IEA TCP: ISGAN - WG 5

IEA TCP ISGAN

The Smart Grid International Research Facility Network – and its Role in Smart & Micro Grids

SIRFN's vision is to accelerate progress and pave the way for the global deployment of renewable energy and smart grids, in conjunction with joint global activities in of research facilities, application & standardization.

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Enhance the Validation of Smart Grids

The Smart Grids International Research Facility Network (SIRFN) is a network of smart grid testing facilities in countries participating in the IEA TCP ISGAN.

SIRFN coordinates joint testing-related activities relevant to "smart" electricity grids. SIRFN's collaborative testing and evaluation capabilities are meant to be leveraged by the international community to enable improved design, implementation, and testing of smart grids and their functionalities, including the reliable integration of clean energy technologies.

Global Network of Experts

SIRFN experts form a world-leading network of smart grid test sites in the Americas, Asia, Australia and Europe with members from highly qualified universities and research organizations.

SIRFN collaborates closely with internationally operating networks such as DERlab, EERA JP SG, Sunspec Alliance, IEEE, ... forming a cluster of high-level experts from research, industry and standardization groups.

The global operating IEA-ISGAN SIRFN Group

Targets for Leveraging Smart Grid Facilities

1. Create and share a **comprehensive knowledge base** of smart grid test facilities, test environments, and key demonstration projects, including essential capabilities that can add value to their work and external stakeholders.
2. Support robust **information exchange**, including non-proprietary research results, best practices and methodologies, and targeted technical assistance, with the goal of promoting development and operation of research and test bed facilities to enhance overall global testing capacity.
3. Improving current **smart grid testing and evaluation capabilities** by identifying gaps through organizing and coordinating joint research and testing efforts to minimize duplicated efforts and make better use of existing expertise.
4. Establish a **framework for supporting users and facilities** in proposing and implementing projects involving smart grid testing by matching evaluation needs with testing capabilities and then providing a framework for all kinds of stakeholders to gain from sharing non-proprietary results, advice and assistance.

Research Focus & Technical Projects

The **Technical Projects** bring together technical experts to consider the current state, identify issues for test facilities to collaborate on resolving, identify potential users of research facilities, and recommend and implement laboratory infrastructures activities to overcome obstacles.

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DER Testing Protocols	Microgrid Testing	Power System Testing	Adv. Lab Testing Methods
Develop interoperability test protocols for DER	Evaluation of microgrid requirements (on/off-grid)	Interdependencies identification in power system control	Enhanced lab testing & testing methods (HiL, Co-Sim)
Evaluation of DER devices and test protocols	Definition of microgrid functionalities (on-grid)	Testing approach for holistic system testing	Creating standardized testing procedures
Adoption of certification protocols by int-/national standards	Development of testing procedure for microgrid testing	Define requirements for real systems testing	Establishing novel research areas for RT / HIL application

This review has been performed by a group of researchers, members of the IEA TCP ISGAN - SIRFN, as part of their efforts to enhance the close collaboration among international test facilities and identifies potential activities for future application and standardization of Smart Grid. In this context, the contributions from the members are acknowledged.

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