Riyadh rural microgrids

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Imagine a future where your business or community generates its own clean, reliable power. At FTI, we transform that vision into reality with our innovative Microgrid & Distribution Generation solutions.

Microgrids: We design and implement intelligent microgrids, self-contained power systems that integrate renewable energy sources like solar and wind with battery storage and traditional utilities. This empowers you to:

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Microgrid (MG) is a scaled-down version of the conventional grid. It is self-sufficient and can supply the local demands of a particular geographic area. The active components of the MG are renewable energy sources like wind turbines (WT), photovoltaic (PV), micro-hydro generators, biomasses, fuel cells, etc. The other associated components of MG are energy storage units, combined heat and power (CHP) units, thermal and electric loads, etc.1.

For ensuring supply reliability, fuel savings, lesser emissions, voltage security, full exploitation of renewable potential, and coordinated output of multiple DGs, there is a need for energy management and optimal dispatch of microgrids. Two different approaches that have widely been used in the literature for the optimal operation of MG are (a) deterministic approaches and (b) heuristic optimization approaches2,3,4,5,6,7,8.

Economic scheduling in both grid-connected and islanded modes uses the concept of load and power curtailment with the help of the GWO algorithm, considering the entire day of system data.

The remaining paper is organised as follows: In Sect. "Optimal operation of microgrid", the optimal operation of MG is discussed. Section "Results and discussion" describes the results and discussion of the proposed methodology, whereas Sect. "Conclusion" gives the conclusion part of the work.

The microgrid can be operated in two modes, grid-connected or stand-alone. The fundamental steps of the proposed optimal scheduling strategy of the microgrid in both modes are given:

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Web: https://www.hollanddutchtours.nl/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346