

Epub free Plate heat exchangers design applications and performance (Read Only)

Plate Heat Exchangers Heat Exchangers - Basics Design Applications Heat Exchangers Fundamentals of Heat Exchanger Design Fundamentals of Heat Exchanger Design Heat Exchanger Design Guide Heat Exchangers Heat Exchanger Design Application of Compact Heat Exchangers For Combined Cycle Driven Efficiency In Next Generation Nuclear Power Plants Process Modeling, Simulation, and Environmental Applications in Chemical Engineering Heat Exchangers Fundamentals of Heat Exchanger Design Design of Heat Exchangers for Heat Pump Applications Heat Exchanger Design Handbook Heat Exchangers Heat Transfer Equipment Fundamentals, Design, Applications, and Operating Problems Heat Exchangers Modules, Systems, and Applications in Thermoelectrics Numerical Simulation of Heat Exchangers Heat Exchanger Design Handbook, Second Edition Innovative Heat Exchangers Mechanical Design of Heat Exchangers Heat Exchangers Heat Exchangers Improving the Thermal Processing of Foods Heat Exchangers: Principles, Design, and Applications Design and Applications of Heat Exchangers Compact Heat Exchangers Design and Operation of Heat Exchangers and their Networks Compact Heat Exchangers for Energy Transfer Intensification Numerical Modelling and Experimental Testing of Heat Exchangers Music-Inspired Harmony Search Algorithm Heat Exchanger Design Handbook Fundamentals of Heat Exchanger Design Heat Exchanger Network Synthesis Mechanical Wear Fundamentals and Testing, Revised and Expanded The Application of Machine Intelligence to the Design of Heat Exchangers Computer Literature Bibliography: 1946-1963 Information Sources in Engineering Solar Energy Update

Plate Heat Exchangers

2007

plate and frame heat exchangers phes are used in many different processes at a broad range of temperatures and with a variety of substances research into phes has increased considerably in recent years and this is a compilation of knowledge on the subject containing invited contributions from prominent and active investigators in the area it should enable graduate students researchers and research and development engineers in industry to achieve a better understanding of transport processes some guidelines for design and development are also included

Heat Exchangers - Basics Design Applications

2016-04-01

a heat exchanger is a device designed to efficiently transfer or exchange heat from one matter to another when a fluid is used to transfer heat the fluid could be a liquid such as water or oil or could be moving air they are widely used in space heating refrigeration air conditioning power stations chemical plants petrochemical plants petroleum refineries natural gas processing and sewage treatment the most well known type of heat exchanger is a car radiator in a radiator a solution of water and ethylene glycol also known as antifreeze transfers heat from the engine to the radiator and then from the radiator to the ambient air flowing through it this process helps to keep a car s engine from overheating for efficiency heat exchangers are designed to maximize the surface area of the wall between the two fluids while minimizing resistance to fluid flow through the exchanger the exchanger s performance can also be affected by the addition of fins or corrugations in one or both directions which increase surface area and may channel fluid flow or induce turbulence heat exchangers basics design applications offers comprehensive information on particular cases of heat exchangers beside the questions of thermodynamic basics the book discourses numerous important issues such as conceptions design operations fouling and cleaning of heat exchangers the book is not inevitably anticipated to be an elementary source of the knowledge in the area it covers but moderately a guide while pursuing detailed solutions of specific technical problems which face engineers and technicians engaged in research and development in the fields of heat transfer and heat exchangers

Heat Exchangers

1988

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

Fundamentals of Heat Exchanger Design

2023-12-07

fundamentals of heat exchanger design second edition builds upon the widely used first edition a text often considered to be the most prominent single volume heat

exchanger text on the market the new and improved second edition serves as an equally comprehensive resource updated to suit the latest technologies and design methods being used in the heat exchanger field written by first edition author dusan p sekulic this text addresses the latest developments in the industry including a brand new chapter on the manufacturing of compact heat exchangers after opening with a basic introduction to heat exchanger types and design methods the book goes on to cover more specialized topics such as the design of recuperators and regenerators pressure drop analysis geometric properties flow friction fouling and corrosion and more with many significant revisions throughout this new edition offers more streamlined content while maintaining the consistent detailed coverage of the fundamentals of the topic that readers appreciated in the first edition these unique features position the second edition of fundamentals of heat exchanger design as the ideal text for both engineering professionals and advanced students alike

