ceptual organization and clarity. An other important recent book in this area, Middleman's *Fundamentals of Polymer Processing* (1977), is more suited to students less well-grounded in continuum mechanics, due to its lucid development of that subject. Throne's *Plastics Process Engineering* (1979), while perhaps most closely related to practical experience, is much less well organized and presented. Tadmor and Gogos' book is more comprehensive and will be a very important and useful addition for practitioners, teachers and more advanced students.

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Applied Instrumentation in the Process Industries, Volume IV, Control Systems: Theory, Troubleshooting and Design, Leslie M. Zoss, Gulf Publishing Company, Houston, Texas, 179 pp., $33.95.

Professor Zoss' book presents a brief and relatively elementary discussion of control systems as applied in the process industries. It also confines its treatment almost completely to the use of single loop pneumatic analog controllers. There is only a brief mention of more advanced concepts and of digital control systems.

The book presents extensive computational examples to illustrate the points being made and there are a large number of additional problems posed for the reader or student with the answers to these presented in an Appendix.

The subject of process and control system dynamics is extensively explored with process dynamics being confined mainly to the overdamped case. Underdamped or oscillatory systems are treated in the context of controller and controlled system dynamics.

The author is to be commended for his integration of the responses of the process, the controller and the associated components in order to obtain the overall response of the "controlled system" as the basis for controller tuning. This subject appears to be the most difficult for other text authors to manage but is well treated here.

This book is recommended for the industrially based engineer who needs a beginning or a brief review text to help him become more knowledgable of basic control system theory and its relationship to the control systems applications he is making daily in his work in industry. The extensive example computations and student problems with answers will be especially helpful for such an individual.

The book suffers somewhat from the necessity to crowd such a big subject into a relatively small book, as a result the explanations tend to be brief and the text jumps quickly from one topic to another. This reviewer was also disturbed with the typography and workmanship of the book itself. It gives a cheap appearance even though the price is anything but inexpensive.

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Process Control Systems, Second Edition, by F. G. Shinskey; McGraw-Hill, February, 1979; 349 pages; $22.50.

This text is a substantially revised and updated version of the author's first edition on process control. While the subject matter covered is essentially the same as that in the first edition, many new examples are included and several sections have been rewritten based on the author's experience in teaching the material. The most extensive revision has been carried out in the section dealing with multiple loops. One good feature of the new edition is the inclusion of answers for the problems at the end of each chapter.

The major strength of this text lies in the vast number of real applications which are presented. In addition to simple loops such as flow and level loops, examples of controlling distillation columns, chemical reactors, heat exchangers, compressors and the like are treated. These examples are drawn from the author's own experience and clearly illustrate control as it is practiced in industry today.

While the text is very strong on applications it is weak on theory. A time domain approach is used to explain feedback control. While this approach avoids the problem of some knowledge of advanced mathematics, it does not give the reader a base which is fundamental enough so that he can build and expand his knowledge. In attacking and explaining solutions to control problems the author is particularly incisive. He is able to get to the heart of a control problem and he explains, in simple terms, his solution to the problem. One wonders, however, whether the typical reader who lacks insight into control problems can do the same or modify the approaches given to cover his own situation. In order to make such modifications the reviewer feels that a more solid grounding in fundamentals than that given early in the text is necessary.

Because of the lack of a theoretical basis, academics would have difficulty in using this text as the only book in a course on control. As a reference book both for course work and research on control this text is invaluable. It contains a great many nuggets of information and examples which are not given elsewhere. For anyone interested in applying control theory this text should be part of their library.

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Handbook of Industrial Energy Analysis, I. Boustead and G. F. Hancock, John Wiley & Sons, New York, 1979, 422 pages. $69.50.

The authors of this book, who are affiliated with Britain's Open University, state that it is intended to explain how to calculate the "primary energy required to manufacture a product from raw materials in the ground". Thus, it deals only with the analysis of existing processes and does not treat the subject of efficiency of energy utilization. There is only superficial reference to the principles of thermodynamics, and energy is considered only in the context the first law. No use is made of the concepts of availability or exergy.

The book explains in great detail how to deal with complex processes consisting of many interrelated subsystems. Among the topics treated are recycle, apportionment and capital energy. A 100-page appendix contains an extensive tabulation of the energy requirements of many industrial processes, as reported in a wide variety of published sources.

The authors say that "the book is aimed primarily at managers, both technical and nontechnical" and that it "would be suitable as an introduction to the subject for undergraduates or graduate students in energy analysis and environmental sciences". In order to make the presentation accessible to readers without a technical background, very little reference is made to scientific principles, and there are very few equations. Instead the approach is formalistic with many rules, definitions and basic concepts set out in bold face type. As a result of this the text is very wordy, and this diffuseness will no doubt prove irksome to engineers or scientists who try to read it. Nonetheless, the type of energy analysis described, although thermodynamically simplistic, is currently the one most used in practice, and it is important that non-technical personnel be familiar with its language, its methodology and its pitfalls.

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