Elementary Internal Combustion Engines J W Kershaw | 853dfebe48ce153003f69cdaa2d9dd8

Mixture Formation in Internal Combustion Engines

Elementary Internal Combustion Engines is a comprehensive guide to the fundamentals of internal combustion engines. It is ideal for students who are following specialist options in internal combustion engines, and also for students at earlier stages in their courses - especially with regard to laboratory work - as well as practising engineers for an overview of the subject, or when they are working on particular aspects of internal combustion engines. It is fully updated including new material on direct injection spark engines, supercharging and renewable fuels. Offers a wealth of worked examples and end-of-chapter questions to test your knowledge. A solutions manual available online for lecturers at www.greenvale.pqoengineering.co.uk.

Internal combustion engines (ICE) still have potential for substantial improvements, particularly with regard to fuel efficiency and environmental compatibility. In order to fully exploit the remaining margins, increasingly sophisticated control systems have to be applied. This book offers an introduction to cost-effective model-based control-system design for ICE. The primary emphasis is put on the ICE and its auxiliary devices. Mathematical models for these processes are developed and solutions for selected feedforward and feedback control-problems are presented. The discussions concerning pollutant emissions and fuel economy are constantly intensified since the first edition of this book was published.

Concerns about the air quality, the limited resources of fossil fuels and the detrimental effects of greenhouse gases exceedingly spurred the interest of both the industry and academia in further improvements. The most important changes for selected feedforward and feedback control-problems are presented. The discussions concerning pollutant emissions and fuel economy of ICE in automotive applications constantly intensified since the first edition of this book was published. Concerns about the air quality, the limited resources of fossil fuels and the detrimental effects of greenhouse gases exceedingly spurred the interest of both the industry and academia in further improvements. The most important changes for selected feedforward and feedback control-problems are presented. The discussions concerning pollutant emissions and fuel economy of ICE in automotive applications constantly intensified since the first edition of this book was published.

Computational Optimization of Internal Combustion Engines presents the state of the art of computational models and optimization methods for internal combustion engine development using multi-dimensional computational fluid dynamics (CFD) tools and genetic algorithms. Strategies to reduce computational cost and mesh dependency are discussed, as well as regression analysis methods. Several case studies are presented in a section devoted to applications, including assessments of: spark-ignition engines, dual-fuel engines, heavy duty and light duty diesel engines. Through regression analysis, optimisation results are used to explain complex interactions between engine design parameters, such as nozzle design, injection timing, swirl, exhaust gas recirculation, bore size, and piston bowl shape. Computational Optimization of Internal Combustion Engines demonstrates that the current multi-dimensional CFD tools are mature enough for practical development of internal combustion engines. It is written for researchers and designers in mechanical engineering and the automotive industry.

Now in its fourth edition, Introduction to Internal Combustion Engines remains the indispensable text to guide you through automotive or mechanical engineering, both at university and beyond. Thoroughly updated, clear, comprehensive and well-illustrated, with a wealth of worked examples and problems, its combination of theory and applied practice is sure to help you understand internal combustion engines, from thermodynamics and combustion to fluid mechanics and materials science. It is ideal for students who are following specialist options in internal combustion engines, and also for students at earlier stages in their courses - especially with regard to laboratory work - as well as practising engineers for an overview of the subject, or when they are working on particular aspects of internal combustion engines that are new to them. It is fully updated including new material on direct injection spark engines, supercharging and renewable fuels. Offers a wealth of worked examples and end-of-chapter questions to test your knowledge. A solutions manual available online for lecturers at www.greenvale.pqoengineering.co.uk.

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