Preface

In the past few decades, growth in the wind energy sector has been most phenomenal among all the renewable sources of energy. Consensus exists almost worldwide that for ensuring a sustainable future, wind energy can definitely play an important role.

This present book has been written to satisfy the interest of readers on wind energy converters. The authors have tried to strike a balance between a short book chapter and a very detailed book for subject experts. There were three prime reasons behind doing so: first, the field is quite inter-disciplinary and requires a simplified presentation for a person from non-parent discipline. The second reason for this short-version of a full book is that both authors have seen students and technically oriented people who were searching for this type of book on wind energy. The third reason and motivation for writing this book was to provide some initial information to people who are embarking on a career in the wind industry. This book is targeted at his group of people.

This book presents the basic concepts of wind energy in Chaps. 1 and 2. Chapter 3 deals with the physics and mechanics of operation. It describes the conversion of wind energy into rotation of turbine, and the critical parameters governing the efficiency of this conversion. Chapter 4 presents an overview of various parts and components of windmills with a blend of basics and recent advancements. Chapter 5 is dedicated to design considerations while selecting appropriate wind turbines for any site. Design options have been presented with their advantages and disadvantages. Chapter 6 is devoted to the utilization and control of operation of wind turbines. In this chapter, various parameters and methods for optimizing the performance are discussed. Chapter 7 presents the economics and financial issues associated with wind energy systems on the example of India and Germany. One new chapter (Chap. 8) has been added in this edition of book covering Life Cycle Assessment of wind energy converters.
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