Operation and Maintenance of PV Plants and Grid Integration

- AI-based methods for optimized operation of PV plants
- Forecasts and predictive control to minimize grid loading and energy costs
- Optimized PV solutions for built and natural environment
- Interaction of PV storage systems, heat pumps or charging stations for e-mobility

Collaboration with other ZSW units and external partners

Consulting
- Technical due diligence
- Factory inspection
- Optimization of non-standard PV installations
- Third-party expertise on underperforming PV systems
- Yield estimation and site appraisal

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Indoor Testing Facilities

- IV measurement and EL imaging
- Climatic stress tests for temperature, humidity and UV
- Mechanical load tests
- Electrical isolation tests
- Material analysis of polymers
- Measurement and test protocols according to IEC standards and applied beyond

Outdoor Testing Facilities

- High-resolution monitoring of meteorological data
- Test beds with individual IV curve monitoring
- Fixed and tracking mounting systems
- Concentration up to 3 times
- Specialized set-up for non-standard modules

Operational since 1988, the ZSW test sites reflect our long-standing experience with diverse PV technologies and system options.

Research and Development

- Performance monitoring and long-term stability
- Accelerated ageing and test-to-failure protocols, adapted to different PV technologies
- Study of particular degradation modes and material faults
- Participation in new test and qualification standards
- Circular economy aspects of PV modules (reuse, repair and requalification)

Participation in national and international R&D projects

The combination of indoor and outdoor test methods and the possibility to correlate the results are unique in this form. Our team can identify degradation mechanisms due to defects or light as well as isolation faults or material problems. State-of-the-art modules ranging from commercial scale to laboratory size are easily handled at the ZSW Solab.

Our mission is to enable durable and sustainable use of PV modules for our partners and clients.