BOOK REVIEWS

Heat transfer science and technology

B. X. Wang

Hemisphere Publishing, New York, 1987, 944 pp., $139.95 (US and Canada)

This book might be more appropriately titled *Proceedings of the International Symposium on Heat Transfer*, held October 15–18, 1985 in Beijing, China. Participants of the conference came from around the world, with about 50 percent from the People's Republic of China. The production of the book is typical camera-ready copy and is of uniform high quality. Over one hundred papers are presented with topics ranging over the whole spectrum of heat transfer. Approximately 60–70 percent of the papers offer experimental data on the various phenomena involved. One may ask how this compares with other symposia volumes and the ultimate extensive volumes of the International Heat Transfer Conference. My estimate is that it compares very well because of the large amount of experimental data included.

As with other "international" conferences, keynote papers are published which set the tone for the conference. My recommendation is for the reader to go directly to papers of interest without any intervening keynote stop.

The book is certainly recommended to all libraries of universities and industries which have any heat transfer activity at all. It offers very good insight into the heat transfer work being performed in the People's Republic of China.

J. P. Holman

Mechanical engineers handbook

Edited by Myer Kutz

Wiley-Interscience, 1986

Comprehensive handbooks, such as this new addition, must out of necessity, buy compromises between subjects covered, depth of treatment and amount of data presented in order to keep the number of pages, the thickness and weight of the tome reasonable. The purpose of a handbook is to serve as an up-to-date reference work for both the practicing engineer and student. The handbook must both be authoritative and cover the topics in a comprehensive manner, providing the needed technical detail for the practicing engineer so that he does not have to search for the needed data or information in textbooks. This handbook is directed to the broad-based mechanical engineer, ranging from the designer of machines to the operator of plants, to the manager of manufacturing operations. The book covers the mechanical, fluid and thermal fields of mechanical engineering with reasonable balance. The manufacturing and management aspects of the mechanical engineer's work receive a somewhat greater emphasis than we find in competing handbooks, in recognition of this country's current concern with our declining productivity posture vis-à-vis foreign industry.

In reviewing the handbook chapter-by-chapter, I find, not surprisingly, that some chapters are exceptionally informative and complete, such as the lubrication chapter and the chapters on dynamic systems and controls. The chapters on fluid mechanics, solid mechanics, thermodynamics and heat transfer are useful in a textbook sense, but lack data; for example, the Fluids chapter should have tables and plots on viscosity, density, etc. for different fluids and shock tables. On the other hand, the chapter on steel, although informative in a textbook sense, lacks useful strength data which is in distinct contrast to the chapters on nickel alloys and titanium alloys. I find the lack of data on screw threads, threaded fasteners, pipes, tubes and other machine elements particularly annoying. Some of the chapters lack a bibliography to provide guidance for further study, e.g., noise measurement and control.

The book differs from the classical mechanical engineering handbooks in its broader sweep of topics and its tendency to neglect important details for either the practicing engineer or the engineering student. However, it contains much useful information of modern mechanical engineering, i.e., computer usage and interfacing, modern analysis methods, and modern manufacturing methods. The book is attractive and carefully prepared as well as very readable, although it lacks the excellent technical illustrations so useful in *Mark's Handbook*.

As a practicing engineer, would I buy and frequently use the book? My answer is yes, but I would keep my latest copy of *Mark's Handbook* nearby.

G. Reethof

Aerothermodynamics of low pressure steam turbines and condensers

M. J. Moore and C. V. Sieverding

Hemisphere Publishing, New York, 290 pp., $59.95 (US and Canada)

The design of a low pressure steam turbine is one of the most challenging aerodynamic problems one can consider due to the coexistence of many fluid mechanics disciplines. The flow velocities vary from subsonic to supersonic, the flow is highly 3-dimensional, viscous effects significantly influence overall performance and the flow consists of a two-phase medium. Further, high efficiency performance is a major consideration which leads immediately to the need for high accuracy in the computation of all aerodynamic phenomenae.

This book is a collection of edited lectures presented at the von Karman Institute, organized into eight chapters which collectively address all the significant aerodynamic design areas encountered in the design of low pressure steam turbines and condensers. The articles are authored by experts renown in their field from Europe and the United States. About half the authors are associated with equipment manufacturers, while the other half come from universities or the British central research organization, CEGB. The book is logically organized and very readable.

In the introductory sections, in the areas of low pressure turbine design and condenser design, an overview of the primary design considerations are given. These introductory sections, although somewhat oriented toward the authors' organization, commercial strategy and experience, are nevertheless very helpful in identifying and defining the considerations which a turbine or condenser designer must deal with. These sections would be very helpful to a turbine or condenser designer, particularly those with limited experience. The remaining sections are discussions of state-to-the-art methods in particular areas such as through-flow design methods, calculation of 3D inviscid flows, and calculation of 3D viscous flows. Of particular interest are several sections dealing with the computation of wet steam flow and the development of instrumentation to be used for obtaining measurements in wet steam. Also of special interest are sections dealing with