

Preface

The renewable energy penetration rate to the power grid is increasing rapidly now-a-days. Wind, solar, biogas/biomass, tidal, geothermal, etc. are considered as the renewable sources of energy and among those the wind is playing the major role in world's energy market along with conventional sources of energy. The wind energy sector has already reached a matured stage due the contributions from many engineering and science disciplines in the last few decades, mainly from mechanical, electrical, electronic, computer, and aerospace. Each discipline has its own beauty and the combined efforts from scientists from different disciplines are the secret of the success of wind industry.

In this book, the present future development schemes of wind turbine generator systems are depicted based on the contribution from many renowned scientists and engineers from different disciplines. A wide verity of research results are merged together to make this book useful for students and researchers.

The chapters of the book are organized into three parts. In part I, wind energy conversion systems using different types of wind generator including necessary control schemes, are presented. Efficiency analysis of commercially available wind energy conversion systems, large scale wind generator, using superconducting material and high efficient power converter technology are the key features of this section. Part II is focused on several important issues for wind industry and transmission system operators. Grid interfacing issues, grid code, lightning strike and protection, use of energy storage options are highlighted in this section. And in the part III, the focus is given only to offshore wind power technology. Offshore wind speed observation from the space, HVDC based transmission scheme to interconnect offshore wind farm into onshore grid, hybrid offshore wind farms and marine current farms are the key issues discussed in this section. A general overview and essence of the chapters can be obtained from [Chap.1](#) of the book.

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Technology and Trends

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