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Nota di contenuto	ADVANCES IN WATER DESALINATION; CONTENTS; Preface; Introduction to the Book Series; About the Authors; CHAPTER 1 Water Desalination Revisited in Changing Physical and Economic Environments; 1.1 INTRODUCTION; 1.1.1 Past and Present Desalination; 1.1.2 The Emerged Concern; 1.1.3 The Emerged Energy Analysis Methodologies; 1.2 THE METHODOLOGY USED IN THIS STUDY; 1.2.1 Improved Thermodynamic Analysis; 1.2.2 Improved Costing Analysis; 1.2.3 Enhanced Optimization; 1.3 THE SCOPE OF ANALYSIS; 1.3.1 Desalination Related to Physical and Economic Environments; 1.3.2 The Systems Considered 1.4 THE ANALYZED SYSTEMS IN DETAIL 1.4.1 Gas Turbine/Multistage Flash Distillation Cogeneration Systems; 1.4.2 The Simple Combined Cycle Systems; 1.4.3 Vapor Compression Systems Driven by the Figure 1.2 Simple Combined Cycle; 1.4.4 Reverse Osmosis Desalination Systems Driven by the Figure 1.2 Simple Combined Cycle; 1.4.5 Photovoltaic/Reverse-Osmosis (PV/RO) Solar Systems; 1.4.6 Photovoltaic/Electrodialysis Solar System; 1.4.7 Osmosis Power

Systems; 1.4.8 Future Competitiveness of Combined Desalination Systems; 1.5 RECOMMENDED RESEARCH DIRECTIONS; 1.5.1 Avoiding CO2 Emissions
1.5.2 Reducing CO2 Emissions 1.5.3 Desalination of Zero Liquid Discharge; 1.6 CONCLUSIONS; 1.7 THE SOFTWARE PROGRAMS DEVELOPED BY THE AUTHOR FOR SYSTEM ANALYSIS; 1.7.1 Four Programs Developed and Their Entries; 1.7.2 Major Ingredients of Each Program; 1.7.3 The Software; APPENDIX; 1.A.1 Brief Description of the Thermodynamic Model of a System and the Design Models of Its Main Components; 1.A.2 The Capital and Fuel Costing Equations of some common Devices (Tables 1.A.1 and 1.A.2); 1.A.3 Some Useful Forms of Flow Exergy Expressions
1.A.4 Theoretical Separation Work Extended to Zero Liquid Discharge SELECTED REFERENCES FOR SECTION 1.1-1.3; FURTHER READING; 1.F.1 International Symposia on Energy Analysis; 1.F.2 Selected International Symposia on Desalination; 1.F.3 Books on Thermodynamics; 1.F.4 Books on Optimization and Equation Solvers; 1.F.5 Books on Design of Energy Conversion Devices; 1.F.6 Books on Optimal Design; 1.F.7 Books on Emerging Technologies (Fuel/Solar Cells and Selective Membranes); 1.F.8 General Additional Reading for Section 1.2; 1.F.9 General Additional Reading for Section 1.4
1.F.10 Literature on Design Models CHAPTER 2 Environmental and Performance Aspects of Pretreatment and Desalination Technologies; 2.1 Introduction; 2.2 Global Desalination Capacity; 2.2.1 Capacity by Process Type and Source Water Type; 2.2.2 Capacity by Region and Source Water Type; 2.3 State of the Art of the Technology; 2.3.1 Seawater Intake; 2.3.2 Pretreatment Processes and Chemical Use; 2.3.3 Comparing Pretreatment Processes with Respect to Organic and Particulate Foulant Reductions in SWRO Systems; 2.3.4 Desalination Process and Energy Use; 2.3.5 Outfalls
2.4 Potential Environmental Impacts

Sommario/riassunto

"Comprehensive coverage of desalination science, technology, economics, energy considerations, environmental impact, and more"--