

## Heat Exchangers Kakac Sadik Liu Hongtan

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Heat Exchangers Kakac Sadik Liu

Packed with new data and methods, this invaluable handbook provides professionals with more than 5000 direct and related calculation procedures for solving common engineering problems quickly and ...

### HEAT TRANSFER AND HEAT EXCHANGERS

Zeng, Yang and Katsuta, Masafumi 2012. Numerical Simulation of Heat Flow in a Vehicle Cabin. Advanced Materials Research, Vol. 602-604, Issue. , p. 1769.

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.

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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 fully updated with new problem sets, Heat Exchangers: Selection, Rating, and Thermal Design, Fourth Edition presents a systematic treatment of heat exchangers, focusing on selection, thermal-hydraulic design, and rating. Topics discussed include Classification of heat exchangers Basic design methods of heat exchangers for sizing and rating problems Single-phase forced convection correlations for heat exchangers Pressure drop and pumping power for heat exchangers and piping circuits Design methods of heat exchangers subject to fouling Thermal design methods and processes for double-pipe, shell-and-tube, gasketed-plate, compact, and polymer heat exchangers Two-phase convection correlations for heat exchangers Thermal design of condensers and evaporators Micro/nanoheat transfer The Fourth Edition contains updated information about microscale heat exchangers and the enhancement heat transfer for applications to heat exchanger design and experiment with nanofluids. The Fourth Edition is designed for courses/modules in process heat transfer, thermal systems design, and heat exchanger technology. This text includes full coverage of all widely used heat exchanger types. A complete solutions manual and figure slides of the text ' s illustrations are available for qualified adopting instructors.

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*Heat Exchangers: Selection, Rating, and Thermal Design* takes a systematic approach to the subject, focusing on the selection, design, rating, and operational challenges of various types of heat exchangers. Written by well-known authors in the field of heat transfer and thermal design, this book covers all the most commonly used types of heat exchangers, including condensers and evaporators. The text begins with the classification of the different types of heat exchangers and discusses methods for their sizing and rating. Single phase forced convection correlations in ducts, two-phase flow heat transfer correlations for thermal design, and pressure drop and pumping power analysis are also covered. A chapter is devoted to the special problem of fouling. Thermal design methods and processes, including designs for condensers and evaporators, complete this thorough introduction to the subject. The appendix provides information on the thermophysical properties of fluids, including the new refrigerants. Every topic features worked examples to illustrate the methods and procedures presented, and additional problems are included at the end of each chapter, with examples to be used as a student design project. An instructor's manual is available with complete solutions to selected problems *Heat Exchangers: Selection, Rating, and Thermal Design* - No engineer or engineering student involved in the design or operation of heat exchange equipment can afford to be without it.

This book describes the fundamentals and applications of compact heat exchangers in energy generation. The text focuses on their efficiency impacts on power systems, particularly emphasizing alternative energy sources such as Concentrated Solar Power and nuclear plants. The various types of compact heat exchanger surfaces and designs are given thorough consideration before the author turns his attention to describing how these compact heat exchangers can be applied to innovative plant designs, and how to conduct operational and safety analyses to optimize thermal efficiency. The book is written at an undergraduate level, but will be useful to practicing engineers and scientists as well.

This up-to-date reference covers the thermal design, operation and maintenance of the three major components in industrial heating and air conditioning systems including fossil fuel-fired boilers, waste heat boilers and air conditioning evaporators. Among the distinguishing features covered are: the numerous types of components in use and the features and relative merits of each, overviews of the major technical sections of the book, with suggested approaches to design based on industrial experience, case studies and examples of actual engineering problems, design methods and procedures based on current industrial practice in the United States, Russia, China and Europe with data charts, tables and thermal-hydraulic correlations for design included, and various approaches to design based on experience in the art of industrial process equipment design.

*Modern Refrigeration and Air Conditioning* provides an excellent blend of theory with job-qualifying skills, making it a leader in the refrigeration and air conditioning field! This comprehensive text teaches both fundamental principles and the service techniques needed to diagnose and remedy HVAC problems. *Modern Refrigeration and Air Conditioning* contains the most recent information and advances in the field needed to prepare the technician for success in today's world. This edition includes up-to-date material on EPA rules and regulations covering refrigerant recovery, recycling, and reclaiming. Both students and practicing technicians will benefit from the comprehensive approach of this text, which provides a solid and thorough knowledge of all aspects of refrigeration and air conditioning.

A description of the design, construction and applications of unfired heat exchangers used in the process industries, giving guidance on the merits and limitations of the different types, details of their materials of construction and cost and numerous examples of design calculations.

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