Fundamentals of Heat Exchanger Design

2003-08-11

comprehensive and unique source integrates the material usually distributed among a half a dozen sources presents a unified approach to modeling of new designs and develops the skills for complex engineering analysis provides industrial insight to the applications of the basic theory developed

Heat Exchanger Design Guide

2015-09-28

heat exchanger design guide a practical guide for planning selecting and designing of shell and tube exchangers takes users on a step by step guide to the design of heat exchangers in daily practice showing how to determine the effective driving temperature difference for heat transfer users will learn how to calculate heat transfer coefficients for convective heat transfer condensing and evaporating using simple equations dew and bubble points and lines are covered with all calculations supported with examples this practical guide is designed to help engineers solve typical problems they might encounter in their day to day work and will also serve as a useful reference for students learning about the field the book is extensively illustrated with figures in support of the text and includes calculation examples to ensure users are fully equipped to select design and operate heat exchangers covers design method and practical correlations needed to design practical heat exchangers for process application includes geometrical calculations for the tube and shell side also covering boiling and condensation heat transfer explores heat transfer coefficients and temperature differences designed to help engineers solve typical problems they might encounter in their day to day work but also ideal as a useful reference for students learning about the field

Heat Exchangers

2012-03-01

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

Heat Exchanger Design

1991-01-16

this second edition of the well received work on design construction and operation of heat exchangers demonstrates how to apply theories of fluid mechanics and heat transfer to practical problems posed by design testing and installation of heat exchangers tables and data have been brought up to date and there is new material on problems of vibration and fouling and on optimization of energy use in the chemical process and manufacturing industries covers all basic principles of heat exchanger design and addresses many specialized situations encountered in engineering applications

Application of Compact Heat Exchangers For Combined Cycle Driven Efficiency In Next Generation Nuclear Power Plants

2015-11-19

covers the fundamentals of combined cycle plants to provide background for understanding the progressive design approaches at the heart of the text discusses the types of compact heat exchanger surfaces suggesting novel designs that can be considered for optimal cost effectiveness and maximum energy production undertakes the thermal analysis of these compact heat exchangers throughout the life cycle from the design perspective through operational and safety assurance stages this book describes the quest to create novel designs for compact heat exchangers in support of emergent combined cycle nuclear plants the text opens with a concise explanation of the fundamentals of combined cycles describing their efficiency impacts on electrical power generation systems it then covers the implementation of these principles in nuclear reactor power systems focusing on the role of compact heat exchangers in the combined cycle loop and applying them to the challenges facing actual nuclear power systems the various types of compact heat exchanger surfaces and designs are given thorough consideration before the author turns his attention to discussing current and projected reactor systems and how the novel design of these compact heat exchangers can be applied to innovative designs operation 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

Process Modeling, Simulation, and Environmental Applications in Chemical Engineering

2016-10-14

in this valuable volume new and original research on various topics on chemical engineering and technology is presented on modeling and simulation material synthesis wastewater treatment analytical techniques and microreactors the research presented here can be applied to technology in food paper and pulp polymers petrochemicals surface coatings oil technology aspects among other uses the book is divided into five sections modeling and simulation environmental applications materials and applications processes and applications analytical methods topics include modeling and simulation of chemical processes process integration and intensification separation processes advances in unit operations and processes chemical reaction engineering fuel and energy advanced materials cfd and transport processes wastewater treatment the valuable research presented here will be of interest to researchers scientists industry practitioners as well as upper level students

Heat Exchangers

2012-03-09

selecting and bringing together matter provided by specialists this project offers comprehensive information on particular cases of heat exchangers the selection was guided by actual and future demands of applied research and industry mainly focusing on the efficient use and conversion energy in changing environment beside the questions of thermodynamic basics the book addresses several important issues such as conceptions design operations fouling and cleaning of heat exchangers it includes also storage of thermal energy and geothermal energy use directly or by application of heat pumps the contributions are thematically grouped in sections and the content of each section is introduced by summarising the main objectives of the encompassed chapters the book is not necessarily intended to be an elementary source of the knowledge in the area it covers but rather a mentor while pursuing detailed solutions of specific technical problems which face engineers and technicians engaged in research and development in the fields of heat transfer and heat exchangers

