

Applied Creep Mechanics (Mechanical Engineering)

By Thomas Hyde, Wei Sun, Christopher Hyde

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Complete coverage of design and life assessment methods for high-temperature components

Applied Creep Mechanics fully discusses the time-dependent deformation which occurs in a metal when subjected to stress at an elevated temperature. This book explains how to perform detailed analyses of welded components; assess the conditions under which cracks may initiate and grow; and extract valuable information about the current state of the material, which may have been in service for many years.

This practical guide provides tested techniques for improving the design and life assessment methods for high-temperature components in power plants, chemical plants, and aero engines. The information presented in this book will help you optimize maintenance and repair, save time, reduce costs, and improve operational efficiency.

- Provides real-world industrial perspective on how to apply techniques to practical problems
- Case studies with linear and non-linear material behavior models
- Solution methods based on equilibrium compatibility and stress-strain and energy concepts
- Discusses high-temperature creep of engineering components; high-temperature structural analysis; high-temperature fracture mechanics; and damage mechanics
- Covers welded, notched, and cracked components
- State-of-the-art coverage of thermo-mechanical fatigue (TMF)

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Applied Creep Mechanics (Mechanical Engineering) By Thomas Hyde, Wei Sun, Christopher Hyde Bibliography

- Sales Rank: #1678968 in Books
- Published on: 2013-10-15
- Original language: English
- Number of items: 1
- Dimensions: 9.30" h x 1.00" w x 8.80" l, 1.45 pounds
- Binding: Hardcover
- 384 pages

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Editorial Review

About the Author

Tom H. Hyde, Wei Sun, and **Chris J. Hyde** have been on the engineering faculty at the University of Nottingham for a combined period of 56 years. All three are highly active researchers and teachers in solid mechanics, with a strong emphasis on the high-temperature behavior of materials and components. The authors have published more than 400 papers and have successfully supervised more than 50 PhD students. They have taught modules to students at all levels in BSc, MSc, BEng, and MEng courses, as well as having taught industry-based courses. Funding for their research has been obtained from a wide range of governmental and industrial collaborators. Professor Tom Hyde was the founding director of the Rolls-Royce UTC (University Technology Centre) on aero-engine transmission systems, at the University of Nottingham. Wei Sun is an associate professor, and Chris Hyde is a lecturer.

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