

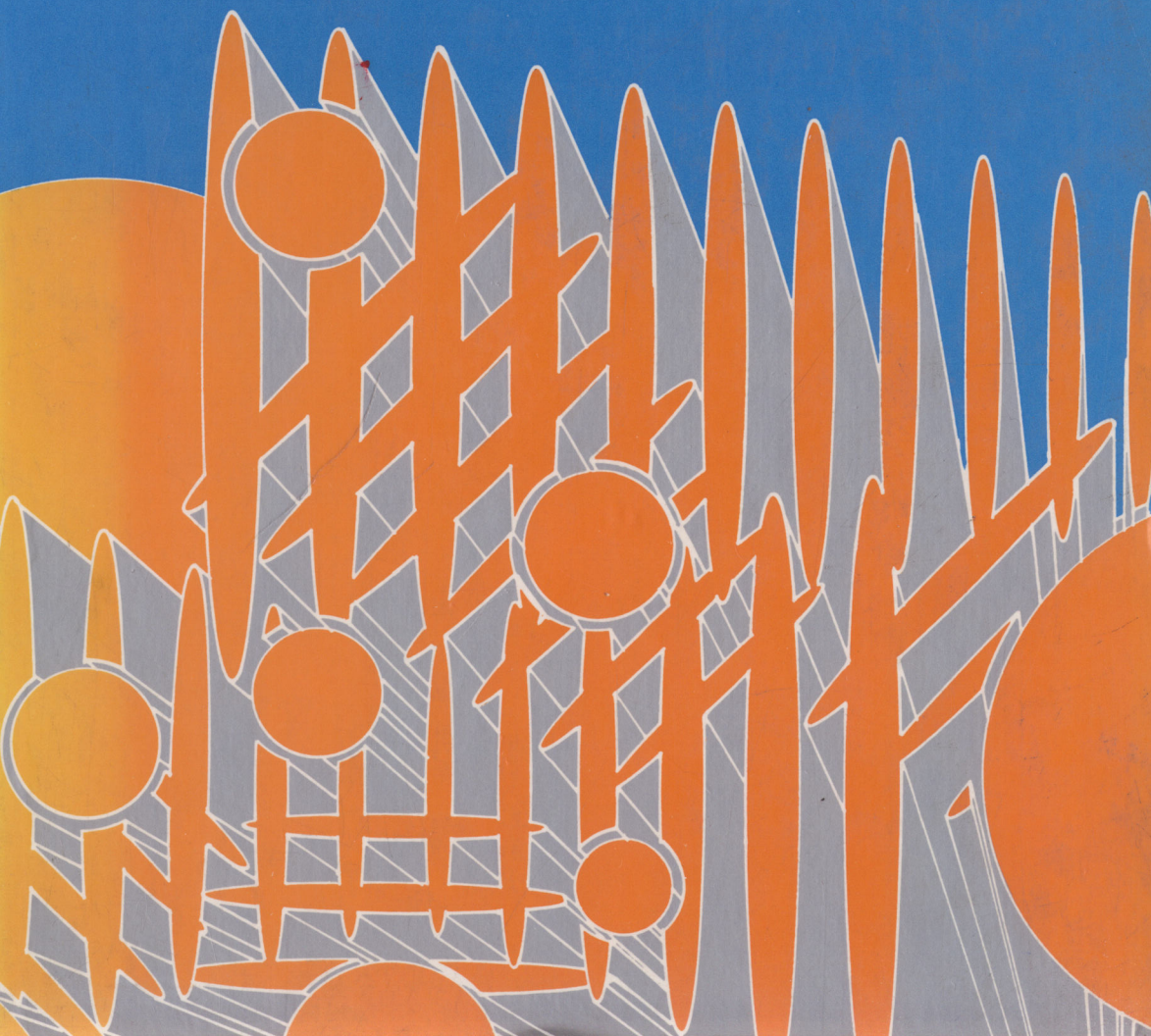
ELLIS HORWOOD SERIES IN CHEMICAL ENGINEERING

HEAT EXCHANGE ENGINEERING

volume 2

**compact heat exchangers:
techniques of size reduction**

E. A. Foumeny and P. J. Heggs



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Compact Heat Exchangers: Techniques of Size Reduction

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Volume 2
Compact Heat Exchangers:
Techniques of Size Reduction



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PREFACE

The shell-and-tube heat exchanger has been the workhorse of the process industries. The energy crisis over a decade ago has forced designers and operators to become more energy conscious. In addition, the emergence of pinch technology and process integration has highlighted the need for more efficient heat exchangers. Unfortunately, the shell-and-tube exchanger configurations are somewhat limited when low temperature difference approaches are required, and these are a prerequisite for highly efficient heat exchangers. Compact heat exchangers do not have such limitations, and they are aptly named, because they are considerably smaller than shell-and-tube exchangers (often multi-shells) for the same thermal duty.

Compact exchangers are becoming more common on process plant, but unlike shell-and-tube exchangers, which were standardised through TEMA, are loosely defined and come in many configurations. Plate heat exchangers, spiral exchangers, plate-fin exchangers and regenerators fall into this category, and the very recent configuration, the printed circuit exchanger, is a welcome addition. Unfortunately there are less design data in the open literature for compact exchangers than that which exists for the shell-and-tube arrangements. Likewise there is less operating experience and detailed applications for compact exchangers in the open literature.

This second volume in the series on Heat Exchange Engineering fills some of the gaps that presently exist. The authors of the chapters are a collection of designers, consultants and academics, who are specialists in their respective fields of interest, and are all advocates of the wider use of compact heat exchangers. The shell-and-tube heat exchanger will not disappear from use in the process and allied industries, but it will not be the most common form of

heat exchange equipment in future years.

The editors are indebted to the authors for their contributions to this volume, to the publishers for their support, to the Institution of Chemical Engineers, especially the East Pennine Centre of the Yorkshire Branch, to EEO and ETSU for their encouragement, and especially to Jane Gibb for her unfailing efforts to type the papers under a very tight schedule. Our wives, Carole and Mahboubeh, must be mentioned, because without their support over this venture, and many others in the past, we could not have achieved half the goals we set out for.

P. J. Heggs and E. A. Foumeny

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