技術者のための ねじの力学
材料力学と数値解析で解き明かす
福岡俊道 著
コロナ社

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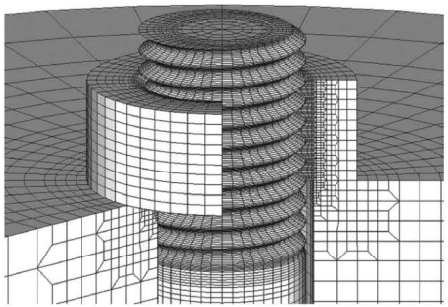
工学博士 福岡俊道 著



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技術者のための ねじの力学

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福岡 俊道（神戸大学教授） 著

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【本書の特徴】

ねじの幾何学，締結部剛性，締め付け特性，静的強度と疲労強度，熱負荷に対する挙動，固有振動特性などを平易に解説し，材料力学と標準的な CAE 手法による“壊れないねじ締結部設計”に必要な基礎知識の提供を目的としています。

【主要目次】

THE MECHANICS OF THREADED FASTENERS AND BOLTED JOINTS FOR ENGINEERING AND DESIGN

Toshimichi Fukuoka

The Mechanics of Threaded Fasteners and Bolted Joints for Engineering and Design outlines how threaded fasteners and bolted joints fail, how these failures can be remedied, and ultimately how to avoid them altogether through tightening methods, material strength, and avoiding loosening. The book demonstrates how to select the appropriate tightening method and determine the optimal tightening procedure for varying nominal diameters. Using the finite element method, it discusses characteristics of stress concentration and fatigue strength and covers bolt force variation due to elastic interaction. The separation of the plate interface via increased external force as the primary cause of fatigue failure in threaded fasteners is discussed, with effective countermeasures provided. Empirical equations of the thermal contact coefficient and apparent thermal contact coefficient in simple form are included as well.

Key Features

- Outlines various tightening methods such as torque control, angle control, direct tension, and thermal expansion
- Demonstrates methods for preventing fatigue failure
- Discusses the effect of high- and low-temperature thermal loads on the strength of bolted joints by looking at thermal contact resistance at the interface

About the Author

Toshimichi Fukuoka is a Professor Emeritus at Kobe University, Japan, and conducts research in the areas of numerical analysis and experimental study of thermal and mechanical behavior of bolted joints, application of computational mechanics to structural design and safety assessment, study of thermal contact resistance and interface stiffness, and inverse problems in contact mechanics and heat transfer phenomena.

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