

Decay Heat Removal and Natural Convection in Fast Breeder Reactors

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As stated on the cover, this book is a collection of material presented at the Specialists Meeting devoted exclusively to shutdown heat removal from fast breeder reactors by buoyancy driven natural convection. Many aspects of the problem, including the experimental and analytical, are covered in considerable detail.

We would suggest, however, that the claim made that it provides a valuable reference to all reactor and heat transfer engineers and analysts is not justified. The book is largely concerned with sodium cooled systems and, although most technically advanced countries are working on fast reactor designs of this type, the effort is a small proportion of the total reactor effort and the unique physical properties of sodium give rise to problems that frequently require unique solutions.

Though containing a useful directory of contributors there is no critical review of the material presented at the meeting. Presumably the papers were discussed and it would have been valuable if some of the discussion had been included. Many of the papers themselves are in a form, probably for reasons of commercial confidence, in which they contain insufficient detail for the reader to be able to judge their value or to make comparisons, especially in the case of computer code studies. For example it would have been interesting to know whether the numerical diffusion inherent in the use of upwind differencing techniques was significant in the PTAR code calculations and whether other codes suffered from similar problems. Also more indication of the computer resources required for running the various codes would have been informa-

tive. Although there is a short report on a post-meeting discussion of future requirements, the book does not give the reader a feeling for whether the 'art' of decay heat removal analysis is flourishing or is in need of new inspiration.

The book is reasonably priced and well presented, although a minority of the figures are illegible either because too much information is given on too small a figure (pp 14, 18, 204) or because of the poor quality of the original (pp 163, 209). It cannot be justified by shortage of space because there are many instances of whole or half pages being used to present the minimum of information (pp 60, 61, 230, 232). We must assume that this is the price we pay for reducing editing to a minimum by accepting camera ready copy.

The index appears to be more detailed than is justified and shows signs of being produced by the non-specialist. Having a personal interest in insulation (particularly when under sodium) we referred to all eleven pages listed under insulation to learn only that experimental work is often difficult to carry out and interpret, facts with which we are all too familiar.

Nevertheless the book is a valuable contribution to the sparse literature in this very specialised but vital field, and we have no hesitation in recommending its purchase.

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Applied Heat Transfer

P. Todd and H. B. Ellis

The book establishes the basic general principles of thermal energy transfer and illustrates the application of these principles on selected technical problems. Starting from the elementary definitions of the terms specific to heat transfer, basic thermal phenomena are explained and engineering calculations with reference to such problems as building heat transfer, heat exchangers, fluid flow mechanical energy losses, the evaluation of solar radiation at the earth's surface etc., are given.

Only a basic knowledge of mathematics/simple algebra and some geometry is required for the reader to be able to understand the contents of the book. Nevertheless, this does not detract from the value of the book or prevent the authors from presenting a wealth of varied material while at the same time making it more accessible to a wider audience.

It is not, however, its thematic contents which ultimately make this book attractive; there are, after all, many texts which cover a similar field of interest. The reason why one may find this book of interest

is the large number of examples drawn from practice. These numerical examples constitute a significant proportion of the book, and each of them is accompanied by a full description in SI units, as is called for in every good engineering project.

The authors introduce SI units at the very outset where they explain the vocabulary of heat transfer and because of this the reader becomes acquainted with the physical meaning of these terms with reference to the SI system. The conversion factor appendix facilitates use of material presented in older publications in British units. In a period when the SI system is still in the process of entering into engineering and academic practice, this thorough approach to units is important and may also draw more advanced readers, for whom the book is not primarily intended.

Because of its lively style, clarity of expression, the large number of numerical examples and the simple mathematics involved, this is an excellent textbook for students. These qualities, together with the large number of tables containing thermo-dynamic and heat transfer data for a large number of gases, liquids and solid material which meet the needs of quite a wide area of engineering activity in free or forced convection, radiation, net