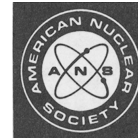


BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



Reactor Core Fuel Management

Author P. Silvennoinen
Publisher Pergamon Press Ltd.
Pages 257
Price Hardcover \$17;
Flexicover \$11
Reviewer Alexander Sesonske

There has been a need for some time for a book on nuclear fuel management. In this book, reactor core fuel management is defined as those aspects of fuel composition and loading, whether related to physics, engineering, or economic decisions, that are relevant to optimal fuel utilization within the design limits imposed on the reactor core. If we consider nuclear fuel management as involving strategies for the entire fuel cycle, then reactor core fuel management covers a more limited activity. However, loading strategies do depend to some extent on fuel cycle parameters, so only limited decoupling is possible. Definitive coverage of even core fuel management therefore represents a major challenge.

This is a short book, based on lectures given in Finland, but is intended to cover the subject from the electric utility viewpoint. Although the book is interesting and contains a good deal of useful information, it does not adequately cover the subject.

The first two chapters review reactor physics topics, although the reader is assumed to have an introduction. A subsequent 16-page

chapter on core heat transfer serves to remind the reader of the role of thermal-hydraulic constraints but provides little basic background. Short chapters devoted to reactivity and reactor operation considerations are good. In these and other chapters, a narrative style of presentation unencumbered with many equations tends to emphasize the desired ideas but often also results in rambling generalities.

The heart of the book is a section on core analysis, introduced by a chapter on core management strategies that is much too brief, and followed by a chapter devoted to computer code modules, which is over one-third of the entire book. Since the author intended this to be the only comprehensive chapter, the worth of the book depends upon it. Unfortunately, the reader is not led through the calculational steps required for multigroup core analysis in a lucid manner. Those generally familiar with analysis procedures will find some useful suggestions, but the beginner will need guidance from elsewhere. More use of specific codes as examples would have made the treatment more meaningful.

Instructors are not likely to consider the book suitable as a text but might find it useful as a supplement to other material. Practicing engineers concerned with fuel management should examine the book to determine if they should add it to their libraries. The needed definitive coverage of core fuel management has not yet arrived.

Alexander Sesonske is professor of nuclear engineering at Purdue

University. He is widely known as the co-author with Samuel Glasstone, of Nuclear Reactor Engineering, and as the author of Nuclear Power Plant Design Analysis. He has made many contributions to the development of fuel management strategies.

Environmental Aspects of Nuclear Power

Author G. G. Eichholz
Publisher Ann Arbor Science Publishers, Inc. (1976)
Pages 657
Price \$29.50
Reviewer Milton E. McLain, Jr.

Environmental Aspects of Nuclear Power is intended as a reference volume for all facets of the nuclear power community. As stated by the publisher, "Professionals responsible for formulating nuclear policy, developing nuclear power as an alternative energy source or monitoring its environmental effects require comprehensive and objective resource material." This is a difficult objective in light of the technically diverse nature of the nuclear industry, but the author has, in this rather comprehensive volume, done well in meeting these claims.

The book's introduction deals with the world need for electric power, the alternate sources of this power, and the resources available. The environmental aspects (land use, esthetic values, air and water pollution)