# BOOK REVIEW

## Alexander Blake: Practical Stress Analysis in Engineering Design

Second edition.
Marcell Dekker, Inc. 1990.

This book was presented in the series of Mechanical Engineering. As the 69th volume of these series it contains a comprehensive collection of classical methods in mechanical engineering design.

Although a detailed stress analysis applies computer methods in recent years, our daily technical decisions of a quick estimation need closed-form solutions and some hands-on approaches to the fundamental design knowledge. This field of mechanical engineering design is nearly covered by this textbook on its 690 pages. Total number of different topics in design is 42 which are arranged in 7 chapters as follows.

   I. Elements of static strength: stresses due to tension, torsion and bending, elastic strain energy, deflection of beams, statically indetermined structures, stress concentrations around holes, buckling of compressed columns.
  II. Dynamic and thermal effects: shocking, seismic loads, fatigue and fracture, stress waves, thermal stresses.
 III. Straight members: design criteria and formulas for different continuous beams due to some kind of loads.
  IV. Curved members: rings, arches, springs and hooks under different loads.
   V. Plates and flanges: some design fundamentals, panels, plates, closures, different flanges and brackets.
  VI. Piping and vessels: cylindrical and spherical vessels loaded by internal or external pressure, dimensioning of pipes.
 VII. Miscellaneous stress topics in design: bolted joints, load transfer elements, springs.

In the Appendix a collection of the principal formulas is given, referring to the equation numbers of different chapters.

In each section the theoretical material is supported by a number of illustrative design problems worked out in fully detail. The numerical results are given both in English and SI units. Numerous simple design case is described by exact equations. For complex problems the formulas are simplified or tables and charts can be used directly during the preliminary stress and deflection calculations.

The list of references contains 281 books and articles relating to the long-lived and proven methods in stress analysis. A number of different design methods have been proved by the author's industrial experience over many years.

This book can be useful mainly for designers, technologists and industrial consultants in their everyday work, in a quick preliminary design.

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