

IEA TCP ISGAN THE SMART GRID INTERNATIONAL RESEARCH FACILITY NETWORK – SIRFN

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

Develop interoperability test protocols for DER

Evaluation of DER devices and test protocols

Adoption of certification protocols by international standards

Microgrid Testing

Evaluation of microgrid requirements (on/off-grid)

Definition of microgrid functionalities (on-grid)

Development of testing procedure for microgrid testing

Power System Testing

Interdependencies identification in power system control

Testing approach for holistic system testing

Define requirements for real systems testing

Adv. Lab Testing Methods

Enhanced lab testing & testing methods (HiL, Co-Sim)

Creating standardized testing procedures

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.

Supported by:
Federal Ministry for Economic Affairs and Climate Action
on the basis of a decision by the German Bundestag

The authors acknowledge the support of the presented work by the Federal Ministry for Economic Affairs and Climate Action as part of the founded project “ISGAN Annex 5; Operating Agent DERlab” (FKZ 03EI6066A). Only the authors are responsible for the content of this publication



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