

Solar America Board for Codes and Standards

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International Electrotechnical Commission (IEC) is based in
Geneva, Switzerland

Technical Committee 82

SOLAR PHOTOVOLTAIC ENERGY SYSTEMS

**The secretariat for TC 82 rests in the US. The secretary
is Howard Barikmo, of Sunset Technology, Inc., who is
making this presentation.**

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Standard writing is done through Working Groups:

- ‡ WG 1: Glossary
- ‡ WG 2: Modules, non-concentrating
- ‡ WG 3: Systems
- ‡ WG 6: Balance-of-system components
- ‡ WG 7: Concentrator modules
- ‡ JWG1: JCG TC 82/TC 88/TC 21/SC 21A
- ‡ WG 8: Expected Wafer and Cell working group



IEC TC 82

To find out what we do, go to www.iec.ch. Go toward bottom of page and click on **TC Dashboard**. In the TC Dashboard window, type in **82**, then click on **Submit**. That window will give you a menu with 8 options for you to navigate to your heart's content learning the TC 82 mission and its work. Some locations are only open to members of the US Technical Advisory Group of TC 82 (US TAG TC 82).



IEC TC 82

The major “workhorse” standards published by TC 82 are written by Working Groups as shown in the following slides:

By the way Working Groups are populated by experts in their field. If you are an expert and want to participate:

Pay attention for to bald faced commercial that will jump out at you at the end of this presentation!!



IEC TC 82

Working Group 1--Glossary

Hidenori Shimizu, Japan, convenor

IEC/TS 61836 Solar photovoltaic energy systems –
Terms and symbols **Ed 3 should be published by 3Q
2013.**



IEC TC 82

Working Group 2--Modules non-Concen.

Dr. John Wohlgemuth, US, convenor

IEC 61215 Ed. 2.0 Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval. **Ed 3 in process of being written--publish in 2Q 2015.**

IEC 61646 Ed. 2.0, Thin-film terrestrial photovoltaic (PV) modules – Design qualification and type approval. **(Ed 3 in process of being written.--publish in 2Q 2015.)**



IEC TC 82

Working Group 2--Modules non-Concen.

IEC 61701 Ed 2: Salt mist corrosion testing of photovoltaic (PV) modules (**Published December 2011**)

IEC 61730-1 Ed. 1.0, Photovoltaic module safety qualification – Part 1: Requirements for construction. (**Am 1 published 2011; Ed. 2 publish 1Q 2015.**)

IEC 61730-2 Ed. 1.0, Photovoltaic module safety qualification – Part 2: Requirements for testing. (**Am 1 published 2011; Ed. 2 publish 1Q 2015.**)



IEC TC 82

Working Group 2--Modules non-Concen.

IEC 61853-2, Power and energy rating of photovoltaic (PV) modules – Part 2 Test Methods. **(Publish 3Q 2013.)**

IEC 61853-3, Power and energy rating of photovoltaic (PV) modules – Part 3 Energy Rating. **(Still pre-NWIP stage.)**

IEC 62716, Ammonia corrosion testing of photovoltaic (PV) modules **(CD stage--publish 4Q 2013.)**



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Working Group 2--Modules non-Concen.

- IEC 60904-11 Ed. 1.0 Photovoltaic devices – Part 11: Measurement of initial light-induced degradation of crystalline silicon solar cells and photovoltaic modules. **CD stage—publish 2Q 2014.**
- IEC 62759-1 Ed. 1.0 Transportation testing of photovoltaic (PV) modules - Part 1: Transportation and shipping of PV module stacks. **CDV stage—publish 1Q 2014.**
- IEC 62775 Ed. 1.0 Cross-linking degree test method for Ethylene-Vinyl Acetate applied in photovoltaic modules - Differential Scanning Calorimetry (DSC). **CD stage—publish 4Q 2014.**



IEC TC 82

Working Group 2--Modules non-Concen.

IEC62782 Ed. 1: Dynamic mechanical load testing for photovoltaic (PV) modules. **CD stage—publish 1Q 2015.**

62788-1-2 Ed. 1: Measurement procedures for materials used in photovoltaic modules - Part 1-2: Encapsulants - Measurement of volume resistivity of photovoltaic encapsulation and backsheet materials. **CD stage—publish 4Q 2012.**

62788-1-4 Ed. 1: Measurement procedures for materials used in Photovoltaic Modules - Part 1-4: Encapsulants - Measurement of optical transmittance and calculation of the solar-weighted photon transmittance, yellowness index, and UV cut-off frequency. **CD stage—publish 4Q 2012.**



IEC TC 82

Working Group 2--Modules non-Concen.

IEC 62788-1-3 Ed. 1.0 : Measurement procedures for material used in photovoltaic modules - Part 1-3: Encapsulants - Measurement of dielectric strength. **CD stage—publish 4Q 2014.**

IEC 62788-1-5 Ed.1: Measurement procedures for materials used in photovoltaic modules - Part 1-5: Encapsulants - Measurement of change in linear dimensions of sheet encapsulation material under thermal conditions. **CD stage—publish 2Q 2015.**



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Working Group 2--Modules non-Concen.

