

CEMiSG 2014

International Workshop on Computational Energy Management in Smart Grids

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www.cemisg2014.org

www.ieee-wcci2014.org

Scope

As the world population increases, the sustainable usage of natural resources becomes an issue that humanity and technology are urgently asked to face. Energy represents a relevant example from this perspective and the strong demand coming from developed and developing countries shoved the scientists worldwide to intensify their studies on renewable energy resources. At the same time, due to the increasing complexity of MV and LV distribution grids on which distributed electrical generators based on renewables have to be included, a growing interest has been oriented to the development of smart systems able to optimally manage the usage and the distribution of energy among the population with the objective of minimizing wasting and the economic impact even at family consumption level. This yielded in a flourishing scientific literature on sophisticated algorithms and systems aimed at introducing intelligence within the energy grid, with also several effective solutions already available in the market.

The task is surely challenging and multi-faceted. Indeed the different needs of the heterogeneous grid costumers and the different peculiarities of energy sources to be included in the grid itself have to be taken into account. Moreover several ways of intervention are feasible, as the ones indicated in the US Energy Independence and Security Act of 2007 as reference: self-healing capability, fault-tolerance on resisting attack, integration of all energy generation and storage, dynamic optimization of grid operation and resources with full cyber-security, incorporation of demand-response, demand-side resources and energy-efficient resources, actively client participation in the grid operations by providing timely information and control options, improvement of reliability, power quality, security and efficiency of the electricity infrastructure.

A multi-disciplinary coordinated action is required to the scientific communities operating in the Electrical and Electronic engineering, Computational Intelligence, Digital Signal Processing and Telecommunications research fields to provide adequate technological solutions to these issues having in mind the more and more stringent constraints we have to consider in terms of environment sustainability. In particular, the organizers of this Workshop wants to explore the new frontiers and challenges within the Computational Intelligence research area, including in particular Neural Networks, Evolutionary Computation and Soft Computing based solutions, for the optimal usage and management of energy resources in Smart Grid applicative scenarios.

Topics

- *Smart Home Energy Management*
- *Computational Intelligence for Smart Grids*
- *Learning Systems for Smart Grid Optimization Tasks*
- *Neural Networks algorithms for Complex Energy Systems*
- *Evolutionary Algorithms in Energy Applications*
- *Soft Computing in Renewable Energy Systems*
- *Energy Resource and Task Scheduling*
- *Building Energy Consumption Forecasting*
- *Demand-side Management*
- *Short-term Load Forecasting*
- *Neural Networks for Time Series Prediction in Smart Grids*
- *Non-intrusive Electrical Load Analysis*
- *Hybrid Battery Management*
- *Brain inspired algorithms for Energy Efficiency*

Sponsors

International Neural
Network Society



IEEE Computational
Intelligence Society



Submission Guidelines

Prospective authors are invited to submit papers according to the IEEE format. All submissions should be according to the specifications of WCCI 2014. Manuscripts will be submitted through the WCCI 2014 paper submission website and will be subject to the same peer-review review procedure as WCCI 2014 regular papers. Accepted contributions will be part of the IJCNN conference proceedings, which will be available in IEEE Xplore. A Special Issue of the *Neurocomputing* journal (IF: 1.634) is also foreseen.

Important Dates

- **20th December 2013**: Due date for paper submission
- **15th March 2014**: Notification to authors
- **15th April 2014**: Camera-ready deadline for accepted papers
- **5th July 2014**: Workshop Day