

1. Record Nr.	UNINA9910533905903321
Autore	Gicquel Renaud
Titolo	Energy systems : a new approach to engineering thermodynamics // by Renaud Gicquel
Pubbl/distr/stampa	Boca Raton, FL : , : CRC Press, an imprint of Taylor and Francis, , 2011
ISBN	0-429-08662-8 1-4665-1538-4
Edizione	[First edition.]
Descrizione fisica	1 online resource (1056 p.)
Disciplina	621.042
Soggetti	Thermodynamics Energy facilities Energy transfer Electronic books.
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 at the end of each chapters.
Nota di contenuto	Front Cover; Dedication; Contents; Searching References in the Thermoptim Unit; Foreword by John W. Mitchell; Foreword by Alain Lambotte; About the Author; General introduction; Mind Maps; List of Symbols; Conversion Factors; 1. First Steps in Engineering Thermodynamics; 1. A New Educational Paradigm; 2. First Steps in Thermodynamics: Absolute Beginners; 3. First Steps in Thermodynamics: Entropy and the Second Law; 2. Methodology, Thermodynamics Fundamentals, Thermoptim, Components; 4. Introduction; 5. Thermodynamics Fundamentals; 6. Presentation of Thermoptim 7. Basic Components and Processes8. Heat Exchangers; 9. Examples of Applications; 10. General Issues on Cycles, Energy and Exergy Balances; 3. Main Conventional Cycles; 11. Introduction: Changing Technologies; 12. Internal Combustion Turbomotors; 13. Reciprocating Internal Combustion Engines; 14. Stirling Engines; 15. Steam Facilities (General); 16. Classical Steam Power Cycles; 17. Combined Cycle Power Plants; 18. Cogeneration and Trigeneration; 19. Compression Refrigeration Cycles, Heat Pumps; 20. Liquid Absorption Refrigeration Cycles; 21. Air Conditioning

22. Optimization by Systems Integration; 4. Innovative Advanced Cycles, including Low Environmental Impact; 23. External Class Development; 24. Advanced Gas Turbines Cycles; 25. Evaporation, Mechanical Vapor Compression, Desalination, Drying by Hot Gas; 26. Cryogenic Cycles; 27. Electrochemical Converters; 28. Global Warming and Capture and Sequestration of CO<sub>2</sub>; 29. Future Nuclear Reactors; 30. Solar Thermodynamic Cycles; 31. Other than Solar NRE cycles; 32. Heat and Compressed Air Storage; 33. Calculation of Thermodynamic Solar Installations; 5. Technological Design and Off-design Operation; 34. Technological Design and Off-design Operation, Model Reduction; 35. Technological Design and Off-design Behavior of Heat Exchangers; 36. Modeling and Setting of Displacement Compressors; 37. Modeling and Setting of Dynamic Compressors and Turbines; 38. Case Studies

---

## Sommario/riassunto

Considered as particularly difficult by generations of students and engineers, thermodynamics applied to energy systems can now be taught with an original instruction method. Energy Systems applies a completely different approach to the calculation, application and theory of multiple energy conversion technologies. It aims to create the reader's foundation for understanding and applying the design principles to all kinds of energy cycles, including renewable energy. Proven to be simpler and more reflective than existing methods, it deals with energy system modeling, instead of the thermodynamic foundations, as the primary objective. Although its style is drastically different from other textbooks, no concession is done to coverage: with encouraging pace, the complete range from basic thermodynamics to the most advanced energy systems is addressed.

---