1. Record Nr. UNINA9910457189003321 Autore Sforza P. M. Titolo Theory of aerospace propulsion [[electronic resource] /] / Pasquale M. Sforza Waltham, Mass., : Academic Press, c2012 Pubbl/distr/stampa **ISBN** 1-283-29364-1 9786613293640 0-12-384889-X Descrizione fisica 1 online resource (703 p.) Collana Aerospace Engineering Disciplina 629.1/1 Soggetti Jet propulsion Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Description based upon print version of record. Note generali Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Front Cover: Theory of Aerospace Propulsion: Copyright: Contents: Preface; Chapter 1 - Idealized Flow Machines; 1.1 Conservation Equations: 1.2 Flow Machines with No Heat Addition: The Propeller: 1.3 Flow Machines with P = 0 and Q = Constant: The Turbojet, Ramjet, and Scramjet; 1.4 Flow Machines with P = 0, Q = Constant, and A0 = 0: The Rocket; 1.5 The Special Case of Combined Heat and Power: The Turbofan; 1.6 Force Field for Air-Breathing Engines; 1.7 Conditions for Maximum Thrust; 1.8 Example: Jet and Rocket Engine Performance; 1.9 Nomenclature: Reference Chapter 2 - Quasi-One-Dimensional Flow Equations 2.1 Introduction; 2.2 Equation of State; 2.3 Speed of Sound; 2.4 Mach Number; 2.5 Conservation of Mass; 2.6 Conservation of Energy; 2.7 Example: Heating Values for Different Fuel-Oxidizer Combinations; 2.8 Conservation of Species; 2.9 Conservation of Momentum; 2.10 Impulse Function; 2.11 Stagnation Pressure; 2.12 Equations of Motion in Standard Form; 2.13 Example: Flow in a Duct with Friction; 2.14 Nomenclature; References; Chapter 3 - Idealized Cycle Analysis of Jet Propulsion Engines: 3.1 Introduction: 3.2 General Jet Engine Cycle 3.3 Ideal Jet Engine Cycle Analysis 3.4 Ideal Turbojet in Maximum Power Take-Off; 3.5 Ideal Turbojet in High Subsonic Cruise in The

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Sommario/riassunto

Readers of this book will be able to: utilize the fundamental principles of fluid mechanics and thermodynamics to analyze aircraft engines, understand the common gas turbine aircraft propulsion systems and be able to determine the applicability of each, perform system studies of aircraft engine systems for specified flight conditions, perform preliminary aerothermal design of turbomachinery components, and conceive, analyze, and optimize competing preliminary designs for conventional and unconventional missions. Early coverage of cycle analysis provides a systems pers