

EEECIS/IAS/IEEE SEMINAR

“Comparison and Application of Multi-Objective Evolutionary Programming for the Electric Power Dispatch Problems”

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Many real world problems involve simultaneous optimization of multiple objectives that often are competing. In a Multi-objective Optimization Problem (MOP), there may not exist, one solution that is best with respect to all objectives. Usually the aim is to determine the trade-off surface, which is a set of non-dominated solution points, known as Pareto optimal solutions. Combined Economic Emission Dispatch (CEED) and Economic Emission Dispatch (EED) problems are the electric power dispatch problems of multi objective nature in the Energy management scenario. Recently, the studies on evolutionary algorithms have shown that these algorithms can be efficiently used to eliminate most of the difficulties of classical methods, such as multiple runs in order to get the Pareto optimal front. Non-dominated solution ranking is employed as selection mechanism in the proposed Multi-objective Evolutionary Programming (MOEP) for the CEED and EED problems. The developed algorithm is tested for a three-unit, a six-unit system, IEEE six, 30 and 118 bus systems. The results demonstrate the capabilities of the proposed approach to generate well-distributed Pareto optimal solutions of the multi-objective problems in a single run.

P. Venkatesh received his Degree in Electrical and Electronics Engineering and Masters in Power System Engineering with Distinction and PhD in 1991, 1994 and 2003, respectively from Madurai Kamaraj University, India. His area of interest is application of evolutionary computation techniques to power system problems and power system restructuring. He has received the Boyscast Fellowship award in the year 2006 from Department of Science and Technology, India for carrying out Post Doctoral Research Work at the Pennsylvania State University, U.S.A. Currently he is working as Assistant Professor in the Department of Electrical and Electronics Engineering, Thiagarajar College of Engineering, Madurai, India.