

1. Record Nr.	UNINA9910957074403321
Titolo	Cooling systems : energy, engineering and applications / / Aaron I. Shanley, editor
Pubbl/distr/stampa	Hauppauge, N.Y., : Nova Science Publishers, c2011
ISBN	1-62081-542-7
Edizione	[1st ed.]
Descrizione fisica	1 online resource (241 p.)
Collana	Mechanical engineering theory and applications Energy science, engineering and technology
Altri autori (Persone)	ShanleyAaron I
Disciplina	621.5/6
Soggetti	Refrigeration and refrigerating machinery Cooling
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	Intro -- COOLING SYSTEMS: ENERGY, ENGINEERING AND APPLICATIONS -- COOLING SYSTEMS: ENERGY, ENGINEERING AND APPLICATIONS -- LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA -- CONTENTS -- PREFACE -- RADIANT COOLING COMBINED WITH VENTILATION SYSTEMS -- ABSTRACT -- SYMBOLS -- 1. INTRODUCTION -- 2. RADIANT SYSTEMS -- 2.1. Definition and Classification -- 2.2. Fundamental of Heat Transfer -- 2.2.1. Conduction -- 2.2.2. Convection -- 2.2.3. Radiation -- 2.2.4. Multimode Heat Transfer -- 2.3. Heating and Cooling Capacity of Radiant Systems -- 3. COMMON VENTILATION STRATEGIES -- 3.1. Ventilation Aims: Indoor Air Quality and Cooling -- 3.2. Mixing Ventilation -- 3.3. Displacement Ventilation -- 4. RADIANT COOLING AND VENTILATION -- 4.1. Opportunities and Threats -- 4.2. Radiant Cooling and Mixing Ventilation -- 4.3. Radiant Cooling and Displacement Ventilation -- 4.3.1. Ceiling Cooling and Displacement Ventilation (CC/DV) -- 4.3.2. Floor Cooling and Displacement Ventilation (FC/DV) -- 5. HEAT TRANSFER COEFFICIENT ENHANCEMENT -- 6. DEDICATED OUTDOOR AIR SYSTEMS (DOAS) -- 7. CONCLUSION -- REFERENCES -- APPLICATIONS OF IMPINGEMENT JET COOLING SYSTEMS -- ABSTRACT -- 1. INTRODUCTION -- 2. HEAT TRANSFER VARIABLES IN IMPINGING JETS -- 3. SINGLE JET FLOW AND JET IMPINGEMENT -- 4. ACTIVE CONTROLS IN SINGLE JETS -- 5. HIGH VELOCITY JET FLOW AND JET IMPINGEMENT -- 6. LIQUID JET

