measuring instruments and processing of random vibrations data is a necessity.

In summary, this is a good book. The reviewer believes that a table of nomenclature would be of great value to the reader. Incorporating computer programs would be a great asset since it would point out the salient methods and analysis as discussed in the book. Finite element methods (FEM) are missing. A number of programs employing FEM are presently in use. They possess great versatility in the analysis of frequencies and mode shapes in complicated multirotor problems. However, the reviewer does recommend this little volume to personnel interested and working in the field of rotor design.

**Seismic Mounting for Vibration Isolation.** by J. A. Macinante, John Wiley & Sons, New York, 1984, 279 pages. Price: $39.95

This book reads like a novel and brings a different slant than other books on the subject. The author professes to write a book which will appeal to both the experienced and less knowledgeable person in the design of vibration isolation mounts. This little volume is devoid of mathematics. It only presents equations which are derived in other sources plus a large number of useful graphs. The latter is a boon to one who is trying to design a vibration isolation mount for use in protecting a machine or equipment from large, induced vibration. The author applies his extensive experience and puts them into words and figures. As stated by the author, "My aim in this book is to stimulate a concern for vibration control from an early stage in the planning and design of buildings, and to provide a more realistic basis than is commonly used in practice for the design of the necessary vibration isolating (seismic) mountings for machinery and sensitive equipment. . . . The book deals with the design of mountings in a way that is consistent with rigorous vibration theory, yet uncluttered with mathematical material. . . ." The author further states that vibration isolation installations are still being designed on the theory that the resonant frequency of the mount installation should be lower than the frequency emitted by the equipment or structure. This could cause major problems if one completely ignores the response of the supporting structure. The author goes to great endeavors to prove his design philosophy.

The book consists of 9 chapters. Chapter 1 introduces the reader to the fundamentals of vibration isolation. He also indicates what seismic mounts perform and how they operate. Chapter 2 describes the different parts and terminology of vibration motion and vibration measurements. The former consists of sinusoidal, periodic, random, transient, rotational, rigid body and elastic. Brief mention is made of displacement, velocity and accelerometer transducers. Included are multichannel measurements and frequency analysis on oscillographs and tape deck. This completes the thought of what vibrations is all about.

Chapter 3 initiates the reader to the basic fundamentals of vibration isolation. The latter may involve (*a*) action at the source to reduce transmitted vibration, (*b*) modification of the transmission path to reduce the severity of the vibration, and (*c*) action at the receiver to reduce its response to unwanted vibration at its support. Dynamic balance, siting of machinery in buildings and seismic mounting of machinery are the initial choices. The primary concern is (*a*) above. If this is to no avail, choice (*b*) dictates transmission through the ground or structure. The last one, (*c*), is siting and/or seismic mounting of equipment of vibration or whole building isolation. The chapter concludes with the employment of vibration insurance to enhance vibration isolation control. The next chapter stresses vibration criteria. This covers dynamic balancing quality and vibration severity rating which employs a master chart derived from a number of sources. Additional critrion for vibration isolation of sensitive equipment are the ISA criterion, importance of frequency in vibration criterion and the action of the suspended floor with respect to sensitive equipment. The concluding section of this chapter mentions the subject of human sensitivity to vibration and the employment of the ISO criterion.

Chapter 5 focuses upon seismic mountings. This covers base mounting, center of gravity mounting and pendulum mounting. The different isolators considered are helical springs, rubber isolators, and air springs. The design guide outlines the necessary procedure for determining the type of mount, immediate access to the isolator and flexible connectors to pipes, hoses, and cables. The other important features are stiffness of inertia block and support pillars. Chapter 6 relates the type of design model for seismic mounting. This can be the single mass model (now considered unconservative) or the two-mass model. The latter considers in the design that the machine is a rigid mass. Other aspects are excitation at support of sensitive equipment, responses in direction other than vertical, and any nonlinearities of stiffness and damping. Lumped or distributed properties are used in a number of occasions for the design of seismic mounts. The seismic two-mass model mount may be exposed to a number of previously mentioned basic types of excitation.