Fundamentals of Heat Exchanger Design

2023-10-24

fundamentals of heat exchanger design a cutting edge update to the most essential single volume resource on the market heat exchangers are thermal devices which transfer heat between two or more fluids they are integral to energy automotive aerospace and myriad other technologies the design and implementation of heat exchangers is an essential skill for engineers looking to contribute to a huge range of applications fundamentals of heat exchanger design second edition provides a comprehensive insight into the design and performance of heat exchangers after introducing the basic heat transfer concepts and parameters an overview of design methodologies is discussed subsequently details of design theory of various types of exchangers are presented the first edition established itself as the standard single volume text on the subject the second edition preserves an established in depth approach but reflects some new technological developments related to design for manufacturing compact heat exchangers including novel 3 d printing approaches to heat exchanger design readers of the second edition of fundamentals of heat exchanger design will also find a new section on the design for manufacturing of compact heat exchangers a new section on design for additive manufacturing compact heat exchangers detailed discussions of the design of recuperators and regenerators pressure drop analysis geometric parameters heat transfer correlations

and more fundamentals of heat exchanger design is ideal for practicing engineers as well as for advanced undergraduate and graduate students in mechanical and aerospace engineering energy engineering and related subjects

Design of Heat Exchangers for Heat Pump Applications

2020-12-28

heat pumps hps allow for providing heat without direct combustion in both civil and industrial applications they are very efficient systems that by exploiting electrical energy greatly reduce local environmental pollution and co2 global emissions the fact that electricity is a partially renewable resource and because the coefficient of performance cop can be as high as four or more means that hps can be nearly carbon neutral for a full sustainable future the proper selection of the heat source and the correct design of the heat exchangers is crucial for attaining high hp efficiencies heat exchangers also in terms of hp control strategies are hence one of the main elements of hps and improving their performance enhances the effectiveness of the whole system both the heat transfer and pressure drop have to be taken into account for the correct sizing especially in the case of mini and micro geometries for which traditional models and correlations can not be applied new models and measurements are required for best hps system design including optimization strategies for energy exploitation temperature control and mechanical reliability thus a multidisciplinary approach of the analysis is requested and become the future challenge

Heat Exchanger Design Handbook

2013-05-20

completely revised and updated to reflect current advances in heat exchanger technology heat exchanger design handbook second edition includes enhanced figures and thermal effectiveness charts tables new chapter and additional topics all while keeping the qualities that made the first edition a centerpiece of information for practicing engine

Heat Exchangers

2017-04-26

this book presents contributions from renowned experts addressing research and development related to the two important areas of heat exchangers which are advanced features and applications this book is intended to be a useful source of information for researchers postgraduate students academics and engineers working in the field of heat exchangers research and development

Heat Transfer Equipment Fundamentals, Design, Applications, and Operating Problems

1989

a heat exchanger is a device built for efficient heat transfer from one medium to another the media may be separated by a solid wall so that they never mix or they

may be in direct contact they are widely used in space heating refrigeration air conditioning power plants chemical plants petrochemical plants petroleum refineries natural gas processing and sewage treatment one common example of a heat exchanger is the radiator in a car in which the heat source being a hot engine cooling fluid water transfers heat to air flowing through the radiator this book presents current research data in the study of heat exchangers including lightweight compact heat exchangers with open cell metal the ntu effectiveness method to design and assess heat exchangers a mathematical model for plate heat exchangers and advances in design optimisation of shell and tube heat exchangers

Heat Exchangers

2011

comprising two volumes thermoelectrics and its energy harvesting reviews the dramatic improvements in technology and application of thermoelectric energy with a specific intention to reduce and reuse waste heat and improve novel techniques for the efficient acquisition and use of energy this volume modules systems and applications in thermoelec

Modules, Systems, and Applications in Thermoelectrics

2012-04-25

this book deals with certain aspects of material science particularly with the release of thermal energy associated with bond breaking it clearly establishes the connection between heat transfer rates and product quality the editors then sharply draw the thermal distinctions between the various categories of welding processes and demonstrate how these distinctions are translated into simulation model uniqueness the book discusses the incorporation of radiative heat transfer processes into the simulation model