IEC 62790 Ed. 1.0 Junction boxes for photovoltaic modules - Safety requirements **CD stage—publish 4Q 2013.**

PNW 82-707 Ed. 1.0 Connectors for DC-application in photovoltaic systems - Safety requirements and tests. **CD stage--In collaboration with WG 6—publish 2Q 2015.**

IEC 62782 Ed. 1.0 Dynamic mechanical load testing for photovoltaic (PV) modules. **CD stage—publish 3Q 2015.**

There are many more NWIPs to be presented in the areas of Back Sheets & Front Sheets; Adhesives; Pottants and Edge Seals



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Working Group 2--Modules non-Concen.

IEC 62804 Ed. 1.0 System voltage durability test for crystalline silicon modules - Qualification and type approval. **CD stage—publish 4Q 2014.**

IEC 62805-1 Ed. 1.0 Test method for total haze and spectral distribution of haze of transparent conductive coated glass for solar cells. **CD stage—publish 4Q 2014.**

IEC 62805-2 Ed. 1.0 Test method for transmittance and reflectance of transparent conductive coated glass for solar cells. **CD stage—publish 4Q 2014.**



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Working Group 3--Systems

Ted Spooner, Australia and Martin Cotterell, UK
convenors

IEC 61829 Ed.1 Crystalline silicon photovoltaic (PV) array
- On-site measurement of I-V characteristics **Ed. 2 in
process—publish 2Q 2013.**

IEC 62093 Ed. 1 Balance-of-system components for
photovoltaic systems - Design qualification natural
environments **Ed.2 in process—publish 3Q 2013**

IEC 62446 Ed.1: Grid connected PV systems - Minimum
system documentation, commissioning tests and
inspection requirements. **Ed. 2 in process—publish 1Q
2015.**



IEC TC 82

Working Group 3--Systems

IEC 62548 Installation and Safety Requirements for Photovoltaic (PV) Arrays. **FDIS to be submitted-- publish 2Q 2013.**

IEC 62748 TS, PV on Buildings. **Submit CD by Dec 2012; publish 2Q 2015. At one time known as BIPV.**



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Working Group 6--Balance of Systems

Greg Ball, US and Dr. Vicente Salas, ES, co-convenors

IEC 62109–3 Safety of power converters for use in photovoltaic power systems – Part 3: Particular requirements for PV modules with integrated electronics. **Writing CD; Publish 4Q 2014.**

IEC 62109-4 Safety of power converters for use in photovoltaic power systems - Part 4: Particular requirements for combiner box **(Most likely undertaken by TC 17.)**



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Working Group 6--Balance of Systems

IEC 62116 Test procedure of islanding prevention measures for utility–interconnected photovoltaic inverters. **Publish Ed. 2 1Q 2013.**



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Working Group 7-- Concentrator Modules

Dr. Robert McConnell, US, convenor

IEC 62108 Ed. 1 Concentrator photovoltaic (CPV) modules and assemblies - Design qualification and type approval **Considered for up-date to Ed. 2 beginning in 2013.**

IEC 62670-1 Ed. 1 Concentrator photovoltaic (CPV) module and assembly performance testing and energy rating - Part 1: Performance measurements and power rating - Irradiance and temperature **In CDV stage—publish 4Q 2013**



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Working Group 7-- Concentrator Modules

IEC 62670-2 Ed. 1.0 Concentrator photovoltaic (CPV) module and assembly performance testing and energy rating - Part 2: Energy rating by measurement **CD; publish by 4Q 2013.**

IEC 62688 Ed. 1.0 Concentrator photovoltaic (CPV) module and assembly safety qualification **CD; publish by 4Q 2013**

IEC/TS 62727 Ed. 1.0 Specification for solar trackers used for photovoltaic systems **Published May 2012**



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Working Group 7-- Concentrator Modules

IEC/TS 62789 Ed. 1.0 Specification for concentrator cell description **CD; publish 3Q 2013.**

IEC 62787 Ed. 1.0 Concentrator photovoltaic (CPV) solar cells and cell-on-carrier (COC) assemblies - Reliability qualification **CD; publish 4Q 2014.**

IEC 62817 Ed. 1.0 Photovoltaic systems - Design qualification of solar trackers **CD; publish 3Q 2014.**



IEC TC 82

JWG1: JCG TC 82/TC 88/TC 21/SC 21A

The JWG1 is responsible for writing technical specifications aimed at Decentralized Rural Electrification (DRE) in developing countries. TSs include PV systems but also hybrid and microgrid systems. These Technical Specifications are in the 62257 series--and are not listed here. To see a listing go to the www.iec.ch website as listed in the 4th slide and search for 62257.



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All US work in TC 82 is done through the US Technical Advisory Group. Experts from the TAG *may* be appointed to various working groups--all dependent on the convenor and not making the WG seem US-centric or European-centric or Asian-centric—and whether you can afford the time and travel to the WG meeting locations.



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Bald faced commercial--continued

If you'd like to participate, do so as a member of the US TC82 TAG. At least help us to review the draft standards that interest you. Get with Alex Mikonowicz—or me—for more detailed information.

ANSI dues for US TAG members is \$295 per year. Must be a member of ANSI to participate in the Technical Advisory Group.