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   Nota di contenuto   Chapter 1. State of the art of 1D thermo-fluid dynamic simulation models -- Chapter 2. Virtual engine development: 1D- and 3D-CFD up to full engine simulation -- Chapter 3. Advanced OD and quasiD thermodynamic combustion models for SI and CI engines -- Chapter 4. Compressor and turbine as boundaryconditions for 1D simulations -- Chapter 5. 3D-CFD combustion models for SI and CI engines -- Chapter 6. Control-oriented gas dynamic simulation via model order reduction -- Chapter 7. Modeling of EGR systems -- Chapter 8. 1D engine model in XiL application: a simulation environment for the entire powertrain development process -- Chapter 9. Coupling of 1D and 3D fluid dynamic models for hybrid simulations -- Chapter 10. Extending the 1D approach to the simulation of 3D components: the Quasi-3D approach -- Chapter 11. 1D simulation models for aftertreatment components -- Chapter 12. 3D simulation models for after-treatment systems -- Chapter 13. Modeling of IC engine silencers and tailpipe noise: 1D and 3D approaches.

Sommario/riassunto

This book provides a description of the most significant and recent achievements in the field of 1D engine simulation models and coupled 1D-3D modeling techniques, including 0D combustion models, quasi-3D methods and some 3D model applications.