Numerical Simulation of Heat Exchangers

2017-04-07

completely revised and updated to reflect current advances in heat exchanger technology heat exchanger design handbook second edition includes enhanced figures and thermal effectiveness charts tables new chapter and additional topics all while keeping the qualities that made the first edition a centerpiece of information for practicing engineers research engineers academicians designers and manufacturers involved in heat exchange between two or more fluids see what's new in the second edition updated information on pressure vessel codes manufacturer's association standards a new chapter on heat exchanger installation operation and maintenance practices classification chapter now includes coverage of scrapped surface graphite coil wound microscale and printed circuit heat exchangers thorough revision of fabrication of shell and tube heat exchangers heat transfer augmentation methods fouling control concepts and inclusion of recent advances in p-hes new topics like embaffle helixchanger and twistedtube heat exchanger feedwater heater steam surface condenser rotary regenerators for hvac applications cab brazing and cupro braze radiators without proper heat exchanger design efficiency of cooling heating system of plants and machineries industrial processes and energy system can be compromised and energy wasted this thoroughly revised handbook offers comprehensive coverage of single phase heat exchangers selection thermal design mechanical design corrosion and fouling fiv material selection and their fabrication issues fabrication of heat exchangers operation and maintenance of heat

exchangers all in one volume

Heat Exchanger Design Handbook, Second Edition

2013-05-20

this accessible book presents unconventional technologies in heat exchanger design that have the capacity to provide solutions to major concerns within the process and power generating industries demonstrating the advantages and limits of these innovative heat exchangers it also discusses micro and nanostructure surfaces and micro scale equipment and introduces pillow plate helical and expanded metal baffle concepts it offers step by step worked examples which provide instructions for developing an initial configuration and are supported by clear detailed drawings and pictures various types of heat exchangers are available and they are widely used in all fields of industry for cooling or heating purposes including in combustion engines the market in 2012 was estimated to be u 42 7 billion and the global demand for heat exchangers is experiencing an annual growth of about 7 8 the market value is expected to reach u 57 9 billion in 2016 and approach u 78 16 billion in 2020 providing a valuable introduction to students and researchers this book offers clear and concise information to thermal engineers mechanical engineers process engineers and heat exchanger specialists

Innovative Heat Exchangers

2017-12-30

a tubular heat exchanger exemplifies many aspects of the challenge in designing a pressure vessel high or very low operating pressures and temperatures combined with sharp temperature gradients and large differences in the stiffnesses of adjoining parts are amongst the legion of conditions that behoove the attention of the heat exchanger designer pitfalls in mechanical design may lead to a variety of operational problems such as tube to tubesheet joint failure flanged joint leakage weld cracks tube buckling and flow induced vibration internal failures such as pass partition bowing or weld rip out pass partition gasket rib blow out and impingement actuated tube end erosion are no less menacing designing to avoid such operational perils requires a thorough grounding in several disciplines of mechanics and a broad understanding of the inter relationship between the thermal and mechanical performance of heat exchangers yet while there are a number of excellent books on heat exchanger thermal design comparable effort in mechanical design has been non existent this apparent void has been filled by an assortment of national codes and industry standards notably the asme boiler and pressure vessel code and the standards of tubular exchanger manufacturers association these documents in conjunction with scattered publications form the motley compendia of the heat exchanger designer s reference source the subject matter clearly beckons a methodical and comprehensive treatment this book is directed towards meeting this need

Mechanical Design of Heat Exchangers

2013-04-17

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

Heat Exchangers

2020-01-21

researchers practitioners instructors and students all welcomed the first edition of heat exchangers selection rating and thermal design for gathering into one place the essence of the information they need information formerly scattered throughout the literature while retaining the basic objectives and popular features of the bestselling first edition the second edition incorporates significant improvements and modifications new in the second edition 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 the authors take a systematic approach to the subject of heat exchanger design focusing on the fundamentals selection thermohydraulic design design processes and the rating and operational challenges of heat exchangers it introduces thermal design by describing various types of single phase and two phase flow heat exchangers and their applications and demonstrates thermal design and rating processes through worked examples exercises and student design projects much of the text is devoted to describing and exemplifying double pipe shell and tube compact gasketed plate heat exchanger types condensers and evaporators

Heat Exchangers

2002-03-14

it has long been recognised that thermal technologies must ensure the safety of food without compromising food quality

Improving the Thermal Processing of Foods

2004-07-16

heat exchangers principles design and applications welcome to the world of heat exchangers where the principles of thermodynamics and fluid dynamics come together to enable efficient heat transfer in a wide range of industrial processes heat exchangers are fundamental devices that play a crucial role in various industries from power generation and chemical manufacturing to hvac systems and renewable energy applications they are essential for optimizing energy efficiency enhancing process performance and promoting sustainability this book heat exchangers principles design and applications aims to provide a comprehensive understanding of heat exchangers covering their principles design considerations performance analysis industrial applications and emerging trends it serves as a valuable resource for

