



DEKRA Asia Pacific

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DEKRA Supports

along the entire life cycles of

Photovoltaic Industry

DEKRA On the safe side.

DEKRA

One Stop Solution of Photovoltaic Industry

Since the Industrial Revolution, the energy mix of most countries across the world has become dominated by fossil fuels. This has major implications for the global climate, as well as for human health. To reduce CO² emissions and local air pollution, the world needs to rapidly shift towards low-carbon sources of energy renewable technologies.

Renewables are the backbone of any energy transition to achieve net zero. As the world increasingly shifts away from carbon emitting fossil fuels, understanding the current role renewables play in the decarbonisation of multiple sectors is key to ensuring a smooth pathway to net zero.

As an international expert organization, DEKRA offers a wide range of comprehensive services to address the challenges of the solar market based on national and international standards as well as industry and customer requirements. We have been accredited by IECEE as CB testing laboratory (CBTL) and offer comprehensive experience and professional team providing supply chain services for PV projects of different capacities. Our goal is to streamline and manage the testing and certification processes across international boundaries and improve both global access and time to market for our customers.



Founded in 1925 in Berlin as Deutscher Kraftfahrzeug-Überwachungs-Verein e.V., DEKRA has been active in the field of safety for almost 100 years.

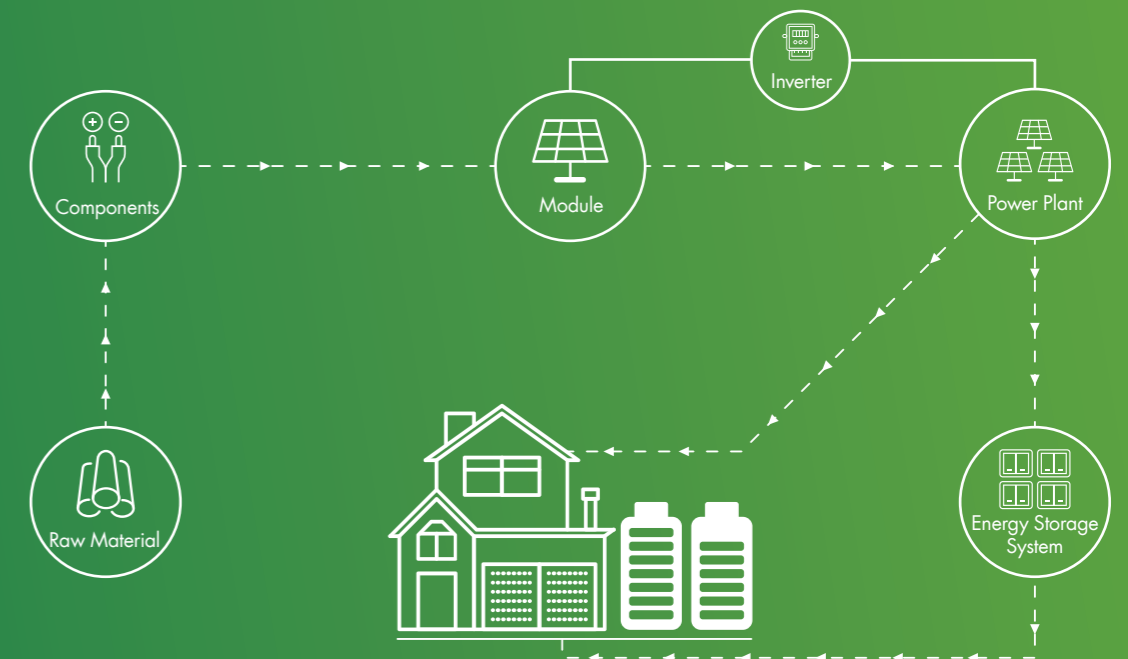
DEKRA is the largest unlisted company and vehicle inspection organization in the global testing, certification and inspection industry, as well as the largest testing and certification organization in Germany.

In 2022, DEKRA generated preliminary sales totaling almost EUR 3.7 billion. The company currently employs almost 48,000 people in approximately 60 countries on all continents. With qualified and independent expert services, they work for safety on the road, at work and at home.

These services range from:

- Vehicle Inspection
- Claims & Expertise
- Product Testing
- Industrial Inspection
- Audit
- Temp Work
- Advisory & Training

we will be the
 global partner
 for a
 safe, secure and sustainable world



DEKRA PV Module Test and Certification

PV modules are important components in PV power plant. Whether in open fields, deserts, on the roofs, different environments put higher demands on the quality and reliability of PV modules. DEKRA is able to provide a wide range of services for PV modules, including crystalline silicon, thin-film, integrated building and concentrated PV modules.



