

This text provides a counterpoint view to the intentionally alarmist, uninformed journalism employed by some of the "anti" lobby where personal opinions are frequently equated with fact. Review of this publication will show that critical questions, such as how much radiation is really harmful, remain unanswered. In spite of the extensive studies of the effects of ionizing radiation, there is still more to learn, and further research in the effects of low-level ionizing radiation exposures is dictated.

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### The Dynamics of Explosion and Its Use

*Author* Josef Henrych  
*Publisher* Elsevier/North-Holland, Inc., New York (1979)  
*Pages* 558  
*Price* \$107.25  
*Reviewer* Jerzy R. Moszynski

This is a very unusual book. It attempts to present in nine chapters a wealth of information on the origin and development of explosion-caused stress waves, the damage due to them, design for protection, engineering use of explosions and, finally, calculation methods for deformations in various types of materials and structures.

The coverage is very uneven. At one extreme are very detailed calculation procedures in Chaps. 7 and 8 of elastic and elastoplastic deformations of elements and structures under a wide variety of impulsive loadings. At the other is the very terse presentation of fundamental aspects of stress wave theory and explosion effects in a medium in Chaps. 1 and 2, and the discussion of explosions in air and water and their effects in Chaps. 3 and 4, respectively. Here, difficult concepts are presented without discussion, equations and their solutions are written down, often with reference to publications not easily accessible. Perhaps the most extreme example is Sec. 2.9 on nuclear explosions, which contains some elements of kinetic theory, quantum mechanics, and radiation that are never used again and are simply written down. In between are Chaps. 5 and 6, which contain a great deal of empirical data and calculation procedures dealing with the use of explosions in excavation, earthwork, metal forming, etc., and in demolition, respectively. An excellent chapter on the seismic effects of explosions concludes the text.

The compilation of empirical data and calculation procedures is one of the best features of the book and will appeal to the designer and practicing engineer. The theoretical treatments are a little more disappointing and may not even serve as a useful starting point for someone embarking on the solution of a specific problem. This is due to the references being mostly Russian books, many not easily accessible. There are practically no references to Western technical journals; some books are listed, however. Even references to Soviet or Eastern European journals are scarce, and almost 15% are to the author's own work. Very few of the references are more recent than 1970.

The text, while terse in places, is understandable with a few exceptions. The translation is competent with very few linguistic lapses. The notation used, largely unfamiliar to an American reader, is very complex. The list of symbols occupies 14 pages. This hardly contributes to ease of reading.

In summary, the book will probably be a useful reference for practicing engineers and may provide a source of information on Soviet and East European work (albeit not too recent) in the field.

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### Gas Turbine Combustor Design Problems

*Editor* Arthur H. Lefebvre  
*Publisher* Hemisphere Publishing Corporation, New York (1980)  
*Pages* 431  
*Price* \$45.00  
*Reviewer* M. R. Bottaccini

A book dedicated to combustion chamber design is an unlikely source of information for nuclear engineers, especially a book such as this one, the heterogeneous proceedings of a meeting held at Purdue University in 1978. Such "workshops" are full of bombast and intellectual noise with nearly vanishing information content. And yet there are compensations even for the nuclear engineer whose work, we are told on p. 87, is being diminished by "the well-publicized opposition to nuclear power," which

is "leading utilities toward the purchase of coal-fired power plants." The useful segments are a bit hard to find, but they exist: bonbons, nuggets, and discoveries.

*Bonbon.* A. J. Verdoluw describes the performance of a vortex-controlled diffuser. Consider an unstreamlined, abrupt enlargement in a pipe. Install an annular bleed duct upstream of the expansion and a vortex fence, actually an orifice, downstream, and the diffuser pressure loss becomes 71% less than in a conventional diffuser.

*Nugget.* A thoughtful review article by Alan C. Eckbreth on laser probing. He discusses the capabilities of Raman scattering, coherent anti-Stokes Raman spectroscopy, and saturated laser-excited fluorescence in the measurement of density distributions, temperature fields, and species concentration. Worth reading by anyone who contemplates using laser spectroscopy. The bibliography is particularly impressive.

*Discovery.* Norman C. Chigier uses high-speed photography and the laser anemometer to study the introduction of liquid sprays in gaseous media. He determines size of particles, velocity distribution, turbulence intensities, mixture ratios, drag ratios, and ballistic trajectories. Fascinating.

*Compensation.* Nuclear engineers have been accused, with some justification, of tunnel vision and overpowering hubris. Their pursuit of nuclear solutions to social problems have marked them, at least in the minds of the uninformed, as single-minded and arrogant since the heady days of the Manhattan Project. But rejoice! They have met their match in the combustion specialist. When it comes to tunnel vision, how can any nuclear specialist compete with a man who dismisses the turbine, the sole reason for the existence of his profession, as a "downstream condition" for the com-

bustor? Or his colleague who informs us that there has been a downward trend in the sale of industrial gas turbines as a result of fuel shortages, high prices, and pollution restrictions, who agrees that there are no reasonable technical solutions in sight but who insists that the situation looks encouraging? Those whom the gods would destroy they first must make mad.

Most of the problems addressed in this volume are of limited interest to the readers of this journal since they are addressed to the improvement of combustion processes in fossil fuels. Two-thirds of the book is concerned with aviation propulsion and one-third with industrial power generation. Multifuel capacity is addressed in many papers, and pollution abatement still seems to be a major consideration. Combustor liner cooling receives some attention and the discussion may be of some use to reactor designers. The book should be in university or plant libraries but, like most such archival compendia, is not worth buying for the personal library of the nonspecialist.

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