





## PV Power Plants and Integrated Photovoltaics

At [Fraunhofer ISE](#), we develop innovative, high-quality, and cost-effective photovoltaic (PV) solutions for deployment across diverse surfaces and applications. Our work spans PV modules, solar power plants, and system integration in urban areas, transport infrastructure, agriculture, and water bodies, unlocking significant additional land potential. Through advanced measurement methods and comprehensive quality assurance, we support customers in delivering PV projects with improved performance and longer service life.

Across the Fraunhofer ISE quality cycle - development, engineering, procurement, commissioning, and operation - we provide customized solutions. Our expertise includes performance characterization and reliability testing of new module technologies, PV forecasting for power trading and grid management, and cost-efficient energy management. We also address solar thermal power plants and hybrid systems combining photovoltaics with power-to-X technologies. In the Business Area "Solar Power Plants and Integrated Photovoltaics", our work focuses on the following research topics:

			
<p>© Fraunhofer ISE</p> <h3>PV Modules</h3> <ul style="list-style-type: none"> <li>Module analysis and damage assessment</li> <li>Reliability of module components</li> <li>Degradation modeling</li> <li>Tests for integrated PV applications</li> </ul>	<p>© Fraunhofer ISE</p> <h3>PV Power Plants</h3> <ul style="list-style-type: none"> <li>Potential analyses and feasibility studies</li> <li>Yield assessments</li> <li>Glare reports</li> <li>Quality assurance and AI-based data analysis</li> <li>Trouble-shooting and fault detection</li> <li>Evaluation of new system concepts</li> </ul>	<p>© Fraunhofer ISE</p> <h3>Integrated PV</h3> <ul style="list-style-type: none"> <li>Potential analyses and feasibility studies</li> <li>Economic and ecological evaluation</li> <li>System simulation and monitoring</li> <li>Innovative solutions for modules and systems</li> </ul> <p>For agriphotovoltaics, floating PV, vehicle-integrated PV, urban PV, biodiversity PV and BIPV.</p>	<p>© Ferrostal AG/Solar Power Group/de Riese</p> <h3>Solar Thermal Power Plants</h3> <ul style="list-style-type: none"> <li>System optimization</li> <li>Long-term measurements and evaluation</li> <li>Evaluation of new system concepts</li> </ul>

### R&D Services:

- **Module Analysis and Reliability:** we investigate the long-term stability and performance of PV modules as well as their materials and individual components. We act as a link between module development, production and practical application in the field
- **Photovoltaic Solar Power Plants:** we are dedicated to the advancement of methods and technologies for PV power plants and their applications. We position ourselves as a reliable partner for technical and scientific customers seeking efficient and dependable solutions in the field of photovoltaics.
- **Integrated Photovoltaics:** We develop innovative solutions for the integration of PV technology – Active Surfaces Made to Fit, in buildings, vehicles and roadways and its incorporation into agricultural and water areas as well as in urban areas.
- **Photovoltaics: Production Technology and Transfer:** We develop innovative approaches from proof of concept to proof of feasibility in small series with proven and innovative production systems.

At Fraunhofer ISE, we benefit from below infrastructure for our research and development activities

- **CalLab PV Modules:** Our services range from the calibration of individual cells and modules to customer-specific tasks such as the calibration of bifacial modules.
- **TestLab PV Modules:** Measurements and tests for the design qualification and type approval of PV modules.
- **Outdoor Performance Lab:** Precise Evaluation of PV Modules

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Kindly get in touch with us if you are interested in this technology or require further information.

Thanks and Regards,

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