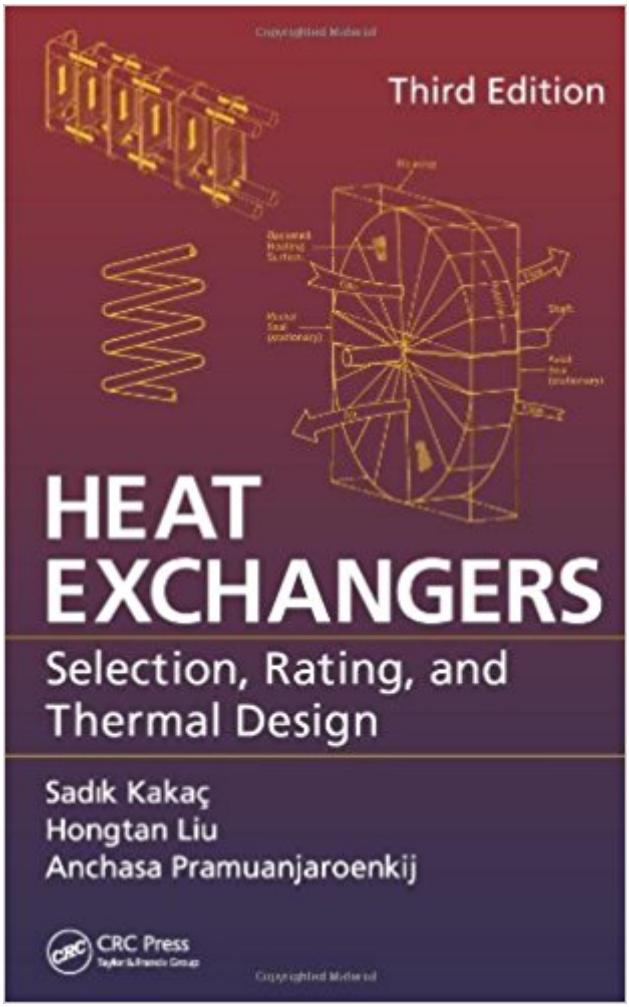
Heat Exchangers: Selection, Rating, And Thermal Design, Third Edition



Synopsis

Heat exchangers are essential in a wide range of engineering applications, including power plants, automobiles, airplanes, process and chemical industries, and heating, air conditioning and refrigeration systems. Revised and updated with new problem sets and examples, Heat Exchangers: Selection, Rating, and Thermal Design, Third Edition presents a systematic treatment of the various types of heat exchangers, focusing on selection, thermal-hydraulic design, and rating. Topics discussed include: Classification of heat exchangers according to different criteria Basic design methods for sizing and rating of heat exchangers Single-phase forced convection correlations in channels Pressure drop and pumping power for heat exchangers and their piping circuit Design solutions for heat exchangers subject to fouling Double-pipe heat exchanger design methods Correlations for the design of two-phase flow heat exchangers Thermal design methods and processes for shell-and-tube, compact, and gasketed-plate heat exchangers Thermal design of condensers and evaporators This third edition contains two new chapters. Micro/Nano Heat Transfer explores the thermal design fundamentals for microscale heat exchangers and the enhancement heat transfer for applications to heat exchanger design with nanofluids. It also examines single-phase forced convection correlations as well as flow friction factors for microchannel flows for heat transfer and pumping power calculations. Polymer Heat Exchangers introduces an alternative design option for applications hindered by the operating limitations of metallic heat exchangers. The appendices provide the thermophysical properties of various fluids. Each chapter contains examples illustrating thermal design methods and procedures and relevant nomenclature. End-of-chapter problems enable students to test their assimilation of the material.

Book Information

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Customer Reviews

Praise for the Bestselling Second Edition The first edition of this work gathered in one place the essence of important information formerly scattered throughout the literature. The second edition adds the following new information: introductory material on heat transfer enhancement; an application of the Bell-Delaware method; new correlation for calculating heat transfer and friction coefficients for chevron-type plates; revision of many of the solved examples and the addition of several new ones.Ã¢â ¬â ¢MEMagazine

