

Laboratory-based Services for Smart Grids: Best Practices from the ERIGrid Project

ERIGrid Side Event at IRED 2018
16 October 2018

Session “Facilitating effective lab testing by lab users”

Moderator: Thomas Strasser, AIT Austrian Institute of Technology

- 08:30 – Registration and Networking
- 09:00 – Welcome and Introduction – Thomas Strasser, AIT Austrian Institute of Technology, Austria
- 09:10 – Hardware in the loop validation of regulation droop coefficients for minimum power losses in islanded microgrid – Outcomes and Results of the IDR TA Project, Tran Thi Tu Quynh, Eleonora Riva Sanseverino, Quoc Tuan Tran (CEA), and Tung Lam Nguyen (GINP), University of Palermo, Italy
- 09:40 – Data-Driven Detection of Events in Distribution Power Systems – Outcomes and Results of the 3D-Power and 4D-Power TA Projects – Reza Arghandeh and Jose Cordova (FSU), Western Norway University of Applied Science, Norway
- 10:10 – Coffee Break
- 10:30 – Optimized parameter settings of reactive power Q(V) control by Photovoltaic inverter – Outcomes and Results of the TIPI-GRID TA Project – Franz Baumgartner, ZHAW Winterthur, Switzerland
- 11:00 – Design and Validation of a Smart Charging Algorithm for Power Quality Control in Electrical Distribution System – Outcomes and Results of the AQUA TA Project – Ammar Alyousef, Dominik Danner, Friederich Kupzog (AIT), and Hermann de Meer, University of Passau, Germany
- 11:30 – Comparison of Power Hardware-in-the-Loop Approaches for the Testing of Smart Grid Controls – Outcomes and Results of the Smart beats Copper TA Project – Falko Ebe, Basem Idlb, David E. Stakic, Shuo Chen, Christoph Kondzialka, Matthias Casel, Gerd Heilscher, Ulm University of Applied Sciences, Germany
- 12:00 – Lunch and Lab Tour (AIT SmartEST)

Session “Improved laboratory-based services for smart grids”

Moderator: Gunter Arnold, Fraunhofer IEE

- 13:30 – Introduction – Gunter Arnold, Fraunhofer IEE
- 13:45 – Improved and Harmonised Smart Grid ICT – Oliver Gehrke, Danmarks Tekniske Universitet (DTU)
- 14:15 – Real-time simulation and hardware-in-the-loop methods – Ron Brandl, Fraunhofer IEE
- 14:45 – System Integration Testing Procedures – Luigi Pellegrino, Ricerca sul Sistema Energetico (RSE)
- 15:15 – Coffee break
- 15:45 – Smart Grid Interoperability – Evangelos Kotsakis, Joint Research Center (JRC) – European Commission
- 16:15 – CAPRICA: A Testbed Demonstrating A Cyber-Secure Synchronous Power Island – Kieran McLaughlin, Queen's University Belfast
- 16:45 – Laboratory-based services for smart grids within the scope of SIRFN activities – Jun Hashimoto, Fukushima Renewable Energy Institute, AIST (FREA)
- 17:15 – Discussion & Wrap-up – Gunter Arnold, Fraunhofer IEE
- 18:00 – End of the Workshop**

- 19:30 – Networking dinner**

Date: 16 October 2018

Location: AIT Austrian Institute of Technology, Vienna (AT)

About the workshop:

Power system testing issues have not been much considered in laboratory context up to now. Up till now supporting future development of smart grid solutions and technologies was done on component level, but system level issues need to be considered too. Pure simulation and current laboratory-based approaches need to be combined and enhanced, since they are not always sufficient to tackle complex problems. Therefore, there is a need for harmonising the existing flexible simulation and co-simulation tools, advanced validations methods using hardware-in-the-loop testing environments and for improving laboratory testing of component and small-scale power system.

The proposed workshop intends to bring together the relevant stakeholders, initiatives and projects to discuss the state-of-the-art and future aims. The discussions should also support the knowledge exchange of running projects.

The following research topics will be considered in the workshop:

- Improvement of existing laboratories with ICT systems
- Developed advanced testing scenarios and corresponding methods from a systems integration point of view
- Improvement of hardware-in-the-loop approach fostering system integration tests, combining co-simulation and real setups for advanced system integration tests

About ERIGrid:

By providing a pan-European research infrastructure ERIGrid supports the technology development as well as the roll out of smart grid solutions and concepts in Europe. The project tackles a holistic, cyber-physical systems-based approach by integrating 18 European research centres and institutions with outstanding research infrastructures and jointly develops common methods, concepts, and procedures. ERIGrid also integrates and enhances the necessary research services for analysing, validating and testing smart grid configurations. System level support and education for industrial and academic researchers is provided as well to foster future innovation.

ERIGrid addresses these challenging aims by providing a single-entry point to the available research infrastructure and offering a broad spectrum of services to researchers active in Smart Grids. This will strengthen the technical leadership of Europe in the energy domain.

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