Test and Certification Service

- IEC/EN 61215/61730 testing and certification
- ANSI/UL 61215/61730 testing and certification
- Ammonia corrosion testing and certification
- Dynamic mechanical load testing and certification
- Transportation testing and certification of components
- CE certification (Low-voltage Directive)
- CB certification
- Factory inspection
- Global Market Access (CQC, Inmetro, JET, BIS, CEC, MCS...)
- Extended PV module test (IEC TS 63126; IEC TS 63209-1; etc)
- PID testing and certification
- Salt mist corrosion testing and certification
- Sand dust corrosion testing and certification
- Non-uniform snow load testing and certification
- Photovoltaic module STC calibration
- PV Module Life Cycle Assessment
- Panfile data package service
- Customized test solution



Quality Assurance Service

- Electro-luminescence (EL) test and infrared imaging
- RoHS compliant test
- Production line sampling and STC test
- Specific standard factory audit
- Potential induced degradation (PID) test
- Light induced degradation (LID) test
- Inspection and supervision services



Add Value Service

- IEC 62941 Quality management system certification
- Evaluation of uncertainty in production line measurement
- Lab management system training and TMP audit
- Training on standards and test methods
- CBTL CTF Audit

DEKRA PV Components Test and Certification

A safe, high-efficiency and running well PV power plant relies on good quality PV components. The effective recognition of PV components is often ignored by the end users, and this circumstances result in a great hidden danger in each stage.

DEKRA not only supports manufacturers as well as end-use customers. We participate into the process in the first stage. We provide our service regarding to international standards, and strictly supervise the process from the design of PV components, material selection to production. We provide the great support to have risk-free operation of PV power plant.



Product

- Junction boxes for PV modules
- Connectors for DC/AC-application in PV systems
- PV junction boxes with integrated electronics
- PV connectors with integrated electronics
- PV array interconnection systems
- Front and back sheet for PV modules
- Encapsulation materials for PV modules
- Glass for PV modules
- Polymer materials for PV applications
- Edge seals and potting sealant for PV applications
- PV cable
- PV plastic frame
- PV rack

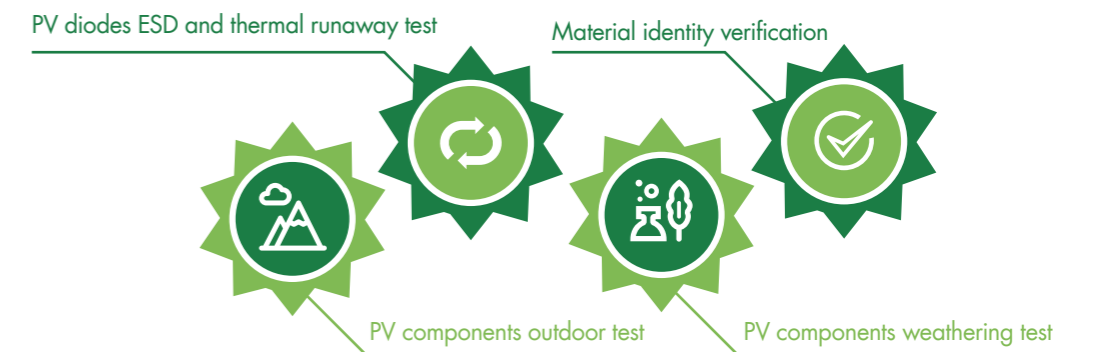


Test and Certification Service

- Testing and certification for PV junction box
- Testing and certification for PV rack
- Public Greencard database for PV materials
- Testing and certification for PV connectors with integrated electronics
- Testing and certification for PV array interconnection systems
- Testing and certification for front sheet and back sheet for PV modules
- Testing and certification for encapsulation materials for PV modules
- Testing and certification for edge seals and potting materials used in PV modules
- Testing and certification for plastic frame material used in PV modules
- Testing and certification for glass for PV modules
- Testing and certification for floating PV system



Customization Service



Add Value Service



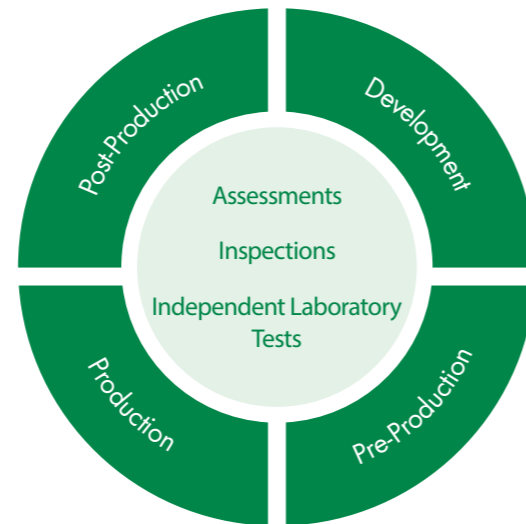
- Customer technical consultation
- Supervision service
- Customize the test scheme
- Quality management system certification
- Failure analysis of PV power plant components
- Global Market Assess
- Process safety and organizational safety consulting
- Design and development program optimization
- Production process evaluation
- Personnel training
- Product quality supervision
- Product carbon footprint audit
- Factory audit
- Buyer Approval Report
- Technical seminar
- Standard development of new product



