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Renewable energy in the form of a Hybrid Micro-Grid System (HMGS) offers an optimal, reliable, and cost-effective solution for utilizing localized renewable energy resources. They provide centralized electricity generation at the local level by combining the renewable energy sources with a diesel generator as a back-up system.

The findings of this dissertation reveal that Iran has the potential to establish a sustainable and cost-effective power system that relies solely on renewable energy sources, with solar and ...

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To realize this growing demand for power generation from R.E., Iran has unveiled plans to pursue the development of nonconventional renewable energy (NCRE) sources. This NCRE development includes increasing its solar and wind capacity in parallel for integration into its electrical grid; and encouraging new development of more conventional R.E ...

The focus of the study is to define a cost optimal 100% renewable energy system in Iran by 2030 using an hourly resolution model. The optimal sets of renewable energy technologies, least-cost energy supply, mix of

capacities and operation modes were calculated and the role of storage technologies was examined.

Many efforts have been made to increase the utilization of renewable energy resources (RESs) in Iran. This paper aimed to evaluate the techno-economic performance of an introduced hybrid microgrid (HMG) in eight climate zones of Iran. Therefore, ten cities are selected from the eight climate conditions of Iran.

The findings of this dissertation reveal that Iran has the potential to establish a sustainable and cost-effective power system that relies solely on renewable energy sources, with solar and wind energy being the dominant sources.

A new concept called "Vehicle-to-Micro-Grid (V2mG) network" integrates off-grid building energy systems with flexible power storage/supply from battery EVs (BEVs) and fuel cell EVs (FCEVs) suggests that the degradation of LIBs in BEVs can be reduced by 13% compared to networks without FCEVs.

Implementing this strategy, Iran will meet 100% of its energy demands by harnessing renewable energy sources in 2050. The second strategy, analyzed, increases the replacement rate to 4%. The third strategy integrates the power generation scheme with water desalination to address Iran water crisis as well.

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