**APPLICATION OF THE SOFT COMPUTING METHODS FOR ELECTRIC POWER SYSTEMS AND SETS**

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The general aim of the project is to implement and adapt the soft computing methods (Evolutionary Algorithms, Artificial Neural Networks and Fuzzy Inference Systems) in order to solve the optimization and estimation problems in electric power systems and sets. The research will deal with the optimal distributed generation allocation in distributed networks, estimation of the photovoltaic panels equivalent circuit parameters and induction motors. The research will be carried out on the simulation level and verified by comparison to previously provided and afterwards measured results.

According to the previous experience, the soft computing methods usage, which aims at solving the specific problems in electrical engineering, requires the problem dependent and unique adjustments. To paraphrase, the use of these methods in their original form in order to solve the specific problems in electrical engineering do not usually result in satisfactory solutions. On the other hand, the soft computing methods enable estimations taking the uncertainties of the numerical data into consideration. Therefore, the proposed research will result in the adjusted soft computing methods in order to simulate real systems as realistic as possible.