OUR CORE TECHNICAL SERVICES INCLUDE:

- **Solar PV testing and certification**
- **Specialized on testing BIPV modules**
- **Accredited for CPV modules**
- **Testing and certification of inverters and grid connections**
- **Certification of solar PV plant and installations**
- **Pre-shipment inspections**
- **Category III Testing**
- **U.K. PV certification according to the MCS scheme**
- **Instrumentation for quality control at the production stage**
- **ATEX testing and certification for PV modules**
- **Testing and certification for North America (UL1703)**

Solar PV Testing and Certification

Kiwa operates an internationally recognized certification scheme for Solar PV modules (Crystalline and Thin Film). This is the KIWA Quality Approval. We use our accredited laboratory facilities to test PV modules according to EN-IEC 61730 for safety, EN-IEC 61215 and EN-IEC 61646 for performance requirements on Crystalline silicon terrestrial photovoltaic (PV) modules and Thin Film terrestrial photovoltaic (PV) modules.

- **EN-IEC 61215** This International Standard lays down IEC requirements for the design qualification and type approval of Crystalline silicon terrestrial photovoltaic modules suitable for long-term operation in general open-air climates, as defined in IEC 60721-2-1. It applies only to Crystalline silicon modules types.

- **EN-IEC 61646** Similarly to EN-IEC 61215, this standard is intended to apply to all terrestrial flat plate module materials not covered by EN-IEC 61215, such as Thin Film modules. The test sequence is derived from EN-IEC 61215 for the design.

- **EN-IEC 61730** This standard describes the fundamental construction requirements for photovoltaic modules in order to provide safe electrical and mechanical operation during their expected lifetime. Specific topics are provided to assess the prevention of electrical shock, fire hazards, and personal injury due to mechanical and environmental stresses.

- **UL 1703** TA Standard for Safety Flat-Plate Photovoltaic Modules and Panels. These requirements cover flat-plate photovoltaic modules and panels intended for installation on or integral with buildings, or to be freestanding (that is, not attached to buildings), in accordance with the National Electrical Code, NFPA 70, and Model Building Codes, as well as modules and panels intended for use in systems with a maximum system voltage of 1000 V or less and components intended to provide electrical connection to and mounting facilities for flat-plate photovoltaic modules and panels.

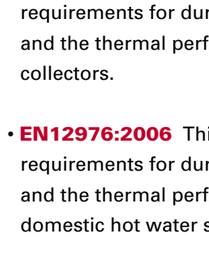
Testing and certification of inverters and grid connections

Kiwa is also a Notified Body on all relevant directives that apply to inverters –electromagnetic compatibility directive (EMC-D), low voltage directive (LVD) and grid connection – our test facilities and expertise are available to you.

On demand services

Besides testing and certification for approval purposes, we are glad to carry out any testing or evaluation that you need and we are happy to discuss on demand service packages. Examples include:

- Technology characterization and comparative testing and evaluation
- Technical services for investors and importers
- Peak output quality control tests
- Reference module provision
- Ammonia corrosion tests (IEC 62716)
- Salt mist corrosion tests (IEC 61701)
- Mechanical load tests (up to 10.000 Pa)



Kiwa's approval mark to show that your modules comply with the mentioned aspects.

Testing and certification of solar thermal and solar boilers

Kiwa is a testing and certification body for solar thermal collectors (EN 12975) and systems (EN 12976). We are able to certify your products according to:

- The voluntary Dutch *Zonnekeur* quality mark demonstrates the safety, reliability, and durability of solar boilers as well as the energy saving it realizes.

- The *Solar Keymark* is the European quality mark for solar boilers and collectors.

The *Solar Keymark* and *Zonnekeur* quality marks for solar boilers are based on product testing and assessment in accordance with the European EN 12976 standard. Solar Keymark for solar collectors is based on the European EN 12975 standard. Additional testing may be required for European certification due to specific national regulations, e.g. in relation to tap-water quality or fire safety.

- **EN12975:2006** This standard details the general requirements for durability, reliability and safety testing and the thermal performance characterization of solar collectors.

- **EN12976:2006** This standard details the general requirements for durability, reliability and safety testing and the thermal performance characterization of solar domestic hot water systems.

Kiwa

Kiwa certification assists customers internationally as a European certification body with internationally recognized certification services of systems, products, processes and people. We also perform third party inspections and investigations as independent experts. You can select from a very broad package of products and services at our company as the answer to all your quality issues. Kiwa will also assist in obtaining certificates from peer certification companies whenever necessary assisting with your market entry.

Experience: Kiwa has more than 75 years experience in the field of testing and certification of energy related products and systems. Our experienced team of experts-offer the latest product and standard knowledge and a broad range of supporting technical and quality services.

Standardization: Kiwa actively participates in standardization activities and committees. This “state-of-the-art” perspective informs all our services and advice to our clients.

World-wide acceptance: Kiwa reports and certificates are well respected by authorities, manufacturers and by the testing and compliance industry globally.

International service: With our facilities in, amongst others, China, Italy, the Netherlands, the United Kingdom and Turkey, we can assist and support you with an integrated service in the areas where your production, suppliers and / or clients are active.

More information?

If you are interested in Solar PV Approvals, Solar Keymark or CE, and would like to receive more information, please see our website: www.kiwa-eup.com or contact:

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Partner for progress

TESTING AND CERTIFICATION SERVICES FOR SOLAR PRODUCTS

When considering testing and certification of your products, what is most important to you?

Cost? Time to Market? Efficiency? Choice? All of these?

Kiwa offers a client focused service, delivering testing and certification solutions of photovoltaic and solar thermal technology, when you need it and at competitive prices. We appreciate that the demands of the European and Asian markets for manufacturers and suppliers are intense and very competitive.

1. Focus – with our offices across Europe and in China we offer a truly integrated service – communicating with you and supporting you where you need us.

2. Speed – we can take your products immediately for testing – ensuring your product enters the market as quickly as possible.

3. Cost –we keep our costs as competitive as possible and seek to add value wherever possible.

4. Efficient – committed to rapid delivery, accelerated testing programs are available for some products.

5. Flexibility – we deliver services tailored to your requirements.
Authorities, banks and investors will require evidence of compliance and quality of products. It is important to have your solar PV modules and solar thermal collectors tested and certified by an internationally recognized and accredited Testing and Certification Body.

Kiwa offers you a suite of services designed to meet the needs of your business in this area.