## Abstract

The CHPED (combined heat and power economic dispatch) is a complex engineering optimization problem. The goal is to minimize the system production costs by taking into consideration different kind of constraints. This research investigates the first implementation of a prevailing bio-inspired meta-heuristic called the cuckoo optimization algorithm which is powered by a penalty function (PECOA) for solving the CHPED problem. Two case studies of the CHPED are presented and the results are compared to those obtained by several other optimization techniques applied in the literature. It has been proven that the implemented PFCOA is superior.