

1. Record Nr.	UNINA9910464870003321
Autore	Serth Robert W
Titolo	Process heat transfer : principles and applications / / Robert W. Serth, Thomas Lestina
Pubbl/distr/stampa	Oxford, [England] ; ; Waltham, [Massachusetts] : , : Academic Press, , 2014 ©2014
ISBN	0-12-397792-4
Edizione	[Second edition.]
Descrizione fisica	1 online resource (633 p.)
Altri autori (Persone)	LestinaThomas
Disciplina	621.4022
Soggetti	Heat - Transmission Heat exchangers Heat - Transmission - Computer programs 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.
Nota di contenuto	Front Cover; DEDICATION; PROCESS HEAT TRANSFER: PRINCIPLES, APPLICATIONS AND RULES OF THUMB; Copyright; CONTENTS; PREFACE TO FIRST EDITION; PREFACE TO SECOND EDITION; CONVERSION FACTORS; PHYSICAL CONSTANTS; ACKNOWLEDGMENTS; 1 - Heat Conduction; 1.1 Introduction; 1.2 Fourier's Law of Heat Conduction; Example 1.1; 1.3 The Heat Conduction Equation; Example 1.2; Example 1.3; Example 1.4; Example 1.5; 1.4 Thermal Resistance; Example 1.6; Example 1.7; 1.5 The Conduction Shape Factor; Example 1.8; Example 1.9; 1.6 Unsteady-State Conduction; Example 1.10; Example 1.11 1.7 Mechanisms of Heat ConductionReferences; Notations; Greek Letters; Other Symbols; 2 - Convective and Radiative Heat Transfer; 2.1 Introduction; 2.2 Combined Conduction and Convection; Example 2.1; Example 2.2; 2.3 Extended Surfaces; Example 2.3; Example 2.4; 2.4 Forced Convection in Pipes and Ducts; Example 2.5; Example 2.6; Example 2.7; Example 2.8; 2.5 Forced Convection in External Flow; Example 2.9; Example 2.10; 2.6 Free Convection; Example 2.11; Example 2.12; 2.7 Radiation; Example 2.13; References; Notations; Greek Letters; 3 - Heat Exchangers; 3.1 Introduction

3.2 Double-Pipe Equipment; 3.3 Shell-and-Tube Equipment; 3.4 Plate Heat Exchangers; 3.5 The Overall Heat-Transfer Coefficient; Example 3.1; 3.6 The LMTD Correction Factor; Example 3.2; 3.7 Analysis of Double-Pipe Exchangers; Example 3.3; 3.8 Preliminary Design of Shell-and-Tube Exchangers; Example 3.4; 3.9 Rating a Shell-and-Tube Exchanger; Example 3.5; 3.10 Heat-Exchanger Effectiveness; Example 3.6; References; Appendix 3.A Derivation of the Logarithmic Mean Temperature Difference; Notations; Greek Letters; 4 - Design of Double-Pipe Heat Exchangers; 4.1 Introduction; 4.2 Heat-Transfer Coefficients for Exchangers without Fins; 4.3 Hydraulic Calculations for Exchangers without Fins; 4.4 Series/Parallel Configurations of Hairpins; 4.5 Multi-Tube Exchangers; 4.6 Over-Surface and Over-Design; Example 4.1; Example 4.2; 4.7 Finned-Pipe Exchangers; 4.8 Heat-Transfer Coefficients and Friction Factors for Finned Annuli; 4.9 Wall Temperature for Finned Pipes; Example 4.3; 4.10 Computer Software; Example 4.4; HEXTRAN Input File for Example 4.4; HEXTRAN Output Data for Example 4.4; Example 4.5; HEXTRAN Input File for Example 4.5; HEXTRAN Output Data for Example 4.5; Example 4.6; HEXTRAN Input File for Example 4.6; HEXTRAN Output Data for Example 4.6; References; Appendix 4.A. Hydraulic Equations in SI Units; Appendix 4.B. Incremental Analysis; Notations; Greek Letters; 5 - Design of Shell-and-Tube Heat Exchangers; 5.1 Introduction; 5.3 Hydraulic Calculations; 5.4 Finned Tubing; 5.5 Tube-Count Tables; 5.6 Factors Affecting Pressure Drop; 5.7 Design Guidelines; 5.8 Design Strategy; Example 5.1; Example 5.2; 5.9 Computer Software; Example 5.3; HEXTRAN Input File for Example 5.3; HEXTRAN Output Data for Example 5.3; Example 5.4; HEXTRAN Input File for Example 5.4, Run 1

Sommario/riassunto

Process Heat Transfer is a reference on the design and implementation of industrial heat exchangers. It provides the background needed to understand and master the commercial software packages used by professional engineers in the design and analysis of heat exchangers. This book focuses on types of heat exchangers most widely used by industry: shell-and-tube exchangers (including condensers, reboilers and vaporizers), air-cooled heat exchangers and double-pipe (hairpin) exchangers. It provides a substantial introduction to the design of heat exchanger networks using pinch tec