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Nota di contenuto	1.Introduction -- 2.Physical laws and model structure of simulations -- 3.Validating and comparing with experiments and other models -- 4. Thermodynamic engine optimization -- 5.Cycle-to-cycle variability -- App.A. Derivation of the basic differential thermodynamic equations -- App.B. Flow rates and valve geometry -- App.C. Flame front area calculations -- App.D. Heat transfer areas -- App.E. Combustion chemistry -- App.F. Alternative fuels -- App.G. Reference geometric and configuration parameters for numerical computations.
Sommario/riassunto	Based on the simulations developed in research groups over the past years, Introduction to Quasi-dimensional Simulation of Spark Ignition Engines provides a compilation of the main ingredients necessary to build up a quasi-dimensional computer simulation scheme. Quasi-dimensional computer simulation of spark ignition engines is a powerful but affordable tool which obtains realistic estimations of a wide variety of variables for a simulated engine keeping insight the basic physical and chemical processes involved in the real evolution of an automotive engine. With low computational costs, it can optimize the design and operation of spark ignition engines as well as it allows to analyze cycle-to-cycle fluctuations. Including details about the structure of a complete simulation scheme, information about what kind of information can be obtained, and comparisons of the simulation results with experiments, Introduction to Quasi-dimensional

Simulation of Spark Ignition Engines offers a thorough guide of this technique. Advanced undergraduates and postgraduates as well as researchers in government and industry in all areas related to applied physics and mechanical and automotive engineering can apply these tools to simulate cyclic variability, potentially leading to new design and control alternatives for lowering emissions and expanding the actual operation limits of spark ignition engines.