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This book is pretty bad. It is very sloppy, which is surprising for a 3rd edition. I’m not familiar with the earlier editions, but presumably the errors in the current edition have persisted from others.What do I mean by sloppy? Here are some examples:*Typos. Lots of them. Some you can read past, but others are confusing for the learner. Example: "Figure 3.3 Correlation factor for the number...". It should be Correction factors.*Incorrect definitions. Like on page 135 it says "presented in Figure 4.4 as a function of Re = ud/mu" (where mu is the Greek symbol, meaning dynamic viscosity). It takes a long time to work through and discover that it’s a typo, not some weird heat-transfery way of presenting data.*Missing nomenclature. Every chapter has a list of nomenclature. The lists are always incomplete, and sometimes the missing terms aren’t defined in the text. Irritating.*Ill-posed problems. The problems are sometimes posed in a way that can’t be solved, or more often can’t be solved with the physical data in the appendices, and sometimes are physically impossible. For example, 4.10 has a heat exchanger with both fluid streams having a 30 degree mean temperature. How can this be? Infinite area?*Instructor solutions are wrong. A surprising number of the instructor solutions have errors in the approach that is taken to solve the problem. Almost half of the problems I assigned have some type of error in the solution. (BTW, your students have copies of the instructor solutions manual for every undergrad textbook that exists. Accept it, and move on).You get the picture. The problem with a sloppy book is that it is very destructive to the learning process.

Students become demoralized when they can’t have faith in what they’re supposed to be learning. I’ve heard the lazy-professor’s cop-out response: "the real world has errors, impossible problems, etc., so students should learn to deal with them". I don’t buy it. Students learn how things work in a nice, controlled environment. They can learn how things don’t work after they know how they’re supposed to work.So, if you’ve got tenure and aren’t concerned about teaching evaluations or the well-being of your students, this may be a good book for you. I confess that I haven’t examined other books on heat exchangers, because I wasn’t given a choice. But, it seems unlikely they’d be worse.

It is unfortunate that there are so many typos and unclear explanations in this book. For example, the definition of Chevron angle for plate & frame heat exchangers, represented as beta (Greek letter), is conflicting throughout the chapter on this topic. Sometimes it is defined relative to the plate horizontal center-line while in other places (in the correlation tables for instance) it is defined relative to the vertical. There are numerous typos for every chapter I have read. Also my print has an index from what appears to be a sports medicine text... this is very frustrating when trying to look something up in the index. I confirm all the flaws stated by "David the Misbehaved" and wish this text was written better. As far as other heat exchanger literature, it is one of the only I’ve found written in textbook format - most others are written as design handbooks. I hope this helps.

I had Hongtan Liu as a professor and he is great, but this book has so many typos that it becomes funny. Not simple spelling typos but I became well versed in the subject and noticed conflicting subscripts written EVERYWHERE. There is also a clear lack of examples in the book, with some entire chapters only having one example. The diagrams and tables are great though.

This book pretty much has every references you need to study the calculation of some simple heat exchanger, good for basic and start off but not for advanced readers.

This book *could be* pretty good. It is unfortunate that the publishers did not bother to proofread it before publication. The index does not even correspond to the right book. It seems like whoever put the book together mixed files between two books.

Physical Processes in Mechanics and Thermal Sciences) Computational Fluid Mechanics and Heat Transfer, Second Edition (Series in Computional and Physical Processes in Mechanics and Thermal Sciences) Heat Conduction Using GreenÃ¢â ¬â„¢s Functions, 2nd Edition (Series in Computational Methods and Physical Processes in Mechanics and Thermal Sciences) Third Eye: Third Eye Activation Mastery, Easy And Simple Guide To Activating Your Third Eye Within 24 Hours (Third Eye Awakening, Pineal Gland Activation, Opening the Third Eye) Introduction to Thermal Systems Engineering: Thermodynamics, Fluid Mechanics, and Heat Transfer Introduction to Thermal Sciences: Thermodynamics, Fluid Dynamics, Heat Transfer Escape to Hope Ranch: A Montana Heat Novel (Montana Heat Series, Book 2) Montana Heat: Escape to You: A Montana Heat Novel Edge of the Heat Box Set Books 1-7: Edge of the Heat Firefighter Romance Heat Treatment, Selection, and Application of Tool Steels 2E Graphic Design Success: Over 100 Tips for Beginners in Graphic Design: Graphic Design Basics for Beginners, Save Time and Jump Start Your Success (graphic ... graphic design beginner, design skills) The Selection: The Selection, Book 1 Happily Ever After: Companion to the Selection Series (The Selection Novella) Design of Fluid Thermal Systems, SI Edition Thermal Energy Systems: Design and Analysis Instrument Rating Test Prep 2017 Book and Tutorial Software Bundle: Study & Prepare: Pass your test and know what is essential to become a safe, ... in aviation training (Test Prep series) Design of Fluid Thermal Systems Nuclear Systems II: Elements of Thermal Hydraulic Design