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Titolo	Optimal Control in Thermal Engineering / / by Viorel Badescu
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ISBN	3-319-52968-4
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XV, 588 p. 179 illus.)
Collana	Studies in Systems, Decision and Control, , 2198-4190 ; ; 93
Disciplina	620
Soggetti	Control engineering Thermodynamics Heat engineering Heat transfer Mass transfer System theory Control theory Control and Systems Theory Engineering Thermodynamics, Heat and Mass Transfer Systems Theory, Control
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Functions optimization -- Elements of variational calculus -- Generalities concerning the optimal control problems -- The maximum principle (Pontryagin) -- The gradient method -- Dynamic programming (Bellman method) -- Heat transfer processes -- Heat exchangers -- Storage of thermal energy and exergy -- Heating and cooling processes -- Optimization of thermal insulation of seasonal water storage tanks -- Optimization of pin fin profiles -- Optimization of solar energy collection systems -- Flat-plate solar collectors. Optimization of absorber geometry -- Optimal time-dependent operation of open loop solar collector systems -- Optimal time-dependent operation of closed loop solar collector systems -- Optimal flow controllers -- Endoreversible heat engines -- Diesel engines -- Optimization of Daniel cam engines -- Photochemical

	Engines -- Optimization of one dimensional slider bearings. .
Sommario/riassunto	This book is the first major work covering applications in thermal engineering and offering a comprehensive introduction to optimal control theory, which has applications in mechanical engineering, particularly aircraft and missile trajectory optimization. The book is organized in three parts: The first part includes a brief presentation of function optimization and variational calculus, while the second part presents a summary of the optimal control theory. Lastly, the third part describes several applications of optimal control theory in solving various thermal engineering problems. These applications are grouped in four sections: heat transfer and thermal energy storage, solar thermal engineering, heat engines and lubrication.Clearly presented and easy-to-use, it is a valuable resource for thermal engineers and thermal-system designers as well as postgraduate students.