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BOOKS

Calculation of Thermal Stresses in Nuclear Reactors, Isoef Izrailevich Gol'denblat and Nikolai Aleksandrovich Nikolaenko, Consultants Bureau, New York (1964). 78 pages. $12.50. (Authorized translation from the Russian РАСЧЕТЫ ТЕМПЕРАТУРНЫХ НАПРЯЖЕННЙ В ЯДЕРНЫХ РЕАКТОРАХ. Two introductory chapters have been omitted.)

This short book might be referred to as a handbook for stress analysts dealing with reactors, pressure vessels, and other related areas (a handbook in the sense that a wide range of topics is covered and detail is omitted in some places). The lack of detail and the omission of certain topics of primarily theoretical interest, such as the coupled thermoelastic equations and thermally induced vibrations,* obviate the use of the book as a text on thermal stress analysis. On the other hand, the wide range of topics of a rather advanced nature provides an extremely interesting format.

The first section of the book treats the usual one- and two-dimensional problems of continuum mechanics, but also includes a discussion of thermal stresses in a medium containing voids and design for thermal creep. The second section of the book treats special thermal stress problems in plates and shells and includes topics such as derivation of Karman type (nonlinear) equations for a thermoelastic shell and their approximate solution, thermal buckling and cracking of circular plates with initial deflection, and the cracking of slightly dished conical and spherical shells.

It is unfortunate that most of the references are to Russian literature and may not be readily available; however, the text itself is usually easy to follow. The book should make a useful addition to the not-too-large thermal stress literature.

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* Refer to Boley, Bruno A., and Jerome H. Weiner, "Theory of Thermal Stresses," Wiley, New York (1960).

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