Chapter 7 speaks about free natural vibration experienced by seismic mounts. They could be an uncoupled vertical mode and/or a number of modes in the horizontal direction. This would be either coupled pitching, coupled yawing, or coupled rolling with horizontal motion. Another important mode is rotational. This could be oscillation about vertical and rotation about the horizontal axis. The concluding section mentions coupled modes of a base type mounting and unsymmetrical mounting of a number of isolators.

Chapter 8 continues with mountings for machines on suspended floors. Since a flexible floor requires a two-mass model, these factors play an important role in the theoretical phase, i.e., (*a*) design model, (*b*) transmissibility ratio, (*c*) resonant frequencies, (*d*) vibration amplitude. The design data require resonance condition, stiff or springy floor, and mounting stiffness. The practical application for actual design are the floor characteristics, excitation frequency, floor frequency ratio, and mount damping ratio. This dictates the isolator selection and layout.

The concluding chapter provides a good format for the mounting of sensitive equipment. Theoretical aspects should be considered, i.e., excitation and transmissibilty ratio. Based upon a two-mass model the designer must know the type of response. This may be either a damped harmonic response, a sinusoidal excitation or resonance condition. The practical application of the design data revolves about (*a*) determination of the vibration site conditions, (*b*) determination of critical element chatracteristics, (*c*) assigned damping ratio of the mount, (*d*) chosen transmissibility ratio, (*e*) mounting natural frequency, and (*f*) layout arrangement and selection of the isolator.

The author fulfills his promise. The book contains a number of examples showing how the tables and graphs could be used to advantage in the design of mounts. However, the reviewer feels that a number of topics are too brief and should be expanded. A table of nomenclature would be of great help to the reader. Shock spectrum for shipboard applications and response spectra for earthquake design are barely mentioned. Both are important in their own rights. Design of inclined mounts or out-of-plane mounts are not mentioned, yet they are used in equipment isolation. Random vibration is glossed over, but aircraft and ground transportation experience this environment. In general, this is a good book. The reviewer recommends this book to personnel concerned with problems in vibration control.

**Noise Control Solutions Power Plants.** by R. K. Miller, Fairmount Press, P.O. Box 14227, Atlanta, GA 30650, 1984, 100 pages.

This little book presents a "birds-eye view" of noise control and indicates some of the problems associated with the various pieces of equipment in a modern power plant. Simple solutions are offered when applicable.

Power plants have been the source of noise disturbance to the existing nearby community. In recent years, the combined efforts of the power plant operators and OSHA have tended to reduce this discomfort. As pointed out by the author, "It should be recognized. . . machinery usage will vary from plant to plant. . . the general approaches to noise reduction presented in this report should be applicable to a wide variety of plants. . . ." The reviewer says "Amen."

The book consists of 17 chapters; some are very abbreviated. Chapter 1 introduces community noise, its effect, means of measurement and noise criteria. Chapter 2 discusses noise basics and provides the basic equations in vibration frequency, sound power level, overall sound power from a sonic jet and transmission loss. Sound absorption, barriers, vibration damping and isolation are explained in very simple terms. Chapter 3 furnishes an overview of noise problems in power plants. Typical sources of electric utility sound emissions are cited. The important in-plant noise based upon the reverberant sound level within a plant and methods of noise control treatments for the power plant are stated in tabular form. Additional sources of noise are fans and transformers. Means of reducing this noise is by siting (may be too costly) or acoustical enclosures. The next chapter speaks about OSHA and how it is enforced. Chapter 5 contains a literature search on noise reduction for power plants (steam and gas turbines).

