ChE book reviews

FLUIDISED BED COMBUSION

Ed., M. Radovanovic
Hemisphere Publishing Corp., 79 Madison Ave., New York, NY 10016; 307 pages, $79.95 (1986)

Reviewed by
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This book arises from a course (one of many) given at the International Centre for Heat and Mass Transfer, Dubrovnik, Yugoslavia. It was organized by the departments of mechanical and of chemical engineering at the Twente University of Technology (Holland). Each chapter is by a faculty member from Twente except for one by Professor H. Masson, University of Brussels, and one by F. Verhoeff, Stork Boilers.

The book is clearly the product of a course. For example, the introduction (Chapter 1) begins with a "welcome to the Summer Course and to Dubrovnik." It also gives details of the departments and the faculty. However, though a little strange, the chapter is short, and from then on the book clearly arises from a good course (as one might expect) from a premier Dutch technical university.

Chapter 2 deals with the mechanical details of fluidised bed combustors in some detail and also gives typical process parameters. Bed level control, fly ash recycle, start-up, and limestone addition are examples of the detailed considerations that are included. This is an excellent chapter.

Chapter 3, entitled "Solids Handling," covers hopper design in detail; feeds for bulk solid handling; covered coal storage and coal spreaders.

With Chapter 4 the book moves into fundamentals of chemical engineering aspects with fluidisation. This is done remarkably well within some forty pages. Next comes "Combustion in Fluidised Beds," starting with basic coal combustion chemistry and including single carbon particle combustion fundamentals. Chapter 6 is entitled "Fuel Circulation and Segregation in F.B.C." This chapter also deals with fluidisation fundamentals, with the addition of segregation. It is an interesting chapter but indicates the difficulty of relating the well-known problems that may arise when handling beds of dissimilar materials, inevitable in F.B.C., to the question of whether such problems will arise in practice. Chapter 6 is not as well referenced as the others.

Chapter 7 deals with heat transfer and is a little thin. Chapter 8 with limestone addition and flue gas sampling in great detail (thirty pages), and Chapter 9 is a small but interesting one on thermodynamic cycles. The book ends with a chapter by a manufacturer on the design of a large industrial F.B.C. which is a very useful finale.

The format is remarkably uniform, even though it as clearly produced from camera-ready sheets, and it is also very legible. In places, the English is a little quaint. Overall, it will make a valuable addition to the field, especially for practicing engineers and, of course, for other advanced courses. □

MATRICES FOR ENGINEERS

by Allan D. Kraus
Hemisphere Publishing Corp., Washington, D.C., 310 pages, $49.00 (1987)

Reviewed by
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For more than twenty years our department (industrial engineering) has taught a matrix methods course which is required of all of our undergraduates. We eschewed similar courses presented by the mathematics department on the grounds that we wished our students to have a working knowledge of matrix methods while not being burdened by too many proofs. We have considered and adopted many books. No book was without some perceived faults. One book would use obscure notation, another would dwell too extensively on the concept of vector spaces, and virtually all would devote too much emphasis to proofs. The matter of proofs is particularly disturbing. Many theorems are accepted as true since intuitively they seem to be correct. Yet upon carefully following the proofs offered by some books, gaps in logic occasionally emerge. Some books ask for proofs in the problems at the end of chapters which can only be worked easily if material presented in a later chapter is invoked.

Initially I was delighted to encounter the subject book since it appeared to address most of the objections raised to other texts. It is short enough to be covered in a three-semester credit course. The Table of Contents lists nine chapters: Preliminary Concepts; Determinants; Matrix Inversion, Partitioning of Matrices, Simultaneous Equations; Orthogonality and Coordinate Transformations; The Eigenvalue Problem, Matrix Polynomials and the Calculus of Matrics; and Examples. This is only slightly more extensive than our intended coverage. I was further encouraged

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