Optimizer in a Box: Simple Economic Optimization of Power Dispatch in Small Microgrids using OPC-UA

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Abstract

In this paper a simple approach to is presented to economically optimize the power dispatch in a small microgrids environment. The optimization is modeled as a linear program problem and was solved by the Gnu Linear Program Tool Kit (GLPK). The converters and inverters that compose the microgrid use the OPC-UA protocol over Ethernet network to exchange data. The main contribution of this paper is the development of a simple optimizer system and friendly communication framework, compatible with small microgrids using renewable energy sources, like green data-centers and home environments to minimize the energy cost subjected to power limits of energy sources and loads demands.

References

Index Terms

Computer Science

Information Sciences

Keywords

Microgrids, Linear Programming, OPC-UA, Simplex