UL Solar PV Module Factory Certification Service

A Transparent Approach to Increase Confidence and Inform Selection

The power performance and economic lifetime of the PV module is of primary importance to stakeholders of PV systems and control of the production environment is essential to their reliability and reproducibility. The International Electrotechnical Commission (IEC) established a new conformity assessment (CA) system for renewable energy (IECRE) which includes a standard approach to assessing solar PV module factories.

Conformity Assessment Certification

Conformity assessment is a valuable tool used in many industries to demonstrate compliance with international standards and provide assurance of quality and reliability. A meaningful CA system for certification of a PV module factory must have:

- Published standards that define the technical requirements
- Operational Documents (ODs) that define the assessment procedure
- Qualified and authorized third parties to perform the assessments, interpret results and issue certification

Published Technical Requirements

The requirements for PV module factory audits are found in IEC TS 62941 and are defined with the assumption that the quality management system (QMS) of the manufacturer fulfills the requirements for ISO 9001. The new technical specification:

- Is written specifically for PV modules
- Describes best practices for product design and manufacturing processes
- Places a strong focus on selection and control of materials used in PV modules

A manufacturing system in accordance with the TS 62941 specification helps ensure a PV module process that can uniformly meet the performance requirements as determined from the test sequences in the IEC 61215 series.

Defined Certification Procedure

The three-part OD-405 series covers the requirements for quality system inspections of PV module factories.

- Part 1: Requirements for certification of a quality system for PV module manufacturing
- Part 2: Audit checklist to be used when conducting an audit
- Part 3: Requirements for PV plant inspectors and PV factory auditors

Why UL?
Since 1986 when UL published the first PV safety standard, we have been working collaboratively with industry to accelerate the use of PV globally. Our efforts have been aimed at increasing adoption of solar technologies by contributing to update building codes, electric codes, utility interaction requirements, and product standards for safety, performance and durability.

Why the IECRE?
Globally, industry has been asking for consistency in technical evaluations. The IEC and IECRE are recognized internationally for standards development and conformity assessment systems respectively. The IECRE includes a standard approach to assessing a PV module manufacturer's production environment. UL and other experts have contributed to its development.

Authorized Independent Third Party

Conformity assessments are performed by Renewable Energy Certification Bodies (RECB), independent third-party certification bodies authorized by the IECRE to perform the assessments. Approved RECBs participate in peer assessments, the mechanism for assurance of the equivalence of all IECRE certifications, and mutual acceptance of results by all participating members. UL is an accredited RECB authorized by the IECRE.

UL's PV Module Manufacturer Factory Audit Service

Pre-Audit Activity
UL sends an audit package requesting detailed information related to the PV module specifications and bill of material (BOM), the factory QMS and procedures in preparation for the stage 1 planning and audit activity.
Stage 1 – Off-site Audit
UL performs an off-site evaluation and audit based on customer inputs and may request additional information to resolve areas of concern prior to the stage 2 site visit.
Stage 2 – On-site Audit
Based on stage 1 preparation, the onsite audit plan is prepared, the audit is conducted and initial audit conclusions summarized (additional time may be required to resolve noncompliance issues).
Certification Preparation
Final review of stage 2 activity, including noncompliance resolution, granting of initial certification and issuance of certification[1] documents.

1 - The manufacturer's certificate of conformance is immediately uploaded to the publicly accessible IEC website for download in support of technical due diligence.

Benefits of a Factory Certificate

Published standards in combination with conformity assessment provide a solid foundation upon which to verify existing practices and build confidence in new technologies. The benefits of a factory certification to stakeholders include:

Manufacturers – Demonstrate commitment and accountability to a common set of technical requirements, endorsed by a third party issued certificate.

Investors – Access to an additional credential when making investment decisions, indicating defined steps have been taken to reduce manufacturing variation risk and help assure quality PV module production.

Developers –The factory certificate provides objective evidence of reduced risk in the selection of a PV module and increases confidence in the project for financiers.

Independent Engineer – Supports pre-finance due diligence of PV technology showing objective information related to PV module manufacturing quality and consistency.

For more information on UL services for the PV industry please visit UL.com/Renewables or contact ULHELPS@ul.com or call 1.877.ULHELPS (1.877.854.3577)

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