IMPINGEMENT -- 7. ARRAY JET IMPINGEMENT -- 8. ARRAY JET
 IMPINGEMENT ON EFFUSION SURFACE -- 9. CONCLUSION --
 REFERENCES -- NUMERICAL DISCRETE ORDINATES METHOD FOR
 RADIATION ENERGY TRANSPORT MODELING FOR THERMAL COMFORT
 COOLING -- 1. INTRODUCTION -- 2. SYSTEM DESCRIPTION -- 3.
 ANALYSIS -- 3.1. Models -- 3.1.1. Cooling System -- 3.1.2. Thermal
 Comfort -- 3.2. Radiation -- 3.2.1. Governing Equations -- 3.2.2.
 Numerical Model -- 3.3. Convection -- 3.4. Simulation Procedure.
 4. NUMERICAL ACCURACY -- 4.1. Parametric Values -- 4.2. Grid-
 Independence -- 4.2.1. Radiation -- 4.3. Validation of DOM -- 5.
 SUMMARY -- 5.1. Effects of CP-Assisted Cooling System Operation on
 Primary Cooling Equipment -- REFERENCES -- A LOW NEUTRON
 ABSORBING COOLANT FOR FAST REACTORS AND ACCELERATOR DRIVEN
 SYSTEMS -- ABSTRACT -- 1. INTRODUCTION -- 2. ONE-GROUP CROSS
 SECTIONS OF NEUTRON RADIATION CAPTURE BY COOLANTS FROM
 LEAD-BISMUTH OR LEAD-208 IN THE FAST REACTOR RBEC-M NEUTRON
 SPECTRA -- 3. ONE-GROUP CROSS SECTIONS OF NEUTRON RADIATION
 CAPTURE BY COOLANTS OF THE ADS SUBCRITICAL CORE -- 4. ONE-
 GROUP CROSS SECTIONS OF NEUTRON RADIATION CAPTURE BY ²³⁸U
 AND ⁹⁹Tc IMMERSED IN THE ADS SUBCRITICAL CORE -- 5.
 CONCLUSIONS -- ACKNOWLEDGMENTS -- REFERENCES --
 OPTIMIZATION OF AIRFOIL'S COOLING PASSAGES -- Abstract -- 1.
 Introduction -- 2. Optimization of the Cooling System -- 3. Problem
 Formulation -- 4. Optimization Objective -- 5. Objective Function and
 Optimization Process -- 6. Finding Optimal Solutions -- 7. Modelling of
 Passage Shape -- 7.1. Passages with a Circular Section -- 7.2. Passages
 with a Non-circular Section -- 8. Computational Model -- 9. Conjugate
 Task -- 10. Computational Examples -- 10.1. Limitations and Objectives
 -- 10.1.1. Cylindrical Passages -- 10.1.2. Non-Cylindrical Passages --
 10.2. CHT Analysis -- 11. Conclusion -- References -- COOLING
 SYSTEMS: RETROFIT AND THERMO-HYDRAULIC DESIGN FOR FLEXIBLE
 OPERATION -- ABSTRACT -- INTRODUCTION -- RETROFIT FOR
 MINIMUM POWER CONSUMPTION -- DESIGN FOR FLEXIBLE OPERATION
 -- CONCLUSIONS -- REFERENCES -- STUDY ON ADSORPTION AND
 THERMOELECTRIC COOLING SYSTEMS USING BOLTZMANN TRANSPORT
 EQUATION APPROACH# -- ABSTRACT -- ABBREVIATIONS -- Subscripts
 -- Superscripts -- 1. INTRODUCTION -- 2. GENERAL FORM OF
 BALANCE EQUATIONS -- 2.1. Derivation of the Thermodynamic
 Framework -- 2.2. Mass Balance Equation.
 2.3. Momentum Balance Equation -- 2.4. Energy Balance Equation 2.4.
 Energy Balance Equation 2.4. Energy Balance Equation -- 2.5. Summary
 of Section 2 -- 3. CONSERVATION OF ENTROPY -- 4. ADSORPTION
 COOLING -- 4.1. Description of Adsorption Cooling Model --
 Evaporator -- Adsorption Isotherms and Kinetics -- Bed -- Condenser
 -- Mass Balance -- 4.2. Discussion -- 4.3. Summary of Section 4 -- 5.
 MACRO AND MICRO THERMOELECTRIC COOLERS -- 5.1. Thermoelectric
 Cooling -- 5.1.1. Energy Balance Analysis -- 5.1.2. Entropy Balance
 Analysis -- 5.1.3. Temperature-Entropy Plots of Bulk Thermoelectric
 Cooling Device -- 5.2. Transient Behavior of Thermoelectric Cooler --
 5.2.1. Derivation of the T-S Relation -- 5.2.2. Discussion -- 5.2.3.
 Summary of Section 5.2 -- 5.3. Microscopic Analysis: Super-Lattice
 Type Devices -- 5.3.1. Thermodynamic Modeling for Thin-Film
 Thermoelectrics -- 5.3.2. Discussion -- 5.3.3. Summary of Section 5.3
 -- CONCLUSIONS -- APPENDIX : GAUSS THEOREM APPROACH --
 ACKNOWLEDGMENTS -- REFERENCES -- NEW PROGRESS IN LIQUID
 DESICCANT COOLING SYSTEMS: ADSORPTION DEHUMIDIFIER AND
 MEMBRANE REGENERATOR# -- ABSTRACT -- NOMENCLATURE -- Greek
 Letters -- Subscripts -- INTRODUCTION -- ADSORPTION DEHUMIDIFIER

-- MEMBRANE REGENERATOR -- CONCLUSION -- REFERENCES --
INDEX.

Sommario/riassunto

This book examines the energy, engineering and application issues of cooling systems. Topics discussed include radiant cooling combined with ventilation systems; the applications of impingement jet cooling systems; solar cooling systems; liquid desiccant cooling systems and thermoelectric cooling systems using the Boltzmann transport equation approach.
