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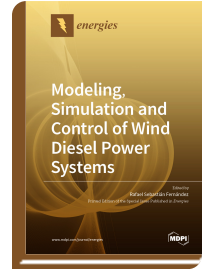
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Modeling, Simulation and Control of Wind Diesel Power Systems

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Wind diesel power systems (WDPSs) are isolated microgrids that combine diesel generators (DGs) with wind turbine generators (WTGs). Often, WDPS are the result of adding WTGs to a previous existing diesel power plant located in a remote place where there is an available wind resource. By means of power supplied by WTGs, fuel consumption and CO₂ emissions are reduced. WDPSs are isolated power systems with low inertia where important system frequency and voltage variations occur. WDPS dynamic modeling and simulation allows short-term simulations to be carried out to obtain detailed electrical variable transients so that WDPS stability and power quality can be tested. This book includes papers on several subjects regarding WDPSs: the main topic of interest is WDPS dynamic modeling and simulation, but related areas such as the sizing of the different WDPS components, studies concerning the control of WDPSs or the use of energy storage systems (ESSs) in WDPSs and the benefits that ESSs provide to WDPS are also discussed. The book also deals with related AC isolated microgrids, such as wind-hydro microgrids or wind-photovoltaic-diesel microgrids.



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