DEKRA PV Supply Chain Service

Our audits and inspections of production lines identify potential weaknesses and risks, ensuring safe and qualified final products, thus a profitable yield. In addition, our authorized state-of-the-art test laboratory can provide durability test of PV modules and components to verify performance. This helps improve quality, performance and compatibility by reducing the risk of serious defects and critical safety issues.

The systematic quality assurance not only improves technology of PV station safety and efficiency, but also financing ability: investors and lenders can feel confident that your project is accounting for and addressing inevitable risks.



	Development	Pre-production	Production	Post-production
Expert Team	<ul style="list-style-type: none"> Supplier evaluation Technical advisory 			
At Factory	<ul style="list-style-type: none"> Factory audits 	<ul style="list-style-type: none"> Capability assessment Pre-production inspection 	<ul style="list-style-type: none"> Factory inspection during production In-line quality assurance 	<ul style="list-style-type: none"> Pre-shipment factory inspection Loading supervision
DEKRA's Authorized Laboratory	<ul style="list-style-type: none"> Module benchmarking 	<ul style="list-style-type: none"> Reliability tests Reference module creation 	<ul style="list-style-type: none"> Fast verification of sample tests 	<ul style="list-style-type: none"> Final random sample tests
On Construction Site				<ul style="list-style-type: none"> Power and IV test on site after assembly

DEKRA Independent Laboratory Tests



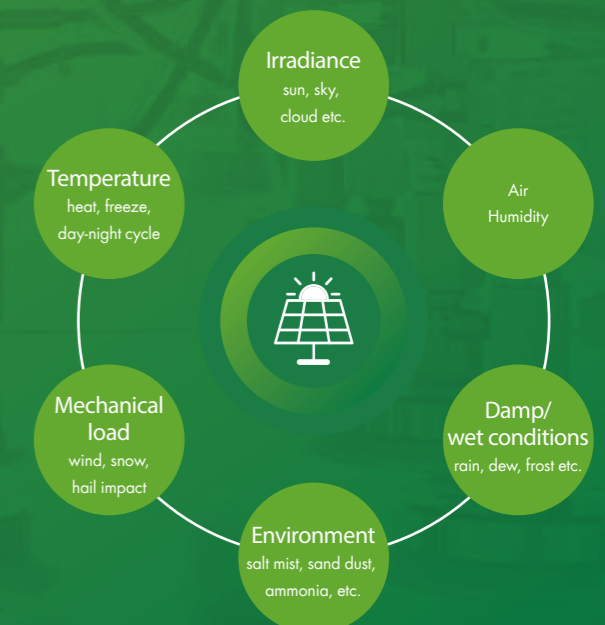
Pre-shipment Tests

- Visual inspection
- Power determination
- Electro-luminescence (EL) test
- Safety test
- Performance at different irradiance/temperature
- Thermo-graphic inspection
- Potential induced degradation (PID) test
- Light induced degradation (LID) test
- Static mechanical load
- Thermal cycling / damp heat
- Highly accurate STC measurement
- EVA gel content & peel-off test



IEC Reliability Tests And Extended Reliability Tests

- Damp heat test (DH)
- Humidity freeze test (HF)
- Impulse voltage test
- Bypass diode thermal test
- Outdoor exposure test
- Ammonia corrosion test
- UV precondition test
- Thermal cycling test (TC)
- Static mechanical load test
- Hail impact test
- Hot-spot endurance test
- Salt mist corrosion test
- Dynamic mechanical load test





DEKRA PV Power Plant Service

DEKRA owns comprehensive photovoltaic power plant services which allow us to explain the risks associated with customer management of the construction and operation of photovoltaic power plants. With DEKRA's technical knowledge and worldwide testing network, from the planning stage to the final acceptance stage, DEKRA is able to perform design assessment, manufacture supervision of key equipment, performance testing, certification, risk assessment, and safety training services to provide one-stop photovoltaic power plant services to developers and operators.

DEKRA PV Power Plant Technical Services throughout the Project Cycle

