



Internal Combustion Engines: Applied Thermosciences

By Colin R. Ferguson, Allan T. Kirkpatrick

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Since the publication of the Second Edition in 2001, there have been considerable advances and developments in the field of internal combustion engines. These include the increased importance of biofuels, new internal combustion processes, more stringent emissions requirements and characterization, and more detailed engine performance modeling, instrumentation, and control. There have also been changes in the instructional methodologies used in the applied thermal sciences that require inclusion in a new edition. These methodologies suggest that an increased focus on applications, examples, problem-based learning, and computation will have a positive effect on learning of the material, both at the novice student, and practicing engineer level. This Third Edition mirrors its predecessor with additional tables, illustrations, photographs, examples, and problems/solutions. All of the software is 'open source', so that readers can see how the computations are performed. In addition to additional java applets, there is companion Matlab code, which has become a default computational tool in most mechanical engineering programs.

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Editorial Review

From the Back Cover

Fully updated third edition incorporating recent developments in engine modelling and analysis, combustion processes, fuels, and engine performance

Since the publication of the Second Edition in 2001, there have been considerable technical advances and developments in the field of internal combustion engines. These include more detailed engine thermodynamic performance modelling, increased importance of gaseous fuels, new combustion processes, and more stringent emissions requirements. There have also been changes in the instructional methodologies used in the applied thermal sciences that require inclusion in a new edition. These methodologies suggest that an increased focus on applications, examples, problem based learning, and computation will have a positive effect on learning of the material, both for the novice student and the practicing engineer.

This Third Edition mirrors its predecessor and has been expanded with two additional chapters, and new examples and homework problems throughout. All of the software now is 'open source', so that readers can see in detail how computational analysis and design of engines is performed. The new edition uses Matlab® software, which has become a default computational tool in most Mechanical Engineering programs, and gives detailed descriptions of the computational techniques employed.

- Provides students and engineers with the tools to apply the fundamental principles of thermodynamics, fluid mechanics, and heat transfer to internal combustion engines.
- Provides insight into how internal combustion engines are modelled and analysed.
- Enhances learning with the inclusion of Matlab® programs showing how to perform representative energy, fluid flow, combustion, and emission calculations.
- Examples and end-of-chapter problems are included throughout the text to illustrate and reinforce important concepts.
- The Appendix and companion website includes listings of the Matlab® computer programs, and detailed explanation of the numerical procedures used.

Users Review

From reader reviews:

Joyce Burke:

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