

国家重点基础研究项目

基于粒子群优化算法的含多种供能系统的微网经济运行分析

杨佩佩,艾欣,崔明勇,雷之力

华北电力大学 电气与电子工程学院,北京市 昌平区 102206

摘要:

从成本和效益2个方面详细分析了微网的经济性,在微网基本结构的基础上进行了简化,给出了供电、供热、供气一体化的微网结构,建立了考虑温室气体、污染物排放的以微网运行成本最低为目标函数的微网经济模型,并用粒子群优化算法对上述模型进行求解。算例结果验证了该模型的有效性和可行性,表明在大电网中并入微网具有较高的经济性。

关键词: 微网 微电源 成本效益分析 经济模型 粒子群优化(PSO)

Particle Swarm Optimization Based Economic Operation Analysis of Microgrid Containing Multi Energy Supply System

YANG Pei-pei ,AI Xin ,CUI Ming-yong ,LEI Zhi-li

School of Electrical and Electronic Engineering, North China Electric Power University, Changping District, Beijing 102206, China

Abstract:

The economy of microgrid is analyzed in both cost and benefit. Based on its basic structure, the structure of microgrid is simplified and the microgrid structure, in which the power supply, thermal supply and fuel gas supply are integrated, is given; an economic model of microgrid, in which the emission of pollutant and greenhouse gases are taken into account and the minimum operation cost of microgrid is taken as objective function, is built. The proposed model is solved by particle swarm optimization (PSO) algorithm. Calculation example shows that the built model is effective and feasible and it is indicated that a higher economy can be achieved while microgrids are connected with large-scale power grid.

Keywords: microgrid micro-generator cost benefit analysis economic model particle swarm optimization (PSO)

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通讯作者: 杨佩佩

作者简介: 杨佩佩(1984—),女,硕士研究生,研究方向为微网经济运行, E-mail:

peipei1366@yahoo.com.cn; 艾欣(1964—),男,教授,博士生导师,研究方向为电力系统运行、分析与控制; 崔明勇(1976—),男,博士研究生,研究方向为微网经济运行、电能质量分析与控制; 雷之力(1982—),男,博士研究生,研究方向为微网电能质量分析与控制。

作者Email: peipei1366@yahoo.com.cn

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