Research of the Decision Model on Capacity and Operation Condition of Energy Systems of the Commercial Building and Urban District Considering Weather Condition of the City

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It is said that the cogeneration system(CGS) and Heat pump system(HP) are the effective air conditioning systems for energy saving and CO_2 reduction in the commercial buildings as well as residential houses. However, the economic, energy and environmental efficiency indicators of these systems vary so much depending on the weather condition and the demand patterns of heat and electric power. In this research, we develop a model to evaluate the optimum decision on the capacity and the operating pattern of air conditioning system by nonlinear mixing integer programming in order to formulate the partial load properties of heating equipments in practical operation considering the climate conditions. The feature of this model is also applicable to assess the energy system planning of the building and urban district. The results show us that the optimum planning including the installation of equipments depends on the regional conditions and the characteristics of the energy systems.

Keywords:
Commercial building, Cogeneration system, Heat Pump System, Nonlinear Mixed integer programming