



Advances in Thermal Design of Heat Exchangers: A Numerical Approach: Direct-sizing, Step-wise rating, and Transients

By Eric M. Smith

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The primary objective in any engineering design process has to be the elimination of uncertainties. In thermal design of heat exchangers there are presently many stages in which assumptions in mathematical solution of the design problem are being made. Accumulation of these assumptions may introduce variations in design. The designer needs to understand where these inaccuracies may arise, and strive to eliminate as many sources of error as possible by choosing design configurations that avoid such problems at source.

In this exciting text, the author adopts a numerical approach to the thermal design of heat exchangers, extending the theory of performance evaluation to the point where computer software may be written. The first few chapters are intended to provide a development from undergraduate studies regarding the fundamentals of heat exchanger theory and the concepts of direct sizing. Later chapters on transient response of heat exchangers and on the related single-blow method of obtaining experimental results should also interest the practicing engineer. Theory is explained simply, with the intention that readers can develop their own approach to the solution of particular problems.

This book is an indispensable reference text for higher level (post-graduate) students and practicing engineers, researchers and academics in the field of heat exchangers.

- Includes a whole new chapter on exergy and pressure loss
- Provides in the first few chapters a development from undergraduate studies regarding the fundamentals of heat exchanger theory, and continues in later chapters to discuss issues such as the transient response of heat exchangers and the related single-blow method of obtaining experimental results that are also of interest to the practicing engineer.
- Adopts a numerical approach to the thermal design of heat exchangers, extending the theory of performance evaluation to the point where computer software may be written
- Contributes to the development of the direct 'sizing' approach in thermal

design of the exchanger surface

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Editorial Review

From the Back Cover

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About the Author

Eric M. Smith BSc, PhD, MInstR, FIMechE, FellowASME has extensive experience in both civil and mechanical engineering. Having taught mechanical engineering to post-graduate level for 20 years, he is a recognized authority in this field.

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