

***Abstract: Optimal Electricity and Heat Production Strategies
in Micro-grids***

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Abstract

Alternative energy sources such as renewable energy like solar power systems, wind power systems, or fuel cell power systems and energy storage systems has been the rising issue in the electrical power system. This paper discusses an economic study analysis of renewable energy sources such as small co-generation units, fuel cells, and power storage systems in the Korean electricity market. It includes the basic concept of an each component in the micro-grid and the Korean electricity market. It also describes the need of renewable energy and how the elements of the micro-grid are connected with the local grid. The profit maximization approach has been structured including electrical power trade with the local grid and heat trade within the micro-grid. This paper presents a simple micro-grid system with few distributed generation units and a power storage system which a battery was used. The test simulation was calculated using GAMS, which is a commercial program that solves optimization problems.