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ChE ***book review***

FLUIDIZATION ENGINEERING
(Second Edition)

by D. Kunii, O. Levenspiel
Butterworth / Heinemann, Stoneham, MA 02180; 491 pages, $145 (1991)

Reviewed by
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The first edition of this book, which appeared over twenty years ago, enjoyed considerable success in drawing together the research results available at that time and synthesizing from them a connected account of direct value to engineers involved in the design of fluidized beds. It is, therefore, a hard act to follow—but this second edition succeeds in preserving (and even enhancing) the virtues of its predecessor, while at the same time weaving many newer ideas into the fabric of the text.

Though some passages from the earlier work are retained, the present book is essentially a completely rewritten text. Even where the material is similar to the earlier presentation, it has been reorganized, expanded, and supplemented with more worked examples. There is much more attention paid to matters such as the influence of the properties of the particulate material on fluidization behavior, resting on concepts (such as the Geldart classification) which have appeared since publication of the first edition. Variants on the classical dense fluidized bed are also treated; for example, a whole chapter (entitled "High Velocity Fluidization") is devoted to turbulent beds and fast fluidized beds, configurations that have become increasingly important. On the other hand, the many students and practitioners who have benefited from the information in Chapter 3 of the first edition (which provided explicit instruction on how to estimate such elementary, but vital, properties as the terminal velocity of fall and the minimum fluidization velocity) will be happy to know that the same chapter of the second edition provides the same help, but in an updated and improved form.

My only criticism of the first edition was that the very success of the authors in presenting the material in such simple, clear exposition tended to give a false impression that the material was well established, reliable, and beyond controversy. In fact, this was far from the truth. Many of the correlations presented were extrapolations from limited data, while the models, though reasonable and the best available at the time, were gross simplifications which had been subjected to only the most superficial testing. In short, the story was told so well that it made the state-of-the-art seem much more firmly based than it really was.

I have some of the same feeling about the second edition. The unwary designer might easily be seduced into following the path so clearly marked out, only to receive a rude awakening further down the road. The subject remains today a very messy one, in a state of continuing flux, with both the physical principles and the tools available to apply them changing very quickly.

But this is only a minor reservation about a book which is likely to be as well received as was its predecessor. We might even hope that the rapid changes in the field will encourage the authors to venture a third edition at some time in the future. ❐