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# OPTIMAL GENERATION EXPANSION PLANNING USING HSDE ALGORITHM AND MCDM

**MADDIPATI VEERA KUMARI[1]& K. VAISAKH**

*EEE Department, SCRRCOE, Eluru, EE Department, AUCOE, Visakhapatnam, Andhra Pradesh, India*

***ABSTRACT***

***This paper illustrates OGEP under normal and network contingency with an optimization technique, HSDE algorithm, for solving OGEP (Generation Expansion Planning) with Security Constraints. In the first stage, a HSDE algorithm is employed to approximate the set of solutions through an evolutionary optimization process. In the subsequent stage, a multi-criteria decision-making approach like AHP, SAW, WPM are adopted to rank these solutions from best to worst and to determinate the best solution in a deterministic environment with a single decision-maker. This hybrid approach is tested on a modified IEEE 30 bus system to illustrate the analysis process. The ranking of solutions is based on entropy weight and the technique for order preference by similarity to ideal solution problem.***

***KEYWORDS: AHP, HSDE, FLCC, MCDM, OGEP, SAW, WPM***

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