Springer Hardcover (ASIN: 3642001637)

Automotive Engines: Control, Estimation, Statistical Detection

Comprehensive Guide to Engine Control and Diagnostics

Introduction

This monograph, authored by a seasoned developmental automotive engineer, provides an extensive overview of automotive engine control and estimation challenges and their practical solutions. It addresses the increasing demands on engine performance, exhaust emissions, and fuel consumption, which necessitate the development of advanced engine functionalities.

The book serves as a valuable resource for understanding the complexities of modern automotive engines and the sophisticated techniques employed for their control and diagnosis.

Key Concepts and Topics Covered

The publication covers a wide array of critical topics and introduces new techniques pertinent to automotive engine control and estimation. Key areas include:

- **Idle Speed Control:** Methods and strategies for maintaining stable engine idle speeds.
- **Cylinder Flow Estimation:** Techniques for accurately estimating air and fuel flow within engine cylinders.
- **Engine Torque and Friction Estimation:** Approaches to determine engine output torque and internal friction losses.
- **Engine Misfire and CAM Profile Switching Diagnostics:** Diagnostic procedures for detecting misfires and issues related to camshaft profile switching.
- **Engine Knock Detection:** Advanced methods for identifying and mitigating engine knock events.

The book also delves into essential tools and techniques such as input estimation, composite adaptation, threshold detection adaptation, real-time algorithms, and crucial statistical techniques for robust engine functionality.

How to Use This Book

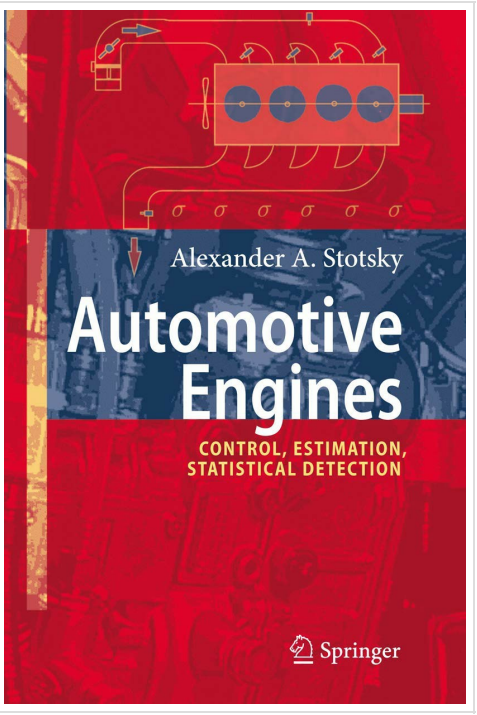
This book is designed to be a comprehensive guide for various audiences interested in automotive engine technology:

- **Practicing Automotive Engineers:** Provides practical solutions and advanced techniques for real-world engine control and diagnostic problems.

- **"Black Belts" in the Automotive Industry:** Offers in-depth knowledge and methodologies for optimizing engine performance and reliability.
- **Lecturers and Students:** Serves as an excellent textbook and reference, covering a wide range of engine control and estimation problems with detailed, well-structured descriptions of useful techniques.

Readers will find insights into current automotive applications, future trends, and challenges in engine functionality.

Product Overview



This image displays the front cover of the book 'Automotive Engines: Control, Estimation, Statistical Detection'. The cover features a red and blue design with an abstract illustration of an engine diagram. The title 'Automotive Engines' is prominently displayed in large white letters, with 'CONTROL, ESTIMATION, STATISTICAL DETECTION' in smaller yellow text below it. The author's name, Alexander A. Stotsky, is also visible, along with the Springer logo at the bottom.

Specifications

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About the Author

The book is written by **Alexander A. Stotsky**, a long-year developmental automotive engineer. His extensive experience in the field provides a practical and insightful perspective on the complex topics covered in this monograph.

For more information about the author, you may refer to the publisher's resources or academic databases.