



SPECIAL SESSION V

Bio-inspired Algorithms Applied to Power and Energy Conversion Systems

ORGANIZED BY

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Literature review reveals that bio-inspired algorithms applied to power and energy conversion systems are nowadays a hot research topic. These metaheuristics are nature inspired algorithms, and its implementation replicates individual and collective strategies and behaviors of different agents to tackle hard optimization problems with a feasible computational cost. The inherent stochastic nature of these algorithms, i.e., often based on random processes, makes them suitable to cope with a wide-range set of problems. The two most adopted approaches of bioinspired algorithms are the Evolutionary Algorithms (EAs), drawing inspiration from natural evolution on biological systems, and Swarm Intelligence based Algorithms (SIAs), inspired by collective behavior of animals. Many real-world problems, and specifically complex optimizations problems within the area of power systems and energy conversion, can be solved with high accuracy and reliability by applying innovative bio inspired techniques. The goal of this Symposium is to identify and discuss the most important and recent developments in the field of evolutionary and nature inspired algorithms to solve problems in the fields of power and energy conversion systems. Improvements and a better tuning understanding of genetic algorithms, artificial immune systems, particle swarm optimization, hybrid models, etc., and proposals of new techniques, applied to bounded multidimensional optimal value search, in systems control, prediction, clustering, security, forecast, data-mining, model parameters determination and design are among the topics of interest in this session

Topics:

- **Evolutionary Algorithms.**
- **Multiobjective Optimization Applied to Energy Conversion Systems Design.**
- **Neural Networks for Optimization in Power and Energy Conversion Systems.**
- **Numerical Analysis Problems in Power and Energy Conversion Systems.**
- **Particle Swarm Optimization.**
- **Parameter Extraction in Power Systems.**
- **Load and Price Forecast.**
- **Decision Making in Electricity Markets.**