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The Bonded Electrical Resistance Strain Gage: An Introduction



Synopsis

Experimental stress analysis is an important tool in the overall design and development of machinery and structures. While analytical techniques and computer solutions are available during the design stage, the results are still dependent on many assumptions that must be made in order to adapt them to the problems at hand. One popular method of finding structural and design weaknesses is through the use of the electrical resistance strain gage. These devices are relatively low in cost, easily applied by a reasonably skilled technician, and require little investment in instrumentation (for the general user), yet they yield a wealth of information in a relatively short time period. The information and its validity is, of course, dependent on the training and knowledge of the engineer who plans the tests and reduces the data. In addition to serving as a reference for engineers, this practical, instructive book has a high potential as a textbook for senior and first-year graduate students in engineering and related fields, such as engineering physics and geology. A solutions manual is available to instructors using the book as a text. To request a free copy of the manual, please write: Peter Gordon, Engineering Editor, Oxford University Press, 198 Madison Avenue, New York, NY 10016.

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Customer Reviews

In my opinion this book is a thorough and carefully written introduction into the topic of stress analysis of machinery and structures. The book covers the theory of the basic concepts. The author paid attention to carefully explain the important ideas. First, the fundamental concepts of strain

gages and strain gage types are explored. Second, the fundamental concepts of stress-strain analysis are reviewed. What follows is a thorough development of the circuit equations, from the elementary circuits to the Wheatstone Bridge. Then, certain effects are addressed and data analysis is discussed. Since this book is an introduction to the topic it is not necessarily a practical handbook to perform stress analysis. But I think it provides the background to use such a handbook.

I am a Structural Engineer and I perform Non-Destructive test on equipment and other structures. This book provides a great foundation for the use and analysis tools for strain measurements. It goes beyond Hooke's Law!

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