



Elements of Structural Optimization (Solid Mechanics and Its Applications)

By Raphael T. Haftka, Zafer Gürdal

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The field of structural optimization is still a relatively new field undergoing rapid changes in methods and focus. Until recently there was a severe imbalance between the enormous amount of literature on the subject, and the paucity of applications to practical design problems. This imbalance is being gradually redressed. There is still no shortage of new publications, but there are also exciting applications of the methods of structural optimizations in the automotive, aerospace, civil engineering, machine design and other engineering fields. As a result of the growing pace of applications, research into structural optimization methods is increasingly driven by real-life problems. Most engineers who design structures employ complex general-purpose software packages for structural analysis. Often they do not have any access to the source program, and even more frequently they have only scant knowledge of the details of the structural analysis algorithms used in this software packages. Therefore the major challenge faced by researchers in structural optimization is to develop methods that are suitable for use with such software packages. Another major challenge is the high computational cost associated with the analysis of many complex real-life problems. In many cases the engineer who has the task of designing a structure cannot afford to analyze it more than a handful of times.

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Editorial Review

Review

'As far as the reviewer's knowledge goes, this textbook is the first one to deal with the principles of optimization in a unified manner for a possible extension to other fields.'

Applied Mechanics Review, 39:6 (1986)

'The authors have placed an emphasis on capturing the essence of the most important concepts and algorithms in structural optimization. They have presented the material in a manner suitable for advanced senior and graduate students, particularly those studying civil, mechanical, automotive and aerospace engineering.'

Inspec Science Abstracts (November 1985)

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