



ZERODEFECT4PV

Advanced Panel-Level Monitoring and Predictive Maintenance for Optimized Solar Plant Efficiency

Current solar power plants face challenges due to string-based monitoring systems, often overlooking critical panel-level defects. Existing monitoring methods limit precise defect identification, resulting in compromised data integrity and inefficient power output predictions. ZERODEFECT4PV offers a streamlined approach with prototype sensors, named Data Collection Units (DCUs), deployed on individual panels or clusters and linked via a mesh network for optimal panel-level monitoring. This master-slave architecture ensures seamless data transfer to the Energy Operations Center (EOC) and other analytic and storage components. Features, including a mathematical “toolbox”, address data inconsistencies, promoting accurate forecasting. These innovations culminate in an assistant system designed to guide operators through large data volumes, offering actionable KPI-driven insights within the EOC environment.

Objectives

- ✓ Development and testing of a state-of-the art integrated sensor prototype for large-scale photovoltaic systems
- ✓ Precise and redundant sensor data acquisition and AI-based evaluation to localize and classify faults and fault types
- ✓ Predictive detection of defects, failures and inefficiencies
- ✓ Prototypical realization and validation

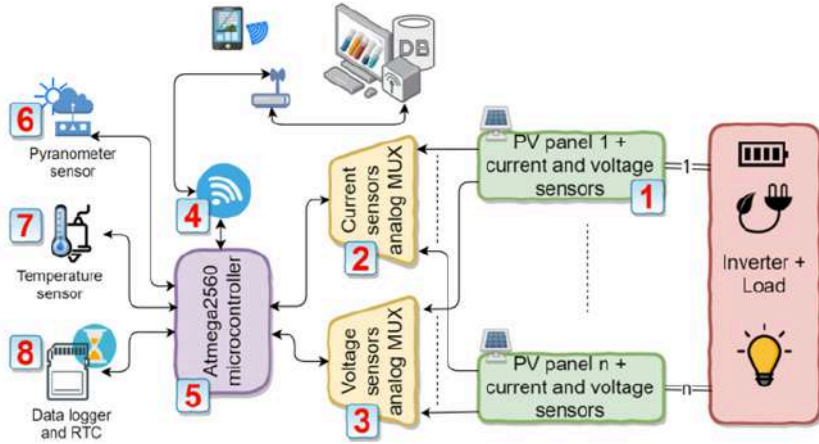
Consortium





ZERODEFECT4PV

Structural diagram of the component and ICT architecture for the ZERODEFECT4PV solution



Relevance



We target pivotal solar plant monitoring inefficiencies, aiming for enhanced renewable energy accessibility and affordability.

Societal Impact



Our project bridges energy efficiency with broader societal and environmental benefits.

Innovation



We merge sensors with AI in an interdisciplinary method, perfectly aligning with the call's emphasis on groundbreaking energy solutions.

Benefits: Our approach is set to **cut operational costs**, enhancing the allure of solar energy investments.

Contact

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