عنوان مقاله:

Determining the optimal size of a ground source heat pump within an air-conditioning system with economic and emission considerations

محل انتشار:

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خلاصه مقاله:

One of the most challenging issues in modern-day building energy management involves equipping the buildings with more energy efficient facilities. In this paper, a hybrid system for cooling/heating for a residential building is developed and optimized. The system consists of a ground source heat pump (GSHP) as well as an electric chiller (EC) and boiler. The model is implemented in MATLAB and optimized using NSGA-II. Two economic and environmental objective functions are considered: Net Present Cost (NPC) and Carbon Emission (CE); which are minimized simultaneously.The results indicated that when the building load is completely met by GSHP, much less carbon is emitted to the environment, while when the majority of the load is provided by EC and boiler, NPC is lower and CE is much higher.

کلمات کلیدی:

Ground Source Heat Pump, Net Present Cost, Carbon Emission, Genetic Algorithm