Optimal Transformer Design for Mass Minimizing Using Constrained Differential Evolution Algorithm

Transformer is one of the most important and expensive components in transmission and distribution systems, where its continuous and non-failure operation has a key role in transferring electrical power and meanwhile increasing the power system reliability. Hence transformer design is one of the most important issues for manufacturers of electrical equipment. For transformer design, it is necessary to have knowledge about electromagnetism, electric and magnetic circuits, losses and heat transfer mechanisms. Conventionally, the process of transformer design was really vague and time-consuming. Early researches in the field of transformer design attempted to replace individual views with mathematical equations. Nowadays with the advent of intelligent methods, heuristic and meta heuristic methods, such as algorithms inspired by nature, new ways have been invented for designing of transformers. This paper includes a demonstration of application of a new version of differential evolution algorithm called $\mu+\lambda$-Constrained Differential Evolution ($\mu+\lambda$-CDE) to design a single-phase dry-type transformer tank with the aim of minimizing mass. Results shows the suitable applicability and computationally fast performance of this algorithm for transformer optimal design.

$\mu+\lambda$-Constrained Differential Evolution Algorithm, Transformer Optimal Design, Mass Minimizing, Design Constraints.
این صفحه به معنای تاییده نمایه سازی مقاله در پایگاه استنادی سیویلیکا می‌باشد. در هر لحظه به منظور تایید اصلاحات این گواهی می‌توانید وضعیت نیمه را از طریق لینک فوق به صورت آنلاین کنترل نمایید.