stagnation point flow ($m=1,; n=1.6$) if $\mathrm{Pr}=10$ or $\mathrm{Pr}=100$. One should, however, be aware of the fact that

$$\mathrm{Nu} \sim x^{(3m-n-2)/3(n+1)}$$

i.e., that the Nusselt number defined in Eq. (14a) tends to infinity as the stagnation point $x=0$ is approached. It seems, therefore, more correct to use the low Prandtl number asymptote (12) rather than the high Prandtl number asymptote (8) to provide the stagnation point heat transfer rate at $x=0$ for the space-marching calculation scheme proposed by Nakayama *et al.*[2]

For the moderate Prandtl number case, $\mathrm{Pr}=1$, considered for instance by Kim *et al.*,[8] it is readily observed that $(x/L)_{tr}=0.114$ (i.e., 6.53 deg), and the region in which the low Prandtl number asymptote applies is by no means negligible.

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BOOK REVIEWS

Managing steam

Edited by Jason Makansi
New York: Hemisphere Publishing, 224 pp. $37.95 U.S. and Canada

In the first section of this book there is a description of how steam—as well as condensate and hot water—are utilized in various industrial, commercial, institutional, and utility applications. Also included in the first section of the book are chapters on the generation and distribution of steam by various means.

The second section of the book contains chapters on control system theory. General control philosophy is presented initially and this is followed by the various aspects associated with boiler and turbine control systems.

The third, and most extensive, section of the book covers hardware and hardware applications associated with control systems. Valves, valve actuators, steam traps, and flow meters are described in detail. Special valve topics such as noise control, cavitation, high pressure drop, and fire safety are also briefly discussed. In the all-important hardware applications portion, actual control system diagrams are presented showing the proper selection and placement of the control system components.

The fourth and final section of the book provides recommendations for operating, maintaining, and inspecting control system components in order to optimize availability and reliability. The appendix provides ten nomographs for estimating steam properties, pressure drop, orifice sizes, condensation in steam lines, flashing, control valve coefficients, and other valves for special situations.

Leslie Company, a supplier of instruments and controls, had perceived a void in the available literature and the need for a single source devoted to steam management. Thus, it was decided to publish a practical reference book for the practicing engineer involved with steam and energy management. In addition to this limited readership, academicians might find it useful as a resource book on steam generation and control.

Technical information presented in the book has been obtained from a very comprehensive list of references. Information sources included trade journals, technical publications, reference books, and internal corporate documents.

The book is easy to read and presented in a logical order. The diagrams, photographs, and illustrations are clear, legible, and easily understood. The book is essentially error-free.

John R. Stenner

Introduction to nuclear power

By John G. Collier and Geoffrey F. Hewitt
New York: Hemisphere Publishing, 1987. 231 pp. $49.95 U.S. and Canada

This book consists of nine chapters, which are: (1) the earth and nuclear power: sources and resources; (2) how reactors work; (3) cooling reactors; (4) loss of cooling; (5) loss-of-cooling accidents: some examples; (6) postulated severe accidents; (7) cooling during fuel removal and processing; (8) cooling and disposing of the waste; and (9) fusion energy: prospect for the future.

Although the title is *Introduction to Nuclear Power*, this book deals mainly with the thermal aspects of nuclear power. Particular emphases are laid on discussions of real and actual accident scenarios in detail, as well as the problems of fuel removal and disposal of nuclear waste, in order to attain the authors' purpose to dispel current fears in the minds of many people about nuclear power generation through a deeper and more widespread understanding of the technologies and other issues involved. Thus the text is written without unnecessary jargon and with superb illustrations and careful examples and problems; there is a bibliography at the end of each chapter. I think this book is of interest to a variety of readers; the intelligent general reader, the undergraduate or graduate student, and the industrial technologist.

During production of this book, news of the Chernobyl reactor accident in the USSR emerged. Therefore, both material on this reactor type and the information available about the accident at that time are included, but I hope that the whole aspect of accident will be described in detail, as is the TMI-2 reactor incident, in a revised edition in future.

Energy problems are very important at any time and in any place. These are deeply related to global environment. In this sense, this book is useful for people who wish to brief themselves about nuclear power, which is one of the important energy sources.

