also runs four CA Systems, each of which operates Schemes based on third-party conformity assessment certification. Together they establish that a product is reliable and meets expectations in terms of performance, safety, efficiency, durability and other criteria.

- **Reducing cost and barriers to trade**

IEC International Standards and CA help reduce trade barriers caused by different certification criteria in different countries. The IEC CA Systems also help remove significant delays and expense for multiple testing and approval. This allows industry to reduce cost and enter markets faster with its products

IEC Conformity assessment systems



Each cover a dedicated segment of electrotechnology. Their ultimate objective is to facilitate global product acceptance by means of **one test**, **one certification** and, when appropriate, **one mark** valid in all markets.



IEC RE example for a PV project



IECRE OD-401

Edition 1.0 2016-05-10

IECRE OPERATIONAL DOCUMENT

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

Conditional PV project certificate

SWISSOLAR  Partner von