students researchers engineers and professionals seeking to deepen their knowledge and explore the fascinating world of heat exchangers the book begins with a solid foundation in the fundamentals of heat transfer introducing concepts such as conduction convection and radiation it then delves into the classification and types of heat exchangers exploring their unique characteristics advantages and limitations the design and construction of heat exchangers are thoroughly discussed highlighting the key considerations in geometry materials and fabrication techniques performance analysis and optimization of heat exchangers are explored in detail providing insights into heat transfer enhancement methods pressure drop calculations and thermal efficiency evaluation real world examples and case studies showcase the practical application of heat exchangers in various industries allowing readers to understand their role in power generation chemical processes hvac systems food and beverage production and more the book also examines the latest advancements in heat exchanger technology including the integration of advanced materials nanotechnology additive manufacturing and intelligent systems it explores the future trends and outlook for heat exchangers envisioning a greener and more sustainable future through energy efficiency improvements waste heat recovery and integration with renewable energy systems maintenance troubleshooting and safety considerations are given due importance emphasizing the importance of regular inspections maintenance practices and adherence to safety protocols to ensure optimal performance and safe operation of heat exchangers throughout this book we have strived to present complex concepts in a clear and accessible manner incorporating illustrations diagrams and practical examples to enhance understanding the content is supported by the latest research and industry practices ensuring its relevance and reliability as the author of this book i am grateful for the opportunity to share my knowledge and passion for heat exchangers with you i hope that this book serves as a valuable guide sparking your curiosity inspiring further exploration and enabling you to contribute to the field of heat exchangers i encourage you to dive into the following chapters embark on a journey through the principles design considerations applications and future trends of heat exchangers may this book equip you with the necessary knowledge and insights to tackle real world challenges drive innovation and contribute to a more efficient and sustainable world happy reading charles nehme

Heat Exchangers: Principles, Design, and Applications

2022-09-20

a system that is used to transfer heat between two or more fluids is known as a heat exchanger it can be used for cooling as well as heating processes the fluids may be in direct contact or may be separated by a solid wall to prevent mixing a prominent example of heat exchanger is present within an internal combustion engine the circulating fluid in an internal combustion engine is known as engine coolant it flows through radiator coils and air flows past the coils this cools the coolant and heats the incoming air heat exchangers are widely used in refrigeration air conditioning space heating petrochemical plants and petroleum refineries the topics included in this book on heat exchangers are of utmost significance and bound to provide incredible insights to readers also included herein is a detailed explanation of the various designs and applications of heat exchangers this book is a complete source of knowledge on the present status of this important field

Design and Applications of Heat Exchangers

2001-05-08

this book presents the ideas and industrial concepts in compact heat exchanger technology that have been developed in the last 10 years or so historically the development and application of compact heat exchangers and their surfaces has taken place in a piecemeal fashion in a number of rather unrelated areas principally those of the automotive and prime mover aerospace cryogenic and refrigeration sectors much detailed technology familiar in one sector progressed only slowly over the boundary into another sector this compartmentalisation was a feature both of the user industries themselves and also of the supplier or manufacturing industries

these barriers are now breaking down with valuable cross fertilisation taking place one of the industrial sectors that is waking up to the challenges of compact heat exchangers is that broadly defined as the process sector if there is a bias in the book it is towards this sector here in many cases the technical challenges are severe since high pressures and temperatures are often involved and working fluids can be corrosive reactive or toxic the opportunities however are correspondingly high since compacts can offer a combination of lower capital or installed cost lower temperature differences and hence running costs and lower inventory in some cases they give the opportunity for a radical re think of the process design by the introduction of process intensification pi concepts such as combining process elements in one unit an example of this is reaction and heat exchange which offers among other advantages significantly lower by product production to stimulate future research the author includes coverage of hitherto neglected approaches such as that of the second law of thermodynamics pioneered by bejan and co workers the justification for this is that there is increasing interest in life cycle and sustainable approaches to industrial activity as a whole often involving exergy second law analysis heat exchangers being fundamental components of energy and process systems are both savers and spenders of exergy according to interpretation

Compact Heat Exchangers

2019-10-04

design and operation of heat exchangers and their networks presents a comprehensive and detailed analysis on the thermal design methods for the most common types of heat exchangers with a focus on their networks simulation procedures for their operations and measurement of their thermal performances the book addresses the fundamental theories and principles of heat transfer performance of heat exchangers and their applications and then applies them to the use of modern computing technology topics discussed include cell methods for condensers and evaporators dispersion models for heat exchangers experimental methods for the evaluation of heat exchanger performance and thermal calculation algorithms for multi stream heat exchangers and heat exchanger networks includes matlab codes to illustrate how the technologies and methods discussed can be easily applied and developed analyses a range of different models applications and case studies in order to reveal more advanced solutions for industrial applications maintains a strong focus on the fundamental theories and principles of the heat transfer performance of heat exchangers and their applications for complex flow arrangement

