



Minimizing the Total Cost of Energy Production by Choosing the Best Energy Conversion Technologies for a Case Study in Iran

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Abstract

In this paper, optimization procedure based on energy flow optimization model (EFOM) proposed for evaluating the contribution of distributed-generation (DG) production and energy-efficiency actions. The proposed methodology details exploitation of primary energy sources, power and heat generation, emissions and end-use sectors. The optimization process, aiming to reduce the overall cost, provides feasible generation settlements that take into account the installation of combined cycle power plants, wind power, solid-waste and biomass exploitation together with industrial combined heat and power (CHP) systems.

Here we want to optimize the "choice" of converting the primary energy, and to achieve the mathematical function we have used the energy flow optimization model (EFOM), which is among the types of energy sources, energy converters and energy consumption, suggests the optimal choice.

In this paper, we tried to optimize the mathematical function of this model by genetic algorithm method.

Keywords: EFOM, Energy flow optimization model, CHP systems, Overall cost, genetic algorithms

Introduction

In this paper, we have chosen the genetic algorithm from different optimization methods, which is a local optimization method that is based on Darwin's survival of the stronger and creation chromosomes and launch it to the range of different areas and maintain the best responses.

A case study have been schemed and then we have analyzed the energy flow optimization model (EFOM) and genetic algorithm method. At last we see that the EFOM model, which is a relatively sophisticated model in the face of a genetic algorithm Method that is without limitations, requires simple premises that is consistent with the conditions of case study in Iran.

The overall question is this, we sought to analyze the model EFOM, we assume a certain amount of electrical energy is produced during 30 years in a row. We have certain options to produce energy, then we want to find the amount of use of each energy conversion technology