

Intelligence for Dependable Energy System



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Intelligence for Dependable Energy System

Targets

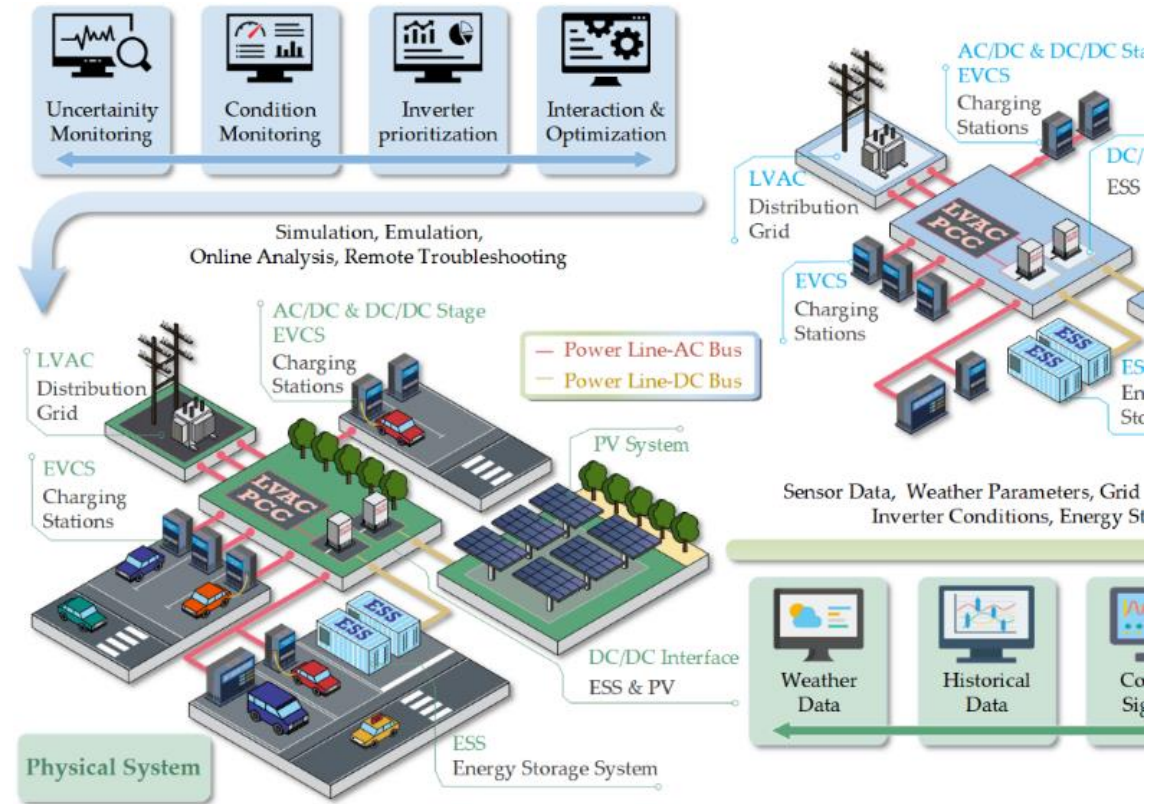
- Uncertainty-aware health indicators and models enabling reliable power-converter operation
- Health-based power management enhancing stability and extending lifetime in converter-dominated grids
- Digital-twin framework for forecasting grid performance and stability evolution

Activities

- Develop physics-informed and data-driven uncertainty quantification models
- Design health monitoring and health-aware power management strategies
- Implement and validate digital-twin-based control in grid-level scenarios

Use case support

- Predictive maintenance and health-aware dispatch of power converters
- Stability assessment of aging converters in renewable-dominated grids
- Digital-twin-enabled decision support for grid operators