Design and Operation of Heat Exchangers and their Networks

2015-12-16

compact heat exchangers for energy transfer intensification low grade heat and fouling mitigation provides theoretical and experimental background on heat transfer intensification in modern heat exchangers emphasizing applications in complex heat recovery systems for the process industries this book covers various issues related to low grade hea

Compact Heat Exchangers for Energy Transfer Intensification

2018-05-17

this book presents new methods of numerical modelling of tube heat exchangers which can be used to perform design and operation calculations of exchangers characterized by a complex flow system it also proposes new heat transfer correlations for laminar transition and turbulent flows a large part of the book is devoted to

experimental testing of heat exchangers and methods for assessing the indirect measurement uncertainty are presented further it describes a new method for parallel determination of the nusselt number correlations on both sides of the tube walls based on the nonlinear least squares method and presents the application of computational fluid dynamic cfd modeling to determine the air side nusselt number correlations lastly it develops a control system based on the mathematical model of the car radiator and compares this with the digital proportional integral derivative pid controller the book is intended for students academics and researchers as well as for designers and manufacturers of heat exchangers

Numerical Modelling and Experimental Testing of Heat Exchangers

2009-05-12

calculus has been used in solving many scientific and engineering problems for optimization problems however the differential calculus technique sometimes has a drawback when the objective function is step wise discontinuous or multi modal or when decision variables are discrete rather than continuous thus researchers have recently turned their interests into metaheuristic algorithms that have been inspired by natural phenomena such as evolution animal behavior or metallic annealing this book especially focuses on a music inspired metaheuristic algorithm harmony search interestingly there exists an analogy between music and optimization each musical instrument corresponds to each decision variable musical note corresponds to variable value and harmony corresponds to solution vector just like musicians in jazz improvisation play notes randomly or based on experiences in order to find fantastic harmony variables in the harmony search algorithm have random values or previously memorized good values in order to find optimal solution

Music-Inspired Harmony Search Algorithm

2013

this comprehensive reference covers all the important aspects of heat exchangers hes design and modes of operation and practical large scale applications in process power petroleum transport air conditioning refrigeration cryogenics heat recovery energy and other industries it includes over 400 drawings diagrams tables and equations making it a great resource for mechanical chemical and petrochemical engineers process equipment and pressure vessel designers and upper level undergraduate and graduate students this second edition includes updated material throughout coverage of the latest advances in he design techniques expanded and updated coverage of materials selection and a look at the newest fabrication techniques

Heat Exchanger Design Handbook

2003-03-01

heat exchanger network synthesis provides engineers designers and industrial practitioners with a how to manual for understanding the methodology for conserving energy through process integration

Fundamentals of Heat Exchanger Design

1995

written by a tribological expert with more than thirty years of experience in the field mechanical wear fundamentals and testing second edition compiles an extensive range of graphs tables micrographs and drawings to illustrate wear friction and lubrication behavior in modern engineering applications the author promotes a clear understanding

Heat Exchanger Network Synthesis

2004-04-22

the current thoroughly revised and updated edition of this approved title evaluates information sources in the field of technology it provides the reader not only with information of primary and secondary sources but also analyses the details of information from all the important technical fields including environmental technology biotechnology aviation and defence nanotechnology industrial design material science security and health care in the workplace as well as aspects of the fields of chemistry electro technology and mechanical engineering the sources of information presented also contain publications available in printed and electronic form such as books journals electronic magazines technical reports dissertations scientific reports articles from conferences meetings and symposiums patents and patent information technical standards products electronic full text services abstract and indexing services bibliographies reviews internet sources reference works and publications of professional associations information sources in engineering is aimed at librarians and information scientists in technical fields as well as non professional information specialists who have to provide information about technical issues furthermore this title is of great value to students and people with technical professions

Mechanical Wear Fundamentals and Testing, Revised and Expanded

1991

The Application of Machine Intelligence to the Design of Heat Exchangers

1965

Computer Literature Bibliography: 1946-1963

2012-04-17

Information Sources in Engineering

1979

Solar Energy Update

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