

1. Record Nr.	UNINA9910139597203321
Titolo	Power conversion and control of wind energy systems // Bin Wu ... [et al.]
Pubbl/distr/stampa	Piscataway, New Jersey : , : IEEE Press, , c2011 [Piscataway, New Jersey] : , : IEEE Xplore, , [2011]
ISBN	1-283-28438-3 9786613284389 1-118-02898-8 1-118-02899-6
Descrizione fisica	1 online resource (482 p.)
Collana	IEEE Press series on power engineering ; ; 29
Classificazione	TEC031000
Altri autori (Persone)	WuB <1957-> (Bin)
Disciplina	621.31/2136 621.312136
Soggetti	Wind energy conversion systems Wind power plants
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- List of Symbols -- Acronyms and Abbreviations -- 1. Introduction -- 1.1 Introduction -- 1.2 Overview of Wind Energy Conversion Systems -- 1.3 Wind Turbine Technology -- 1.4 Wind Energy Conversion System Configurations -- 1.5 Grid Code -- 1.6 Summary -- 2. Fundamentals of Wind Energy Conversion System Control -- 2.1 Introduction -- 2.2 Wind Turbine Components -- 2.3 Wind Turbine Aerodynamics -- 2.4 Maximum Power Point Tracking (MPPT) Control -- 2.5 Summary -- 3. Wind Generators and Modeling -- 3.1 Introduction -- 3.2 Reference Frame Transformation -- 3.3 Induction Generator Models -- 3.4 Synchronous Generators -- 3.5 Summary -- 4. Power Converters in Wind Energy Conversion Systems -- 4.1 Introduction -- 4.2 AC Voltage Controllers (Soft Starters) -- 4.3 Interleaved Boost Converters -- 4.4 Two-Level Voltage Source Converters -- 4.5 Three-Level Neutral Point Clamped Converters -- 4.6 PWM Current Source Converters -- 4.7 Control of Grid-Connected Inverter -- 4.8 Summary -- 5. Wind Energy System Configurations -- 5.1 Introduction -- 5.2 Fixed Speed WECS -- 5.3 Variable Speed

Induction Generator WECS -- 5.4 Variable-speed Synchronous Generator WECS -- 5.5 Summary -- 6. Fixed-Speed Induction Generator WECS -- 6.1 Introduction -- 6.2 Configuration of Fixed-Speed Wind Energy Systems -- 6.3 Operation Principle -- 6.4 Grid Connection with Soft Starter -- 6.5 Reactive Power Compensation -- 6.6 Summary -- 7. Variable-Speed Wind Energy Systems with Squirrel Cage Induction Generators -- 7.1 Introduction -- 7.2 Direct Field Oriented Control -- 7.3 Indirect Field Oriented Control -- 7.4 Direct Torque Control -- 7.5 Control of Current Source Converter Interfaced WECS -- 7.6 Summary -- 8. Doubly-Fed Induction Generator Based WECS -- 8.1 Introduction -- 8.2 Super- and Sub-synchronous Operation of DFIG -- 8.3 Unity Power Factor Operation of DFIG -- 8.4 Leading and Lagging Power Factor Operation -- 8.5 A Steady-State Performance of DFIG WECS -- 8.6 DFIG WECS Start-up and Experiments. 8.7 Summary -- 9. Variable-Speed Wind Energy Systems with Synchronous Generators -- 9.1 Introduction -- 9.2 System Configuration -- 9.3 Control of Synchronous Generators -- 9.4 SG Wind Energy System with Back-to-back VSC -- 9.5 DC/DC Boost Converter Interfaced SG Wind Energy Systems -- 9.6 Reactive Power Control of SG WECS -- 9.7 Current Source Converter Based SG Wind Energy Systems -- 9.8 Summary -- Appendix A. Per Unit System -- Appendix B. Generator Parameters -- Appendix C. Problems and Answers Manual.

---

Sommario/riassunto

"The book covers a wide range of topics on wind energy conversion and control from the electrical engineering aspect. It includes wind generators and modeling, power converters and modulation schemes, operating principle of fixed and variable speed wind turbines, advanced generator control schemes, active and reactive power controls of individual wind and is a valuable reference book for academic researchers, practicing engineers, and other professionals. The book can also be used as a textbook for graduate level and final year undergraduate-level courses"--

---