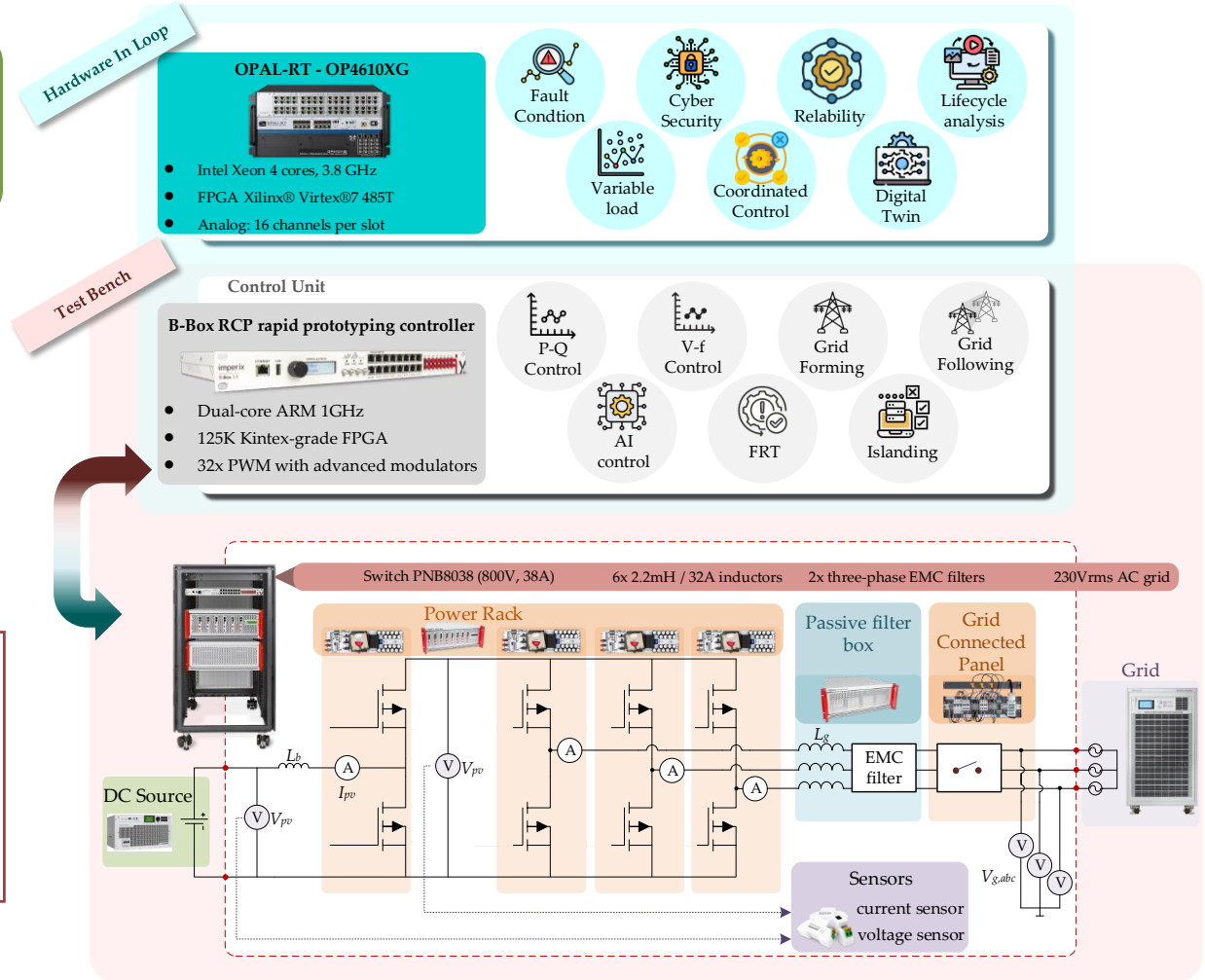


Support we can provide for the project

- Design and analyze energy systems
- Develop protection and control methods
- Create practical engineering tools
- Advance research in emerging technologies
- Provide prototyping and demonstration infrastructure

Complementary skills needed for the proposal

Partners with expertise in energy-efficient AI hardware, distributed cloud-edge infrastructures, and AI ethics and policy.



Projects

IEA Wind Task 61 on VRE-Hydrogen Integration

Duration: June 2025 → Dec 2028

Project budget: 2.23 mio. DKK

This project will explore and identify current challenges in the design, control, and deployment of hybrid VRE-hydrogen plants.

Funded by:



Project Details



Project partners:



PowerGridOptimiser

Duration: April 2024 → March 2027

Project budget: 19.05 mio. DKK

The PowerGridOptimiser improves Operation and Maintenance (O&M) of power distribution grids.

Funded by:



Project Details



Project partners:



ComEiCo: Competitive Electrolyzer Converters

Duration: June 2022 → Feb 2025

Project budget: 12 mio. DKK

In ComEiCo power electronics converters for electrolyzers with improved efficiency, low cost, and provisions for grid services are developed.

Funded by:

Innovation Fund Denmark



Project Details



Project partners:



Erhvervsfyrstårn Syd: Grøn Energi og Sektorkobling

Duration: Nov 2021 → Dec 2023

Project budget: 157 mio. DKK

The Danish government states in its political PtX strategy available from December 2021 that Denmark aims to build and install a total of 4-6 GW of electrolysis capacity by 2030.

Funded by:

Danmarks Erhvervsfremmebestyrelse

Project Details



Project partners:



Calls of interest

Other Calls

- CETP
- Eureka
- Doctoral Network

HORIZON-CL5-2026-03-D3-

01: Targeting key value chain components for increasing the competitiveness of renewable energy technologies in Europe

03: Innovative technologies and solutions to improve wind energy systems supporting the Strategic Energy Technology (SET) Plan on wind

18: Grid-forming capabilities for more resilient and RES-based electricity grids

20: Hybrid AI-Control Framework for a next-generation grid-scale energy storage and system integration

22: AI-driven forecasting algorithms for Grid and Consumer friendly Energy Sharing – Societal Readiness pilot

23: Data sharing to support the training and development of AI foundation models in the energy sector

HORIZON-

CL4-2027-04-DATA-09: Energy efficiency and sustainability of AI data processing in Data Centres (IA)

CL5-2027-07-D3-28: Community of practice - Data-Driven Decision-Making in Energy

CL5-2027-07-D3-26: Advanced Distribution Management Systems (ADSM) for more efficient and flexible distribution grids

CL3-2027-02-CS-ECCC-01: Artificial Intelligence for Cybersecurity applications

CL5-2027-07-D3-25: Advanced TSO control rooms to enhance grid observability, stability and resilience

CL5-2026-04-Two-Stage-D3-02: Next generation of renewable energy technologies