

Contents

Possibilities and Challenges of Implementing Renewable Energy in the Light of PESTLE & SWOT Analyses for Island Countries	1
F.R. Islam and K.A. Mamun	
Utilization and Optimization of Diesel Generation for Maximum Renewable Energy Integration.	21
J.M. Hamilton, M. Negnevitsky, X. Wang, A. Tavakoli and M. Mueller-Stoffels	
Optimal Control System of Under Frequency Load Shedding in Microgrid System with Renewable Energy Resources	71
T. Madiba, R.C. Bansal, J.J. Justo and K. Kusakana	
Power Quality Impacts and Mitigation Measures for High Penetrations of Photovoltaics in Distribution Networks	97
Peter Wolfs, M. Mejbaul Haque and Sawkat Ali	
Grid-Connected and Off-Grid Solar Photovoltaic System	125
V. Karthikeyan, S. Rajasekar, Vipin Das, P. Karuppanan and Asheesh Kumar Singh	
Feasibility Study and Design of a Flywheel Energy System in a Microgrid for Small Village in Pacific Island State Countries	159
D. Aitchison, M. Cirrincione, G. Cirrincione, A. Mohammadi and M. Pucci	
Energy Storage Systems in Solar-Wind Hybrid Renewable Systems	189
Abhishek Awasthi, V. Karthikeyan, Vipin Das, S. Rajasekar and Asheesh Kumar Singh	
Frequency Stability Improvement in Weak Grids by Storage Systems	223
Gianpaolo Vitale	

Identifying Energy Trends in Fiji Islands	259
Shamal Selvin Chand, Aamir Iqbal, Maurizio Cirrincione, F.R. Islam, K.A. Mamun and Ajal Kumar	
Energy Grid Management, Optimization and Economic Analysis of Microgrid	289
Vipin Das, P. Karuppanan, V. Karthikeyan, S. Rajasekar and Asheesh Kumar Singh	
Energy Management of AC-Isolated Microgrids Based on Distributed Storage Systems and Renewable Energy Sources	327
Andoni Urtasun, Pablo Sanchis and Luis Marroyo	
Optimal Design and Energy Management of a Hybrid Power Generation System Based on Wind/Tidal/PV Sources: Case Study for the Ouessant French Island	381
O.H. Mohammed, Y. Amirat, M.E.H. Benbouzid and G. Feld	
Hybrid Diesel/MCT/Battery Electricity Power Supply System for Power Management in Small Islanded Sites: Case Study for the Ouessant French Island	415
Z. Zhou, M.E.H. Benbouzid, J.F. Charpentier and F. Scuiller	
Optimal Power Flow of a Battery/Wind/PV/Grid Hybrid System: Case of South Africa	447
K. Kusakana	



<http://www.springer.com/978-3-319-50196-3>

Smart Energy Grid Design for Island Countries

Challenges and Opportunities

Islam, F.M.R.; Mamun, K.A.; Amanullah, M.T.O. (Eds.)

2017, XI, 465 p. 301 illus., 218 illus. in color., Hardcover

ISBN: 978-3-319-50196-3