

Compact Heat Exchangers 2nd Edition

Hesselgreaves, Law, Reay

Published July 2016

Key Features I

- Worked examples throughout the book to assist in teaching in both industrial and academic areas
- Relationship between enhancement and compactness more thoroughly explored
- Updated sections on industrially available exchangers including HEx-reactor types and additive manufacturing
- An extensive new chapter on convection fundamentals:
 1. Not available in other heat exchanger design books.
 2. In-depth development of the boundary layer equations in laminar flow, including flat plate, wedge, cylindrical surfaces
 3. New interpretation of Kays and London strip fin data
 4. Outline of three-dimensional flow approaches

Key Features II

- Updated chapter on design to include fin optimisation, reactors and CFD principles
- Thorough system view from commissioning, operation and maintenance, with novel approaches to design for fouling situations:
 1. Fan/pump interactions - the steepness of the pump characteristic can strongly affect flow velocity and hence fouling propensity.
 2. It is suggested that the fouling factor, if applied, should be scaled according to hydraulic diameter.
- Coverage of Second Law approaches is retained and extended, to reflect on-going needs for sustainability concepts

Compact Heat Exchangers

Selection, Design and Operation

Second Edition

John E. Hesselgreaves, Richard Law and David A. Reay

Compact Heat Exchangers, 2e, is fully revised to present recent developments and fundamental ideas and industrial concepts in compact heat exchanger technology.

New to this edition is a description of micro, sintered and porous passage developments, including additive manufacturing. The revised content also has updated sections on industrially available exchangers including micro-reactors, which are considered to be one of the growth areas of the process sector. A more detailed coverage is given of the relationship of compactness and enhancement, and the design section is extended to include the principles of good practice in Computational Fluid Dynamics (CFD).

A major new inclusion in the book, not available in other heat exchanger design books, is a chapter on convection fundamentals. It takes the form of a relatively in-depth development of the boundary layer equations in laminar flow. Its main function is to explore and emphasise the 'why' of convective heat transfer as distinct from the 'how' embodied in correlations. This is regarded as essential for both the sensible utilisation and the future development of compact surfaces.

Coverage of Second Law approaches is retained and extended, to reflect on-going needs for sustainability concepts.

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- Thorough system view from commissioning, operation and maintenance, with novel approaches to design for fouling situations, including fan/pump interactions

Related Titles

Serth and Lestina / *Process Heat Transfer, Second edition* / 9780123971951

Zhang / *Conjugate Heat and Mass Transfer in Heat Mass Exchanger Ducts* / 9780124077829

Stewart and Lewis / *Heat Exchanger Equipment Field Manual, Gulf Professional Publishing* / 9780123970169

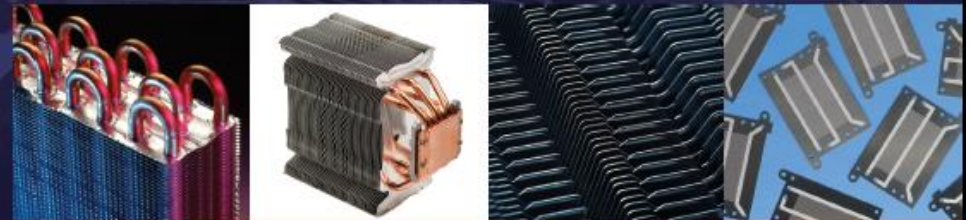
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