Chapter 6 provides the general approach to noise control but offers no specific solutions. The next chapter reports upon valves and piping. It provides equations and accompanying charts for determining the overall sound pressure in a control valve including that of *db* correction for acoustical treatment applied to pipes. Chapter 8 considers the paths of sound transmissions from a fan and states the equation for sound power level and blade frequency. Chapter 9 continues with large centrifugal compressors and their main noise sources. The next chapter, which is very informative, provides an elaborate set of guidelines for pump and hydraulic system noise control. Chapter 11 covers steam leaks and their contributions to the noise exposure profile of a power plant. Although seemingly insignificant, it can cause hardship to people working within the vicinity as well as create excessive maintenance cost. Chapter 12 discusses venting of airsteam or process gas into the atmosphere. Simple plots are furnished which make up the overall sound pressure level. The next chapter mentions motors and contains a chart of A-weighted sound power levels. Chapter 14 presents equations for noise source indentification through structural vibration analysis. Chapter 15 covers hearing conservation and means of implementation either by plant or outside expert services. The concluding chapter presents different forms to aid in maintenance check up for noise control and hearing conservation. A good chapter that should be read by plant and engineering personnel.

In summary, this is an elementary book. Its greatest drawback is the lack of examples showing how most of the equations operate. Noise control methods are mentioned, but no example is given showing how this can be utilized. The plots and tables are too small and at times require external magnification to read them. Elementary vibration analysis and isolation are deleted. The suggestions for reducing pump noise are an excellent contribution to this book. An interested reader wanting to know about the broad basics of power plant noise control could acquire a good introduction. The experienced person would do better by studying the more advanced books in industrial noise control.

**Mechanical Vibrations for Engineers.** by M. Lalanne, P. Berthia, and Jider Hagapian (Translated by F. C. Nelson), John Wiley & Sons, New York 1983, 266 pages.

This little volume is a revised and expanded version of the French language text. The book stresses desk top computer application with 12 computer programs written in BASIC, which are incorporated in the book. As stated by the authors, "This book is a basis for the study of linear, mechanical vibration. It is intended primarily for the use of students and practicing mechanical engineers. Its purpose is to provide an understanding of vibration phenomena and concepts, ability to formulate and solve equations of motion of vibrating systems and an appreciation of the role and technique of vibration measurements." This book considers the vibration of structures with a series of structural models. Beginning with springs and masses, this progresses into beams and plates. Finally simple structures employing finite elements and methods of substructure (component mode method) complete the picture.

The book consists of 7 chapters, a short bibliography and an appendix describing Lagrange's equation. It also contains over 100 worked out examples.

The initial chapter considers single degree-of-freedom system (SDOF). This includes free and forced vibration (harmonic and periodic excitation), damping and a good explanation of Rayleigh's method and transfer matrix. Examples showing applications of SDOF systems are included. The next chapter reports on two degree-of-freedom systems. This involves free and forced vibrations in both undamped and damped systems. It concludes with the derivation of the vibration absorber. Chapter 3 continues with *N* degrees of freedom systems. Beginning with an explanation of matrix properties used in the analysis, this continues with the calculation of frequencies and modes using direct Rayleigh–Ritz and the iterative mode. The concluding part answers the question of how one may calculate the response to excitation. This covers steady state and general response.

Chapter 4 delves into continuous systems. The initial topics are the equations of motion for bars, rods and beams (torsion and bending). The frequency modes and orthogonality are studied for the longitudinal and lateral motions. The approximate methods (Rayleigh–Ritz) are then considered. Response to excitation are then employed in the subsequent analysis. The modal method and kinetic and strain energies of plates and rotor elements complete the chapter. This is a most interesting chapter, brief but to the point.

Chapter 5 presents the finite element (FE) method and its application to dynamics. Starting with the derivation of the equation, this steps forward to the derivation of the stiffness and mass matrices plus the assembly of the elemental properties into the complete FE. Frequencies and modes plus response to an excitation complete this phase. We now enter structural modification with application to the influence of a small structural modification. This chapter concludes with the use either free modes or constrained modes in the component mode method as applied to structures. A brief but interesting chapter.

Chapter 6 enters into the phase of experimental methods and procedures used in vibration analysis. Initiating the subject, we meet transducers, piezoelectric strain gages,