1. Record Nr. UNINA9910809167203321

Titolo	Modeling, design, and optimization of net-zero energy buildings / / edited by Andreas Athienitis, William O'Brien
Pubbl/distr/stampa	Berlin, Germany : , : Ernst & Sohn, , [2015] ©2015
ISBN	3-433-60462-2 3-433-60465-7
Edizione	[5th ed.]
Descrizione fisica	1 online resource (850 p.)
Collana	Solar Heating and Cooling
Disciplina	720/.472
Soggetti	Sustainable buildings Sustainable construction Sustainable architecture
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	Cover; Related Titles; Title Page; Copyright; About the Editors; List of Contributors; Preface; Foreword; Acknowledgments; 1.1 Evolution to Net-Zero Energy Buildings; 1.2 Scope of this Book; References; Chapter 1: Introduction; 2.1 Introduction; 2.2 Renewable Energy Generation Systems/Technologies Integrated in Net ZEBs; References; Chapter 2: Modeling and Design of Net ZEBs as Integrated Energy Systems; 3.1 Introduction; 3.2 Thermal Comfort; 3.3 Daylight and Visual Comfort; 3.4 Acoustic Comfort; 3.5 Indoor Air Quality; 3.6 Conclusion; References Chapter 3: Comfort Considerations in Net ZEBs: Theory and Design4.1 Introduction; 4.2 Integrating Modeling Tools in the Net ZEB Design Process; 4.3 Net ZEB Design Tools, Model Resolution, and Design Methods; 4.4 Conclusion; References; Chapter 4: Net ZEB Design Processes and Tools; 5.1 Introduction; 5.2 Optimization Fundamentals; 5.3 Application of Optimization: Cost-Optimal and Nearly Zero-Energy Building; 5.4 Application of Optimization: A Comfortable Net-Zero Energy House; 5.5 Conclusion; References; Chapter 5: Building Performance Optimization of Net Zero-Energy Buildings 6.1 Introduction6.2 LMGI Indicators; 6.3 Strategies for Predictive

Control and Load Management; 6.4 Development of Models for Controls; 6.5 Conclusion; References; Chapter 6: Load Matching, Grid Interaction, and Advanced Control; 7.1 Introduction; 7.2 EcoTerra; 7.3 Leaf House; 7.4 NREL RSF; 7.5 Enerpos; 7.6 Conclusions; Acknowledgment; References; Chapter 7: Net ZEB Case Studies; 8.1 Net ZEB Modeling, Design, and Simulation; 8.2 Future Directions and Research Needs; Chapter 8: Conclusion, Research Needs, and Future Directions; Glossary; Index; EULA

Sommario/riassunto

Building energy design is currently going through a period of majorchanges. One key factor of this is the adoption of net-zero energyas a long term goal for new buildings in most developed countries.To achieve this goal a lot of research is needed to accumulateknowledge and to utilize it in practical applications. In thisbook, accomplished international experts present advanced modelingtechniques as well as in-depth case studies in order to aiddesigners in optimally using simulation tools for net-zero energybuilding design. The strategies and technologies discussed in thisbook are, however, al