Itaru Michiyoshi

Exergy analysis of thermal, chemical and metallurgical processes

By J. Szargut, D. R. Morris and F. R. Steward
New York: Hemisphere Publishing, 1988. 332 pp. $59.50 U.S. and Canada

This is the latest monograph on exergy analysis (second-law analysis) and its

potential applications in industry. It is a book that features applications (processes), worked-out examples, end-of-chapter problems, and references. It presents a fairly complete coverage of the areas in which exergy analysis has already been applied and emphasizes a long list of applications that have received relatively little attention during the past decade.

Among the newer features that recommend this book as a reference are the sections on industrial chemical processes (e.g., sulphuric acid plant, synthesis gas and ammonia plant), and metallurgical processes (e.g., iron blast furnace, steel making). The treatment of power generation and refrigeration plants is also more extensive and more detailed than in the earlier monographs on exergy analysis (e.g., steam turbine plants, jet propulsion). This book contains also the most extensive compilation of exergy (property) values, in the form of charts and tables. The inclusion of topics such as thermoeconomics, food production, and ecological applications has the positive effect of balancing the hard engineering orientation of the first 70 percent of the book. The proper selection of the reference state for the calculation of chemical exergies constitutes also an important segment in this treatment.

Less satisfactory is the esthetic presentation of the material. Everything appears "crowded"; for example, the figures are small and busy, the numerical examples have equations (calculations) written in the text, and the type used for the end-of-chapter problems is much too small to pass unnoticed.

Overall, this is a good reference book for thermal designers and researchers, especially for those with some experience in the exergy area. I do not find it suitable for use in the classroom because, in addition to the items noted in the preceding paragraph, the student will see little continuity between this treatment and his or her exposure to the standard first-course in engineering thermodynamics taught in North American curricula.

Adrian Bejan

Cindas Data Series on Material Properties

The series is an updated, expanded, and reorganized successor to the earlier *TPRC Data Series* entitled *Thermophysical Properties of Matter* published by Hemisphere Publishing Corporation and edited by C. Y. Ho. It presents a critical evaluation of the data and a brief discussion of the state of knowledge for each property. Whenever possible an indication as to how the values would change under certain experimental conditions is presented. In instances where no data evaluation was possible, a table of selected representative data from the literature with specimen specifications is included to assist the user in making judgment in data selection. This book in this series will be a very valuable addition to engineering libraries.

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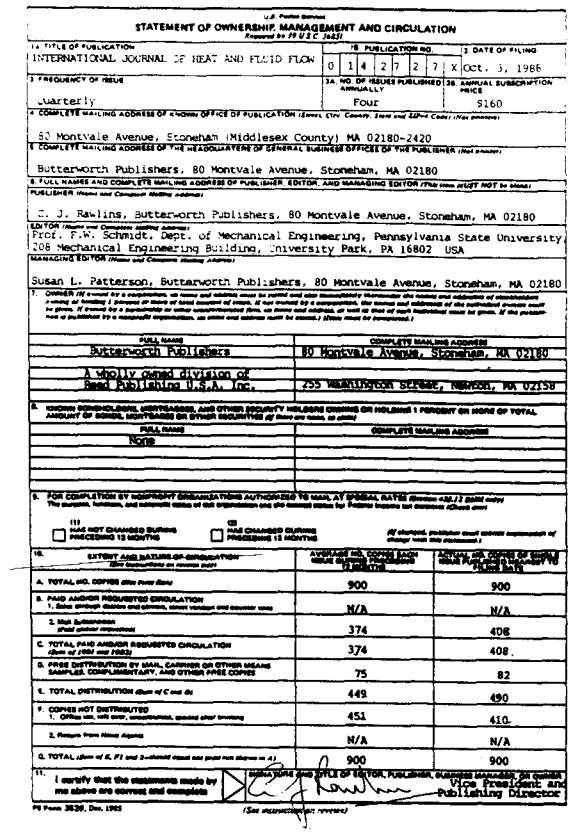
Frank W. Schmidt

Erratum

In R. S. Neve's article, "The performance and modeling of fluid jet gas pumps" (*International Journal of Heat and Fluid Flow*, 9 [September 1988]: 156–164), paragraphs 5, 6, and 7 on page 156 should follow paragraphs 1, 2, and 3 on page 157. The Publisher apologizes for the error and, as a convenience to our subscribers and readers, encloses in this issue of the journal a reprint of the corrected pages.



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